

Unveiling The Interplay : Board Gender Diversity, Surname Ties, Capital Structure on Firm Performance : The Mediating Role Agency Cost

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Abstract

The study's findings are based on a rigorous quantitative analysis, which provides a robust understanding of the relationships between these variables. Recommendations for manufacturing companies are to increase the number of female directors to improve firm performance and analyze the identification of surname ties not only through a person's last name.

Keywords: board gender diversity, surname ties, capital structure, agency cost, firm performance.

1. Introduction

The growth of the Gross Domestic Product of the manufacturing industry in Indonesia, which fluctuates from 2018 to 2022, provides the largest contribution even though the value per year tends to decrease. The manufacturing sector still provides the highest contribution compared to other sectors. This underscores the pivotal role of the manufacturing industry in the Indonesian economy, despite the global economic slowdown. The magnitude of the contribution of the manufacturing industry has decreased starting in 2019, supported by data from Bank Indonesia (BI), namely the Prompt Manufacturing Index (PMI), which is an indicator that provides an overview of the performance of the manufacturing sector in a particular quarter of the year and projections for the next quarter (Bank Indonesia, 2019)

The manufacturing industry makes the largest contribution compared to other sectors; this can be analyzed through the Gross Domestic Product, which explains the percentage of contribution to the country. Manufacturing companies that make a large contribution have good performance, which can be analyzed through Bank Indonesia's Prompt Manufacturing Index, which describes quarterly performance. Manufacturing companies measure firm performance through the efficient use of capital, one of which is with return on equity. Return on equity measures the return on investment of firm owners by comparing profits with shareholders' equity. Performance in the firm is influenced by several factors, both directly and indirectly, one of which is the equal opportunity for each individual to occupy various important positions in the firm, which shows the existence of gender diversity. Gender diversity within the firm can reflect a culture that is open to various perspectives and ideas in adapting to an increasingly complex business environment, facing various social and environmental challenges, and responding better to issues such as sustainability, corporate social responsibility, and social justice so that it can lead to new product development, more efficient business processes, which can increase firm revenue and profits (Isidro & Sobral, 2015); (Dezsö & Ross, 2012).

Regarding firm performance, the upper echelons theory considers that top management has differences in cognitive abilities and values that affect firm performance. Top management's cognitive ability to search for information and evaluate depends on experience, knowledge, and values that shape the way of thinking that impacts top management decisions and firm performance (Hambrick & Mason, 1984); (Hambrick, 2007). Men tend to show less emotional expression, focus on discussions about work, and are less able to express their feelings or technical-related activities—a tendency to make risky decisions.

Whereas women have psychological characteristics, among others, women are more open to showing their emotional expression in social relationships (Robb & Watson, 2002).

The document published by the European Commission in 2020 in Brussels on A Union of Equality: Gender Equality Strategy 2020-2025 explains that to encourage an increase in gender balance to contribute to the representation of women in decision-making positions in European business and industry, firm boards set a minimum number of 40% female members. The results of board gender diversity research conducted by (Garanina & Muravyev, 2020), Loukil et al. (2019) ; (W. Khan & Vieito, 2013), and Konrad et al. (2008) stated that the presence of female directors will improve the firm's performance. It is more efficient when three women occupy the board of directors position. Furthermore, Rancati (2017) explain that at least 1 (one) woman occupies a position on the board of directors. Board gender diversity in the composition of the board of directors is a concern because the composition of the board of directors has a big role in the decision-making process that will affect firm performance, however, it is reversed by the results of the study Ellwood & Lacalle (2014); that the presence of women on the board of directors does not influence firm performance (Adams & Ferreira, 2009) ; (Kibat et al., 2019); Singh et al., (2019).

Adams & Ferreira (2009) stated that female boards of directors require intensive monitoring and audit efforts from male colleagues to perform better. In line with research conducted by Jurkus et al., (2011:185); (Chen & Hassan, 2022) found that a female board of directors reduces agency cost. In contrast to the research results from Jadiyahappa *et al.*, (2019); (Wellalage & Locke, 2013), the number of women on the board of directors will increase agency cost. The existence of transparency in companies that have board gender diversity can reduce agency cost, which impacts improving firm performance in line with the research conducted by Khuong et al., (2022).

In Indonesia, many large companies are managed by families, and many have developed into conglomerates with various businesses in various sectors. In this regard, surname ties are important in determining firm performance because they are based on the family's vision and mission. Surname ties can also be identified based on the similarity of surnames, culture, province and place of education, having blood relations from people who are social markers (Peng, 2004); (Du, 2017); (Gymrek et al., 2013). Surname ties make communicating easier by classifying each other into social groups (Gibbons, 2004), thereby increasing agency cost. Surname ties motivate directors to classify themselves into the same group, resulting in a group of favorites that have an impact on bias in making evaluations that lead to agency conflicts, thereby increasing agency cost (Zhang et al., (2017) ; Zhang et al., (2020). Furthermore, Lihong (2015) explain that there is a negative influence between family-managed management and agency cost. Zattoni *et al.*, (2015); Zhang et al., (2020) and Peng (2004); Rajverma *et al.*, (2019) state the existence of surname ties reduces agency conflicts by providing efficient decisions that improve firm performance because it helps reduce concerns about disclosure of information that encourages the effectiveness of governance explains the effect of surname ties on firm performance through agency cost. Family-run companies depend on superiors (the moon culture), so management has difficulty making economic decisions.

The firm's capital structure influences the firm's performance. The firm's capital structure is obtained from the balance between debt and equity (Le & Phan, 2017). Capital structure is a financing mix as the firm uses debt and equity. These long-term sources of funds consist of debt, preference shares, and equity. Long-term debt includes various types of bonds, mortgages, and others. Harvey *et al.*, (2004) explain that the higher the use of debt, the higher the agency cost, especially for companies that invest in fixed assets with limited increase in income. However, Ang et al., (2007); (Fauver & McDonald, 2015); (Vilasuso & Minkler, 2001) explain that the increase in capital structure will reduce agency cost due to monitoring from third parties, namely banks, companies will try to improve the efficiency and effectiveness of their operational performance

Ang *et al.* (2000); H. Abdullah & Tursoy (2019); Yeboah *et al.*, (2021); Dao & Ta (2020); Dawar (2014); Le & Phan (2017) explains that the capital structure, companies using funding from external parties should pay interest expense which reduces the amount of current profit thereby reducing firm performance as measured by return on equity. Research results Wright *et al.*, (2009:237); Khan et al. (2020) explain that agency cost negatively affect firm performance. (2013) explains that agency cost affect firm performance. However, Wang (2010) explains that agency cost does not affect firm performance. Based on the

background description above, it can be concluded that the problem identification is as follows: firm performance can be influenced by several factors both directly and indirectly and supported by the upper echelons theory, considers that the choice of organizational strategy and the level of firm performance is determined by managerial background characteristics including board gender diversity, surname ties and management's tendency to manage firm capital using funding from external or internal parties. Capital management is based on the pecking order theory, explaining that companies prefer funding through debt and equity. Corporate Governance Factbook 2023 (OECD, 2023) explained that in Indonesia, there is no requirement to achieve gender diversity in leadership positions and to disclose statistics on gender composition. In addition, the existence of board gender diversity variables, surname ties, and capital structure will affect agency cost and impact firm performance due to the delegation of authority by shareholders to firm management.

2. Literature Review

2.1 Agency Theory

An agency relationship is a contract in which one or more shareholders engage an agent to perform some service on their behalf, which involves delegating decision-making authority to the agent. Agency theory explains the conflict of interest between management and shareholders. If management's interests differ from those of shareholders, shareholders bear the cost of monitoring management's activities. (Jensen & Meckling, 1976). A firm is a legal form that serves a set of counter-relationships so that there is a view that states that the firm is a set of contracts (nexus of contracts), namely the existence of a contract between the owner and the manager (Fama, 1980).

2.2 Upper Echelons Theory

The upper echelons theory was first introduced by Hambrick & Mason, (1984). This theory assumes that top management has differences in cognitive abilities and values that affect firm performance. The cognitive ability of top management in the process of information search and evaluation depends on experience, knowledge, and values that shape the directors' way of thinking in searching and interpreting information so that it impacts top management decisions and firm performance. The strategy determined by the firm is a description of the demographic characteristics of top management, where the alternative strategy chosen can affect firm performance. Firm leaders have a role in determining firm performance because they are believed to have the power to make decisions. (Hambrick, 2007) ; (Roberson & Park, 2007) ; (Adusei *et al.*, 2017).

2.3 Pecking Order Theory

The pecking order theory introduced by Myers (1984) Pecking order theory assumes that there is additional financing from the firm's internal capital. If operational and investment needs are not met, financing will be provided from creditor loans (debt) and equity or equity financing as the last alternative. Pecking order theory explains that if a firm's profit increases, the percentage of retained earnings will increase. Pecking order theory is based on the view that firms have better information about their internal value than external investors. Therefore, they avoid external financing such as new share issuance, which may signal the market negatively about the firm's value. The pecking order theory explains that when a firm's internal cash flow is insufficient to finance actual investments and dividends, it will resort to debt. Shares will never be issued unless the cost of financial distress is high. In addition, there is a negative judgment from shareholders due to the issuance of shares or a decrease in leverage.

2.4 Board Gender Diversity

Gender has been socially constructed since the rise of second-wave feminism. Gender describes what it means to be a man or a woman regardless of biological differences. Men and women are considered to have the same talents and behavioral tendencies to varying degrees. Men are considered to be brave and have more knowledge of the law. In contrast, women are considered more consistent and enduring (Davies, 2018:58). Fasih (2013:8) stated that the concept of gender is a trait attached to men and women that is socially and culturally constructed. The gender bias that results in workload is reinforced by the view that

women's work is not productive, so it is not taken into account in economic statistics. Board gender diversity has become a governance tool that can influence strategic decisions, and board dynamics have become ethical and social requirements for stakeholders. The existence of board gender diversity in a firm can improve its public image and influence investor decisions (Loukil *et al.*, 2019:671). Board gender diversity is likely to create conflicts in decision-making, resulting in less effective board performance. (Adams & Ferreira, 2009) ; (Chen & Hassan, 2022). Gordini & Rancati (2017); Meca da Martín, (2022); Khan & Vieito, (2013) concluded that the presence of at least 3 (three) female directors on the board of directors of listed companies in Italy has a positive and significant effect on financial performance.

2.4 Surname Ties

Surnames are kinship markers that reveal family relationships. Surnames in children mostly connect them to male parents (Davies, 2011:565) ; (Peng, 2004). Traditional surname classification based on Kennett (2012) is divided into four main categories: (a) Surnames derived from place names and topography, i.e. surnames derived from places are called toponyms or locations (b) Surnames by gift and relationship, i.e. the category includes names derived from the given name of the father or mother, or sometimes the names of grandparents or other relatives (c) Surnames by status, occupation, office, i.e. surnames derived from occupations because they are the most productive and easily recognizable (d) Surnames by nicknames i.e. common nicknames are given and only a few give modern nicknames to surnames. Boards of directors with shared surnames who have common ancestors are likely to have ties to the same hometown. Hometown links can improve communication, strengthen in-group networks, and increase political power within the group (Hogg & Terry, 2000).

2.5 Capital Structure

Brigham & Daves (2018) explain that sales growth requires growth in operating capital, which often requires external funds to be raised through a combination of equity and debt. A firm's mix of debt and equity is called its capital structure. Although the actual level of debt and equity may vary over time, most companies try to keep the financing mix close to the target capital structure. A firm's capital structure decisions include the choice of target capital structure, average debt maturity, and the particular type of financing it decides to use at any given time. As with operating decisions, management makes capital structure decisions to maximize the firm's intrinsic value. The two main types of corporate debt are notes payable and long-term bonds, but more complex companies may also report the portion of long-term debt that matures within one year, the value of capitalized leases, and other types of interest-bearing liabilities.

2.6 Agency Cost

Agency cost are the sum of monitoring cost by shareholders, bonding cost by agents, and residual loss, which is a decrease in shareholder wealth due to differences in decisions made by agents with decisions that should maximize shareholder wealth (Jensen & Meckling, 1976). Jensen & Meckling (1976) divides agency cost into three, including: (a) monitoring cost, which is cost in terms of shareholders limiting differences by setting appropriate incentives for management, giving rise to monitoring cost designed to limit management activities (b) bonding cost, which are shareholders will pay agents (management) to spend resources in the form of bonding cost to guarantee that agents will not take actions that will reduce shareholders. In addition, the agent will pay a resource cost (bonding cost) to guarantee that the agent will not take specific actions that will reduce the principal or ensure that the principal will be compensated if the agent takes such actions. (c) Residual loss is a cost due to decreased shareholder welfare due to differences in interests between agents and shareholders despite monitoring and bonding.

2.7 Firm Performance

The best operational performance of the firm can be explained through financial performance, so the firm's performance is commonly referred to as financial performance (Combs *et al.*, 2005). Firm performance is important to stakeholders and shareholders because it is used as an indicator of business valuation, the basis for dividend distribution and attracting potential investors. (Müller, 2014). Investors assess the firm's

financial performance level in the capital market through earnings. Reported earnings are used by management to signal investors about the firm's performance which can influence investment decisions (Aljifri & Moustafa, 2007). The profitability ratio is used to measure how efficiently the firm uses its assets and how efficiently the firm runs its operations, and focuses on profit. (Pandey & Sahu, 2019).

Hypothesis Development

The Influence of Board Gender Diversity on Agency Cost

Information asymmetry, where management discriminatorily has better/more information than shareholders, is a major cause of conflict of interest. Agency cost also arise when shareholders try to mitigate these problems. The existence of board gender diversity can reduce agency cost, given its positive impact on the firm. Female directors on the board improve governance, this study tests whether female officers reduce agency problems. When the firm is not managed optimally, it will impact spending a lot of free cash flow, so the agency cost will also be significant. However, female-led firms have less optimal decisions and constraints arising from patriarchal culture, resulting in increased agency cost compared to male-led firms (Jadiyappa *et al.*, 2019:486). In line with research conducted by Jadiyappa *et al.*, (2019), research conducted by Wellalage & Locke (2013) stated that the existence of board gender diversity in top management with the presence of women will increase agency cost that the firm will bear. However, in contrast to Jurkus *et al.*, (2011) and Ain *et al.* (2021), which state that board gender diversity significantly negatively affects agency cost. Based on the results of previous research on the effect of board gender diversity on agency cost, the following hypothesis is formulated:

H₁: Board gender diversity affects agency cost

The Influence of Surname Ties on Agency Cost

Surname ties between boards of directors can serve as a basis for categorization. Kinship is bound by norms about social life and family education, which impact individual values and behavior. Ancestral ties based on surnames motivate boards of directors to categorize into the same social group (Zhang *et al.*, 2020). Surname ties shorten the social distance among the board of directors by demonstrating kindness and generosity. Favoritism inhibits board monitoring and increases self-serving behavior, with the impact on the firm being increased agency cost due to decreased monitoring effectiveness in preventing self-serving behavior. The existence of executives and directors with surname ties becomes a means of categorization that shows the symbol of kinship, giving them a sense of belonging so that the tendency for favoritism in groups derived from shared surnames to occur when directors evaluate the CEO will increase agency cost (Zhang *et al.*, 2017). Zhang *et al.*, (2017) ; Zhang *et al.*, (2020) ; Khan *et al.*, (2020) explains that there are CEOs with surname ties. However, it is inversely proportional to the research conducted by Wangfeng & Lihong (2015) that the existence of management managed by the family negatively influences agency cost. Based on the results of previous research on the effect of family name ties on agency cost, the following hypothesis is formulated:

H₂: Surname ties affect agency cost

The Influence of Capital Structure on Agency Cost

To reduce agency conflicts, creditors often use various control mechanisms such as credit agreements, financial supervision, or increased monitoring of firm activities. Jensen & Meckling (1976) explain that debt helps overcome agency cost. Management has an incentive to generate the financial resources needed to repay debt. Agency cost associated with debt consist of opportunity loss of wealth caused by the impact of debt on investment decisions, monitoring and repayment of bonds, and bankruptcy cost. Creditors entrust money to the firm, believing that the risks associated with debt will not increase substantially. Capital structure can balance the conflict between shareholders and management, as well as the conflict between shareholders and creditors. Ang *et al.*, (2007) and Florackis (2008) stated that capital structure reduces agency cost, the existence of funding from creditors reflects that the firm can carry out monitoring activities

so that the firm runs well to reduce agency cost. Based on the results of previous research on the effect of capital structure on agency cost, the following hypothesis is formulated:

H₃: Capital structure affects agency cost

The Effect of Board Gender Diversity on Firm Performance

The existence of board gender diversity shows that if the firm accepts a qualified and competent woman, it is expected to improve firm performance. Upper-echelons theory explains that the strategy determined by a firm is determined by the demographic characteristics of top management that affect firm performance. Kibat *et al.*, (2019) and Singh *et al.*, (2019) suggest that the presence of women in top management does not significantly affect firm performance as measured by return on equity—the existence of at least three female directors who can make economic decisions and improve firm performance. The results of research conducted by Adams & Ferreira, (2009:307) show that the presence of women in corporate management has a significant negative effect on firm performance, indicating that there is discrimination against women in terms of education and social status, especially in developing countries. Loukil *et al.*, (2019); Gordini & Rancati (2017); Khan & Vieito (2013) stated that board gender diversity has a positive effect on firm performance. Based on the results of previous research on the effect of board gender diversity on firm performance, the following hypothesis is formulated:

H₄: Board gender diversity affects firm performance

The Effect of Surname Ties on Firm Performance

Emotional attachment among the board of directors with surname ties will lead to loyalty in running the firm. Therefore, the presence of a board of directors with surname ties encourages stakeholders to provide trust, which impacts the perception of the firm's financial performance. Boards of directors with surname ties affect firm performance in different ways. On the one hand, surname ties within the board of directors may reduce the level of the board's oversight role. Strong surname ties and lack of diversity and independence impair board oversight. (Gompers *et al.*, 2016:18). Rajverma *et al.*, (2019) stated that a board of directors with surname attachments would reduce firm performance. Therefore, sharing directors' surnames tends to have a detrimental effect on firm performance. However, it is inversely proportional to the research conducted by Rajverma *et al.*, (2019) and Zattoni *et al.*, (2015) based on the results of previous studies on the effect of surname ties on firm performance, it is hypothesized that family firms have higher performance because they have family assets and lower agency cost than firms managed without family ties. Based on the results of previous research on the effect of surname ties on firm performance, the following hypothesis is formulated:

H₅: Surname ties affect firm performance

The Effect of Capital Structure on Firm Performance

Capital structure is the composition of short-term, long-term, and equity, which is expected to achieve an optimal combination to improve firm performance. If the firm uses its financial resources by issuing shares, it must compensate shareholders through dividends. Based on the pecking order theory introduced by Myers (1984), it assumes that there is financing from the firm's internal capital; if operational and investment needs are not met, then financing will be provided from debt and equity. Financing through equity is the last resort. Pecking order theory companies prefer to use internal funds before considering debt or equity because it is a cheaper source of funds and does not incur additional cost such as interest or dividends. Le & Phan (2017); Dawar (2014); Ankamah-Yeboah *et al.*, (2021) stated that the composition of debt that is smaller than equity causes a reduction in the benefits obtained by the firm with interest expense so that it can improve firm performance by increasing the amount of profit after tax. Abdullah & Tursoy (2019:17) stated that capital structure reduces firm performance. Based on the results of previous research on the effect of capital structure on firm performance, the following hypothesis is formulated:

H₆: Capital structure affects firm performance

The Influence of Agency Cost on Firm Performance

Zhang *et al.*, (2020) agency cost, as measured by the ratio of operating expenses to total sales, indicates how effectively management controls operating cost, including agency cost. A high operating expense ratio over annual sales indicates that the firm incurs high agency cost. The ratio reflects management's discretion in spending the firm's resources. The separation of management and ownership functions is highly susceptible to agency conflicts. Jabbar *et al.*, (2013) stated that agency problems can lead to agency cost, such as providing appropriate bonuses to management and the cost incurred on supervision to prevent losses. Agency cost can also be interpreted as the use of cash flow for non-essential expenses made by managers so that it will reduce firm performance. In contrast to Khan *et al.*, (2020) that agency cost have a negative effect on firm performance. Based on the results of previous research on the effect of agency cost on firm performance, the following hypothesis is formulated:

H₇: Agency cost affects firm performance

The Effect of Board Gender Diversity on Firm Performance through Agency Costs

Firm with a higher proportion of female gender diversity boards will make less optimal decisions and the constraints arising from patriarchal culture result in greater agency cost than male-led companies, leading to lower relative performance (Jurkus *et al.*, (2011:185); (Khuong *et al.*, 2022). The existence of board gender diversity in the firm is expected to improve its reputation and have better financial performance in the long run. Several empirical studies show women are more vigilant than men (Ain *et al.*, 2021). Characteristics of women when serving in top management include: (a) female directors request that audits be carried out more in-depth and specifically (b) have a tough character in supervising (c) have sufficient experience to improve the perception of the quality of board decisions (Khan & Vieito, 2013). Female boards are more operations-focused than male directors (Adams & Ferreira, 2009). Based on the results of previous research, the following hypothesis is formulated:

H_{8a}: Board gender diversity affects firm performance through agency cost

The Effect of Surname Ties on Firm Performance through Agency Costs

Surname ties are a term used to refer to relationships between board members or executives within a firm who are related or share the same surname. This reduces conflicts to resolve dissenting opinions facilitates the monitoring process at a fraction of the cost and can improve firm performance (Zattoni *et al.*, 2015). Surname ties can raise questions about the firm's separation between decisions and supervision. Family involvement in the decision-making process can affect transparency and accountability, and lead to potential conflicts of interest. This is in line with research conducted by Zhang *et al.*, (2020), which found that surname ties have a significant positive effect on agency cost and reduce firm performance. Based on the results of previous research, the following hypothesis is formulated:

H_{8b}: *Surname ties affect firm performance through agency cost*

The Effect of Capital Structure on Firm Performance through Agency Cost

The use of large debt will increase monitoring cost from both creditors and firm management, this is done to ensure that the firm can maintain its liquidity level. Debt increases interest expense, so discretionary expenses can increase and consequently reduce firm performance (Pandey & Sahu, 2019). Ankamah-Yeboah *et al.*, (2021); Dawar (2014) suggested that capital structure has a negative effect on firm performance. However, the results of research conducted by Kurniawati & Yatna (2020) stated that agency cost is able to be a mediating variable between capital structure and firm performance. Based on the results of previous research, the following hypothesis is formulated:

H_{8c}: The capital structure influences the firm's performance through agency cost.

3. Methodology

3.1 Research Design

This study is an explanatory research that aims to elucidate the relationships between research variables through hypothesis testing. These relationships can manifest as correlations or associations aimed at examining the contributions of one variable to another. Specifically, this research explores the impact of board gender diversity, surname ties, and capital structure on firm performance, with agency cost as a mediating variable.

3.2 Variable Measurement

The measurement of variables is the specification of research activities in measuring a variable. To clarify the variables being studied, the operational definitions of each variable can be explained as follows :

Table 1: Variable Measurement

Variable		Indicators
Board Gender Diversity	(Kibat et al., 2019)	Number of Female Board Members / Total Board Members
Surname Ties	(L. Zhang et al., 2020)	Board members in manufacturing companies identified with surname ties are marked with a value of "1" if there is a shared family surname among board members. Conversely, a value of "0" is assigned if there are no shared surnames.
Capital Structure	(Brigham & Daves, 2018)	Total Debt / Total Equity
Agency Cost	(L. Zhang et al., 2020)	(Selling and Administrative Expenses) / Total Sales
Firm Performance	(Pandey & Sahu, 2019)	Return on Equity = Net Income / Total Equity

3.3 Research Population and Sample

The population of manufacturing companies amounts to 218 listed on the Indonesia Stock Exchange from 2018 through 2022. The total number of companies meeting the criteria is 68 companies per year.

Table 2: Research Sample Criteria

Criteria	Total
Manufacturing companies listed on the Indonesia Stock Exchange.	218
Manufacturing companies that have conducted an Initial Public Offering (IPO) during the research period from 2018 to 2022.	(38)
Manufacturing companies without female board members.	(112)
Manufacturing companies that meet the criteria	68

3.4 Data Analysis Technique

This research employs a quantitative approach to test statistical formulas, namely simultaneous equation system analysis, as it involves equations that must be solved simultaneously. The simultaneous equation system adheres to a recursive model, with the analyzed data first transformed using standardization (Solimun *et al.*, 2020). This research uses a simultaneous equation system employing path analysis using Lisrel 9.10 software. The data utilized in this study are the Annual Reports of Manufacturing Companies Listed on the

Indonesia Stock Exchange. Equation 1 is used to test H₁, H₂, and H₃. Equation 2 is used to test H₄, H₅, H₆, H₇, H_{8a}, H_{8b}, H_{8c}

Structural equations are formulated to express the causal relationship between various variables arranged as follows:

$$AC = \gamma_{11} BGD + \gamma_{12} DTIES + \gamma_{13} CS + e_1 \dots \dots \dots (1)$$

$$KP = \gamma_{21} BGD + \gamma_{22} DTIES + \gamma_{23} CS + \gamma_{31} AC + e_1 \dots \dots \dots (2)$$

4. Results And Discussion

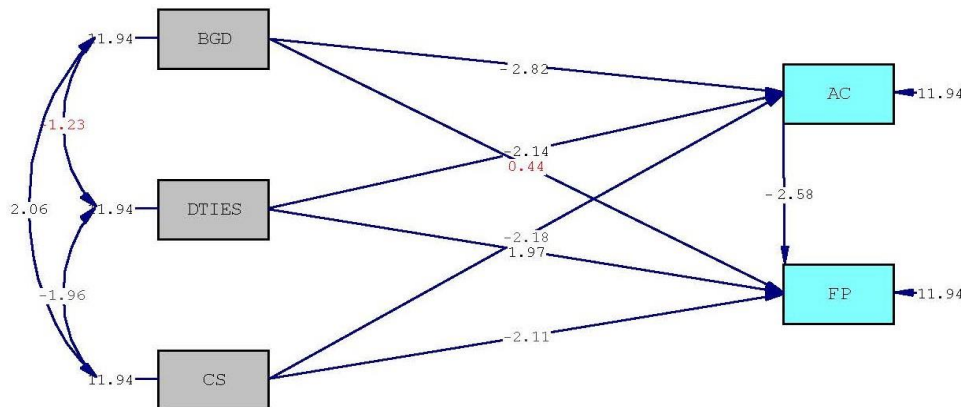


Figure 1: Path Model Analysis

Table 2: Path Analysis Results for the Hypothesis Test

Hypothesis				p-values	t-values	Std error	Decision
H ₁	BGD	→	AC	0,005	-2,821	0,0370	Accepted
H ₂	DTIES	→	AC	0,032	-2,145	0,0150	Accepted
H ₃	CS	→	AC	0,036	-2,184	0,00920	Accepted
H ₄	BGD	→	FP	0,656	0,446	0,105	Rejected
H ₅	DTIES	→	FP	0,048	1,978	0,0334	Accepted
H ₆	CS	→	FP	0,029	-2,116	0,0204	Accepted
H ₇	AC	→	FP	0,010	-2,589	0,131	Accepted

a. Board Gender Diversity has a significant effect on Agency Cost

Based on the hypothesis testing results, it is indicated that board gender diversity has a significant negative effect on agency cost. This research finding is consistent with Jurkus *et al.*, (2011) ; Chen & Hassan (2022) ; Amin *et al.*, (2022) found that the presence of a female board of directors has a negative effect on agency cost. The results of this study are inversely proportional to Adams & Ferreira, (2009) ; Jadiyahpa et al., (2019) ; Wellalage & Locke (2013) ; Chen & Hassan, (2022) explained that the proportion of women on the board of directors will increase agency cost. Gordini & Rancati (2017) found that boards with three or more female directors substantially reduce agency cost, compared to two or fewer female directors on the board.

The document published by the European Commission in 2020 in Brussels on A Union of Equality: Gender Equality Strategy 2020-2025 encourages the improvement of gender balance in order to contribute to the representation of women in decision-making positions in European business and industry, firm boards set a minimum number of 40% female members. In addition Corporate Governance Factbook 2023 (OECD, 2023) explained that in Indonesia there is no requirement to achieve gender diversity in leadership positions to disclose statistics on gender composition. Manufacturing companies are expected to be able to act to provide opinions and insightful advice and increase board independence. An increasing proportion of female board of directors can be a mechanism for reducing agency problems.

b. Surname ties have a significant effect on Agency Cost

Someone who has the same surname ties always considers coming from the same descendants. The results of hypothesis testing in this study indicate that the dummy variable surname ties have a negative and significant effect on agency cost. The results of this study are by the research of Wangfeng & Lihong, (2015) but inversely proportional to the research of Zhang *et al.*, (2017); Zhang & Dou, (2021); Zhang *et al.*, (2020).

A board of directors with surname ties can become good friends, resulting in a flexible board oversight role and fewer agency problems. The more the presence of a board of directors with surname ties, the lower the agency cost incurred by the firm. The existence of surname ties strengthens the bonds between individuals in the board of directors structure and has long-term expectations to maintain firm stability. Surname ties motivate directors to maintain shareholder trust due to a long-term vision. They are supported by a work culture that upholds family values and more flexible monitoring activities, thereby reducing agency cost.

The results of hypothesis testing in this study fill the limitations of the study Wangfeng & Lihong (2015) which contributes to the literature on companies whose boards have family ties. Such involvement has an impact on control mechanisms and management. Directors with family relationships can ensure consistency of interests within the firm and reduce agency cost caused by conflicts of interest. If the interests of management differ from those of shareholders, shareholders bear the cost of monitoring management activities.

c. Capital Structure Significantly Affects Agency Cost

Capital structure reflects financing consisting of internal capital and external capital. Financing the firm through funds from creditors can reduce agency cost from free cash flow, reducing the cash flow available for spending in determining manager policies. Based on the results of hypothesis testing in this study, it is found that capital structure negatively affects agency cost. The results of this study are by Florackis (2008) and Ang *et al.*, (2007) but are inversely proportional to research conducted by Zulvia & Serly (2019).

An increase in a firm's total debt decreases selling and administrative expenses. The utilization of long-term debt assists the firm in reducing agency cost. Long-term debt helps enhance management discipline to minimize expenditures due to the priority payments of principal and regular interest payments.

The hypothesis testing results in this study support the agency theory, which explains that a firm is a legal entity that serves a set of contractual relationships with shareholders and creditors. The nexus of contracts encompasses management with the capital market, leading to agency conflicts between creditors and corporate management. Creditors receive fixed payments each period even if the firm performs well. Agency conflicts arise between management and creditors when the firm seeks additional debt usage. The more debt a firm employs to fund investments in assets or otherwise, the higher the firm's risk. On the other hand, companies with a capital structure that is more heavily reliant on external capital will face more intensive scrutiny from creditors over management.

d. Board gender diversity has no significant effect on Firm Performance

The results of hypothesis testing showed that board gender diversity does not significantly affect firm performance. The results of this study support research conducted by Kibat *et al.*, (2019) and Singh *et al.*, (2019) This explains that the presence of women in the board of directors' structure does not impact firm performance. The research findings are not in line with those Loukil *et al.*, (2019); Gordini & Rancati (2017); Khan & Vieito (2013). This indicates that the firm's management is still dominated by men who tend to have authority and preference in managing the firm. The average number of female directors in manufacturing companies is 1, which is still not to the results of the study by Gordini & Rancati (2017) and Amin *et al.*, (2022), which state that the number of women on the board of directors is at least 3 (three) in order to contribute to strategic decision making so that it has an impact on firm performance. The opportunity for women in the firm's top management is not as much as men's, so it is necessary to have regulations related to the number of women on the board of directors to support good corporate governance. The existence of women provides diverse perspectives and views and can unravel decision-making (Abdullah, 2014).

e. Surname Ties have a significant effect on Firm Performance

The results of hypothesis testing in this study explain that surname ties have a negative and significant effect on firm performance. The results of this study are in line with research conducted by Zattoni *et al.*, (2015) and inversely proportional to research conducted by Rajverma *et al.*, (2019) which states that companies managed by management with family ties have higher performance because they have family assets and lower agency cost than companies managed without family ties. The board of directors with surname ties strives to manage well based on family values because they have the same goals and interests. Fellow board members will try not to group, thus increasing trust and coordination among board members. Communication between the board will become more open and better co-operation, to provide innovation, which can contribute to increasing firm profits.

f. Capital Structure Significantly Affects Firm Performance

The results of hypothesis testing in this study explain that capital structure has a negative and significant effect on firm performance. The higher the ratio value of the capital structure, the lower the firm performance of manufacturing companies. The results of this study are in accordance with Pandey & Sahu, (2019), Ankamah-Yeboah *et al.*, (2021), and Dawar (2014). However, it is inversely proportional to Abdullah & Tursoy (2019).

Long-term debt indicates that companies can use a higher debt ratio to reduce the conflict of interest between managers and shareholders than the level that should be. The use of debt as a means of monitoring so that management is encouraged to improve the firm's performance is not too large. Thus, large cash flows from debt can cause managers to perform discretionary behavior or have a negative impact on firm performance.

The results of this hypothesis test support the pecking order theory that companies tend to reduce the level of debt when the level of profit is high. The firm uses internal funding rather than external funding. This pecking order theory explains how companies choose their capital sources through debt, internal equity, or external equity and how these choices can affect firm performance.

g. Agency Cost has a Significant Effect on Company Performance

The results of hypothesis testing in this study support research conducted by Khan *et al.*, (2020) that shows that agency cost has a negative effect on firm performance. Agency cost can also be interpreted as the use of cash flow for unnecessary expenses made by managers so that it will reduce firm performance. However, it is inversely proportional to the research conducted by Jabbar *et al.*, (2013) and Khuong *et al.*, (2022).

Agency cost caused by differences in interests between shareholders and management in the firm have a negative impact on firm performance due to conflicts of interest between shareholders and management who tend to make decisions that benefit themselves more than shareholders. Manufacturing companies continue to incur agency cost with the consideration that shareholders cannot always measure management performance directly. Therefore, companies must incur cost to develop an effective and transparent performance measurement system.

Mediation Analysis

a. Agency Cost is able to fully mediate the effect of Board Gender Diversity on Firm Performance

Table 3: Mediating Effect of Board Gender Diversity

Path			Coefficient	Std. error	t-value	p-values	Decision
BGD	→	AC	0.132	0.0370	-2.821	0.005	Full mediation
AC	→	FP	0,340	0.131	-2.589	0.010	
BGD	→	FP	0.468	0.105	0.446	0.656	

Board gender diversity has a significant effect on agency cost. Agency cost variables have a significant effect on firm performance. Board gender diversity variable has a direct effect with insignificant results on firm performance. Hair et al., (2010) explain that if there is a significant relationship between the path coefficient of the indirect effect of board gender diversity on firm performance and the path coefficient of the direct effect of board gender diversity on firm performance is not significant, then the agency cost variable can mediate completely. The results of this hypothesis test explain that the high or low proportion of women on the board of directors indirectly affects firm performance through the cost incurred by the firm to monitor, bind management, and pay losses for not achieving firm targets. A female board of directors allows for innovation and ideas. It reduces conflicts of interest between the board of directors, so a female board of directors will improve firm performance. The results of this hypothesis test support research conducted by Khuong et al., (2022) that women with new perspectives on decision-making and ideas to innovate and are more flexible to control agency cost are believed to improve firm performance. Otherwise women will cause conflicts in the board of directors.

b. Agency Cost is able to partially mediate the effect of Surname Ties on Firm Performance

Table 4: Mediating Effect of Surname Ties

Path			Coefficient	Std. error	t-value	p-values	Decision
DTIES	→	AC	0.322	0.0150	-2.145	0.032	Partial mediation
AC	→	FP	0.340	0.131	-2.589	0.010	
DTIES	→	FP	0.660	0.0334	1.978	0.048	

Surname ties have a significant effect on agency cost. Agency cost variables have a significant effect on firm performance. The surname ties variable has a significant effect on firm performance. Hair et al., (2010) explain that if there is a significant relationship between the path coefficient of the indirect effect of surname ties on firm performance and the path coefficient of the direct effect of surname ties on firm performance is significant, then the agency cost variable can mediate partially. Surname ties on the board of directors of manufacturing companies will improve firm performance. Wangfeng & Lihong (2015) explained that in developing countries with surname ties, top management is more flexible in monitoring activities to reduce conflicts of interest that improve firm performance. Surname ties can also be used to overcome the scarcity of internal resources and achieve performance goals in a dynamic environment. Surname ties will provide complete information on the firm's condition to reduce agency cost.

This aligns with research conducted by Hussain et al., (2019), which found that a board of directors with family relationships improves firm performance. However, the results of this study are inversely proportional to the research conducted by Zhang *et al.*, (2020). Companies with boards of directors with surname ties have common interests that can reduce agency conflicts with shareholders and other members of top management. Board of directors with surname ties tend to be flexible towards regulations.

c. Agency Cost is able to partially mediate the effect of Capital Structure on Firm Performance

Table 5: Mediating Effect of Capital Structure

Path			Coefficient	Std. error	t-value	p-values	Decision
CS	→	AC	0.109	0.00920	-2.184	0.036	Partial mediation
AC	→	FP	0.340	0.131	-2.589	0.010	
CS	→	FP	0.349	0.0204	-2.116	0.029	

Capital structure has a significant effect on agency cost. Agency cost variable has a significant effect on firm performance. Capital structure variable has a significant effect on firm performance. Hair et al., (2010) explain that if there is a significant relationship between the path coefficient of the indirect effect of capital structure on firm performance and the path coefficient of the direct effect of capital structure on firm performance is significant, then the agency cost variable can mediate partially. Based on the research results conducted by Kurniawati & Yatna (2020) This study explains that capital structure directly affects firm performance, and agency cost variable mediates the effect of capital structure on firm performance. The higher the capital structure in manufacturing companies, the lower the firm's performance. The results showed that debt reduces agency cost because management prioritizes fulfilling short-term and long-term obligations. In addition, creditors supervise and monitor the firm so that the firm's health remains good. Debt financing can lead to conflicts between shareholders and bondholders. In addition, the increase in corporate cash due to debt must be anticipated to prevent managers from maximizing their interests. The test result of this hypothesis suggests that capital structure negatively affects firm performance through agency cost. The existence of term debt reduces firm performance due to the separation between management control rights and proportional cash flow ownership, and it causes the problem of overinvestment in assets that limit the firm's growth opportunities. Overall, it shows that shareholders can monitor long-term debt intensively and reduce the risk of considerable information asymmetry.

5. Conclusion

Based on the results of hypothesis testing and discussion that has been carried out, it can be concluded that: (a) board gender diversity, surname ties and capital structure have a negative and significant effect on agency cost variables (b) board gender diversity has an insignificant effect on firm performance (c) surname ties have a positive and significant effect on firm performance (d) capital structure has a negative and significant effect on firm performance (e) agency cost fully mediates the effect of board gender diversity on firm performance (f) agency cost partially mediates the effect of surname ties and capital structure on firm performance.

This research seeks to fill the gap in research conducted by Lee (2019) ; Zhang *et al.*, (2020) and Ain *et al.*, (2021) The results of this study support agency theory, which states that there is a relationship as a form of contract in which one or more people (shareholders) engage others (agents) to delegate authority and decision-making responsibilities to the agent. The results of this study support agency theory, which states that there is a relationship as a form of contract in which one or more people (shareholders) involve other people (agents) to delegate authority and responsibility for decision-making to the agent. Corporate Governance Factbook 2023 (OECD, 2023) explained that in Indonesia, there is no requirement to achieve gender diversity in leadership positions and to disclose statistics on gender composition. These conditions have a tendency when making decisions not optimal due to risk aversion and the existence of obstacles from a patriarchal culture which results in increased agency cost supported by research Ain *et al.*, (2021; Jadiyahappa *et al.*, (2019); Jurkus *et al.*, (2011); Wellalage & Locke, (2013). Therefore, government support should be given to strengthen the draft law, promote board gender diversity of at least 3 women, and create a conducive work environment for women to work effectively. The cognitive ability of top management in searching for information and determining performance evaluation strategies depends on experience, knowledge, and values to form thinking patterns that influence. Board gender diversity on the board of directors shows the different cognitive abilities of women and men, so there is heterogeneity in terms of gender that will affect firm performance (Amin *et al.*, 2022).

Upper echelons theory explains that demographic characteristics are closely related to psychological and cognitive features, leading to experience, decision-making and perception, impacting performance. The results of this study indicate that the proportion of women on the board of directors does not affect the performance of manufacturing companies in Indonesia because their presence is still relatively small. The existence of surname ties in the firm will reduce agency cost. However, this study's results indicate that directors with surname ties have the ability and experience to manage the business and open access to external parties to invest in the firm to improve performance.

Agency conflicts in the firm occur between management and creditors, as indicated by the amount of debt used for operational and investment activities. Shareholders can limit management's deviant behavior by continuously setting the right incentives and monitoring. Companies with a financing structure originating from creditors will more intensively supervise management to reduce agency cost.

Limitations in this study include some companies with a board of directors with family relationships. However, they cannot be directly identified because the directors do not have the same family surname. In addition, there is no government regulation regarding the number of female directors in manufacturing companies in Indonesia.

6. Acknowledgments

Words cannot express my gratitude to Professor Budiyanto and Professor Nur Fadjrih Asyik from STIESIA Surabaya for their patience and invaluable feedback, generously providing knowledge and expertise. Moreover, this endeavor would not have been possible without the generous support of Romo Budi Hermanto from Universitas Katolik Darma Cendika, who funded my doctoral program.

Lastly, I would be remiss if I did not mention my family, especially my parents, partner, and children. Their trust in me has maintained my spirit and motivation throughout the completion of this dissertation and research.

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