
**Top Management Characteristics and State-owned Enterprises's
Performance: The Moderating Role of Government Financial Support**

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Abstract

The objective of this research is to examine the effect of top management characteristics on the financial performance of state-owned enterprises (SOEs) in Indonesia and determine whether government financial support moderates this effect. Literature on top management characteristics has generated arguments regarding their impact on financial performance, including the negative association of age and the positive effect of gender diversity on financial performance. Using officially published data from 2017 to 2021 and considering the impact of the Covid-19 pandemic that began in March 2020 in Indonesia, this study employed statistical models to provide empirical evidence regarding the estimated effects of board size, average age, and female proportion in top management on financial performance, with government financial support as a moderator. The results of this study indicate a positive association between financial performance and the size of the board of commissioners, while average age and female proportion tend to have the opposite effect. Meanwhile, top management characteristics at the director level were found to have no significant effect on company financial performance. Lastly, this research demonstrates that government financial support does not significantly moderate the effect of top management characteristics on financial performance. The findings from this study are expected to provide insights that can be applied in the implementation of state-owned enterprise management policies in Indonesia.

Keywords: Indonesian SOEs, Firm Performance, Top Management, Government Financial Support, Board Diversity

1. Introduction

Like most companies, State-Owned Enterprises (SOEs) share the same functions of generating profits and/or increasing their market value for their shareholders. However, the social responsibility of SOEs to contribute to society cannot be disregarded (Putri & Rossieta, 2019). These two functions differentiate SOEs from regular companies, especially considering the complex and diverse challenges and expectations of stakeholders. As dual-role entities, SOEs face more intricate issues and challenges compared to private enterprises, including complex

bureaucracy, politicization, and intricate regulations that pose unique challenges to their business operations. On the other hand, the extensive network of SOEs in Indonesia spans nearly all strategic aspects of the Indonesian economy. The dual role of SOEs, serving both commercial and social purposes, may potentially create conflicting targets between the company's commercial objectives and its social role (Aharoni, 1981). The OECD (2016) emphasizes that the risks faced by state-owned enterprises (BUMN) are likely to exacerbate if these entities are not equipped with top management possessing integrity, professionalism, and closely associated independence in fostering healthy government relations. This situation is further compounded when coupled with rent-seeking behavior, a fundamental issue in developing countries where susceptibility to such behavior is higher than in OECD countries, particularly concerning transparency and accountability concerns (Apriliyanti & Kristiansen, 2019).

The RPJMN 2015-2019 outlines the priority of infrastructure development in Indonesia. It is crucial to underscore that such infrastructure development necessitates significant investment capital and an extended timeframe to reach a break-even point. Often, these projects are assigned to state-owned enterprises, and it should be noted that post-investment completion, operational costs frequently lead to financial deficits or operational expenses exceeding revenues. Such a profitability gap necessitates ongoing government support in the form of subsidies or injected capital (Assagaf et al., 2017a; Assagaf and Ali, 2017; Li et al., 2021; Schreiner and Yaron, 1999; Wang et al., 2021).

The crucial role of state-owned enterprises (BUMN) in Indonesia's economic growth, coupled with the significance of management in achieving diverse objectives, is correlated with recent phenomena of top management turnover initiated by the Ministry of State-Owned Enterprises in recent years. This serves as the motivation for conducting this research.

Research on management and its impact on company performance has yielded relatively diverse findings. Ahmadi et al. (2018), Menozzi et al. (2012), and Zajac (1990) successfully demonstrated a significant influence of top management characteristics on the financial performance of companies. The negative relationship between the size of top management and company performance based on Tobin's Q is driven by leadership synergy issues (Hermalin & Weisbach, 2003). From the agency theory perspective, this negative relationship is further supported by evidence regarding excessive top management size, which gives rise to a desire for control, compounded by the impact of power differences among directors, leading to the potential for conflicts (Jensen, 1993). However, in contrast to the findings of Pearce & Zahra (1992) and Dalton et al. (1999), who reported a significant positive correlation between top management size and the financial performance of companies, Nugroho (2019) argues that direct capital injection into SOEs, government-owned infrastructure investments in SOEs, and other forms of government support have a positive and significant impact on Return on Assets (ROA) and Return on Equity (ROE). However, this impact is not significant in the long term, emphasizing the importance of effective communication between SOEs and the government regarding the future direction to support mutual objectives. This aligns with the research conducted by Guan & Yam (2015), which concluded that government financial support for SOEs has not significantly improved the technological progress of manufacturing SOEs in China.

Similarly, Maimunah et al. (2022) posits that government support through direct capital injection into SOEs does not significantly affect the financial performance of SOEs but has a positive and significant impact on SOEs' Good Corporate Governance (GCG). The rationale behind this is that oversight of SOEs receiving state capital injection will significantly increase due to the expectations of various stakeholders that such activities can yield both commercial and social returns.

Based on Figure 1, during the period from 2019 to 2021, the value of State Capital Injection (*Penyertaan Modal Negara-PMN*) to SOEs as a form of government financial support for SOEs exhibited a significant increase, rising from Rp17 trillion in 2019 to Rp68.94 trillion in 2021. However, based on data published by the Ministry of State-Owned Enterprises (BUMN, 2021) regarding SOEs contributions of Rp3,295 trillion throughout the years 2011-2020, the value of Rp68.94 trillion represents only 2% of SOEs' own contributions. It is expected that this will stimulate a multiplier effect through the spending mechanism, where PMN funds managed by SOEs can be allocated to larger capital expenditure (capex) and enhance leverage.

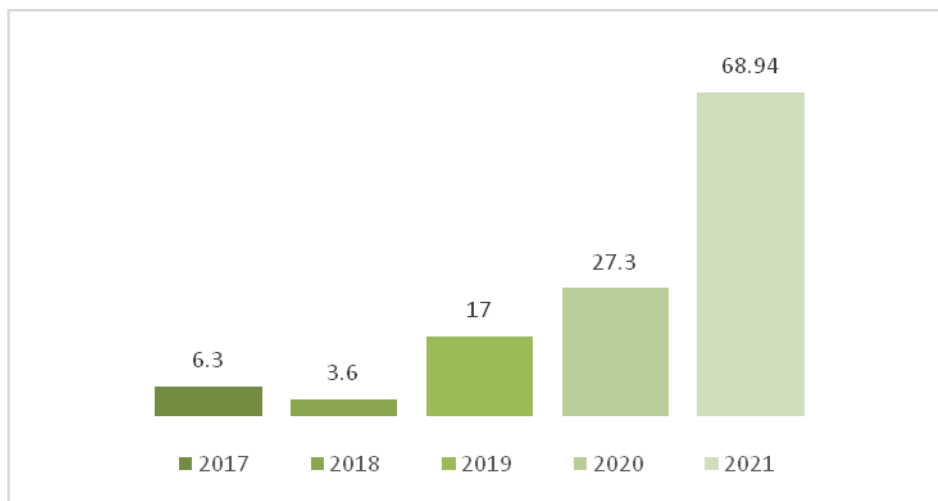


Figure 1 State Capital Injection (PMN) in State-Owned Enterprises
Source: Central Government Financial Report (2017-2021)

The management's role may positively affect a company's financial performance, including the consistency of the board of commissioners in focusing on oversight tasks and granting flexibility to the Board of Directors through policy implementation for the company's operations and growth Rossieta (2013). The effect of the size of the board of commissioners on the profitability is only significant for the operating profit margin, particularly concerning their role in revenue generation for the state. Meanwhile, the size of the board of directors does not significantly affect profitability, as measured by the operating profit margin and net profit margin. This is because the Board of Directors not only focuses on profit and loss but also considers the business aspect and the core competencies of the company to compete in the market. However, further research is needed to consider the impact of the social function of State-Owned Enterprises (Putri and Rossieta, 2019). With regard to activities closely related to public services, State-Owned

Enterprise management tends to receive subsidies, prioritize low financial risk measures, and take actions in line with a framework of rules and legality Kowalski et al. (2013). On the other hand, State-Owned Enterprise management seeks to maintain or even enhance its managerial autonomy. Given the attention to a more open market, SOEs have a profit-oriented orientation with a higher degree of autonomy, allowing for a more rapid response to dynamic changes Bonardi et al. (2005). According to González et al. (2005), government subsidies to companies can stimulate management to be more innovative through increased research and development activities. These subsidies potentially bring more significant impact when provided to companies that have initiated or are currently implementing research and development programs. Regarding company performance, various studies have yielded different conclusions. Bergström (2000) suggests that government subsidies positively affect the productivity of companies in Sweden, particularly through increased workforce absorption. Positive effects of subsidies on management's intention to undertake development for improved performance were found in China, as indicated in research conducted by Zhang et al. (2014) and supported by studies by González et al. (2005), Liu et al. (2019), G. Liu et al., (2019), and Wu et al., (2022). On the other hand, Beason & Weinstein's(1996) study in Japanese companies reports that providing subsidies to companies in sectors with low growth rates does not have a significant impact. The ineffectiveness of such subsidies is also discussed by (Tzelepis & Skuras (2004), who found that in the short term, subsidies do not significantly affect company performance, although they can effectively encourage management to increase investments.

The present study contributes to the literature related to SOEs in Indonesia by investigating the effect of top management characteristics on SOEs' financial performance and the effect of government financial support in enhancing such effect. This research is an integral part of representing the role of SOEs in providing social benefits. The inclusion of the Covid-19 pandemic as a variable in this study ensures that the research yields more up-to-date and informative results.

2. Literature Review and Hypotheses Development

2.1. Board Size and Financial Performance

Based on the assumptions presented in the Resource Dependence Theory, management is one of the strategic resources that can lead a company to better performance. Previous studies have not reached a consensus regarding the top management (TM) size and company performance. Fama & Jensen (1983) argue that a larger TM size offers advantages related to control over strategic decisions. This perspective posits that the knowledge possessed by the TM has a broad scope, and decisions are made based on logical reasoning, incorporating critical thinking and avoiding domination by any single TM member.

Empirically, these arguments have been applied in various studies with diverse findings. The significant positive effect of TM size on company performance has been supported in several studies, with a common argument being that this is primarily due to the extensive scope of issues that can be managed by a larger TM. This is attributed to the wide network of information they possess, diverse capabilities in dealing with uncertainty, and minimizing dominance within the TM, allowing for the best decisions to be made after thorough consideration (Coles et al., 2004;

Dalton et al., 1999; Haleblian & Finikelstein, 1993; Kyere & Ausloos, 2021; Pearce & Zahra, 1992; Tulung & Ramdani, 2018). On the other hand, Guest (2008), Kao et al., (2019), Mak & Kusnadi (2005) and Yermack (1996) have demonstrated a significant negative relationship between TM size and company performance. They argue that this is mainly due to coordination and response speed issues, especially when the board size is relatively large compared to its benefits. Other researchers have identified an optimal TM size that significantly affects financial performance, as asserted by Lipton & Lorsch (1992) and Jensen (1993). Meanwhile, Mak & Kusnadi, (2005) suggest that five members are considered optimal. Regardless of the specific optimal number mentioned, a common theme in these studies is that exceeding the optimal number leads to coordination problems and hampers the flow of information, thereby inhibiting decision-making processes.

Although empirical works on the effect of top management (TM) on company performance has yielded diverse results, the Resource Dependence Theory views management as a part of strategic resources determining organizational policies, and based on the rationale that the more resources utilized, the higher the expectations for improved organizational performance.

2.2. Board Age and Financial Performance

According to the Upper Echelon Theory, age is a significant factor that can affect management in decision-making process. As stated by Hambrick & Mason (1984), significant changes in a company's performance often correlate with a younger management team. This is because older management teams typically exhibit at least three important factors that drive them to behave in a more risk-averse manner: (1) physical factors that reduce stamina and responsiveness to change or new ideas, (2) psychological factors where senior management has a stronger attachment to established organizational status or rank, and (3) senior management tends to avoid conditions that pose risks to their income. In contrast, younger management teams tend to make more risk-taking strategic decisions, potentially resulting in more unstable company performance, which can be identified through higher growth rates or short-term performance decline. In the context of SOEs, the idealism typically possessed by younger leaders has the potential to make them more inclined to consider social interests, thereby influencing the commercial goals of SOEs (Putri and Rossietta, 2019).

From a different perspective, Darmadi (2011) demonstrates that placing younger officials on the BOC also confirms the negative and significant influence since the authority of the BOC is limited to providing input and supervision, while execution is still carried out at the executive level.

2.3. Women in Top Management and Financial Performance

Heterogeneity in top management, as articulated by Hambrick and Mason (1984), provides important arguments regarding strategic decision-making. Essentially, They suggest that decision-making speed can be accelerated when there is a similarity in characteristics among top management (TM). This similarity in characteristics can have an optimal impact on companies operating in relatively stable external environments. However, in more uncertain environments, the similarity in TM characteristics may negatively affect a company's profitability due to

limitations in alternative perspectives and viewpoints accessible within the group. The Resource Dependence Theory also offers a perspective aligned with the importance of diverse top management composition. Diversity in TM is closely related to the quantity of resources controlled by the company to support its goals and sustainability. Although no significant effectiveness differences have been found between men and women regarding strategic decision-making, specific behaviors or abilities of women may provide advantageous perspectives for companies (Nielsen & Huse, 2010).

The presence of women as leaders in SOEs in Indonesia, while not common, has been implemented. Prominent women who have held or are currently holding leadership positions in Indonesian SOEs include Nicke Widyawati (Pertamina), Ira Puspadewi (ASDP), Alexandra Askandar (Bank Mandiri), Adi Sulistowati, and Novita Widya A. (Bank BNI). This situation aligns with the perspective in sociology research Wright & Tellei (1993) that the potential of women is equal to that of men, and it predicts that with the growth of the Indonesian economy, the existing trend of increasing the role and quantity of women in middle to top management positions will continue to grow.

Indeed, the topic of women in top management (TM) and its impact on company performance remains a subject of debate among researchers. Some countries have implemented quotas mandating a certain number of women in TM positions, and studies by Ahern & Dittmar (2012) and Singh et al., (2008) have shown that fewer women have experience as CEOs compared to men. However, women tend to have higher educational qualifications and are, on average, younger. An important aspect related to women in management is the phenomenon of the "glass ceiling," as discussed in studies by Li & Wang Leung (2001), Matsa & Miller (2011), and Adams & Funk (2012). This invisible barrier restricts women from ascending higher in the management hierarchy. Yet, as (Chen et al., (2018) argue, breaking through this barrier is a testament to their distinctive capabilities. Those who have achieved this milestone can be considered as individuals whose competence has been proven and are deserving of their positions.

Previous research on the effect of women on companies has not yielded a convincing consensus. Existing studies have reported the positive, negative, and insignificant effects of the proportion of women in top management on company performance. They argue that women bring broader perspectives and unique advantages in developing relationships to achieve company goals (Campbell & Mínguez-Vera, 2008; Carter et al., 2003), potentially increasing constructive conflicts within the organization. It is important to note that these women are appointed not as substitutes for managerial positions but due to their unique personal characteristics or qualities (García-Meca et al., 2015).

In certain conditions, previous studies have presented different arguments regarding the influence of women in top management (TM) positions. Bøhren & Strøm (2007) demonstrated a negative relationship between women in TM and financial performance. They argued that excessive diversity in TM can lead to less effective decision-making due to the multitude of considerations involved. Diversity was also attributed to management's difficulty in building financially beneficial relationships for the company. Wellalage & Locke, (2013) expressed a similar viewpoint regarding the emergence of conflicts in decision-making and its potential to

harm company performance. They concurred with the notion of excessive overconfidence, as expressed by Andreoni & Vesterlund (2001). Penttilä (2016) in their research on publicly listed companies in Finland, revealed that women in TM have an optimal and positive effect on the company when their proportion is less than 20% of the total TM. A proportion of 20-40% showed statistical insignificance, while a proportion greater than 40% had a significant negative impact. Similar results were found in Ahern & Dittmar's(2012) research, arguing that regulators need to be cautious when enforcing rules requiring the inclusion of women in TM. Their study on Norwegian listed companies from 2001 to 2009 found a significant negative impact of government regulations related to women in TM on the dependent variable, Tobin's Q.

Another perspective is presented in studies indicating that women in TM do not significantly affect company performance, as demonstrated by Green & Homroy (2018), Penttilä (2016), and Shrader et al., (1997). However, this was later explained by the fact that during the period of their study (1992-1993), women in TM in the United States were not assigned strategic roles that significantly impacted company performance due to the prevailing stereotype of male superiority at that time. The arguments presented align with Darmadi (2011) and Smith et al., (2006), indicating that the proportion of women in the BOD does not significantly affect company performance when measured using accounting methods. However, when performance is measured using Tobin's Q, the proportion of women in both the BOD and (BOC) results in negative notations. This is explained as the result of inferior company performance when women are appointed to top management positions.

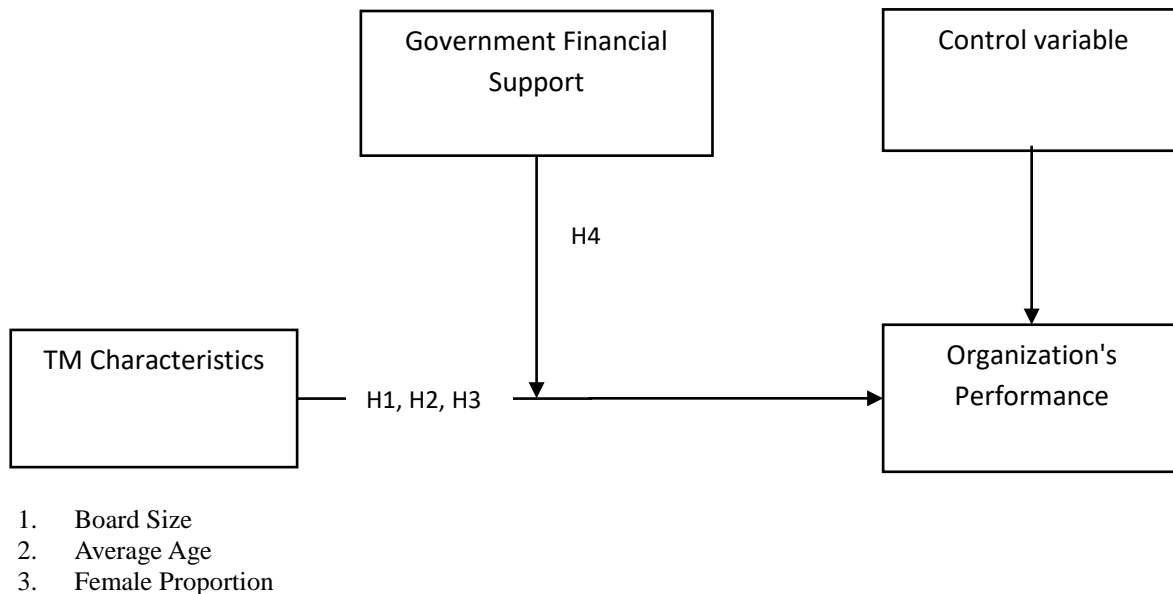


Figure 2. Research Framework

2.4. Government Financial Support and Financial Performance

Building upon the Upper Echelon theory that posits that a company is a reflection of its management, including in the context of SOEs, the dual function of SOEs's goals and the ambiguity in logically defined targets have the potential to influence SOEs's performance. SOEs must cater to various interests, including social and national interests, and even the political interests of specific parties. At the core of the Upper Echelon Theory is the assertion that the characteristics possessed by management, including professional background, social background, career experience, level of education, age, and even diversity in personal finances, play a key role in responding to the situations faced by the company. Ultimately, these characteristics result in strategic choices that, in turn, affect company performance (Hambrick and Mason, 1984). When related to the strategic position of SOEs, as they play pivotal roles in sectors crucial to the sustainability of economies in various countries, particularly in Indonesia, SOEs plays a key role in economic development. However, if not managed effectively, the "special" competitive advantage of these entities can burden or even impede the development of the private sector. This is relevant to the dilemma faced by SOEs management regarding the clarity of SOEs's objectives. In fact, Jones & Aharoni (1982) have pointed out that some countries have even used government audit bodies to formulate the most optimal objectives for SOEs, and the outcome of these activities is the publication of data about SOEs. However, the optimal formulation of strategies for SOEs remains a challenging issue to address. This strengthens the theory regarding the difficulties in formulating SOEs strategies, and consequently, the control over their achievement also faces similar challenges.

Logical reasoning regarding a company's performance as a result of strategic decisions made by management has been extensively discussed and widely used in various literature. What is interesting about this is the evidence that management characteristics, organizational characteristics, and how they respond to external factors can influence the achievement of a company's objectives. Comparing State-Owned Enterprises], to private companies are always interesting to study. Astami et al. (2010) view that SOE managements face unique conditions concerning the differences from private company management, which may have ownership stakes in the company. This ownership stake provides them with higher motivation to make the company more efficient to achieve better performance because good company performance directly impacts the prosperity of management. The efficiency issues faced by SOEs management are further described by research conducted by Apriliyanti & Kristiansen (2019) that, in addition to being responsible for economic and social objectives, SOEs are also tasked with serving the political needs of those in power, which adds a burden to the primary objectives of SOEs. Another unique aspect of the conditions of SOEs management is the information advantage they possess compared to their shareholders. In Indonesia, this role is under the control of the Ministry of State-Owned Enterprises. This was stated by Smith (2001), who mentioned that SOEs management has more negotiation power, especially concerning discussions about the targets that must be achieved. As a result, the targets set can be defined as "easily attainable" targets.

A characteristic of subsidizing state-owned enterprises is the requirement for these businesses to achieve at least a break-even target. This raises the subsequent question about the efficiency of

the operations conducted by SOEs, as highlighted in research conducted by Alperovych, Hübner, and Lobet (2015) and Hsu and Hsueh (2009). These studies posit that government support serves a role in regional development with a long-term time horizon and the creation of employment opportunities.

2.5. Hypothesis Development

The significant positive effect of TM size on company performance has been supported in several studies, with a common argument being that this is primarily due to the extensive scope of issues that can be managed by a larger TM (Coles et al., 2004; Dalton et al., 1999; Haleblan & Finikelstein, 1993; Kyere & Ausloos, 2021; Pearce & Zahra, 1992; Tulung & Ramdani, 2018). Accordingly, the first hypothesis proposed by this study is stated as follows:

H1a: The size of the Board of Commissioners (BOC) positively affects company performance.

H1b: The size of the Board of Commissioners (BOD) positively affects company performance.

Empirically, previous studies have generally found agreement regarding the risk-averse tendencies of more senior management. They tend to prefer stability and, as a result, lean towards making more conservative decisions (S. Y. Cho & Kim, 2017; T. S. Cho et al., 1994). Relevant to the implementation of the two-tier board system in Indonesia, Tejerina-Gaite & Fernández-Temprano's(2021) research contributes to the argument that the impact of age on management needs to be differentiated at different management levels. Furthermore, the empirical findings of this research confirm that, at the executive or BOD level, age does not have a significant influence on financial performance, as measured by ROA and Tobin's Q. However, it does validate previous research by showing that, on average, higher ages at the supervisory or Board of Commissioners (BOC) level have a significant negative impact on a company's financial performance. This caution extends to budgetary decisions related to research and development (Barker & Mueller, 2002)and may be associated with a decline in cognitive abilities and motivation (Waelchli & Zeller, 2013). This is explained by the tendency towards lower risk appetite being a primary contributor to this effect. Accordingly, the second hypothesis proposed by this study is stated as follows:

H2a: A higher average age of the Board of Commissioners (BOC) negatively affects company performance.

H2b: A higher average age of the Board of Commissioners (BOD) negatively affects company performance.

Based on the arguments stated before that women bring broader perspectives and unique advantages in developing relationships to achieve company goals and potentially increasing constructive conflicts within the organization. This, in turn, promotes good governance, careful decision-making, and the prioritization of best practices agreed upon by management (Brahma et al., 2021; Erhardt et al., 2003). Considering Resource Dependence Theory premise that women bring diversity similar to adding different types of resources to the company, the third hypothesis proposed by this study is stated as follows:

H3a: A higher proportion of women in the BOC has a positive impact on company performance.

H3b: A higher proportion of women in the BOD has a positive impact on company performance.

Tzelepis and Skuras (2004) argued that government financial support can enhance company efficiency by accelerating economies of scale within a shorter timeframe. Research conducted in Greece successfully demonstrated that government support reduces production inefficiencies in companies and leads to a decrease in production costs (Skuras et al., 2006). Consequently, this study proposes the fourth hypothesis as follows:

H4a: Government financial support moderates the effect of BOC size and SOEs' financial performance.

H4b: Government financial support moderates the effect of BOD size and SOEs' financial performance.

H4c: Government financial support moderates the effect of average BOC age and SOEs' financial performance.

H4d: Government financial support moderates the effect of average BOD age and SOEs' financial performance.

H4e: Government financial support moderates the effect of the proportion of women in SOEs' and BUMN financial performance.

H4f: Government financial support moderates the effect of the proportion of women in BOD and SOEs' financial performance.

3. Research Method

3.1. Population and Sampling

This descriptive quantitative study aims to provide explanations and predictions, in addition to expand and test a theory (Blumberg, Cooper, and Schindler, 2014), and implement multiple regression analysis to address research questions and hypotheses. The population for this study consisted of all SOEs in Indonesia. From this population, samples were selected, comprising SOEs that had issued annual reports and published them on their respective official websites. The sampling technique employed in this study was purposive sampling, a non-probability sampling technique designed to yield an adequate sample size that could effectively represent the conditions under investigation based on predetermined criteria (Sekaran & Bougie, 2016). The sampling criteria this research were as follows: (1) Companies in which at least 51% of the shares were directly owned by the Government of the Republic of Indonesia in the form of either a state-owned company or a limited liability company under the Ministry of State-Owned Enterprises; (2) Companies that had published annual reports from 2017 to 2021 on their official websites; (3) Companies that had not undergone mergers, acquisitions, and/or restructuring during the period from 2017 to 2021. The data used in this study were panel data because the sample consisted of time series data involving more than one State-Owned Enterprise (SOEs) as subjects from the year 2017 to 2021. Sampling criteria and results are presented in Table 1.

Table 1. Criteria and Sample

Criteria	2017	2018	2019	2020	2021
List of Companies based on Ministry of Finance's Publication	99	99	99	94	79
Companies without annual report published on official website	43	40	40	35	21
Companies with insufficient annual reports	1	1	2	2	1
Companies experiencing merger, acquisition, and/or restructuring	2	2	2	2	2
Number of sample companies/year	53	56	55	55	55
%	54%	57%	56%	59%	70%
Total sample companies	274				

Source: Data processing, 2023

3.2. Hypothesis Test

First, a test was conducted to determine the effect of independent variables on the dependent variable, as follows:

$$ROA = \alpha + \beta_1 COMSIZE + \beta_2 COMAGE + \beta_3 COMPRO + \beta_4 DIRSIZE + \beta_5 DIRAGE + \beta_6 DIRPRO + \beta_7 GOVT + \beta_8 FSIZE + \beta_9 LEV + \beta_{10} GRO + \beta_{11} FAGE + \beta_{12} CAPEX + \beta_{13} COV + \varepsilon$$

(1)

Subsequently, a moderation test was carried out to determine their individual effects on the dependent variable. Model 2 was used to ascertain the moderating effect of GOVT on the effect of the COMSIZE and DIRSIZE on the dependent variable.

$$ROA = \alpha + \beta_1 COMSIZE + \beta_2 COMAGE + \beta_3 COMPRO + \beta_4 DIRSIZE + \beta_5 DIRAGE + \beta_6 DIRPRO + \beta_7 GOVT + \beta_8 COMSIZE*GOVT + \beta_9 DIRSIZE*GOVT + \beta_{10} FSIZE + \beta_{11} LEV + \beta_{12} GRO + \beta_{13} FAGE + \beta_{14} CAPEX + \beta_{15} COV + \varepsilon$$

(2)

Model 3 was used to ascertain the moderating effect of GOVT on the effect of the COMAGE and DIRAGE on the dependent variable.

$$ROA = \alpha + \beta_1 COMSIZE + \beta_2 COMAGE + \beta_3 COMPRO + \beta_4 DIRSIZE + \beta_5 DIRAGE + \beta_6 DIRPRO + \beta_7 GOVT + \beta_8 COMAGE*GOVT + \beta_9 DIRAGE*GOVT + \beta_{10} FSIZE + \beta_{11} LEV + \beta_{12} GRO + \beta_{13} FAGE + \beta_{14} CAPEX + \beta_{15} COV + \varepsilon$$

(3)

Model 4 was used to ascertain the moderating effect of GOVT on the effect of the COMPRO and DIRPRO on the dependent variable.

$$ROA = \alpha + \beta_1 COMSIZE + \beta_2 COMAGE + \beta_3 COMPRO + \beta_4 DIRSIZE + \beta_5 DIRAGE + \beta_6 DIRPRO + \beta_7 GOVT + \beta_8 COMPRO * GOVT + \beta_9 DIRPRO * GOVT + \beta_{10} FSIZE + \beta_{11} LEV + \beta_{12} GRO + \beta_{13} FAGE + \beta_{14} CAPEX + \beta_{15} COV + \varepsilon$$

(4)

Table 2 provides an explanation of the notation, description, and measurement for the variables used in Model 1, Model 2, Model 3, and Model 4.

Table 2. Notation and Variable Description in the Empirical Model

Variable	Description
ROA	Net income for the current year divided by total company assets
COMSIZE	Number of board of commissioners (BOC) members
COMAGE	Average age of BOC members
COMPRO	Number of women in BOC divided by total BOC members
DIRSIZE	Number of board of commissioners (BOD) members
DIRAGE	Average age of BOD members
DIRPRO	Number of women in BOD divided by total BOD members
GOVT	<i>Dummy variable.</i> 1 = receiving government financial support; 0 = not receiving government financial support
FSIZE	Natural logarithm of total company assets
LEV	Total debt divided by total assets
GRO	Company's operating income growth in year t compared to year t-1
FAGE	Number of years since the company's establishment up to the observation period
CAPEX	Growth of company's fixed assets in year t compared to year t-1
COV	Covid-19 Pandemic dummy variable.0 for the years 2017, 2018, and 2019; 1 for the years 2020 and 2021
α	Constant
β	Regression Coefficient
ε	<i>Error Term</i>

4. Result

The research hypotheses were tested using regression with moderation variables. The Cochran-Orcutt procedure was employed due to the classical assumption tests indicating issues of non-normality and heteroscedasticity, while no multicollinearity issues were detected. The procedure involved employing regression equations for both Model 1, Model 2, Model 3, and Model 4 with AR(1), aiming to eliminate error autocorrelation.

4.1. Descriptive Statistics

The results of the descriptive statistics for the variables are presented in Table 3. Some of the characteristics of BOC and BOD show identical values, such as the size of BOD with an average of 5.2 and the average size of BOC with a value of 5.68. However, regarding average age, BOD tends to have a younger average age (DIRAGE = 52.69) compared to the BOC (COMAGE = 56.46). The age distribution of BOC shows larger values, suggesting that age in BOC is more diversified and different from BOD, which has a relatively uniform age composition.

Table 3. Descriptive Statistics of Variables Used in the Empirical Model

N = 274	Mean	Maximum	Minimum	Std. Dev
ROA	0.03	0.26	-0.33	0.06
COMSIZE	5.20	12.00	1.00	2.03
COMAGE	56.46	64.00	43.00	3.26
COMPRO	0.09	0.50	-	0.12
DIRSIZE	5.68	15.00	1.00	2.60
DIRAGE	52.69	59.60	44.50	2.64
DIRPRO	0.08	0.50	-	0.12
FSIZE	16.55	21.27	12.43	2.21
LEV	2.45	29.21	-11.21	3.37
GRO	1.25	224.83	-66.67	15.71
FAGE	56.50	131.00	13.00	25.92
CAPEX	0.17	4.12	-0.78	0.43

Source: Secondary data processing, 2023

4.2. Regression test

Regression test was conducted to test the research hypotheses with the moderation variable, as presented in Table 4. The Cochrane-Orcutt procedure was employed due to the classical assumption tests indicating issues of non-normality and heteroscedasticity, while no multicollinearity issues were detected. The procedure involved employing regression equations for both Model 1, Model 2, Model 3, and Model 4 with AR(1) to eliminate autocorrelation.

Based on the regression results for the COMSIZE variable, with significance values below 0.05 in all models and positive coefficient values in all models, the empirical test results support hypothesis 1a, meaning that the number of BOC positively and significantly affects financial performance. Contradictions are evident in the findings that do not support hypothesis 1b, as indicated by empirical results for the DIRSIZE variable, with significance values above 0.05 in all models and negative regression coefficient values in Model 1, Model 2, Model 3, and Model

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all models and negative regression coefficient values in Model 1, Model 2, Model 3, and Model 4.

Consistent with hypothesis 2a, the regression results show significance values below 0.05 for the COMAGE variable in all models. Therefore, it can be concluded that the higher the average age of BOC, the more negatively it affects company performance. Meanwhile, the significance value for the DIRAGE variable in all models is greater than 0.05, indicating that the average age of the board of directors does not significantly influence ROA.

Table 4. Regression Result

			Coeff. Reg.			
N = 274	Predicted Effect		Model 1	Model 2	Model 3	Model 4
Var. Dependent: ROA						
Size						
COMSIZE	H1a	+	0.007 <i>0.002***</i>	0.008 <i>0.003***</i>	0.008 <i>0.003***</i>	0.008 <i>0.003***</i>
DIRSIZE	H1b	+	-0.003 <i>0.449</i>	-0.002 <i>0.652</i>	-0.003 <i>0.513</i>	-0.003 <i>0.477</i>
Average age						
COMAGE	H2a	-	-0.007 <i>0.001***</i>	-0.004 <i>0.000***</i>	-0.004 <i>0.000***</i>	-0.003 <i>0.001***</i>
DIRAGE	H2b	-	0.002 <i>0.205</i>	0.002 <i>0.133</i>	0.002 <i>0.127</i>	0.002 <i>0.192</i>
Female Proportion						
COMPRO	H3a	+	-0.007 <i>0.000***</i>	-0.163 <i>0.000***</i>	-0.165 <i>0.000***</i>	-0.168 <i>0.000***</i>
DIRPRO	H3b	+	0.017 <i>0.513</i>	0.013 <i>0.610</i>	0.013 <i>0.617</i>	0.011 <i>0.666</i>
GOVT		+	-0.009	0.071	-0.096	-0.028
FSIZE		+	-0.006*	-0.007*	-0.006*	-0.006*
LEV		+	0.002*	0.002*	0.002*	0.002*
GRO		+	0.001***	0.001***	0.001***	0.001***
FAGE		+	-0.003*	-0.003*	-0.003*	-0.003*
CAPEX		+	0.025***	0.022***	0.023***	0.025***
COV		-	-0.508**	-0.512**	-0.507**	-0.506**
SIG-F			0.000	0.000	0.000	0.000
R-square			0.643	0.659	0.654	0.650

*** Significant at $p\text{-value} \leq 1\%$; ** Significant at $p\text{-value} \leq 5\%$; * Significant at $p\text{-value} \leq 10\%$

Source: Secondary data processing, 2023

The empirical analysis results also indicate diversity in the impact at the supervisory management and executive management levels. The significance level of the COMPRO variable in all models shows values lower than 0.05, meaning that the test results are consistent with hypothesis 3a, which states that the proportion of women on the BOC has a positive and significant impact on financial performance. Meanwhile, the significance value of the DIRPRO variable is greater than 0.05 in all models, indicating that hypothesis 3b is not supported, or the proportion of women on the BOD does not significantly affect financial performance.

The empirical results in Table 5 show that in Model 1, Model 2, Model 3, and Model 4, moderation test results in significance values above 0.05. This empirically proves that government support does not moderate the effect of the COMSIZE, DIRSIZE, COMAGE, DIRAGE, COMPRO, and DIRPRO on the financial performance of SOEs, represented by ROA.

Table 5. Regression Result for moderating variable

		Model	Coefficient	Prob.
COMSIZE_GOVT	H4a	2	-0.011	0.620
DIRSIZE_GOVT	H4b	2	-0.002	0.930
COMAGE_GOVT	H4c	3	0.004	0.654
DIRAGE_GOVT	H4d	3	-0.002	0.727
COMPRO_GOVT	H4e	4	0.069	0.687
DIRPRO_GOVT	H4f	4	0.120	0.460

5. Discussion

5.1 The Number of Top Management Members and Company Performance

The test results indicate that the two-tier system implemented in managing SOEs in Indonesia can have different impacts on ROA at each level of top management, as evidenced in the study by Putri & Rossietta (2019), which showed differences in the influence between the size of the BOC due to broader oversight factors and the size of the BOD that can be attributed to the speed of decision-making regarding financial performance. Hypothesis 1a, which was confirmed by empirical test, is consistent with the results of research conducted by Tulung and Ramdani (2018) and Kyere and Ausloos (2021). It is also consistent with the findings of the study by Bezemer et al. (2014) regarding the extensive oversight coverage by commissioners as supervisory boards, which can be attributed to critical questions posed to the BOD, leading to decisions that have been scrutinized against criteria deemed to yield the best outcomes for the company. However, these empirical results do not align with the findings of Rouyer (2014), who suggested that increased oversight would focus on the sustainability of long-term performance improvement.

These results are also consistent with the findings of Kao et al. (2019), which demonstrated that smaller executive management sizes are positively associated with ROA and ROE, as faster management can seize opportunities. This contradicts research suggesting that larger TM sizes have a positive impact on financial performance, as found by Coles et al. (2004). However, it's important to note that the positive correlation in their study is mainly observed in companies with relatively high levels of diversification, unlike SOEs, which typically focus on their

respective fields. When the regression results for the COMSIZE and DIRSIZE variables are correlated with the Resource Dependence Theory premise, it becomes evident that larger management sizes can potentially lead to better financial performance due to the quantity of resources available. However, this must be balanced against the potential challenges related to coordination and communication that need to be appropriately mitigated.

5.2 The Average Age of Top Management Members and Company Performance

The research results, tested using regression for H2a and H2b, revealed differences in the effects on BOC and BOD. This aligns with the notion that the impact of age varies at each management level concerning a company's financial performance. Specifically, it suggests that higher ages among BOC members may have a negative impact on a company's financial performance due to a tendency toward risk aversion (Tejerina-Gaite and Fernández-Temprano, 2021).

Hypothesis 2a, which was supported by empirical testing results, confirms previous research that argued for conservatism in spending or development choices, a characteristic of older top management, which has a negative impact on a company's financial performance (Cho, Hambrick, and Chen, 1994; Barker and Mueller, 2002; Nakano, 2011; Cho and Kim, 2017). The negative coefficient for the COMAGE variable in all regression models further confirms this hypothesis. This finding contradicts the opinions put forth by Putri and Rossieta (2019) and the notion that relatively high age diversity can enhance financial performance due to a broader perspective (Engelen et al., 2012).

The significance values in the regression results for the DIRAGE variable, which are all greater than 0.05, indicate that hypothesis 2b is not supported, meaning that there is no significant influence between the average age of BOD members and financial performance. However, the positive regression coefficients demonstrated for the DIRAGE variable's impact on the dependent variable align with H2b and support the argument that younger CEOs perceive risks as opportunities for career development and future income growth, making them more risk-taking (Barker & Mueller, 2002; S. Y. Cho & Kim, 2017).

5.3 Female Proportion in Top Management and Company Performance

The empirical analysis results also demonstrate diverse effects at the supervisory management and executive management levels. The significant negative impact and notation on the COMPRO variable align with hypothesis 3a and the research by Wellalage & Locke (2013), which argued that the involvement of women in top management increases the potential for conflict. This is consistent with Brahma et al.'s (2021) findings that there is an optimal proportion of women relative to the total board size that can improve a company's financial performance. It underscores the need for caution when determining the proportion of women on the board, emphasizing that it should be based on managerial competence rather than simply for gender diversity considerations Rose (2007). On the other hand, the proportion of women in BOD is shown not to have a significant impact on financial performance, not supporting hypothesis 3b and Campbell & Mínguez-Vera's(2008) and Carter et al.'s(2003) studies. However, it is consistent with the argument that competent women in BOD may view decisions differently, especially concerning risk appetite (García-Meca et al., 2015). They may have a competitive advantage when placed in strategic positions within the company, including a

tendency toward stricter oversight (Brahma et al., 2021; Tahir et al., 2021; Valls Martínez & Cruz Rambaud, 2019).

5.4 Government Financial Support as the Moderator

Empirically, government financial support did not moderate the impact of top management characteristics on financial performance, with diverse direction. This finding does not support the hypotheses stated in H4a, H4b, H4c, H4d, H4e, and H4f. These findings are consistent with empirical evidence that government financial support does not directly affect financial performance or, in this case, company profitability. This is because, in the case of SOEs in Indonesia, government financial support is dedicated to SOEs assigned large-scale projects relative to the size of the company, and its impact cannot be directly enjoyed in the year the financial support is provided (Maimunah et al., 2022; Nugroho, 2019; Yan & Huang, 2021).

The empirical results are also consistent with the findings of Assagaf et al. (2017) that government financial support does not have a significant impact on the financial strength of state-owned enterprises, as measured using the Altman Z-Score model. This is considered a factor that tends to encourage a management dependency behavior on government support to meet the financial needs of BUMN, rather than focusing on BUMN development.

As an illustration of this logical reasoning, between 2017 and 2021, PT HutamaKarya (Persero) ("HK") and PT Kereta Api Indonesia (Persero) ("KAI") were the two SOEs that received the largest government financial support in the form of additional state capital injection. During that period, they received financial support of Rp43.2 trillion and Rp12.5 trillion, respectively, for infrastructure projects assigned as the basis for the support. Both the toll road development by HK and the railway infrastructure development by KAI are estimated to have a payback period of more than 10 years (Rahayu et al., 2023; Saputra, 2022).

Table 6. Coefficient of Determination (R^2)

R-squared	0.646267	Mean dependent var	0.025620
Adjusted R-squared	0.625701	S.D. dependent var	0.065206
S.E. of regression	0.039893	Akaike info criterion	-3.533723
Sum squared resid	0.410594	Schwarz criterion	-3.322738
Log likelihood	500.1201	Hannan-Quinn criter.	-3.449039
F-statistic	31.42422	Durbin-Watson stat	2.194016
Prob(F-statistic)	0.000000		

To determine the magnitude of the impact of exogenous variables on the endogenous variable, an analysis was conducted, resulting in coefficient of determination (R^2) of 0.646267 or 64.63% for model 1. The coefficient of determination (R^2) essentially measures the extent to which the model can explain the variation in the independent variables (Ghozali, 2013). This indicates that during the Covid-19 pandemic, the number of board of commissioners' members, the average age of the board of commissioners, the proportion of women in the board of commissioners, the number of board of directors' members, the average age of the board of directors, the proportion

of women in the board of directors, government support, company size, leverage, profitability growth, the number of years the company has been operating, and capital expenditure can explain ROA by 64.63%, while the remaining 35.37% is explained by variables outside the scope of this study.

6 . Conclusion& Recommendation

The phenomenon of changing commissioners and directors in SOEs carried out by the Ministry of State-Owned Enterprises has been a hot topic in the media in recent years. The performance of SOEs as agents of development is closely scrutinized and, of course, cannot be separated from the government's role in SOEs activities, including financial support.

This research aims to determine the effect of top management characteristics on the financial performance of SOEs in Indonesia and the impact of government financial support in promoting the effect of top management characteristics on the financial performance of SOEs in Indonesia. The positive association of BOC size and financial performance are consistent with research conducted by Tulung and Ramdani (2018) and Kyere and Ausloos (2021). Meanwhile, the empirical test results that provides insignificant association between BOD and financial performance are consistent with the findings of Lipton and Lorsch (1992), Yermack (1996), Guest (2008), and Putri and Rossietta (2019). These studies argue that at the BOD level, decisions often need to be made within limited timeframes. Therefore, effective and efficient communication and coordination play a crucial role, and this becomes more challenging as the size of the BOD increases.

Older average age of BOC has a negative impact on a company's financial performance consistent with research conducted by Cho, Hambrick, and Chen (1994). Barker and Mueller, (2002), Nakano (2011), and Cho and Kim (2017). As for insignificant association of BOD average age and financial performance consistent with tendency to perceive risks as opportunities for career development and future income growth, making them more risk-taking (Barker & Mueller, 2002; S. Y. Cho & Kim, 2017). Higher average board age tends to be associated with conservatism and caution, which may weigh on financial performance and profitability.

BOC female proportion are associated with better company performance because management possesses a range of skills and diversity in handling various issues that companies may face, consistent with research conducted by Rose (2007), Wellalage & Locke (2013), and Brahma et al.'s(2021). On the other hand, the proportion of women in BOD is shown not to have a significant impact on financial performance, it is consistent with the argument that competent women in BOD may view decisions differently, especially concerning risk appetite (García-Meca et al., 2015) including a tendency toward stricter oversight (Brahma et al., 2021; Tahir et al., 2021; Valls Martínez & Cruz Rambaud, 2019)

Accordingly, government financial support did not moderate the impact of top management characteristics on financial performance due to long term nature of the underlying projects. Consistent with the research conducted by Maimunah et al. (2022), Nugroho (2019), and Yan & Huang (2021)

Suggestion for further research based on several limitations were identified in this research and need to be addressed in future research. Firstly, the data used as samples in this study were limited to SOEs in Indonesia. Subsequent research could use samples that include SOEs in other countries to enrich the data. Secondly, the characteristics of top management in this study were confined to data included in the official annual reports published by each SOE. Future research may consider conducting interviews or obtaining primary data to further deepen the discussion.

Based on the research results, several policies can be recommended regarding SOEs management.

First, there should be consideration for emphasizing the characteristics and/or personal qualities of top management in SOEs, including determining the optimal number or size of top management based on current developments as identified in Other researchers have identified an optimal TM size that significantly affects financial performance, as asserted by Lipton & Lorsch (1992) and Jensen (1993). Meanwhile, Mak & Kusnadi, (2005) suggest that five members are considered optimal.

Second, even though SOEs was given financial support, there should be consideration for setting short-term performance targets and growth that SOEs must achieve, so that the public's benefit from SOEs can continue to increase while maintaining the company's sustainability without burdening the state with future financial support needs. The implementation of the provisions of Article 66 of the State-Owned Enterprises Law regarding the basis for special assignments to state-owned enterprises (SOEs) can be consistently applied, particularly in light of the explanation provided in Article 66, paragraph (1), which states:

"Although state-owned enterprises are established with the purpose and objective of pursuing profits, it is not impossible for urgent matters to necessitate a special assignment to BUMN by the government. If, based on a financial assessment, such an assignment is not financially feasible, the government must compensate SOEs for all the expenses incurred, including the expected margin."

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