e-ISSN: 3047-857X
Proceedings of the International Symposium on Management (Volume 22, 2025)

Woman Director and Firm Performance

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ABSTRACT
This study seeks to assess the impact of the ratio of women directors and their educational qualifications on corporate performance. The research employs 78 samples from mining firms listed on the Indonesia Stock Exchange from 2021 to 2023. This research analyzes critical criteria such as firm success, the percentage of women directors, and their educational attainment. This study employed multiple linear regression for data analysis. The results indicate that the inclusion of women directors on the board positively influences corporate success. An increase in women directors is deemed to promote innovation, hence enhancing firm performance. Nevertheless, the findings suggest that the educational attainment of women directors does not significantly influence firm success. These findings underscore the significant impact of women directors in mining businesses, despite the industry's prevailing male dominance. Diverse leadership can offer wider viewpoints in decision-making, therefore improving the quality of company strategy..

Keywords: *Proportion of Women Direction, Education Level, Mining Company, Firm Performance*

1. INTRODUCTION

The performance of a company is related to the actions and decisions of the company's management (Kılıç & Kuzey, 2016). Investors expect objective and comprehensive decisions that improve firm performance (Ramadhani & Adhariani, 2017). The Board of Directors is accountable for decisions and strategies within the company (Noorkhaista & Sari, 2017). Martinez-Jimenez et al. (2020) emphasize that board composition significantly influences decision-making effectiveness and, consequently, firm performance. A diverse board improves decision quality by offering varied perspectives (Martinez-Jimenez et al., 2020). Diversity can be defined by characteristics such as gender, age, ethnicity, education, and work experience (Singh, Terjesen & Vinnicombe, 2008; Permatasari et al., 2022). Gender diversity, particularly the inclusion of women directors, has attracted attention from policymakers and researchers (Arena et al., 2015; Arioglu, 2020), as gender equality plays a crucial role in achieving Sustainable Development Goals (SDGs) (Permatasari et al., 2022). In Indonesia, Presidential Instruction No. 9 of 2000 sought to mainstream gender for national development and reduce gender disparities. Data from the Central Statistics Agency (BPS) reveals a 2.52% increase in the number of women in managerial positions from 2021 to 2023, alongside a 1.8% decrease in the gender inequality index during the same period. However, industries like mining remain male-dominated due to their high masculinity, long working hours, and challenging work conditions (Arena et al., 2015). As a result, women still face lower participation, roles, and salaries in these sectors (Potter & Hill, 2009; Ness, 2012). Indonesia's legal framework, including Law No. 7 of 1984, ensures gender justice and equality.

Women directors enhance decision quality by offering diverse perspectives (Kılıç & Kuzey, 2016). Their decision-making tends to focus on long-term impacts and risk reduction, which contributes to better firm performance (Arena et al., 2015). Women's communication skills with clients and partners provide a competitive advantage that competitors find hard to replicate (Kılıç & Kuzey, 2016; Arioglu, 2020). This is in line with Upper Echelon Theory, which suggests that managerial characteristics impact firm performance (Hambrick & Mason, 1984). More diverse board characteristics lead to better decisions and improved performance (Moreno-Gómez et al., 2018). Research on the role of women directors, however, has yielded mixed results. Some studies show that the proportion of women directors negatively affects (Swartz & Firer, 2005; Arena et al., 2015; Putri et al., 2021) or has no effect on firm performance (Ramadhani & Adhariani, 2017). This could be due to a lack of knowledge among women directors about board responsibilities, limiting their contribution to company success (Swartz & Firer, 2005; Permatasari et al., 2022). Arena et al. (2015) argue that the education level of women directors is key to improving their decision-making contributions. Research by Madyan et al. (2021) supports this, suggesting that higher education improves knowledge and expertise, which positively affects firm performance (Darmadi, 2013; Madyan et al., 2021). Higher education levels reflect directors' cognitive abilities and skills (Nekhili & Gatfaoui, 2013). Upper Echelon Theory posits that management's cognitive abilities influence company decisions (Hambrick & Mason, 1984). Directors with advanced degrees (S2 or S3) are more effective in strategic decision-making (Darmadi, 2013). Higher education fosters innovative problem-solving and greater risk-taking (Madyan et al., 2021). However, Arena et al. (2015) and Permatasari et al. (2022) suggest that highly educated women directors may create conflicts in male-dominated firms, potentially lowering performance due to perceptions of superiority. This study aims to explore how the proportion and education level of women directors impact the performance of Indonesian mining companies, addressing the limitations of Kılıç & Kuzey's research (2016), which focused solely on gender diversity. It seeks to provide insights into how board composition and educational qualifications affect company performance.

1.1. Upper Echelon Theory

Upper Echelon Theory, as proposed by Hambrick and Mason (1984), focuses on the characteristics of top management to understand company outcomes, such as performance, strategy, and innovation. The theory suggests that decisions and strategies are a reflection of the cognitive abilities of the board of directors (Hambrick & Mason, 1984). A board's decision-making process, risk avoidance, and alternative choices are shaped by its members' backgrounds, experiences, and perceptions (Moreno-Gómez, Lafuente & Vaillant, 2018). A diverse board can improve management quality by offering broader perspectives and better adaptability, leading to better decision-making and enhanced company performance (Noorkhaista & Sari, 2017; Moreno-Gómez et al., 2018). Diversity in gender and education further influences cognitive abilities, improving strategic decisions and firm performance (Hambrick & Mason, 1984).

1.2. Firm Performance

Firm performance refers to a company's success in achieving its goals and objectives through strategies and decisions made by management (Muhammad & Pribadi, 2020). The efficiency and effectiveness of these decisions affect company earnings over time (Kılıç & Kuzey, 2016). Effective management of both tangible and intangible assets, like intellectual resources, is critical for a company's success (Noorkhaista & Sari, 2017). The board's ability to manage these assets effectively is integral to sustaining long-term performance.

1.3. Proportion of Women Directors

According to Law No. 40 of 2007, the Board of Directors holds executive power and is responsible for managing the company's activities and formulating its strategies (Muhammad & Pribadi, 2020). Gender diversity, particularly the inclusion of women directors, improves decision-making by offering different perspectives and fostering efficiency (Martinez-Jimenez et al., 2020). A higher proportion of women directors enhances investor confidence, reflecting accountability, transparency, and commitment to gender equality (Kılıç & Kuzey, 2016; Arioglu, 2020). Women directors' ability to foster diverse viewpoints in decision-making can lead to improved governance and company performance (Kılıç & Kuzey, 2016).

1.4. Education Level of Women Director

The education level of a company's leadership plays a crucial role in decision-making quality (Putri et al., 2021). Observable characteristics such as education level and work experience, alongside unobservable traits like leadership skills, influence the effectiveness of board members (Elsharkawy, Paterson & Sherif, 2018). Higher education is associated with better cognitive abilities, which enhance decision-making and the ability to introduce innovations (Arena et al., 2015; Wincent et al., 2010). Directors with advanced education can better manage the company, improving overall performance (Arena et al., 2015). As per Putri et al. (2021), higher educational qualifications in directors positively influence firm performance, enabling them to execute effective strategies and decisions.

1.5. Hypothesis Development

The proportion of women directors serves as an important diversity component, reflecting the company's commitment to gender equality in the professional world, which can enhance its image and performance (Kılıç & Kuzey, 2016; Arioglu, 2020). Women's tendency to avoid conflict, consider long-term risks, and balance governance processes leads to better decision-making (Moreno-Gómez et al., 2018). Women directors' communication skills also improve relationships with women clients and partners, contributing to a competitive advantage (Kılıç & Kuzey, 2016; Fathonah, 2018). The presence of multiple women directors ensures their opinions are heard, preventing the domination of male perspectives in decision-making (Arena et al., 2015; Martinez-Jimenez et al., 2020). However, limited opportunities for women in male-dominated industries can restrict their contributions and harm firm performance (Arena et al., 2015). Therefore, the following hypothesis is proposed:

H1: The proportion of women directors affects the firm's performance.

The education level of women directors enhances their contributions, ensuring they have qualifications comparable to their male counterparts (Arena et al., 2015). Higher education levels reflect increased knowledge and experience, which are crucial for developing effective strategies (Madyan, Setyowati & Setiawan, 2021). As per Upper Echelon Theory, a board's decision-making is influenced by its cognitive abilities (Hambrick & Mason, 1984). Women directors with higher education can offer a broader perspective and adapt to complex situations, improving decision-making effectiveness (Darmadi, 2013). However, in male-dominated industries, higher education among women may lead to conflicts and perceived superiority, which can negatively affect decision-making and performance (Arena et al., 2015; Permatasari, Cahyono & Arifin, 2022). Based on this, the following hypothesis is proposed:

H2: The education level of women directors affects the firm's performance.

2. RESEARCH METHODS

This study is to examine the influence of the ratio and educational attainment of women directors on the performance of mining firms listed on the Indonesia Stock Exchange from 2021 to 2023. The research employed purposive sampling to get a sample of 78 firms. The dependent variable in this study is firm performance, defined as a company's capacity to manage resources for revenue generation (Kiel & Nicholson, 2003). Firm performance is assessed by an accounting-based metric, specifically Return on Assets (ROA) (Makaryanawati, 2019). Return on Assets (ROA) is a profitability measure that assesses a company's performance from an internal viewpoint, indicating the efficacy of business actions and strategies in leveraging assets to generate profits. The formula for Return on Assets (ROA) is articulated as follows:

$$\boxed{ROA = \frac{Net\ Income}{Total\ Assets}}$$

This study utilizes independent factors, such as the percentage of women directors and their educational attainment. The ratio of women directors is characterized as the percentage of women occupying director positions inside a firm (Moreno-Gómez, Lafuente, & Vaillant, 2018; Martinez-Jimenez, Hernández-Ortiz, & Cabrera Fernández, 2020). This percentage is determined by contrasting the quantity of women directors with the overall number of directors in the company (Arena et al., 2015; Reguera-Alvarado, de Fuentes, & Laffarga, 2017; Fathonah, 2018; Ionascu et al., 2018). The formula for calculating the percentage of women directors is as follows:

$$\boxed{Proportion\ of\ Women\ Directors = \frac{Number\ of\ Women\ Directors}{Number\ of\ Board\ Directors}\ x\ 100}$$

Education level reflects a person's knowledge, intelligence, and cognitive abilities (King, Srivastav, & Williams, 2016; Madyan, Setyowati, & Setiawan, 2021). Higher education levels are associated with enhanced managerial ability (King, Srivastav, & Williams, 2016). Education level is quantified by assigning values to each degree (below S1 = 1; S1 = 2; S2 = 3; S3 = 4), as outlined by Reeb and Zhao (2011), to calculate an average score representing the overall education level of women directors in each company. This study applies multiple linear regression to assess the impact of the proportion and education level of women directors on company performance, following the classical assumption tests. The normality test results show a significance value of 0.076, indicating that the data is normally distributed. The heteroscedasticity test produces a significance value greater than 0.05, confirming the absence of heteroscedasticity issues. Meanwhile, the multicollinearity test results show a tolerance value greater than 0.10 and a Variance Inflation Factor (VIF) of less than 10, indicating no multicollinearity. Additionally, the autocorrelation test yields a significance value of 0.254, confirming that the regression model is free from autocorrelation issues.

3. RESULT AND DISCUSSION

Table 1 presents the outcomes of the descriptive statistics. The average ROA value in the sample is 0.085, indicating that the company generates a revenue of 8.5% from its assets. An ROA score nearing 10% signifies that the company's proficiency in asset management for profit generation is relatively strong.

Table 1. Descriptive Statistics

	N	Min	Max	Mean	Std. Deviation
ROA	78	-0.260	0.583	0.085	0.130
Proportion of Women Directors	78	0.000	0.667	0.258	0.150
Education Level of Women Directors	78	1.000	3	2.229	0.889

Table 1 indicates that the average proportion of women directors is 0.258, meaning that women make up only 25.8% of the board of directors, while the remaining 74.2% are male directors. This composition suggests that the board of directors in the sampled companies is predominantly male, aligning with the characteristics of the mining industry, which is generally considered a male-dominated sector. Additionally, the average education level of women directors is 2.229, indicating that most women directors in the sampled companies have an undergraduate-level education.

Table 2. Hypothesis Test Results

Variable	ROA			Conclusion
	Coefficient	t-stat	Sig.	
Constant	-2.143	-3.951	0.001	
Proportion of Women Directors	3.127	2.109	0.038**	H1 accepted
Education Level of Women Directors	-0.481	-1.911	0.060*	H2 rejected
F			0.051	
R Square	0.032			

Note: ** <0.05; *<0.1

Table 2 displays the results of hypothesis testing, demonstrating that the independent factors in this study jointly affect company performance, as evidenced by the F-test findings. This is corroborated by the significance (Sig.) value, which is below 0.05. The analysis indicates that the percentage of women directors significantly influences corporate performance, evidenced by a significance value of 0.038, which is below 0.05. The correlation of 3.127 indicates that an increased percentage of women directors favorably impacts corporate performance. The educational attainment of women directors does not significantly influence firm performance, as evidenced by a significance value of 0.060, which surpasses the 0.05 threshold. Furthermore, according to the R-squared value presented in Table 2, the independent variables explain merely 3.2% of the variance in company performance, with the remaining 96.8% attributable to additional factors not investigated in this study.

3.1. The Influence of the Proportion of Women Directors on Firm Performance

The results of this study show that the proportion of women directors positively impacts firm performance. The presence of women brings diverse ideas, expertise, and leadership styles, which enhance company performance. This finding aligns with previous research, including studies by Arioglu (2020), Fathonah (2018), and Reguera-Alvarado et al. (2017). Their communication skills improve relationships with partners and clients, boosting performance (Kılıç & Kuzey, 2016). However, the effect varies across industries. In male-dominated sectors like mining, women's leadership roles are limited, with 74.2% of directors being male and only 25.8% female in the study sample. Despite perceived physical limitations, women's qualities—such as diligence, reliability, and innovation—positively impact performance (Lu, 2012). Women directors are more innovative and market-savvy than their male counterparts, driving firm performance (Zelechowski & Bilimoria, 2004; Ali et al., 2021). Many companies are increasing women's leadership roles, with 89.7% having at least one women director. Including women on boards brings competitive advantages and promotes better decision-making, as women offer diverse perspectives that improve outcomes (Mattis, 1993; Bonn et al., 2004). This supports Upper Echelon Theory, which suggests that the characteristics of top management influence firm decisions and performance (Hambrick & Mason, 1984).

3.2. The Effect of the Education Level of Women Directors on Firm Performance

The study also finds that the education level of women directors does not have a significant impact on firm performance. Contrary to expectations, the results align with the research by Magnanelli et al. (2021), which shows no effect of education on performance. Most women directors in this study hold an undergraduate degree (S1), while higher education levels (S2 and S3) are believed to improve decision-making (Darmadi, 2013; Madyan et al., 2021). However, education alone does not account for performance outcomes. Professional experience and tenure also play a significant role. The diverse backgrounds of women directors in economics, business, and management contribute different perspectives that enhance decision-making (Permatasari et al., 2022). While education reflects managerial ability (Weir et al., 2005), it is experience and tenure that are more critical in driving firm performance (Gottesman & Morey, 2006).

4. CONCLUSION

This study seeks to assess the influence of the ratio of women directors and their educational attainment on the performance of companies in the mining sector listed on the Indonesia Stock Exchange from 2021 to 2023. The analytical results demonstrate that the ratio of women directors affects corporate success. The findings indicate that the inclusion of women directors can enhance firm performance by promoting creativity, hence leading to superior outcomes. This study also indicated that the educational attainment of women directors did not significantly influence firm success. This indicates that a greater level of education does not directly correlate with an enhancement or decline in organizational effectiveness. In a male-dominated business, women directors must possess particular abilities and pertinent expertise to enhance their contributions to the organization. These findings elucidate the significance of women directors in the mining sector for enterprises. Their presence can improve decision-making quality by providing varied perspectives in the management process.

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