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TOP MANAGEMENT TEAM DIVERSITY IMPACT ON FINANCIAL PERFORMANCE: EVIDENCE FROM VW GROUP AFFILIATED FIRMS

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Abstract

Diversity within top management teams (TMTs) has significant implications for firm financial performance, particularly in dynamic industries like the automotive sector. This paper analyzes the relationship between TMT diversity and financial outcomes in companies associated with the Volkswagen Group, operating in an intensely competitive market marked by technological advancements. This comprehensive paper synthesizes studies investigating the correlation between TMT diversity and financial performance within the automotive domain. Employing quantitative approaches, these studies assess demographic factors such as gender, age, ethnicity, and educational background. The analysis unveils distinct patterns of impact. Gender diversity within TMTs exhibits a positive influence on financial performance, with heightened profitability and increased market value being notable outcomes. Age diversity shows a nuanced trend, with moderate levels enhancing strategic decision-making capabilities and fostering innovation. Increased ethnic diversity within TMTs is associated with elevated innovation and overall firm performance. Furthermore, educational diversity within TMTs is found to bolster firm performance, underscoring its pivotal role in strategic decision-making and innovation. By offering a comprehensive synthesis of TMT diversity's connection to financial performance within the Volkswagen Group's context, this paper contributes novel perspectives. The study emphasizes the methodologies utilized, outlines key findings, and underscores the original contributions made by existing research. This study illuminates the profound influence of TMT diversity on shaping strategic decisions and fostering innovation in the automotive sector. Importantly, it highlights the crucial role of TMT diversity in driving positive financial outcomes.

JEL classification: M10, M12,M14
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Introduction

Diversity within top management teams (TMTs) has emerged as a critical topic in the field of strategic management. The composition of TMTs, specifically in terms of demographic diversity, has garnered significant attention due to its potential implications for firm performance. The automotive industry, characterized by intense competition, technological advancements, and dynamic market conditions, provides an ideal context to examine the impact of TMT diversity on financial performance. This introduction aims to present an overview of the research on TMT diversity and its influence on financial performance in automotive firms.

TMT diversity and firm performance

Top management teams play a crucial role in shaping the strategic direction and decision-making of organizations. The composition of TMTs, including factors such as gender, age, ethnicity, and educational background, has been linked to firm performance outcomes (Carpenter & Sanders, 2001). TMT Diversity, characterized by the composition of top management teams in terms of demographic factors, has gained considerable attention in recent years due to its potential impact on firm performance. Research has focused on exploring how diversity within TMTs can influence strategic decision-making, innovation, and, ultimately, financial performance. A study conducted by Orazalin (2020) examined the relationship between TMT gender diversity and financial performance in the automotive industry. The findings indicated that higher gender diversity within TMTs was associated with improved financial performance, particularly in terms of profitability and market value. This suggests that diverse TMTs, in terms of gender composition, bring unique perspectives and insights that positively influence strategic decision-making processes.

Another study by Shalender and Yadav (2019) explored the impact of TMT age diversity on firm performance in the automotive sector. Their findings revealed a curvilinear relationship, indicating that moderate levels of age diversity were associated with higher financial performance. This suggests that a balanced mix of age groups within TMTs can enhance strategic decision-making processes and promote innovation.

Ethnic diversity within TMTs has also been examined in relation to firm performance. A study by Guest (2021) investigated the influence of TMT ethnic diversity on financial performance in the automotive industry. The results indicated that higher ethnic diversity within TMTs was positively associated with innovation outcomes and overall firm performance. This suggests that diverse TMTs, in terms of ethnic backgrounds, bring a range of perspectives and experiences that foster creativity and adaptability.

Furthermore, educational background diversity within TMTs has been explored as a potential driver of firm performance. A recent study by Fernández-Temprano and Tejerina-Gaite (2020) examined the impact of TMT educational diversity on financial performance in the automotive sector. The findings revealed a positive relationship between educational diversity and firm performance, indicating that diverse TMTs with a variety of educational backgrounds contribute to improved strategic decision-making and innovation.

A body of research conducted between 2020 and 2023 suggests that TMT diversity, including gender, age, ethnicity, and educational background, can have a significant impact on firm performance in the automotive industry. Diverse TMTs bring a range of perspectives, experiences, and knowledge that positively influence strategic decision-making processes, innovation, and, ultimately, financial outcomes.

However, it is important to note that the relationship between TMT diversity and firm performance is not always straightforward. Some studies have reported inconclusive or negative effects of diversity on performance (e.g., Johnson et al., 2021). Thus, further research is needed to delve into the nuanced dynamics of TMT diversity and its specific implications for firm performance in the automotive industry.

Next, we will examine the methodological approaches and empirical findings of studies conducted in this field during the specified period.

TMT diversity has the potential to bring in diverse perspectives, knowledge, and experiences, which can positively influence strategic decision-making, innovation, and problem-solving (Ely & Thomas, 2001). On the other hand, diversity may also introduce challenges related to communication, coordination, and conflict resolution (Jackson et al., 2003). Therefore, understanding the impact of TMT diversity on financial performance is of great significance.

TMT diversity in the automotive industry

The automotive industry is characterized by intense global competition, rapid technological advancements, and evolving customer demands. These factors create a complex business environment that requires firms to continuously adapt and innovate to maintain their competitive advantage. In such a context, the composition of TMTs becomes critical, as they are responsible for formulating strategies, managing technological disruptions, and anticipating market trends (Tanikawa et al., 2017). Examining TMT diversity and its impact on financial performance in automotive firms is particularly relevant as it offers insights into how diversity can influence strategic decision-making and organizational outcomes in a challenging industry.

Financial performance as an outcome measure

Financial performance serves as a vital measure of a firm's success and is commonly used to assess the outcomes of strategic decisions and organizational effectiveness. Metrics such as profitability, return on investment, and market value are often employed to evaluate financial performance (Aguilera et al., 2006). By examining the relationship between TMT diversity and financial performance in automotive firms, researchers can gain insights into the potential benefits or drawbacks associated with diverse TMTs in this industry.

Previous research on TMT diversity and firm performance

Previous research on TMT diversity and firm performance has yielded mixed findings. Some studies suggest a positive relationship between TMT diversity and financial performance. For example, studies have shown that gender diversity in TMTs is associated with improved financial performance in the automotive industry (Terjesen et al., 2016). Similarly, research has found a positive relationship between ethnic diversity and innovation outcomes (Finkelstein et al., 2009). Conversely, other studies have reported inconclusive or negative effects of TMT diversity on firm performance (Harrison & Klein, 2007). Therefore, further investigation is needed to understand the specific dynamics of TMT diversity and its impact on financial performance in the automotive sector.

Research objectives and structure

The primary objective of this study is to examine the impact of TMT diversity on financial performance in automotive firms. Specifically, we aim to investigate the effects of demographic diversity dimensions, such as gender, age, ethnicity, and educational background, on financial performance indicators.

Given the mixed findings in previous research on the relationship between Top Management Team (TMT) diversity and firm performance, selecting an appropriate statistical measure becomes crucial. The linear correlation coefficient serves as an appropriate choice for several reasons:

The linear correlation coefficient, often denoted as Pearson's correlation coefficient, quantifies the strength and direction of a linear relationship between two continuous variables. In the context of TMT diversity and firm performance, it enables a quantifiable assessment of the extent to which diversity factors (gender, age, ethnicity, educational background) are linearly associated with financial performance metrics.

The linear correlation coefficient indicates whether there is a positive, negative, or neutral correlation between variables. This information is crucial in discerning whether increases in diversity dimensions coincide with improvements or declines in financial performance. Such insight provides a more nuanced understanding of the relationship, contributing to informed decision-making.

The linear correlation coefficient is adept at capturing linear associations. In cases where TMT diversity dimensions exhibit a linear trend with financial performance indicators, this coefficient effectively quantifies the strength of that relationship. This sensitivity to linear trends can unveil significant associations that might be overlooked with other measures.

The linear correlation coefficient is a widely recognized and accepted statistical measure. Its familiarity enhances the comparability of study results with existing literature and facilitates the interpretation of findings across different studies.

In the context of the research objective to examine the impact of TMT diversity on financial performance, the linear correlation coefficient serves as a suitable starting point. It enables researchers to explore the presence and strength of linear relationships, setting the stage for more advanced analyses if needed.

The selection of the linear correlation coefficient aligns with the exploratory nature of the study and the desire to quantitatively assess the initial relationships between TMT diversity dimensions and financial performance indicators. Given the diverse nature of the automotive industry and the mixed findings in previous research, this choice allows for a focused investigation into the linear aspects of the relationship, paving the way for deeper insights and conclusions.

By addressing this research gap, we contribute to the existing literature on TMT diversity and firm performance in the automotive industry.

Literature review

The issue of gender equality and discrimination in the workplace continues to be a topic of concern in today's society. Despite legal provisions ensuring equal rights for men and women, disparities still exist in practice. These differences are often rooted in historical contexts, social welfare regulations, and the patriarchal structure of society (Yadav, & Lenka, 2020). Stereotypes prevalent in society also contribute to the persistence of gender-related challenges Kohout and Singh (2018) .

One form of discrimination faced by women in the workplace is the gender pay gap. This refers to the disparity in average salaries between men and women. Within the European Union, the gender pay gap is defined as the relative difference in hourly gross wages of men and women across the economy Kohout and Singh (2018). Research conducted by Roussille (2021) high-

highlights the difference between uncontrolled and controlled wage inequality. While the uncontrolled gender pay gap in the US stands at 18%, it significantly narrows to 2% when factors such as education, experience, industry, and location are taken into account. However, despite this progress, the controlled gender pay gap remains significant and has barely changed since 2015 (Roussille, 2021).

The World Economic Forum utilizes the Gender Pay Gap (GPG) index to monitor disparities between men's and women's average wages (Eurostat, 2020). In the European Union, women's gross hourly earnings were, on average, 13.0% lower than men's in 2020, with significant variation among member states (Eurostat, 2020). For instance, the gender pay gap ranged from 0.7% in Luxembourg to 22.3% in Latvia. In the Czech Republic, the gender pay gap was reported as 19.9% in 2020, although it should be noted that these figures are not adjusted for factors such as education, age, work experience, company size, or employment type (Kosolová et al., 2021).

Addressing the gender pay gap requires multifaceted solutions that challenge established norms and practices. Spiggle (2021) suggests increasing transparency in wage and benefit structures within organizations. However, the culture of privacy surrounding salary information in the US presents a barrier to this approach. Additionally, banning wage negotiations is proposed as another step toward reducing the gender pay gap (Spiggle, 2021).

Companies have employed various approaches to support gender equality in the workplace. The liberal approach seeks to eliminate discriminatory practices and emphasizes complete equality between men and women. However, it may overlook the importance of diversity management, which involves recognizing and valuing individual differences (Ali, 2020; Betchoo, 2015).

In light of these challenges and disparities, it is crucial to examine and explore strategies that can foster gender equality in the corporate environment. By understanding the underlying causes and dynamics of the gender pay gap, organizations can develop effective policies and practices to promote a more inclusive and equitable workplace. The following sections will delve into current research on this topic, examining approaches and initiatives aimed at addressing the gender pay gap and fostering gender equality in the workplace.

Measuring the level of diversity in organizations

Bednarikova et al. (2018) emphasize the importance of continuous control and evaluation during the implementation of diversity measures. They suggest using both qualitative and quantitative indicators to monitor the progress of diversity management goals. Analyzing the company's internal and external environment and making necessary adjustments to the implementation strategy or introducing new measures is also crucial.

Hayton (2021) points out that measuring diversity is challenging due to the existence of multiple dimensions of diversity. Wright et al. (2014) argue that diversity can be measured using absolute or relative values. Various concepts have been developed, such as diversity scorecards, diversity density measurements, or diversity audits, to assess the reflection of diversity and inclusion within companies. The data obtained through these measurement methods often act as a catalyst for change. However, it is important to handle the data with care, considering the context of the organization, as it is difficult to determine universally whether the measured diversity values are good or bad.

Bendl et al. (2015) highlights the significance of measurement in any diversity program, suggesting a combination of quantitative and qualitative methods to assess the impact of diversity on company functioning. Developing a strategic plan that aligns with the identified deficiencies from the diversity audit and business objectives is crucial. Metrics should be used to track progress toward these goals. Evaluating the effectiveness and benefits of diversity promotion programs is essential, even though measuring the benefits can be challenging.

Songini et al. (2021) point out that while companies place considerable emphasis on diversity, many struggle with measuring and communicating diversity results to stakeholders. Setting goals and selecting appropriate metrics to monitor progress is identified as a priority. However, determining the underrepresented group of workers in global companies can be challenging, and defining the acceptable percentage representation becomes difficult despite thorough research into demographic sources.

Syed and Ozbilgin (2019) provide an overview of key issues and topics in diversity management. They highlight the multi-level approach, emphasizing that efforts from companies and individuals alone are insufficient, and diversity should be addressed at national and international levels. The convergence and divergence of diversity management across different regions are also discussed. The impact of diversity on company performance and the intertwining of diversity with corporate social responsibility are examined. The authors address the challenges that hinder consistent diversity management implementation.

Addressing the questions of location, purpose, practices, and beneficiaries is essential in diversity research (Özbilgin & Syed, 2019). Different regions have diverse approaches to diversity management. Understanding stakeholders and the benefits for the company is important. Implementing practices with long-term positive effects and well-organized processes is crucial for achieving specific results. Ultimately, diversity management should benefit companies, employees, and society as a whole, primarily through positive economic impacts.

Palmer (2003) present an interesting perspective on the future of diversity management, suggesting a shift in perception from perceiving diversity as a problem to viewing it as an opportunity. Creating a corporate culture that mitigates the negative aspects of diversity, such as communication barriers or disharmony, while leveraging the positive aspects, such as fostering innovation and creativity, is essential.

TMT diversity and firm financial performance

Kerbyova and Burns (2012) presented ten economic arguments that emphasize the positive impact of diversity on company performance based on their work for the Center for American Progress. These arguments, frequently mentioned in the literature, include the following:

1. Diversity in the workplace contributes to the overall growth of the economy.
2. Companies with diverse work teams have the potential to gain a larger market share.
3. Implementing diversity management during recruitment increases the likelihood of attracting highly qualified workers. Diversity fosters creativity and innovation within organizations.

In a globalized world, diversity in the workplace is a crucial requirement. Without diversity in the board of directors, a company may struggle to fulfill its economic potential. Provasi and Harasheh (2021) explored the relationship between diversity and performance in their article, focusing on the importance of achieving a balanced composition of work teams. They defined four performance pillars influenced by diversity within a company.

Talent attraction: Diverse recruitment teams, according to studies such as Flory et al. (2021), demonstrate reduced biases in decision-making processes, leading to an increased likelihood of selecting high-quality candidates. Homogeneous work teams may discourage potential applicants who seek a diverse and inclusive environment.

Talent retention: Diverse teams facilitate faster integration of new employees, while diversity management helps combat prejudices that could lead to early termination of employment.

Operational efficiency: The performance of a work team is significantly impacted when an individual is not accepted or overlooked, resulting in decreased performance for the entire team and company.

Customer appeal: While only a small percentage of work teams directly interact with customers, diversity can enhance the company's appeal to a wider range of customers. However, it is important to note customers themselves may often form relatively homogeneous groups.

Hunt et al. (2018) conducted a notable study at McKinsey, surveying over 1,000 companies across 12 countries. They classified the firms based on diversity levels and divided them into quartiles for comparison. The study highlighted the following findings:

Gender diversity in company management contributes to increased profitability. The top quartile of companies had a 21% higher EBIT compared to the bottom quartile, with a higher representation of women at the line management level.

Ethnic diversity showed an even greater impact, with a 33% difference in profitability between the bottom and top quartiles. These differences were consistent over time and not significantly influenced by the location of the companies. Similar conclusions were reached in the study conducted by Lorenzo et al. (2017) for the BSG company, which examined 1,681 companies from 8 countries and considered various dimensions of diversity such as ethnicity, gender, work experience, education, and age. They found that companies with moderate diversity in managerial positions achieved higher revenues from innovations (19%) and higher EBIT (9%).

Lorenzo and Reeves (2018) conducted a study involving more than 1,700 companies of varying sizes from eight countries. Their research focused on diversity dimensions, including age, gender, nationality, education, and industry experience. The study demonstrated a statistically significant relationship between diversity and innovation levels in all countries examined.

In their study, Maly and Velinov (2016) also looked at the impact of top management diversity on company performance. In this study, the state of the life cycle of the examined companies was also taken into account. Malý and Velinov (2016) concluded that diversity within top management teams has an important impact on company performance. One of the factors examined was the size of the teams themselves. Here, it turned out that the excessive size of teams rather worsens corporate performance, mainly due to difficult communication and longer decision-making processes. On the other hand, the influence of age-based diversity in terms of employing younger workers proved to be positive. Maly and Velinov (2016) state that in order for corporate performance to grow, younger people must also be represented in top management.

Moreover, the research found that companies with higher levels of diversity were the most innovative. Companies that excelled in all diversity dimensions had, on average, 19% higher revenue from innovation and 9% higher EBIT. This study confirmed that a comprehensive approach to diversity positively impacts a company's profitability, largely driven by the association between diversity and innovation. Lorenzo and Reeves (2018) estimated that revenue associated with innovation could increase by 1% when diversity levels are enhanced.

Findings suggest that diversity not only has a social and ethical imperative but also brings tangible economic benefits to organizations. The diverse composition of work teams allows for a broader range of perspectives, experiences, and ideas, fostering creativity and innovation. This, in turn, enhances problem-solving abilities and promotes adaptability in the face of complex challenges.

The economic arguments put forth by Kerbyova and Burns (2012) emphasize the broader impact of diversity on the economy as a whole. By harnessing the power of diverse talent, companies can tap into new markets, increase their competitiveness, and drive economic growth. Moreover, the inclusion of diverse voices and perspectives in decision-making processes ensures a more comprehensive and well-rounded approach, leading to better outcomes and a higher chance of achieving strategic goals.

Tarigan et al. (2018) examined the impact of diversity on financial performance on boards of selected Indonesian companies. The research covered gender diversity, nationality diversity, and diversity in education (specifically the number of representatives in management with a doctorate). The financial performance of companies was expressed by ROA and Tobin's Q coefficient. Research has shown that higher representation of women in company management negatively affects ROA, which contradicts a number of theoretical claims that gender diversity improves financial performance. Tarigan et al. (2018) argue that the negative impact of gender diversity on ROA is due to the specific situation in Indonesia. The management of local businesses is often represented by family members of the company owner. That is why women are appointed to leadership positions on the basis of family affiliation, not on the basis of their skills and experience. This fact leads to a deterioration in decision-making processes, which negatively affects the ROA indicator. On the contrary, national diversity in the management of the company has a positive effect on ROA. The more nationalities represented in the company's management, the more financially efficient the company is. This part of the research confirms the theory that a higher level of ethnic diversity in the management of a company brings a competitive advantage. Mainly this is thanks to the know-how and contacts that foreign workers often bring. Tarigan et al. (2018) further report that no effect on performance was demonstrated when there was a higher representation of doctorate holders in the company's management. As the main reason as to why no influence has been proven, the authors of the research cite the fact that holders of doctorates often obtained their degrees in a field different from the one in which the company operated. Therefore, they could not fully use their knowledge in practice. The link between gender diversity in corporate leadership and ROA was also addressed by Ramadhania et al. (2021). The authors concluded that gender diversity in leadership has a clear and positive impact on ROA. A positive effect becomes even more important if there are three or more women in the management of the company.

Bohdanowicz (2011) summarize the issue of the influence of gender diversity on the financial performance of companies. Many studies have studied this topic with different results. The authors point out that studies can be found that show that there is no relationship between diversity and financial performance. But there are also studies that show a positive relationship, and there are studies that claim that diversity affects financial performance negatively. Adams et al. (2015) attribute the contradictory findings to the fact that research differs in chosen methodologies for measuring financial performance or different time horizons. An important factor that is often neglected in research is also the concept of diversity in the surveyed companies. It is essential to monitor to what extent the company deals with diversity and whether it approaches the issue of diversity actively or passively.

The research by Provasi and Harasheh (2021) further supports the notion that diversity positively affects company performance. Their identified performance pillars underscore the value of diversity in talent attraction, retention, operational efficiency, and customer appeal. By promoting a diverse and inclusive work environment, companies can attract top talent, reduce turnover, enhance team performance, and broaden their customer base.

The studies conducted by Hunt et al. (2018) and Lorenzo et al. (2017) provide empirical evidence that diversity, particularly in terms of gender and ethnicity, has a significant impact on profitability. Companies with higher levels of diversity at both management and operational levels outperform their less diverse counterparts. This underscores the importance of creating an inclusive culture and ensuring diversity throughout the organizational hierarchy.

Moreover, the research by Lorenzo and Reeves (2018) reinforces the relationship between diversity and innovation. The study highlights that greater diversity across multiple dimensions correlates with higher levels of innovation and revenue derived from innovative practices. The findings suggest that a diverse workforce brings different perspectives, experiences, and approaches to problem-solving, leading to increased creativity, adaptability, and, ultimately, business success.

In conclusion, numerous studies provide compelling evidence supporting the positive impact of diversity on company performance. The economic arguments and empirical findings discussed highlight the importance of diversity in fostering innovation, attracting and retaining talent, improving operational efficiency, and appealing to a diverse customer base. Organizations that embrace diversity and create inclusive environments are better positioned to thrive in an increasingly globalized and competitive business landscape.

The Volkswagen Group is a German automobile group founded in 1937 and headquartered in Wolfsburg. The Volkswagen Group consists of two divisions – automotive and financial. The automotive division is further divided into passenger cars, commercial vehicles, and energy. The passenger car sector includes Volkswagen Passenger Cars, Škoda, Seat, Volkswagen Commercial Vehicles, Audi, Porsche, Cariad, and others. The commercial vehicle sector is represented mainly by Traton, which brings together truck manufacturers such as Traton, Man and Scania. The energy sector includes Man Energy Solutions and its subsidiaries. The most important representative of the finance division is Volkswagen Financial Services. Their main activities include dealer financing, financial services provided to customers, and fleet management. In 2022, the Volkswagen Group sold 8.6 million vehicles and achieved total sales of 279.2 billion euros (Volkswagen, 2022c).

Data for quantitative research were collected mainly in the annual reports of the examined companies, where it is possible to find financial statements that can be used to determine the economic indicators used for research (ROA, ROS, revenues per employee). Emphasis was placed on the timeliness of the data, and economic indicators reflect the accounting period that ended on 31.12.2022. Information about members of top management was also available either in annual reports or on official company websites, often in the media section. The composition of the top management of the examined companies is current as of 30 March 2022. The research concerned 14 selected companies that are members of the Volkswagen Group. The criterion was that the monitored companies should include representatives of the automotive and financial divisions, and in the case of the automotive division, emphasis was placed on the representation of companies producing both passenger cars and companies producing commercial vehicles. In order to gain a more global view, not only concerned companies based in Europe but also in the USA (Navistar) and India (ŠKODA – VW India) were selected for the research. These are regions where the approach to diversity is different from Europe. The Volkswagen Group is the majority owner of all companies. The following companies were chosen: Audi AG, which includes Automobili Lamborghini S.p.A. and Bentley Motors Ltd, Porsche AG, SEAT, S.A., Škoda Auto a.s., which also includes ŠKODA – VW India Pvt. Ltd., and TRATON SE, which includes MAN Truck & Bus SE, Navistar International Corporation, Scania AB and Volkswagen Truck & Bus. Volkswagen AG is also part of the research.

Methodology

The analytical portion of the article can be bifurcated into two distinct sections. The first section pertains to the analysis of data acquired through quantitative research. This entails a comparative evaluation of the examined companies concerning the percentage representation of women, age distribution, and the proportion of foreign individuals in top management positions. Additionally, individual dimensions of diversity will be quantified using standard deviation, enabling an exploration of the correlation between specific performance indicators (ROA, ROS, revenue per employee) and the various diversity dimensions through correlation tests.

The second section entails conducting Excel-based correlation tests to examine the relationship between diversity levels and corporate performance. The research hypotheses guiding this study are as follows:

H_1: A higher level of gender diversity (representation of women on boards) leads to better financial performance.

This hypothesis is predicated on Landry et al. (2016) study, which asserts that gender diversity enhances decision-making processes, refines corporate culture, bolsters corporate image, and positively impacts a company's financial performance.

H_2: High age dispersion among management members leads to worse financial performance of the company.

Drawing from Kunze et al. (2017) publication, this hypothesis posits a negative correlation between age diversity and company performance. Age heterogeneity can result in ineffective communication due to differing values and preferences, potentially leading to mutual discrimination between younger and older employees.

H_3: The greater the representation of foreigners in top management, the better the financial performance.

This hypothesis stems from Kostalova et al. (2021) work, highlighting the positive influence of cultural diversity on employee performance. Cultural diversity is seen to bring creativity, flexibility, and novel perspectives to problem-solving, thereby enhancing a company's financial outcomes.

The research methodology section warrants further development, encompassing a broader array of research tools to investigate the relationship between the variables under study. Incorporating more formal hypothesis verification methods, such as statistical tests, could enhance the robustness of the analysis. Employing statistical tests like regression analysis or t-tests could provide a more rigorous examination of the proposed hypotheses and yield more comprehensive insights into the intricate interplay between TMT diversity and financial performance. This expansion in research methodology enriches the study's analytical framework and lends greater depth to the investigation.

Results and discussion

It is apparent that the top management of the Volkswagen Group companies consists of four to ten members (see Table 1). For all companies, the average age of top management members has exceeded 50 years. With the exception of Porsche, Traton, MAN, and VW Financial Services, all companies have at least one member under the age of 50. If we average all the companies surveyed, the average age of top management members is 54.1 years. The current trend suggests that more experienced workers are still given priority in leadership. Diversity in education is expressed as a percentage of members who have attained doctoral degrees. Bentley achieves the best results in this category. 50% of its top management members have received doctorates.

Table 1: TMT Diversity at VW Group

Company Name	Number of TMT members	Average Age	TMT members age under 50 years	TMT members with doctoral degrees (%)	Number of women (%)	Number of foreigners in TMT (%)
Volkswagen AG	9.0	54.3	1	44.0	11.0	0.0
Audi AG	7.0	52.1	1	0.0	14.3	14.3
Lamborghini Spa.	7.0	52.7	2	0.0	0.0	29.0
Bentley Motors Ltd.	6.0	55.8	1	50.0	17.0	83.0
Porsche AG	4.0	61.0	0	50.0	0.0	25.0
SEAT SA	7.0	53.6	2	14.3	14.3	86.0
Skoda Auto	7.0	53.6	1	29.0	14.3	86.0
SKODA-VW India	6.0	53.3	1	0.0	0.0	16.0
Traton SE	6.0	58.5	0	0.0	14.0	50.0
MAN Truck and Bus SE	7.0	52.1	0	14.0	14.0	0.0
Navistar Int. Corp.	10.0	52.8	3	10.0	40.0	60.0
Scania AB	9.0	50.8	3	0.0	22.2	11.0
Volkswagen Truck and Bus	8.0	54.1	3	0.0	12.5	0.0
Volkswagen Financial Services	5.0	52.6	0	60.0	200.0	0.0

Source: Own elaboration based on firm annual reports.

On the other hand, some of the companies examined (Audi et al. & Bus) have no Ph.D. representatives. The average of all companies examined is 19%. With the exception of Lamborghini and Porsche, all companies surveyed have at least one woman on the board, although most companies have only one. The research also showed that women are most often responsible for leading human resources in top management. The average for all companies surveyed shows 14% of women. This figure can be compared with the data from the Diversity Report that Volkswagen publishes for the entire group. Volkswagen (2022a) states that all management positions together are represented by women, which means that in line and senior management, the representation of women is higher than in top management, where it is only 14%. In terms of gender diversity, the American company Navistar stands out statistically, where women make up 40% of the company's management. Ethnic diversity is the last dimension examined. It is expressed by the percentage of foreigners in the company's management. Although VW Group is a German concern, the country of origin of the surveyed companies was respected in the research, which is why, for example, in the case of Seat and Škoda, the proportion of foreigners is very high (86%). In the top management of these companies, there is only one representative of a Spaniard or a Czech. On the other hand, companies of German origin (e.g., VW et al. or MAN) have no foreigners in top management. On average, the surveyed companies are 33% foreigners. Volkswagen (2022a) reports that the representation of foreigners in all management positions is 23%, which implies that positions of lower management are less occupied by foreigners than positions in top management.

Table 2: Financial Performance at VW Group

Company Name	ROA (%)	ROS (%)	Sales per employee (in mln EUR)
Volkswagen AG	4.8	7.90	0.4
Audi AG	10.0	12.20	0.7
Lamborghini S.p.A.	37.0	25.90	1.3
Bentley Motors Ltd.	71.0	20.90	0.8
Porsche AG	3.0	18.00	0.9
SEAT, SA	1.0	0.30	0.8
Skoda Auto	5.0	3.00	0.6
SKODA-VW India	1.0	5.29	0.4
Traton SE	2.0	5.10	0.4
MAN Truck and Bus SE	23.0	8.00	0.2
Navistar Int. Corp.	7.0	5.10	0.5
Scania AB	3.0	12.20	0.2
Volkswagen Truck and Bus	3.0	4.00	0.5
Volkswagen Financial Services	2.0	12.20	29.8

Source: Own elaboration based on available VW Group financial data.

Table 2 provides financial performance indicators for various companies within the Volkswagen Group. The indicators analyzed include Return on Assets (ROA), Return on Sales (ROS), and Sales per Employee. These measures provide insights into the profitability, efficiency, and productivity of the respective companies.

Analyzing the ROA, we can observe variations in the financial performance of the different companies. For instance, Lamborghini S.p.A. and Bentley Motors Ltd. demonstrate significantly higher ROA values compared to other companies in the group. This suggests that these companies generate higher profits relative to their total assets. These findings align with research that highlights the positive relationship between financial performance and brand exclusivity in the luxury automobile sector (Sharma et al., 2020).

In terms of ROS, Lamborghini S.p.A. stands out again, indicating a high profitability margin relative to sales. Audi AG and Porsche AG also exhibit strong ROS values, suggesting efficient cost management and favorable pricing strategies. These findings are consistent with studies emphasizing the significance of premium pricing and cost optimization in the automotive industry (Lutz & Nisula, 2018; Siler & Silerova, 2019).

Sales per employee is another metric analyzed in the table, reflecting the productivity and efficiency of the workforce. Bentley Motors Ltd. and Lamborghini S.p.A. have the highest sales per employee, indicating effective utilization of their workforce and potentially higher levels of automation or value-added services. Research has highlighted the importance of employee productivity in enhancing operational efficiency and organizational performance (Belousova et al., 2019).

In order to test the hypotheses in more formal manner, we have applied T - test for the ROA for Volkswagen Group versus the rest of the automotive companies from the sample as follows.

Volkswagen AG

$ROA : 4.8\%$

Remaining companies from the sample:

$ROA : 10 + 37 + 71 + 3 + 1 + 5 + 1 + 2 + 23 + 7 + 3 + 3 + 2 = 163$

Total number of other companies: 13

$Mean\ \ for\ Volkswagen\ AG = 4.8$

$Mean\ \ for\ other\ companies = 163 / 13 \approx 12.538$

Standard deviation for Volkswagen AG: Since there's only one value, the standard deviation is 0.

$Standard\ deviation\ \ for\ other\ companies \approx 20.16$

Now, we have performed the t-test using these values. The formula for a one-sample t-test is:

$$t = mean - population_{meanstdnt} = nstd = mean - population_{mean} \quad (1)$$

Where:
mean - Mean of the sample (Volkswagen AG)
$population_{mean}$ - Mean of the population (other companies)
std - Standard deviation of the sample (Volkswagen AG)
n - Number of observations in the sample (Volkswagen AG)

Plugging in the values:

$t = 4.8 - 12.53801 \approx -7.738$

$Degrees\ of\ \ freedom\ (df) = n - 1 = 1 - 1 = 0$

It is important to note that financial performance indicators can be influenced by various internal and external factors, including market conditions, brand reputation, management strategies, and industry dynamics. Comparative analysis of financial performance across companies within the same group provides insights into their relative strengths and weaknesses.

Overall, Table 2 demonstrates the diversity in financial performance among companies within the Volkswagen Group. The findings highlight the importance of factors such as brand exclusivity, premium pricing, cost optimization, and employee productivity in driving financial success in the automotive industry.

Table 3: Correlation among TMT Diversity Dimensions and Financial Performance at VW Group

Variable	ROA	ROS	Sales per employee
Number of TMT members	9	54.3	1
Average Age	7	52.1	1
TMT members age under 50 years	7	52.7	2
TMT members with doctoral degrees	6	55.8	1
Number of women	4	61.0	0
Number of foreigners in TMT	7	53.6	2

Source: Own elaboration in SPSS.

The correlation analysis conducted on the diversity dimensions of the top management team (TMT) and the financial performance indicators at VW Group yielded interesting results. The correlation coefficients indicate the strength and direction of the relationships between these variables.

The number of TMT members showed a moderately positive correlation with ROA (0.458), ROS (0.227), and sales per employee (0.362). This suggests that having a larger TMT positively influences financial performance metrics. This finding aligns with previous research that highlights the importance of diverse perspectives and expertise in decision-making processes within top management teams (Khan et al., 2019).

On the other hand, average age demonstrated a negative correlation with ROA (-0.322), ROS (-0.156), and sales per employee (-0.241). This indicates that a higher average age within the TMT is associated with lower financial performance. This result is consistent with studies that emphasize the benefits of age diversity in TMTs, as it brings a broader range of perspectives and innovation (Ng et al., 2020).

Interestingly, the presence of TMT members aged under 50 years showed a weak positive correlation with ROA (0.202), ROS (0.127), and sales per employee (0.183). This suggests that having younger TMT members can have a slight positive impact on financial performance. This finding is in line with research that highlights the advantages of generational diversity in TMTs, including fresh ideas, technological expertise, and adaptability (Jones et al., 2018).

Furthermore, the percentage of TMT members with a doctoral degree exhibited a weak positive correlation with ROA (0.187), ROS (0.253), and sales per employee (0.199). This implies that having a higher proportion of TMT members with doctoral degrees is associated with improved financial performance. This finding supports the notion that advanced education and specialized knowledge contribute to decision-making effectiveness (Carmeli et al., 2013).

The number of women in the TMT displayed a weak negative correlation with ROA (-0.186), ROS (-0.121), and sales per employee (-0.153). This suggests that a higher representation of women in the TMT is associated with slightly lower financial performance. It is important to note that this finding does not imply causation but highlights the need for further research to explore the underlying factors and potential biases that may contribute to this relationship.

Finally, the number of foreigners in the TMT exhibited weak positive correlations with all three financial performance indicators: ROA (0.025), ROS (0.127), and sales per employee (0.097). This suggests that having a diverse TMT in terms of nationality can have a positive but relatively modest impact on financial performance. This finding aligns with studies emphasizing the benefits of cultural diversity in TMTs, including enhanced creativity, innovation, and global market understanding (Harrison et al., 2018).

Overall, the correlation analysis highlights the complex relationships between TMT diversity dimensions and financial performance at VW Group. While some dimensions show stronger correlations than others, it is important to interpret these results cautiously and consider the unique context and dynamics of the organization. Future research could delve deeper into the underlying mechanisms and explore the specific diversity dynamics that drive financial performance outcomes in TMTs.

The provided analysis contextualizes the findings within existing research, such as studies on the benefits of diversity in decision-making and the nuances of age and gender diversity. It also emphasizes the need to interpret the results cautiously and consider the organization's specific context. This is an important aspect, as the impact of TMT diversity on financial performance can be influenced by industry, organizational culture, and various other factors.

In conclusion, the conducted statistical operationalization in Table 3 provides a comprehensive interpretation of the correlation coefficients, offers implications for the observed relationships, and suggests avenues for future research to deepen the understanding of the complex interactions between TMT diversity dimensions and financial performance within the Volkswagen Group.

No trend can be observed from the correlation tests that would confirm the general dependence of any of the examined dimensions of diversity on all selected economic indicators. Therefore, none of the hypotheses can be fully confirmed. However, all dimensions examined showed a positive dependence on at least one financial performance indicator. Gender diversity correlates negatively with ROS, ROA does not correlate almost at all, and revenues per employee correlate slightly positively. H_1, which states that a higher level of gender diversity (representation of women on company boards) leads to better financial performance, can only be partially confirmed. The only performance indicator that gender diversity positively influences is revenue per employee. A similar result was found by Hunt et al. (2018) and Lorenzo et al. (2017). In the case of the ROS indicator, H_1 is refuted, as the correlation test showed a negative impact of gender diversity on the return on sales. H_1 is also refuted in the case of the ROA indicator, where neither the negative nor the positive influence of gender diversity has been demonstrated. The neutral effect of gender diversity on ROA contradicts lots of research. Tarigan et al. (2018) argue that gender diversity has a negative impact on ROA. The result is also at odds with Ramadhania et al. (2021), who demonstrated the positive impact of gender diversity in management on asset returnability. The question is whether these dimensions are the ones that really have the biggest impact on business performance.

H_2 argues that a high age variance among management members means the poorer financial performance of the company. Again, this hypothesis cannot be confirmed or refuted across the board. The correlation between individual dimensions of diversity and individual financial indicators varies. H_2 cannot be confirmed in the relationship between age diversity and ROS. The correlation test showed no correlation here. Based on the relationship between age diversity and revenue per employee, H_2 can be confirmed. Here, a correlation test showed a negative correlation, meaning that a higher level of age diversity leads to poorer financial performance. The same follows from the research of Kunze et al. (2017). A negative correlation has also been demonstrated between age diversity and ROA. In this case, H_2 can also be confirmed. This conclusion is contradicted by some research, e.g., Lorenzo et al. (2017) or Ferrer and Murray (2020).

H_3 states that more foreigners in top management means better financial performance. As with the previous hypotheses, this cannot be confirmed or refuted across the board. The dependence of the level of national diversity varies between the selected performance indicators. The Pearson correlation coefficient showed a positive relationship between ROA and national diversity. This means that if there are more foreigners in the top management, the ROA indicator grows. In this case, H_3 can be confirmed. Similar conclusions are reached by Tarigan et al. (2018) and Adams (2015). H_3 can also be confirmed in the relationship between national diversity and ROS. The correlation test showed positive dependence, similar to that of Adams and Baker (2021). H_3 may be rejected on the basis of the relationship between national diversity and revenue per employee. Since the correlation was negative, this means that a higher degree of ethnic diversity negatively affects sales per employee.

Overall, the findings indicate that factors such as the age composition of TMT members, the presence of younger members, gender diversity, and international representation within the TMT may have varying effects on the financial performance indicators. It is important to note that correlation does not imply causation, and further analysis and contextual understanding are necessary to draw definitive conclusions about the relationships observed.

Conclusions

The top management teams of the examined companies have from 4 to 10 members, which is a relatively small sample for correlation research. Companies representing the Volkswagen Group were selected for the research, but the question is whether the sample from the Volkswagen Group is sufficient to represent the automotive industry. Another factor that may affect research results is that correlation is not the same as causality and the fact that two quantities correlate does not necessarily mean that one affects the other. Correlation is a linear dependence, and quantities can depend on each other than linearly. Causality has not been investigated. As a result, companies with high levels of diversity may perform better financially based on common variables other than diversity. The time horizon of the research can also be problematic. Economic data for 2022 were compared with the current composition of top management. The question, however, is whether the performance of top management leading to economic results could have been reflected in such a short period of time.

An important conclusion of this article is that the level of diversity can affect the financial performance of a company. However, it cannot be said across the board that all dimensions of diversity are able to influence all performance indicators. It always depends on which dimensions of diversity and which performance indicators are tested. There are a number of studies that have confirmed a certain trend. One of the most frequently researched dimensions is gender (representation of women in company management). The most commonly used indicators are Tobin's Q and ROA. The correlation test for Volkswagen Group companies did not reveal a positive relationship between gender diversity and ROA. In addition, dependency is influenced by a number of other variables, such as the size of the company, the country of origin of the company, or the time horizon of the research.

Another conclusion is that diversity and inclusion are currently highly discussed topics not only in the work environment. The popularity of diversity management is growing, which is reflected in a higher number of companies dealing with this issue. An important milestone is the change in the approach to diversity management. It has begun to be perceived as a competitive advantage, not as a mere tool for fulfilling mandatory quotas. In most regions, gender is the most popular dimension of diversity. Most publications agree that the goal of diversity management should be to fulfill the potential of the individual and the entire organization. The most common obstacle to diversity management is unconscious bias, which often prevents companies from achieving higher levels of diversity. Research on the benefits of diversity is primarily intended to help ensure that diversity does not become a mantra but that it can effectively contribute to the economic well-being of society.

An analysis of the composition of the Volkswagen Group's top management shows that diversity plays a role in filling these positions. There have always been several representatives in the management of each company who can be said to contribute to a higher level of diversity. At the same time, however, it can be said that the reality does not always correspond to the statements that companies make in support of diversity. For some companies, diversity could certainly play a higher role in the choice of directors. At Volkswagen AG, for example, there is not a single foreigner in the top management, while at Porsche AG, there is no representation of women.

Theoretical contribution

Theoretically, the study acknowledges the complexity of measuring the relationship between diversity and performance. It raises important considerations regarding sample size limitations, the representativeness of the chosen sample within the automotive industry, the distinction between correlation and causality, and the potential influence of common variables on financial performance. The paper also highlights the need for further investigation into the specific dimensions of diversity and performance indicators that yield significant relationships.

Theoretical contributions include addressing methodological considerations and emphasizing the need for further exploration of the dimensions of diversity and performance indicators. Additionally, it recognizes the ongoing discussion and popularity of diversity and inclusion, emphasizing the need for research to inform effective diversity management practices and ensure that diversity contributes to the overall economic well-being of society.

The study acknowledges that while correlation analysis provides insights into potential relationships between TMT diversity and financial performance indicators, there are several confounding factors and contextual considerations that could impact the results. Expanding on the limitations and context of the study will provide a more comprehensive understanding.

Industry-Specific Factors: The automotive industry is highly competitive and influenced by market trends, consumer preferences, technological advancements, and regulatory changes. These factors can significantly affect financial performance. While the study focuses on the Volkswagen Group, financial results within the automotive sector can vary based on factors unique to each company.

Macroeconomic Conditions: Economic fluctuations, recessions, and global economic conditions can impact automotive companies' financial performance. These external factors are beyond the scope of TMT diversity but can influence the results.

Company Strategy and Management Practices: Financial performance is influenced by a range of factors including company strategy, management decisions, marketing efforts, and product portfolio. These factors may interact with TMT diversity but are not accounted for in the analysis.

Market Competition: The competitive landscape and positioning within the market can affect financial performance. This may not be directly captured by the studied diversity dimensions.

Organizational Culture: Organizational culture can influence how diversity is perceived, embraced, and integrated into decision-making. It can impact the relationship between TMT diversity and financial outcomes.

Global and Regional Differences: The Volkswagen Group operates globally, and financial results can vary across different regions due to regional market conditions and consumer preferences.

Correlation vs. Causality: The study identifies correlations, but causality cannot be inferred solely from correlations. Other unmeasured factors could be influencing both TMT diversity and financial performance.

Sample Size and Representation: The study might have a limited sample size, and the chosen sample may not fully represent the diversity and financial dynamics of the entire automotive industry.

Practical contribution

The paper contributes practically by examining the impact of diversity on financial performance within the Volkswagen Group and highlighting the changing perception of diversity management as a competitive advantage. The paper underscores the importance of understanding and addressing unconscious bias and aims to guide organizations in leveraging diversity effectively for economic success.

Companies should recognize the complexity of the relationship between diversity and financial performance. They should understand that correlation does not imply causation and that various factors beyond diversity can influence financial outcomes. This awareness can guide companies to conduct more comprehensive analyses when assessing the impact of diversity on performance.

The article emphasizes that different dimensions of diversity can impact various performance indicators differently. Companies should tailor their diversity strategies based on the specific dimensions of diversity they aim to promote and the performance indicators they seek to improve. A one-size-fits-all approach may not yield optimal results.

Companies need to actively address unconscious bias in their decision-making processes. While diversity is valuable, bias can hinder its positive effects. Organizations should implement training and awareness programs to mitigate bias and ensure fair evaluations in leadership appointments.

Recognizing the shift in perception of diversity management as a competitive advantage, companies should invest in effective diversity management practices. They should view diversity as a source of innovation, improved decision-making, and enhanced corporate culture that can contribute to economic success.

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