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Submission date: 17-Apr-2025 11:33AM (UTC+0700)
Submission ID: 2614446129
File name: submit_corporate_governance_test_turnitin.docx (162.35K)
Word count: 9144
Character count: 53553

The Substance of Indonesian Women Directors in Creating Value

Abstract

Purpose – *This paper aims to provide insight into the impact of the gender composition of the board of directors on firm value by taking into consideration the educational level and tenure of women directors in the governance of Indonesia's companies.*

Design/methodology/approach – *The hypotheses are tested on 177 Indonesian listed companies in the IDX between 2015-2020, manufacturing and retail industries, using the weighted least squares regressions.*

Findings – *The evidence conveys that the educational level rather than the simple presence of women directors can increase firm value. Additionally, results reveal that the tenure of women is negatively related to firm value, as it might impair the board's independence.*

Research limitations/implications –*This study explores the potential of women on board through their educational level and tenure in the firms. Future studies may expand to the family background, reputation, and other personal or professional elements that can complete their performance for the companies.*

Practical implications – *Companies become more mindful of women's role in firm value and their influence across industries.*

Originality/value – *Few studies have addressed* the impact of women across different industries, especially in developing economies. This research contributes by examining the demographic variables of women board members that are still poorly apprehended (i.e. their educational level and tenure) in such a setting.

Keywords *Gender diversity, Women directors, Firm value, Education, Tenure, Upper echelon*

Paper type *Research paper*

1. Introduction

Women and men are vastly different; this is indeed an inescapable fact of life. Countless remarks have reinforced the extreme differences between the sexes in popular culture (Hofmann et al., 2025; Jabbar & Warraich, 2023; Olowookere et al., 2020). This also applies in the business world, where several studies have indicated the fact that women and men lead in different ways (Guedes et al., 2023). Man is often viewed as a highly confident leader who is commonly associated with dominance and decisiveness, while women display more communal traits such as warmth, empathy, and kindness (Prowse et al., 2020). The presence of these two distinct characteristics is essential as diversity is one of the sources of competitive advantage. Yet, women are often taken for granted because of their gender and consequently under-represented in the boardroom (Guedes et al., 2023).

Over the past two decades, the subject of gender diversity on the board of directors has increasingly become a topic of interest. However, despite thorough research, no consensus has been reached upon the influence of women on board to firm performance. Some research suggests that women on board tend to empower varied knowledge, skills, background and personal qualities to be leveraged therefore add necessary dynamic for strategy tasks (Slomka-Golebiowska et al., 2023), as such, they have the potential to boost creativity and innovation thus firm performance (Nadia et al., 2024)(Ain et al., 2021). On the contrary, some argue that women have a detrimental repercussion on a company's performance which is highly due to the investors having a stereotypic assumption about women's lack of competence and unfitness for leadership positions (Yang & del Carmen Triana, 2019); (Loy & Rupertus, 2020). These mixed and contradictory results come as no surprise given the complexity between board diversity and company success, theoretically and empirically. Research with firm value as a primary determinant of firm performance is still lacking. Hence, the present research is designed to explore the influence of women's presence, education, and tenure on the corporate board towards the firm value.

It is important to note that the main objective of an organization is to maximize the firm value and one of the functions of the board of directors is to create value for its shareholders. Firm value, also known as enterprise value, is an economic metric that depicts the market value of a company as a whole (Emestine & Setyaningrum, 2019). The use of just financial metrics to portray the true image of an organisation's success is backwards-looking in and of itself. Because of this reason, this research employs firm value as a metric for firm performance, offering forward-looking insight into potential results that are not achievable via conventional accounting methods. We measure firm value using Tobin's Q, which demonstrates the firm's future and growth prospects.

To have a more sophisticated interpretation of the role of women's representation on board, we investigate the demographic variables, namely the educational level and tenure of women directors. Of course, having the characteristics of a woman is not a sole predictor of an effective board, but observable measures such as education also need to be considered. According to (Gottesman & Morey, 2006), educational qualification can be used to proxy intellectual, where more intellectual executives are expected to outperform their colleagues. Similarly, the tenure of the board members is another observable characteristic that could affect the board's quality. Long-tenured directors are associated with more expertise and thus should be more competent in making value-enhancing decisions (Brochet et al., 2021; Hambrick & Fukutomi, 1991).

Talking further about women's careers, there is a research-backed phenomenon known as the "glass cliff". The "glass cliff" defines the idea that women are promoted to a position of authority when an organization is in trouble (Kulich et al., 2021). The fact that such a phenomenon exists leads us to believe that women play a crucial role in top management in normal times and during a challenging period. When there is an economic shock, managerial skills are put to the test; thus, board gender, educational attainment, and tenure are of great importance. Recently, the world was stunned by the emergence of novel coronavirus disease (COVID-19). COVID-19 is an unanticipated event that has resulted in many business failures, employment losses, and substantial changes in jobs across industries (Fu & Shen, 2020; Shen et al., 2020). New research has come to the surface about women leaders doing a better job to tolerate the adverse effect of the crisis. In the context of the world, countries led by women are systematically better, with fewer cases and deaths (Garikipati & Kambhampati, 2020). Interestingly, similar results were found inside organizations. A 360-degree assessment published in the Harvard Business Review has shown women were rated as more effective leaders by those who worked with them both before and during the first wave of the pandemic (Zenger & Folkman, 2020). This is because women emphasise interpersonal skills and are more mindful of their followers' wellbeing. Parallel to this discussion, small-medium enterprises (SMEs) owned by women in Indonesia are more resilient in sustaining their businesses amid the pandemic (2021).

To establish the linkage concerning women's involvement on board and firm financial success, the hypotheses are tested on Indonesian manufacturing and retail companies listed between 2015-2020, whereas the year 2020 represents the year of the COVID-19 pandemic. We focused on companies in the manufacturing and retail industries because they have the highest female force participation (Dumauli, 2023). However, despite both having high female participation, the nature of these two industries contradicts each other. The manufacturing industry converts raw materials into finished goods that go to a distributor or a wholesaler, while the retailers sell the goods to the end consumer. All data were obtained from the Bloomberg Database and companies' annual reports.

This research adds to the body of knowledge in several ways. To begin with, it contributes to the area of literature by examining the extent to which demographic attributes, namely educational level, and tenure affect the firm value. Second, this paper also includes the COVID-19 period in its sample, where the effectiveness of leadership can be examined. To the best knowledge of the researcher, this is the earliest study that investigates the correlation with the inclusion of the COVID-19 period in such a setting. Finally, we extend the literature by investigating the relationship between women in top management roles and company performance in the context of a developing country, particularly one that adopts a two-tier board arrangement.

The remainder of this paper is structured in the following manner. The next section will comprise the literature review and hypotheses development. The data and methodology are described in the section after. Next, we report the empirical result and analysis followed by the robustness check. Last but not least, we draw a conclusion upon this study in the endmost section.

2. Theoretical Background and Hypotheses Development

2.1 Upper Echelons Theory

The Upper Echelons Theory is one of the most prevalent theories that foster the upsurge interest in board representation and firm outcomes (Muhammad et al., 2024; Neely et al., 2020). Set forth by (Hambrick & Mason, 1984), this theory provides the idea that organization performance reflects the ingrained character within its top management. The essence of the Upper Echelons Theory lies on the premise that top managements' backgrounds, beliefs, and attitudes have a significant impact on how they view and evaluate the situation. Indeed, the theory proposes two main principles: managers behave based on their conceptions of circumstances, and these perceptions are influenced by their backgrounds (seniority, education, career track) and personality. Consequently, this individualized construal of the circumstances shapes the board decisions, and ultimately the outcomes that arise – both strategies and effectiveness.

Operational decisions are known to have a broad behavioural aspect, depicting the decision maker's characteristics to a certain degree (Sedliacikova et al., 2021). When it comes to organization, each board works in its dynamics; thus, a deeper understanding of why companies do what they do or work the way they do must come with the acceptance of biases and dispositions of their most powerful individuals. Although the upper echelons theory originally centred on senior management, some scholars have utilized it to the board of directors by equating boards to "supra top management team" (Post & Byron, 2015).

The board of directors appears to greatly influence day-to-day corporate choices in the workplace. Given the tremendous effect that board decisions have on organizational success, we see one's characteristics as particularly important at the board level. This is because the board of directors works in an extremely challenging environment. Based on the idea that their actions are determined by cognitive base and beliefs, the boards' traits can therefore be used to partially forecast organizational performance (Harrison et al., 2019; Oreg & Berson, 2019). However, since such psychological dimensions are difficult to distinguish, the emphasis of the upper echelons theory is primarily on measurable demographic profiles of the top managers as indicators for their cognitive base and beliefs. Beyond that, the situational aspects of a company, for instance, its environmental setting or firm-specific characteristics, affect the upper echelons' characteristics and corporate strategy.

To support the conventional upper echelon theory, (Hambrick, 2007) proposed two variables that moderate the correlation between managerial characteristics and firm performance – managerial discretion and executive job demands. First, managerial discretion is associated with the independence or latitude of action with which top executives may exercise in taking business decisions (Crossland & Hambrick, 2011). Upper echelons theory delivers satisfactory prediction of corporate results well in direct proportion to the amount of managerial authority available. When a great deal of discretion is present, managerial characteristics would be mirrored in policy and performance. On the contrary, the qualities possessed by top executives are meaningless if discretion is absent (Hambrick, Donald C. Quigley, 2014). Meanwhile, executive job demands, which is the other moderating variable, relate to the challenge faced by the top management team (Hambrick et al., 2005). The theory proposed that top executives who encounter many obstacles will have much less time to consider choices and will thus take mental shortcuts in the process. In psychology, these shortcuts are known as heuristics which rely upon individual experiences or immediate solutions that jump to mind (Cherry, 2021; Sedliacikova et al., 2021). Complex choices are primarily the product of behavioural considerations instead of a mechanical search for economic optimization (Hambrick & Mason, 1984). As a result, it is expected that the correlation between upper echelon traits and organization outcomes will be greater when managerial obstacles are high.

2.2 Two-Tier Board System in Indonesia

When referring to the arrangement in place in Indonesia, all listed companies have two types of boards in their corporate structures, as specified in the country's corporation legislation:

1. Dewan Komisaris (board of commissioners)
2. Dewan Direksi (board of directors)

This two-tier arrangement prevents overlapping membership and role duality as each board of commissioners and directors has its own set of members (Wayan Widnyana et al., 2021). The board of commissioners, headed by a president commissioner, is often resorted to as business oversight since its role encompasses the oversight of the company's ability to thrive, conduct and grow the business. Its primary responsibility is to monitor administration including the directors' policies and actions in operating the company (Utama & Utama, 2019). Thus, the function of the board of commissioners is strictly non-executive.

Meanwhile, the board of directors, comprised of majority external board members, are responsible to both shareholders and the board of commissioner. They are mainly in charge of the day-to-day business operations (Darmadi, 2013b). The board of directors, who the stockholders elect, plays a crucial part in a company. Referring to the Regulations Limited Liability Company enforced in Indonesia, the board of directors is appointed and has full responsibility for the organisation's management, following the company's vision and mission. They are largely responsible for managing administrative efficiency and maintaining a fair return for shareholders while minimizing disputes and addressing conflicting demands on the company (Emestine & Setyaningrum, 2019; Khatib & Nour, 2021). For the purpose of this report, we concentrate solely on women who work on the board of directors.

2.3 Women Directors Presence and Firm Value

The main purpose of this research is to examine how board composition, particularly in terms of gender parity, influences the decision made by the board and, as a result, firm value. According to the upper echelons theory, firm performance is related to the board members' characteristics. The theory postulates that board decisions, shaped by managers' traits, have a significant impact on operational results. In the context of leadership, women are more likely to pose questions and raise difficult topics in comparison to men (Papangkorn et al., 2019). Other research indicates that women presence on board are associated healthy dynamic needed as leveraged and strategy tasks (Slomka-Golebiowska et al., 2023).

In the accounting literature, some studies have revealed the positive association between women on the board of directors and company value. For instance, (Ullah et al., 2020) find that the representation of women in the boardroom Increases the firm value. Likewise, utilizing Tobin's Q to reflect the market-based performance, statistical evidence also a positive correlation between board diversity and firm success (Ionascu et al., 2018). Another study shows participation of female directors in corporate board reduces agency costs (Ain et al., 2020). In developing economies, (Ararat & Yurtoglu, 2019; Nadia et al., 2024) undertook research and found empirical evidence to support the notion that women are valuable assets for the company. The study emphasizes that women are a significant source of human capital for the board and that gender diversity benefits the company's success. Thus, resembling previous studies, the following hypothesis is introduced:

H1. Women's presence on the board of directors positively affects firm value.

2.4 Women Directors Education and Firm Value

In spite of predicting the influence of women's representation on board towards the firm value, we also believe that demographic characteristics are likely to influence their judgment. It should be acknowledged that one of the demographic characteristics of the board is education. Education level background are valuable resources that positively associated with firm performance (Purkayastha et al., 2021). Directors with higher educational background tend to rely increasingly on appropriate evidence, preventing excessive risk taking (Hatane et al., 2023). (Gottesman & Morey, 2006) argued that individual with a high educational attainment have superior quality of education. Education level can therefore improve an organization's market performance significantly.

Previous research conducted by (Darmadi, 2013a) in Indonesia finds that a greater proportion of boards of directors holding postgraduate degrees is linked to improved performance. A board of directors that is composed of well-educated members is believed to process information better and accept significant changes. Likewise, research suggests that a women's education level as a board member positively influences firm performance (John et al., 2020). (Gounopoulos et al., 2021) contend in a similar manner that superior educational credentials of CEO results in lower levels of IPO underpricing; as such, they are supposed to result in improved firm value. Another study shows elite education translates to superior market performance and science/technology education background manifests in more spending on R&D, less on advertising and less exposure to financial risk for the firm (Jaggia & Thosar, 2021). From all the shreds of evidence, we hypothesized that:

H2. Women's educational level on the board of directors positively affect firm value

2.5 Women Directors Tenure and Firm Value

Besides projecting the influence of female directors on firm value, we also assume that tenure may affect the outcomes. Board tenure, which refers to the amount of time a person has held the role of directors in a particular company, is another key element that affects individual choices. Many researchers have demonstrated tenure to impact the decision-making process in business (Darouichi et al., 2021) and company's value significantly (Livnat et al., 2021). To explore different assumptions about the influence of tenure on organizational performance, (Al-Shaer et al., 2024) examined the relationship between corporate strategy, board composition and firm value. They found that board tenure has influence on the relationship between corporate strategy and firm value. This finding agrees with another study that proves that greater tenure comes better performance due to the greater grasp of the business activity (Emestine & Setyaningrum, 2019). Consequently, they will make value-enhancing decisions that maximize the shareholder's wealth. Resembling previous studies, the following hypothesis is then introduced:

H3. Women's tenure on the board of directors positively affects firm value

3. Data and Methodology

3.1 The sample

Our sample considers all Indonesian companies listed in the IDX for the year 2015-2020. Afterwards, we retain companies belonging to the manufacturing and retail industry. Next, we exclude companies with incomplete information regarding the board composition and the firm value. Finally, companies that fulfil the criteria mentioned above will be included in the sample. In the end, 1062 samples were obtained from 177 companies. This study adopted non-probability sampling technique: purposive sampling. With this form of sampling, some items of the population are chosen arbitrarily according to certain characteristics that are compiled based on researchers' own judgment. In other words, this research will be centered towards particular elements of the population guided by a set of criteria that aim to achieve the goal of this research.

3.2 Methodology

Founded by Professor James Tobin in 1967, Tobin's Q is utilized as the measure of firm value in this particular paper. Tobin's Q is a traditional measure of firm performance that demonstrates the capital markets' latest estimation regarding the value of return for each dollar of incremental spending. In addition, this ratio provides a more complete view of performance as it considers all of the company's assets and can be easily compared across companies.

This study uses the percentage of women on board of directors (WBOD) as proxy for women's presence for the independent variables. The educational level of women board members is represented by the proportion of women holding postgraduate degrees, which includes Master's, graduate credential, graduate diploma, Doctor of Philosophy (Ph.D.), Doctor of Business Administration (DBA), and their equivalents (Darmadi, 2013a). As for proxy of women's tenure on board, we calculate the number of years each woman on the board of directors has held such position and averaged the tenure of all women members (Bach & Lee, 2018; Emestine & Setyaningrum, 2019).

In our regression, we also consider a set of control variables to help interpret the relationship between independent and dependent variables. First, firm size is believed to affect the respective company's value (Koerniawan & Malelak, 2021). This is because larger companies have access to more capital and better technology to support their operations which means the company is of greater value. Next, leverage measures the amount of debt held that is used to finance business operations. Leverage inspects the company's risk, which will affect the confidence of investors, thus the company's value (Hirdinis, 2019). Third, capital expenditure is used by firms to create benefits in the future. With higher capital expenditure, investors expect more return which improves their wealth (Salimah & Herliansyah, 2019). Forth, asset turnover represents how efficiently a company manages their asset to generate profit. The higher the asset turnover, the more valuable a company becomes, as it creates the opportunity for investors to invest (Bama et al., 2021). Last but least is industry, which is divided into manufacturing and retail. Industry act as a control variable because they are of two contradictory nature which may influence the firm value. Here, the industry is operationalized as a dummy variable where 1 represents those companies in the manufacturing industry, whereas 2 represents retail companies.

The regressions model formulated to test our hypothesis is represented with the following formula:

$$FVALUE_{i,t} = \beta 0 + \beta 1WBOD_{i,t} + \beta 2WEDUC_{i,t} + \beta 3WTEN_{i,t} + \beta 4FSize_{i,t} + \beta 5FLeverage_{i,t} + \beta 6CAPEX_{i,t} + \beta 7ATO_{i,t} + \beta 8INDUSTRY_{i,t} + \varepsilon_{i,t}$$

4. Empirical Result and Analysis

Table II reports the descriptive statistics for 1062 firm-year observations. We can see from this table that the company's average value (FVALUE) is 1.3326. The mean percentage of women on the board of directors (PWOB) is 0.128, with the maximum value of 75 percent among the sampled firms. In terms of education, we found that the average percentage of women board members holding postgraduate degrees is 11.9 percent with the minimum and maximum value of 0 and 100 percent respectively. With respect to the women's tenure, we find that women work 3.25 years in average. This study also found that in terms of the mean, there is no significant difference before and during COVID-19 for all variables except for capital expenditure (CAPEX) and asset turnover (ATO). CAPEX and ATO are not the main variables analysed concerned in this paper, therefore, we do not test the model in 2 settings (i.e. before and during the pandemic). Furthermore, although not significant, we can see that the COVID-19 pandemic worsens the firm value as it depresses company's financial condition (Mirza et al., 2020; Nugroho, 2021)

Table I	Description of variables	
Variable	*Definition*	*Source*
Dependent variable		
FVALUE	Total market value of equity and debt divided by total assets.	Bloomberg
Independent variables		
PWOB	Number of women on the board of directors divided by the total number of board of directors	Published Annual Report
WEDUC	Number of women holding postgraduate degree divided by total number of women on the board of directors	Published Annual Report
WTEN	The average number of years women sit on the board of directors	Published Annual Report
Control variables		
FSIZE	How big or small a company calculated as the natural logarithm of total assets	Bloomberg
CAPEX	Money used by company to purchase, upgrade and maintain physical assets such as plants, asset,, technology	Bloomberg
ATO	Total revenue divided by average total assets	Bloomberg

LEV	Proxied by the debt to equity ratio calculated as total liabilities divided by total equity	Bloomberg
INDUSTRY	Represented by dummy assuming "1" for manufacturing companies, and "2" for retail companies	Published Annual Report

Table II Descriptives

Descriptive statistics for continuous variables

Variable	N	*Minimum*	*Mean*	*Median*	*Maximum*	*SD*	Mean before Covid Period	Mean at Covid Period	p-value mean difference
FVALUE	1062	0.0929	1.3326	0.7833	22.742	1.9673	1.3622	1.1846	0.2731
PWOB	1062	0.0000	0.1288	0.0000	0.7500	0.1682	0.1273	0.1359	0.5376
WEDUC	1062	0.0000	0.1190	0.0000	1.0000	0.2966	0.1167	0.1306	0.5764
WTEN	1062	0.0000	3.2505	0.0000	31.000	5.4499	3.2165	3.4208	0.6490
FSIZE	1062	7.9337	12.273	12.333	14.546	0.9430	12.266	12.312	0.5548
CAPEX	1062	0.0000	0.0371	0.0265	0.4326	0.0393	0.0397	0.0240	1.17e-006
ATO	1062	0.0000	1.0601	0.8975	8.4293	0.8140	1.0914	0.9037	0.0051
LEV	1062	0.0000	0.2344	0.2110	2.9423	0.2320	0.2366	0.2234	0.4891

Descriptive statistics for dummy control variable

Variable	Min.	Max.
INDUSTRY	1	2

Note: See Table I for variable definition

Before running the regressions, we test the model in advance to address potential multicollinearity and heteroskedasticity issues. Table III reports the Pearson correlations and variance inflation (VIF). This study can reject the presence of multicollinearity in our model as none of the correlation coefficients exceeds 0.80. Furthermore, all VIF values are lower than 1.937, which falls below the accepted threshold of 10 (Ain et al., 2021; Gujrati, 2003). We can thus conclude that there is no serious correlation among the variables. This study uses the white heteroskedasticity-consistent standard error estimates (as shown in Table IV). From a P-value test at a 0.05 significance level, we found that our model suffers from heteroskedasticity. In order to circumvent this issue, we adopt the Weighted Least Square (WLS) estimation to test our hypotheses (Usman et al., 2019)

Table III Pearson Correlation & Variance Inflation Factors

Variables	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*VIF*
(1) FVALUE	1	0.0284	0.0027	-0.0479	0.1640***	0.1683***	0.1208***	-0.0976**	
(2) PWOB		1	0.3865***	0.6296***	-0.0730**	0.0165	0.1295***	-0.1491***	1.937

(3) WEDUC		1	0.2699***	0.0031	-0.0060	-0.0280	-0.0630**	1.187
(4) WTEN			1	-0.0539*	-0.0272	0.0059	-0.1237***	1.710
(5) FSIZE				1	0.2238***	-0.0607**	0.1167***	1.133
(6) CAPEX					1	0.0135	-0.0097	1.059
(7) ATO						1	-0.1369***	1.079
(8) LEV							1	1.063
Mean VIF								1.310

Table IV	Panel Diagnostic & Heteroskedasticity Test		
Chow Test	*Breusch-Pagan Test*	*Hausman Test*	*White Heteroskedasticity Test*
F(175, 878) = 26.4802 with p-value 9.87779e-257	LM = 1673.83 with p-value = prob(chi-square(1) > 1673.83) = 0	H = 16.9298 with p-value = prob(chi-square(7) > 16.9298) = 0.0178547	TR^2 = 242.566548, with p-value = P(Chi-square(43) > 242.566548) = 0.000000

Table VI reports the WLS result which tests our H1, H2, and H3. In terms of the control variables, firm size (FSIZE), capital expenditure (CAPEX), and asset turnover (ATO) have a significantly positive correlation with the firm value. This suggests that big firms, high capital expenditure firms, and well-managed assets enhance the firm value. Conversely, firm leverage has a negative and significant effect on Tobin's Q. This indicates that financially distressed companies are associated with lower market performance.

Table V	Results				
Variables	*Coefficient*	*Std. Error*	*t-ratio*	*p-value*	
const	−1.0860	0.18564	−5.850	<0.0001	***
PWOB	0.06244	0.11321	0.5516	0.5814	
WEDUC	0.09492	0.05299	1.791	0.0736	*
WTEN	−0.01492	0.00250	−5.957	<0.0001	***
FSIZE	0.16951	0.01373	12.34	<0.0001	***
CAPEX	2.66736	0.46305	5.760	<0.0001	***
ATO	0.13640	0.01749	7.800	<0.0001	***
LEV	−0.3796	0.07823	−4.853	<0.0001	***
INDUSTRY	−0.10364	0.03056	−3.391	0.0007	***
Fit model tests:					
F-test	54,83640				
P-value(F)	1,48e-74				
Adjusted R^2	0.313816				

First, no support is found for H1, as the coefficient of PWOB does not significantly affect the firm value. To put it in another way, women on the board of directors do not contribute to improving the management's performance in managing the company assets. This is consistent with previous literature that proved women to have no significant effect on firm value due to the under-representation of women on the board (Zulvina & Adhariani, 2019). In Indonesia, women represent an average of 10.45% of Indonesia's board of directors between 2015-2020, which confirm the male domination of such position (Kersley et al., 2021). Furthermore, another study suggests that significant boost on performance exist when three woman present on board, however the impact weaker over this threshold (Nadia et al., 2024). However, Indonesian publicly traded firms have no mandatory rulings to include woman directors on the corporate board. Consequently, women are often recruited as a symbolic effort for gender equality instead of their expertise and experience (Zajiji et al., 2020).

Table V also reports that the second hypothesis is fully supported, as the coefficient of WEDUC is positive and significant for the firm value, as proxied by Tobin's Q. Increasing the number of post-graduate members by one, all else being equal, increase Tobin's Q by 0.095. This value represents 7% of the mean value of Tobin's Q, indicating that the effect is economically significant. The result obtained is aligned to the upper echelons theory, where the board member's educational level can make a substantial increase in the firm value. This is because education reflects the knowledge possessed by the company, which can provide a comprehensive perspective on board during the decision-making process (Boadi & Osarfo, 2019; John et al., 2020). On top of that, post-graduate education benefits the company value as they have a better cognitive capacity allowing the identification of appropriate strategic actions to improve competitive advantage.

Finally, we test the impact of the tenure of women directors on the firm value (H3). The coefficient value of −0.0149 (negative) and significant indicates that the longer women serve as the board of directors (WTEN), the worse the firm value. Long-tenured women are regarded as creating conflict on the basis that it forms too close of a relationship among the longstanding board members. As a result, the board's independence is compromised. Investors hold an unfavourable opinion about this as they believe that there will be less effective corporate governance . When women hold the board position for a considerate amount of time, their autonomy enhances giving them much power to resist new investment decisions that could actually be beneficial for the firm.

Furthermore, extended tenure is associated with worsened firm value because they adapt less to the changing environment (Ali et al., 2019). Even with new women members on the board, they may not be able to contribute as much in terms of enhancing the firm value. This is because they tend to respect the former members which prevent them to refute one's opinion or offer their own, if it is on the contrary with the older members. The tendency of board to arrive at a uniformity decision may actually suppress innovation where other alternative courses of actions remain undiscovered.

5. Additional Analysis

Additionally, this study would like to see the relationship between women & firm value each for the two different industries. Table VI presents the regression for the manufacturing and retail industries. Similar to the above result, we found that women's representation on the board of directors has no significant effect on Tobin's Q regardless of the industry. Women education (WEDUC) and tenure (WTEN), on the other side, reveal contradicting results between the two sampled industries

Table VI Additional Result

Variables	*Manufacturing*				*Retail*			
	Coefficient	*Std. Error*	*t-ratio*		*Coefficient*	*Std. Error*	*t-ratio*	
const	−506004	0.378809	−13.36	***	−0.210085	0.191616	−1.096	
PWOB	0.188400	0.242137	0.7781		0.00893588	0.162727	0.05491	
WEDUC	0.284330	0.0793945	3.581	***	−0.320357	0.0779372	−4.110	***
WTEN	−0.0137407	0.00433016	−3.173	***	0,0204927	0.00659176	3.109	***
FSIZE	0.457822	0.0322643	14.19	***	0.0993243	0.0164706	6.030	***
CAPEX	2.32200	0.567218	4.094	***	2.88085	0.637785	4.517	***
ATO	0.417327	0.0432156	9.657	***	−0.0139737	0.0207459	−0.6736	
LEV	−0.361073	0.0771973	−4.677	***	−0.620791	0.140183	−4.428	***

With consideration of women's educational level, the value of the manufacturing companies is positively affected by their presence. Like the aforementioned, education level will provide a hint for investors about the director's ability, thus positively affecting the firm value (Boadi & Osarfo, 2019). Conversely, education level negatively affects the value of retail companies. When it comes to the retail business, open-mindedness is very important for building trust with the customers as retail is all about communication and understanding. Research found that those who perceive themselves as experts tend to exhibit more closed-minded behavior (Ottati et al., 2015). This possibly explains that those with a postgraduate degree are less open-minded than their undergraduate peers. Consequently, close-mindedness means they are less able to achieve communication on a high level. Furthermore, since education increases one's knowledge base, they become more aware cautious in making decisions, perhaps to a point where they avoid taking the risk in any way. This may prevent value creation.

Talking further about tenure, in the manufacturing industry, tenured women correspond to a lower firm value. A lot of industries experience dramatic change due to digital transformation, but none like the manufacturing industry. According to (Brochet et al., 2022), firm value starts to decline after fewer years of CEO tenure in more dynamic industries, if CEOs are less adaptable to changes, and if CEO entrenchment is higher. In addition, women are not capable of engaging with the rapid development of technology in the manufacturing industries due to their nature of being too careful in making decisions (Widhiastuti et al., 2020). On the flip side, women's tenure is beneficial for the retail industry. Retailers focus on building a relationship with its consumer which takes a considerate amount of time. The board of directors must therefore focus on ways to make the best of customer experience which requires more than just that knowledge learned in formal education. Over time, board members gain a greater understanding of their customers. As a result, they begin to realize how their expertise can maximize the firm's core competencies.

6. Robustness Check

To examine the robustness of the result above, we conduct additional analysis by means of quantile regression. Quantile regression is a statistical technique that shows the relationship between the independent and dependent variables throughout the conditional distribution function. Quantile can provide comprehensive information of which component of the conditional distributions differs as it is robust to outliers. In this study, we choose five representative quantiles (5,25,50,75, and 95 percent) and examine whether the relationship between women and firm value are heterogeneous across these quantiles. Table VII shows the result of the quantile regression.

Table VII	Quantile Analysis				
All					
Variables	*Q5%*	*Q25%*	*Q50%*	*Q75%*	*Q95%*
PWOB	-0.0644	0.0255	-0.0424	0.2870	0.4001
	(-0.9033)	(0.2583)	(-0.2914)	(0.6982)	(0.4651)
WEDUC	0.0358	-0.0011	-0.0338	-0.0851	-0.3026
	(1.9721)**	(-0.0260)	(-0.5328)	(-0.4756)	(-0.8077)
WTEN	0.0002	-9.10748e	-0.0051	-0.0229	-0.0826
	(0.0904)	(-0.0318)	(-1.2029)	(-1.9169)*	(-3.3118)***
FSIZE	0.0213	0.0556	0.1079	0.1568	0.4395
	(2,19215)**	(4,12618)***	(5,43405)***	(2,79607)***	(3,74590)***
CAPEX	1.0139	1.2253	1.8466	3.9355	7.7447
	(4.4946)***	(3.9197)***	(4.0065)***	(3.0243)***	(2.8443)***
ATO	0.0236	0.0291	0.0493	0.0085	1.4661
	(2.1491)**	(1.9133)	(2.1957)**	(0.1342)	(11.0523)***
LEV	0.3784	0.2658	-0.0763	-0.59032	-1.4554
	(9.884760)***	(5.01054)***	(-0.975977)	(-2.67317)***	(-3.14969)***
INDUSTRY	0.0223	0.0406	0.0895	-0.0238	-0.3492
	(1.0961)	(1.4381)	(2.1539)**	(-0.2025)	(-1.4217)
Manufacturing					
Variables	*Q5%*	*Q25%*	*Q50%*	*Q75%*	*Q95%*
PWOB	-0.1644	-0.1403	-0.0816	-0.3003	-2.6084
	(-2.976)***	(-1.4581)	(-0.3812)	(-0.5780)	(-2.8790)***
WEDUC	0.0509	0.00978	0.0563	0.2666	0.4203
	(2.3983)***	(0.2639)	(0.6839)	(1.3348)	(1.2068)
WTEN	0.0029	0.0015	-0.0039	-0.0085	-0.0541
	(2.0595)**	(0.6400)	(-0.7241)	(-0.6493)	(-2.3728)***
FSIZE	0.0516	0.13440	0.1816	0.3908	0.7585
	(5.6389)***	(8.4371)***	(5.1232)***	(4.5434)***	(5.0561)***
CAPEX	0.8626	0.5636	1.6484	7.1883	11.9967
	(5.9152)***	(2.2189)**	(2.9163)***	(5.2404)***	(5.0147)***
ATO	0.0285	0.1224	0.1210	0.1021	3.6104
	(3.0604)***	(7.5438)***	(3.3478)***	(1.1647)	(23.6187)***
LEV	0.3210	0.1976	-0.1086	-0.2484	-0.9303
	(13.2580)***	(4.6852)***	(-1.1576)	(-1.0906)	(-2.3422)***
Retail					
Variables	*Q5%*	*Q25%*	*Q50%*	*Q75%*	*Q95%*
PWOB	0.0612	-0.1628	-0.3839	0.2920	1.8538
	(1.6480)*	(-1.8049)*	(-1.8726)*	(0.9867)	(1.8743)*
WEDUC	-0.0702	-0.0591	-0.1625	-0.4830	-2.1095
	(-3.5124)***	(-1.2174)	(-1.4728)	(-3.0317)***	(-39622)***
WTEN	0.0128	0.0116	0.0213	0.0094	0.0989
	(7.6982)***	(2.8732)***	(2.3163)***	(0.7089)	(2.2321)**
FSIZE	0.0171	0.0230	0.0644	0.1216	0.0980
	(3.7976)***	(2114)**	(2.6000)***	(3.3983)***	(0.8194)
CAPEX	1.0399	2.4794	1.9181	0.8382	-0.2509
	(6.0792)***	(5.9736)***	(2.0317)**	(0.6150)	(-0.0551)
ATO	0.0076	-0.0121	-0.0056	-0.0817	-0.3170
	(1.4712)	(-0.9618)	(-0.1935)	(-1.9739)**	(-2.2902)**
LEV	0.7402	0.2189	-0.0321	-0.8764	-2.4016
	(21.4767)***	(2.6178)***	(-0.1687)	(-3.1911)***	(-2.6170)***

When we conduct the regression using data that include all companies from both the manufacturing and retail industries, we observe that the presence of women does not significantly affect Tobin's Q. This is consistent with the result of the weighted least square regression (Table V). Focusing on the women's educational level, we find that it positively affects the firm value, specifically for those firms that do not get much attention from the investor. This means that the presence of highly educated women is significantly positive in firms that have their stock undervalued. Finally, when it comes to the tenure of women on board, the quantile analysis shows that tenure negatively affects the firm value of those companies that are judged well by the investors. This implies that a firm that has already received lots of funding from the capital market should be better performing without the presence of long-tenured women on the board of directors. Such information is not available in the previous result.

Continuing the discussion of the manufacturing industry, there is a clearer picture of the association between women and firm value through the quantile regression. In the WLS result, the correlation between women on board and firm value is insignificant, however, the quantile regression reveals that the relationship between these variables is rather heterogeneous. The presence of women on board is significantly negative at the lowest (Q5%) and highest Tobin's Q quartiles (Q95%) but insignificant in the other three quantiles. Companies in the 5 percent quantile, which are seen as less attractive by the investor, cannot improve their value if such a mindset is held by the top management team. Furthermore, the more women in leadership positions, the tougher the monitoring, which can become excessive at some point (Nadia et al., 2024). This is likely to be the case for companies in the 95 percent Tobin's Q quantile. Since these firms have gotten the attention of the investors, the fear of failure heightened as they do not want to lose them, leading to a more stringent board monitoring. This extra monitoring may become costly and causes a detrimental effect upon the firm value.

Discussing further about the women's background, education and tenure are significantly positive at the lowest quantile. Although women's presence itself cannot improve the value of manufacturing companies, the participation of educated and experienced women can. Specifically for the women's tenure, the coefficient becomes increasingly more negative as the firm value quantiles increase, starting from being significantly positive in the 5 percent quantile to significantly negative in the 95 percent quantile. This suggests that less attractive manufacturing companies highly need the presence of experienced women on board. Nevertheless, as the level of maturity of women board members increases, they become more powerful and overconfident in themselves (Hambrick & Fukutomi, 1991). As the company becomes more attractive, this pushes tenured women to become even more confident to a point where they no longer put great thought into every decision made. Therefore, firm values are negatively affected as experienced by firms in the 50 to 95 percent quantiles.

Moving on to the retail industry, the quantile regression shows considerable heterogeneity in the relationship between women on board and Tobin's Q. Recall that the WLS coefficient on PWOB is positive but insignificant (Table V). However, the quantile regression reveals that the coefficients on PWOB are significantly positive at the 5 and 95 percent Tobin's Q quantile, but significantly negative at the 25 and 50 percent quantile. This implies that appointing women on the board of directors provide benefit for low- and high-performing, as they can provide a valuable form of legitimacy in the eyes of the customers. This is contradictory to the manufacturing industry. On the other hand, women directors are unable to enhance the value of those middle-range retail companies. A possible explanation is due to the common belief that women are less experienced to hold leadership positions compared to their male compatriots. As for WEDUC and WTEN, the WLS coefficient are significantly negative and positive, respectively. The quantile regression confirms our WLS estimates. With all things considered, this quantile analysis gives a deeper insight into which particular firms require women to help improve their performance.

7. Concluding Remarks

This study contributes to the literature by exploring the impact of women on the board of directors on corporate value. To get a deeper understanding about the relationship, we also examine two demographic variables: educational qualification and tenure.

Drawing upon previous research on board diversity and dynamics, we hypothesize that women's presence positively affect the market performance as proxied by the Tobin's Q (Ionascu et al., 2018), and the level of education and tenure also influence the firm value (Al-Shaer et al., 2024; Purkayastha et al., 2021).

To investigate the association, we rely on a sample of 177 firms belonging to the manufacturing and retail industry. From this, we find that the presence of women directors solely does not have a significant effect on firm value. This is may be due to the fact that they are still under-represented on Indonesia's boardroom, preventing the value-creation (Zulvina & Adhariani, 2019). With no mandatory rulings to include women in the boardroom, women will only be recruited as a token of gender equality. Because of this reason, government and regulators should consider the inclusion of minimum women on the boardroom both to improve diversity on board as well as for the sake of improving one's overall performance.

When we take into account the education, we found that highly educated women board members positively affect the firm value. On the contrary, extended tenure is conflicting on the board of directors because they are perceived as less effective in performing their functions (Endraswati, 2018). There seem to be a relationship between the two characteristics women who pursue higher education have shorter tenure. Thus, the knowledge and skills obtained during their study may contribute well to value creation. It is important to note that the presence of not just any women is needed to enhance firm overall performance, but instead qualified women is required. In other words, when hiring women to the board, their qualification, whether in terms of education or experience, becomes one vital aspect.

The results of our study have meaningful importance for entity. First of all, it offers the implication of the presence of women on board to create value for firms. In particular, this paper highlights the relevance of having educated and experienced in different industries. A deeper analysis into each industry reveals a contradicting need for women in the manufacturing and retail industry. The existence of long-tenured women is more likely to decline the value of manufacturing firms. This suggests that in such an industry, the presence of newly appointed board members can be beneficial as it brings a new perspective into board discussion. On the other hand, the retail industry needs longer tenure women to allow for knowledge continuity and the creation of the best customer experience.

Despite its contribution, there are some limitations present in our study. First, this research sample the manufacturing and retail industry. Further investigation is required to see whether the result is accepted for the broader industry. It is also interesting to examine the hypotheses in a masculine industry. With regards to the variables, we do not include the profitability measures in the control variable which could affect the relationship between women and firm value. This could be addressed in future studies. It would be possible to assess the association between women and firm value with consideration of other market value metrics such as market to book ratio, share price, or total shareholder return. Lastly, future studies may perform a similar approach in the context of other developing countries.

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