

**THE EFFECT OF WOMEN COMMISSIONERS ON FIRMS' VALUE IN THE  
INDONESIAN MANUFACTURING INDUSTRY:  
MEDIATING ROLE OF ENVIRONMENTAL ENGAGEMENT**

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**ABSTRACT**

Issues regarding gender equality have been increasing since the United Nations made it one of the global goals in the Sustainable Development Goals. It has put a question of whether the role of women will have a good impact on the company. In this study, female commissioners in 129 Indonesian manufacturing companies will be examined concerning their roles from 2015 to 2019. WarpPLS7.0 software was used to analyze the data using structural equation modeling - partial least squares (SEM-PLS). This study discovered that the association between women on commissions and firms' values is mediated by environmental engagement. Furthermore, this study also found significant influences between Women on Commissioners and Firms' Values. The results of this study are expected to contribute significantly to the development of the literature and can practically be considered by the company's stakeholders.

**Keywords:** Upper Echelon Theory; Sustainable Development Goals; Women on Commissioners

**ABSTRAK**

*Isu – isu mengenai kesetaraan gender semakin meningkat sejak United Nation menjadikannya sebagai salah satu global goals dalam Sustainable Development Goals. Hal ini memunculkan pertanyaan apakah peran perempuan akan memberikan dampak yang baik di perusahaan. Penelitian ini bertujuan untuk menyelidiki peran komisioner wanita dalam perusahaan – perusahaan di Indonesia. Dengan melibatkan 129 perusahaan manufaktur dalam rentang waktu 2015 – 2019 dan terdaftar dalam Bursa Efek Indonesia (BEI). Data yang diperoleh dianalisis menggunakan structural equation modelling – partial least square (SEM-PLS) dengan software WarpPLS7.0. Dari pengujian tersebut, didapat bahwa Environmental Engagement memediasi hubungan Women on Commissioner terhadap Firms' Value. Selain itu, penelitian ini juga membuktikan bahwa adanya pengaruh signifikan pada hubungan women on commissioner terhadap firms' value. Hasil dari penelitian ini diharapkan berkontribusi besar pada pengembangan literatur serta secara praktis dapat menjadi bahan pertimbangan para pemangku kepentingan perusahaan.*

**Kata Kunci :** Teori Eselon Atas; Tujuan Pembangunan Berkelanjutan; Perempuan di Komisaris

**JEL Classification:** G34; G40



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## INTRODUCTION

The importance of women's role in improving organizational performance is still being debated. It is due to an increase in the number of women entering the workforce (Nwagbara, 2020) and an increase in the number of women who successfully occupy company leadership positions (Arioglu, 2020; De Cabo et al., 2019; Orazalin, 2020). This increase was due to several policies involving the involvement of women in companies (Ararat & Yurtoglu, 2021; Arioglu, 2020; Sarkar & Selarka, 2021). In addition, this is because awareness of gender issues continues to increase. One proof is the existence of Sustainable Development Goals that promote gender equality (UN, 2015). The goal is to empower women and eliminate gender disparities and discrimination against women (UN, 2015).

The existence of awareness of the importance of knowing gender has a good impact on countries whose people still uphold patriarchal culture, one of which is Indonesia. Patriarchy is a social system that encourages men's leadership, power, and domination in various aspects of life (Adisa et al., 2019). Given this belief, women do not have the opportunity to assume responsibility in an organization, as do men (De Cabo et al., 2019; Valls Martínez & Cruz Rambaud, 2019). In Indonesia, the patriarchal culture in the world of work is shown by the low level of female work participation, namely 54.2%, in contrast to the male work participation rate, which is 83.6% (Karunia, 2022). It can be due to the society's culture that views men as more worthy of being leaders than women (Ahrens et al., 2015). Through this women's gender campaign, it is hoped that it can minimize the patriarchal culture, which is one of the factors that hinder careers in the world of work.

The Upper Echelon Theory developed by Hambrick & Mason (1984) is relevant to this research because it provides a clear theoretical foundation regarding the relationship between firm characteristics and diversity with firm performance (Byron & Post, 2016; Moreno-Gómez et al., 2018). Upper Echelon Theory states that the organization represents its top management (Hambrick & Mason, 1984). It shows that a company's strategic decisions are influenced by the experience and personality of its top leadership (Hambrick, 2007; Hambrick & Mason, 1984). This theory shows that the composition of company leaders needs to be considered because women and men tend to have different experiences and perspectives (Byron & Post, 2016; Moreno-Gómez et al., 2018). In the context of this study, the contribution of women in top management is believed to have an impact on improving company performance (Martinez-Jimenez et al., 2020; Ullah et al., 2020).

The sustainability theory is also considered relevant to this research. Sustainability theory was introduced by Elkington (1997), which states that to improve company performance, companies need to pay attention to environmental, economic, and social aspects or known as the Triple Bottom Line (TBL) concept (Shou et al., 2019; Stefaniec et al., 2020). Companies can achieve their competitive advantage by being more responsible for the surrounding environment (Gangi, Daniele et al., 2020). Companies need to prepare strategies to achieve sustainable performance, one of which is by involving women on the board of commissioners. Women are more skeptical of environmental issues (Gabaldon et al., 2016).

Previous studies' results regarding women's influence in improving company performance still need to be more consistent. Several studies have shown that women positively increase company performance as measured by Tobin's Q (Ararat & Yurtoglu, 2021; Campbell & Mínguez-Vera, 2008; Garanina & Muravyev, 2020; Reguera-Alvarado et al., 2017; Sarkar & Selarka, 2021; Terjesen et al., 2015; Valls

Martínez & Cruz Rambaud, 2019). The role of women in leadership is believed to impact company performance positively due to their characteristics, such as being more critical and detailed in supervision (Menicucci et al., 2019; Song et al., 2020). However, several previous studies have argued that women have a negative effect on company performance (Adams & Ferreira, 2009; González et al., 2020; Haslam et al., 2010). It is because women always propose less aggressive strategies (Apesteguia et al., 2012) and tend to avoid risk (Byron & Post, 2016; Croson & Gneezy, 2009; Niederle & Vesterlund, 2007). Also, some studies prove that women do not affect organizational performance (Khan et al., 2019; Singh et al., 2019). Given this research gap, environmental engagement is proposed as a mediating variable.

Environmental engagement is a company's commitment to be responsible for the environment around its business. This commitment can be realized by integrating environmental factors into its business operations (Li et al., 2020). Through a commitment to the environment, companies can create competitive advantages (Russo & Fouts, 1997; Zhang & Ouyang, 2021) and improve company performance (Schons & Steinmeier, 2016; Zhang & Ouyang, 2021). The selection of environmental engagement as a mediating variable is for the following reasons: (1) previous research on the influence of women on the company's environmental performance (Birindelli et al., 2019; Cordeiro et al., 2020; García Martín & Herrero, 2020); (2) the existence of previous research on the effect of corporate environmental performance on firm value (Gangi, D'Angelo, et al., 2020; Li et al., 2020; Sohn et al., 2020).

This research has the following updates: (1) This research adds environmental engagement mediation variables so that the research model used is more comprehensive than before; (2) This research was conducted on a two-tier system used by companies in Indonesia. Valls Martínez & Cruz Rambaud's research (2019) was conducted in Spain, and Sarkar & Selarka (2021) was conducted in India, both of which use a one-tier system; (3) This study analyzes five years from 2015 to 2019. Valls Martínez & Cruz Rambaud's research (2019) investigates fifteen years from 2003 to 2017, and Sarkar & Selarka's (2021) analyzes ten years from 2005 to 2014. The main focus of this study is to analyze the role of environmental engagement in mediating the relationship between women on commissioners and firms' value. In addition, this study also explains the influence of women on commissioners on firms' value, the influence of women on commissioners on environmental engagement, and environmental engagement on firms' value.

## METHOD

Data is collected through each company's annual report from 2015 to 2019. The annual report is obtained through the official website of the Indonesia Stock Exchange ([www.idx.co.id](http://www.idx.co.id)) and the official website of each company. The choice of the manufacturing industry as the object of this research is due to its immense contribution to economic development in Indonesia. The manufacturing sector contributes to employment, increased exports, and investment (Kementerian Perindustrian, 2019). However, despite the success of manufacturing in helping the country's economy, this industry also contributes to a relatively large environmental problem (Nurcaya, 2020). Therefore, appropriate strategies are needed to deal with these environmental problems because they will increase the company's value.

During the period chosen (2015 - 2019), 182 manufacturing companies were obtained. In selecting the sample, the researcher used a purposive sampling technique with the following criteria: (1) Companies listed on the BEI for the 2015-2019 period; (2) Companies that report complete annual reports for the 2015-2019 period; (3) The

annual report contains information related to research variables. Thus, this research obtained 129 manufacturing companies that match the required criteria.

**Table 1. Research Sample**

Description Criteria	2015	2016	2017	2018	2019
Number of manufacturing companies listed on the Indonesian Stock Exchange (BEI)	144	146	158	167	182
Number of annual reports not obtained or unsuitable with the research criteria	(15)	(17)	(29)	(39)	(53)
Total data obtained and suitable with research criteria	129	129	129	129	129
Total Observation Data			645		

The independent variable of this research is Women on Boards of Commissioners (WOC). The dependent variable of this study is Firms' Value measured by Tobin's Q. The mediating variable is Environmental Engagement (ERE). This study uses two control variables, namely size and age. We use variable control to enhance the internal validity of this research by limiting the influence of confounding and other extraneous variables.

**Table 2. Variable Measurement**

Variable	Name of Variable	Measurement	Reference
Independent	Women on Commissioners	% commissioner boards who are women	Ahern & Dittmar (2012); Martinez & Rumbaud (2019)
Dependent	Firms Value	$\text{Tobin's } Q_{i,t} = \frac{MVCS_{i,t} + BVD_{i,t}}{BVT A_{i,t}}$ <p>Tobin's <math>Q_{i,t}</math> = Value of firm <math>i</math> in year <math>t</math>  <math>MVCS_{i,t}</math> = Market value of company <math>i</math>'s common stock in year <math>t</math>  <math>BVD_{i,t}</math> = Book value of debt of company <math>i</math> in year <math>t</math>  <math>BVT A_{i,t}</math> = Book value of total assets of the company <math>i</math> in year <math>t</math></p>	Chijoke-Mgbame et al. (2020)
Mediation	Environmental Engagement	a. Legal consciousness (ERE1). Consists of: (1) if the business complies with the Global Reporting Initiative (ERE1.1); if the business discloses or reports environmental information (ERE1.2); and if the business has ever been subject to environmental sanctions (ERE1.3) <sup>1</sup>	Li et al. (2020).

<sup>1</sup> (ERE1.3) It is given a value of 0 if it is exposed to environmental sanctions and one if it is not subject to environmental sanctions. The other part is given an indicator of a value of 1 on a yes answer and a score of 0 on a no answer.



Variable	Name of Variable	Measurement	Reference
		b. Social evaluation (ERE2). Determine whether the business has ever won an environmental award c. Eco-friendly production (ERE3). Checks whether the company causes or reduces pollution during production d. Low-carbon or low-carbon technology (ERE4). Verifies the use of environmentally friendly technologies by the business. e. Green management (ERE5). Examines the organization's ISO 14000 series certification The final results from ERE 1 - ERE 5 are averaged and become one combined value.	
Control	Size	The natural logarithm of a company's total assets	Li et al. (2020)
	Age	The total year since the company was listed on the Stock Exchange	

This study used partial least square structural equation modeling (PLS-SEM) to test the model. The criteria for determining whether a hypothesis is accepted is if it has a significant p-value at <0.10. This study refers to the role of mediation (MacKinnon & Tofighi, 2012). A variable can be said to be mediating if the independent path to mediation (X - M) is significant and the mediation path to the dependent is also substantial (M - Y).

## RESULT AND DISCUSSION

Table 3 shows the descriptive statistical results of the research variables. The WoC variable shows a mean value of 0.12, smaller than the standard deviation value of 0.18. It implies that while the value of the percentage of women on the board of commissioners tends to vary, it is primarily influenced by businesses that do not include women as commissioners. In this sample, the companies with the highest involvement of women in commissioners are PYFA and TSPC, with an involvement rate of 75%. PYFA consistently had a value of 75% during the year of observation, but for TSPC only in 2015, the rest experienced a decrease in the percentage of women's involvement. The lowest rate is held by more than 50% of companies in the research sample, which consistently from 2015 - 2019 did not involve women on its board of commissioners. It might be because no strict regulation regulates the mandatory involvement of women in the company, especially in the executive ranks. In addition, the patriarchal culture is still firmly attached in Indonesia, so companies with the involvement of women in them are not responded to well by the market, which will have an impact on decreasing the company's value. A culture that underestimates women's abilities becomes a significant barrier for women to achieve strategic positions in the company. In line with research by Khan & Vieito (2013), it is difficult

for women to occupy top managerial positions despite having the same good performance as men.

**Table 3. Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
WoC	645	0	0.75	0.12	0.18
ERE	645	0	1		
FV	645	0,15	41.51	2.24	4.19
SIZE	645	25.22	33.49	28.55	1.55
AGE	645	0	40	20.53	9.03
Valid N	645				

The ERE variable is a dummy variable that cannot show the mean and standard deviation values. The INTP company holds the highest value of ERE, which is one (1). INTP companies are consistent with a value of 1 during the year of observation. It is because the INTP company is fully aware of the impact of its operations in direct contact with the environment and society. In the last ten years, INTP has consistently reported its sustainability performance. In addition, INTP also has a responsibility program that is in line with the SDGs and was designed by Heidelberg Cement (one of the largest materials companies in the world) that is documented in the Heidelberg Cement Sustainability Commitment program. On the other side, LMPI consistently holds the lowest value of ERE throughout the year of observation. It is because, in its annual report, LMPI only explains the environmental impacts of business operations and how LMPI handles them. However, the annual report does not explain the statements used in measuring ERE.

The firm value variable shows a mean value of 2.24, smaller than the standard deviation of 4.19. It means that Tobin's Q values of the companies studied tend to vary. The POLY company holds the highest value on firm value, with a value of 41.51 in the 2019 observation year. However, POLY only sometimes holds the highest value in other observation years. Furthermore, the lowest value held by the ULTJ company of 0.15 for two consecutive years of observation, 2018 and 2019.

The results of the statistical test can be seen in Figure 1 (direct effect) and Figure 2 (indirect effect). Figure 1 shows that women on commissioners negatively and significantly affect firm value ( $\beta = -0.07$ ;  $P = 0.04$ ;  $R^2 = 0.02$ ). Figure 2 shows that women on commissioners have a negative and significant effect on environmental engagement ( $\beta = -0.21$ ;  $P = <0.01$ ;  $R^2 = 0.04$ ). This study also proves that environmental engagement has a positive and significant effect on firm value ( $\beta = 0.09$ ;  $P = 0.01$ ;  $R^2 = 0.02$ ). Finally, this study proves that environmental engagement mediates the relationship between women on commissioners and firm value. Referring to MacKinnon & Tofighi (2012), this is because women on commissioners have a significant effect on environmental engagement ( $P = <0.01$ ), and environmental engagement is also significant to firm value ( $P = 0.01$ ).

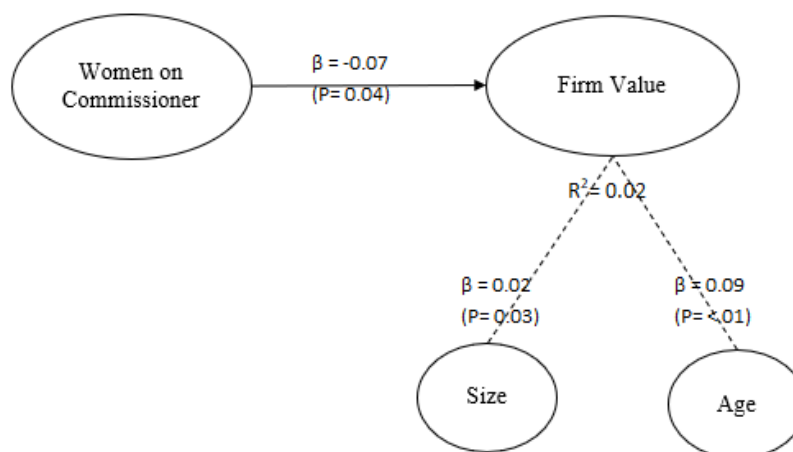


Figure 1. Direct Effect

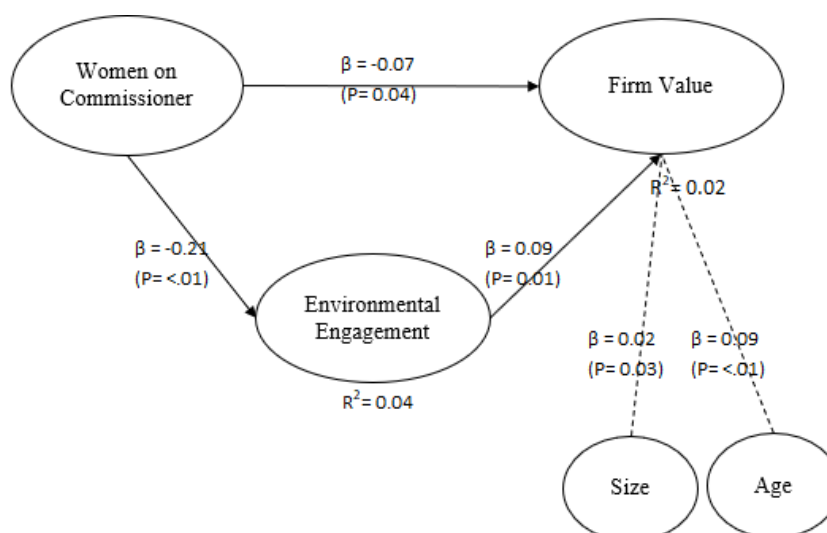


Figure 2. Indirect Effect

### Women on Commissioners and Firm Value

This study demonstrates that the company's value decreases as the proportion of women on the board of directors increases. It is not in line with research (Ararat & Yurtoglu, 2021; Garanina & Muravyev, 2020; Sarkar & Selarka, 2021) that states the role of women in company leadership has an impact on increasing company value and profit. However, it supports findings from previous studies such as (Adams & Ferreira, 2009; González et al., 2020; Haslam et al., 2010). The result of this study is in line with the upper-echelon theory, which states that leadership characteristics affect company performance. It shows that organizational performance reflects the personality of its leader (Hambrick & Mason, 1984). Women are vital in monitoring (Menicucci et al., 2019; Song et al., 2020). However, this excess may decrease shareholder value (Almazan & Suarez, 2003). It is because solid leadership monitoring will negatively impact communication relationships with managers (Adams & Ferreira, 2009). In addition, women tend to propose less aggressive strategies (Apesteguia et al., 2012) and be risk-averse (Byron & Post, 2016; Croson & Gneezy, 2009; Niederle & Vesterlund, 2007). In the context of research on companies in Indonesia, the increase in female commissioners is not responded to well by the market so it can reduce the company's



value. In line with research data, companies without involving women still dominate up to more than 90%. Amongst the 90% of these companies, some companies hold the three highest Tobins'Q scores. It further strengthens the research results that the traits women possess can be a significant barrier to increasing the company's value. It might be because no strict regulation regulates the mandatory involvement of women in the company, especially in executive positions.

### **Women on Commissioner and Environmental Engagement**

This study proves that the more women on the company's board of commissioners, the lower the environmental commitment. According to upper-echelon theory, a company's strategic decisions are influenced by its leaders' knowledge, experience, and values (Byron & Post, 2016). The negative effect of women on the commissioner on environmental engagement is likely because input or advice from women on technical issues, including environmental issues, is too complex for men to accept (Queensland, 2003). Thus, even though women are more concerned about the environment, they still cannot influence decision-making, including those related to environmental issues (Ardito et al., 2021). It is because the decision-making process depends on the approval of male leaders. In addition, the characteristics of women who tend to avoid risk (Croson & Gneezy, 2009) are less likely to be involved in decisions related to environments that are considered very risky (Huang & Kisgen, 2013). It implies that the more women on the board of commissioners, the lower the company's environmental commitment. In line with the research results, increasing the number of female commissioners in companies in Indonesia does not have a good impact on the environment. It tends to experience a decrease in commitment to the environment. In addition, research data also proves that more than 50% of companies in the research sample still get the highest points in implementing environmental engagement even though they do not involve women in their business processes.

### **Environmental Engagement and Firm Value**

The results of this study are in line with previous research by Sohn et al. (2020), Li et al. (2015), and Xia et al. (2021), which proves that environmental performance has a positive effect on firm value. It shows that the greater the company's commitment to the environment, the greater the value of the company. It is in line with sustainability theory which states that companies must pay attention to environmental, economic, and social elements in running their business (Shou et al., 2019) and achieve their competitive advantage by being more responsible for the surrounding environment (Gangi, Daniele, et al., 2020). In a competitive environment, stakeholders demand that companies be more concerned about the environment around their business (Gangi, Daniele et al., 2020). Along with increasing awareness of environmental sustainability, various parties need to make changes to minimize adverse environmental impacts, especially manufacturing companies. In 2021, the manufacturing sector will be the most significant contributor to B3 waste (hazardous and toxic materials) (Dihni, 2022). Efforts to increase environmental engagement, such as reducing carbon emissions, energy consumption, product recycling, and waste management, positively impact equity financing costs (El Ghouli et al., 2018). In the context of companies in Indonesia, companies are relatively highly committed to the environment. For example, a company in Indonesia tried to minimize adverse environmental impacts, such as using biomass energy from palm shells, using recycled plastic for product packaging, and using environmentally friendly formulas (Unilever, 2021). In addition, they also





conducted the latest campaign, "Easy Go Green," by inviting the public to choose environmentally friendly products (Alamsyah, 2022). Another example is that a company in Indonesia has implemented a sustainability program aligned with the Sustainable Development Goals (SDGs). All these programs certainly attract the sympathy of shareholders impact, increasing the company's value.

### **Environmental Engagement Mediates the Relationship between Women on Commissioner and Firm Value.**

The results of this study prove that environmental engagement mediates the relationship between women on the commissioner and firm value. Along with the increasing awareness of the Indonesian people about environmental sustainability, companies with high environmental engagement will get a good response from the market (Handayani, 2019). Thus, the impact on increasing the value of the company. The results line with the sustainability theory by Elkington (1997), which states that to improve company performance, companies need to pay attention to environmental, economic, and social aspects or known as the Triple Bottom Line (TBL) concept (Shou et al., 2019; Stefaniec et al., 2020). The high commitment to the environment is shown by several environmentally friendly programs initiated by many companies in Indonesia, for example, using environmentally friendly production materials, recycling waste, and scrap to become safe packaging raw materials, owning a Waste Water Treatment Plant (IPAL) to convert the remaining tobacco packs and clove water waste into compost, as well as many other companies with their version of the environmentally friendly movement. However, in Indonesia, a high commitment to the environment can be achieved if the proportion of female commissioners in the company is less than that of male commissioners. According to (Huang & Kisgen, 2013), this may be the nature of women who tend to avoid risk. On the other hand, decisions related to the environment are considered very risky.

### **CONCLUSION**

The result of this study indicates that the presence of female commissioners needs to be better responded to by the market in Indonesia, which has an impact on the decrease in firm value. In addition, the presence of female commissioners is also proven to reduce the environmental engagement of a company. It is due to the natural characteristics of women, such as tending to avoid risk and tend to propose less aggressive strategies. Decisions related to the environment are considered very risky and require strong consideration. Along with increasing public awareness of the importance of environmental sustainability, this research proves that a company with a solid environmental engagement can attract market responses, thus increasing the firm value.

This research contributes to the development of upper-echelon theory and sustainability theory, which is explained through the relationship of women on the commissioner to firm value, women on the commissioner to environmental engagement, environmental engagement to firm value, and the mediating role of environmental engagement in the relationship of women on the commissioner to solid value in the company. This research also contributes practically to providing additional information as a basis for decision-making by the management.

This research has limitations in providing research information. Only a few manufacturing companies are listed on the Indonesia Stock Exchange. In addition, based on research data, the proportion of women in manufacturing companies tends to be low. Future research can expand the population by adding manufacturing

companies in neighboring countries (such as ASEAN) or adding other industries to compare results with this research.

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