JURNAL AKSI (Akuntansi dan Sistem Informasi). 2024. 9. (1): 38-49

JURNAL AKSI
Akuntansi dan Sistem Informasi
http://aksi.pnm.ac.id

Financial Performance, Gender Diversity and Corporate Environmental Performance: The Moderating Role of Firm Size

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ARTICLE INFO

Keywords:
Financial Performance, Gender Diversity, Corporate Environmental Performance, Firm Size

Article History:
Received: 30/010/2023
Accepted: 02/02/2024

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ABSTRACT

Research aims: This study analyzes the relationship between financial performance and gender diversity on the board of directors and environmental performance in non-financial companies, while also examining the moderating role of financial constraints and company size.
Design/Methodology/Approach: In this study, panel data analysis was conducted on 75 non-financial companies listed on the Indonesia Stock Exchange that participated in the PROPER program from the Ministry of Environment and Forestry of the Republic of Indonesia from 2018 to 2022.
Research findings: The research findings suggest that financial performance and gender diversity are predictors that have a significant impact on the corporate environmental performance variable. However, the study also revealed that company size does not have a moderation effect, except for the level of debt-to-capital ratio, which acts as a quasi-moderation.
Theoretical contribution/ Originality: This study offers valuable new insights into the environmental performance of non-financial companies in Indonesia. It specifically assesses their participation in the PROPER program, run by the Ministry of Environment and Forestry. Prior research has not extensively investigated environmental performance within this context. Additionally, the study incorporates financial performance components such as debt-to-capital ratio and sales growth, serving as a proxy for financial performance, in addition to return on assets.
Practitioner/Policy implication: This research can be useful for public companies listed on the Indonesia Stock Exchange and provide input to the government, as a reference to increase awareness and environmental management in public companies in Indonesia.

p-ISSN: 2528-6145, e-ISSN: 2541-3198 Accredited Third Grade by Ministry of Research, Technology and Higher Education of The Republic of Indonesia, Decree No: 148/E/KPT/2020

Cite this as: Manfa, A.G., Triyono, Bawono, A.D.B. (2024). Financial performance, gender diversity and corporate environmental performance: the moderating role of firm size. JURNAL AKSI (Akuntansi dan Sistem Informasi), 9 (1), 38-49. http://doi.org/ 10.32486/aksi.v9i1.604

INTRODUCTION

Environmental damage prevention and environmental management are crucial to achieving sustainability and preserving the future of our planet. In both developed and developing countries, the responsibility for preventing environmental damage and undertaking environmental management activities has shifted from solely government-led to shared responsibility with business entities (Cosma et al., 2021). The government, acting as a regulator, mandates that both national and international companies disclose annual reports that include non-financial information and detail the directors' responsibilities pertaining to environmental issues. These responsibilities are implemented by the board of directors via their respective organizational strategies (Adu et al., 2022; Cosma et al., 2021; Hanif et al., 2020)

The shift in perspective from the capitalist principle to long-term sustainability enables companies to attain profits for all stakeholders while simultaneously protecting the environment. As a result, modern businesses have transitioned from prioritizing short-term profitability towards pursuing sustainable and long-term growth to fulfill the expectations and needs of all participating stakeholders (Bogacki & Letmathe, 2021; Orazalin & Mahmood, 2021). Environmental management in companies is a burgeoning concept gaining traction in modern business, reflecting the interdepend ability of the natural environment and the operational activities of firms (Cordeiro et al., 2020). Its objective is to foster greater sustainability and minimize adverse impacts on the environment. Due to government regulations regarding the publication of non-financial reports, companies, through investors or shareholders, are no longer solely focused on personal/group profits, which has traditionally been the primary measure of business success. Instead, attention is gradually shifting towards the interests of the surrounding environment. In general, a company's existence is always paired with the surrounding environmental conditions, as both positive and negative impacts may result from the company's presence (Cordeiro et al., 2020; Cosma et al., 2021; Fadhilah et al., 2021; Hanif et al., 2020).

The detrimental effects of a company's presence on environmental conditions can gradually result in economic losses for the company. This poses a formidable challenge, as the company needs to not only enhance financial performance to provide returns to investors and shareholders, but also maintain the environmental conditions surrounding the company (Fadhilah et al., 2021; Liao & Zhang, 2020). If the company is unable to properly manage and maintain its surrounding environmental conditions, it may jeopardize its business operations, facing financial risks such as fines and litigation costs. This can be particularly significant if the company's environmental performance is subpar (Bouzzine & Lueg, 2020; Carnahan et al., 2010; Kemp et al., 2021). Numerous instances of environmental pollution have arisen in various industries throughout Indonesia, to the detriment of stakeholders. One such case concerns PT Chevron Pacific Indonesia's operation in the Rokan Block of Kampar district, which has been found, through an investigation on January 18, 2018, to have contaminated soil with petroleum (www.finance.detik.com). The issue of illegal dumping of fly ash and bottom ash from PT Indominco Mandiri's PLTU mine site in Kutai Kartanegara (www.kaltim.antaranews.com) and the waste pond embankment collapse of PT Kayan Putra Utama Coal (KPUC) in Malinau, North Kalimantan, resulting in the pollution of the Malinau and Sesayap Rivers (www.responsibank.id), are just a few examples of the environmental degradation caused by coal companies.

The Government of Indonesia, through the Ministry of Environment, has implemented PROPER (Company Performance Rating Program in Environmental Management) to objectively measure companies' environmental performance and improve companies' compliance with applicable laws and regulations. PROPER also promotes transparency and democratization in environmental management in Indonesia. The Ministry of Environment seeks to implement the principles of good governance in environmental management through the use of this instrument (*SEJARAH PROPER*, n.d.). However, the PROPER program is voluntary and not mandatory for all companies, so some companies listed on the Indonesia Stock Exchange do not participate in the program.

Companies that report on their environmental performance tend to exhibit strong profitability. This allows for greater flexibility and freedom in disclosing social and environmental information to investors, enabling them to pay closer attention to building a positive corporate image (Bresciani et al., 2023; Ghosh et al., 2022). Kipesha (2013) found that older and larger profitable companies often have a more skilled workforce and better technical knowledge than newer counterparts, which enables them to engage in various discretionary activities, including disclosing environmental information and implementing environmental protection initiatives. Similarly, research by Younis and Sundarakani (2020) indicates that larger firms have better access to capital and labor, allowing them to invest in environmentally friendly machinery and equipment. Additionally, companies with higher debt ratios

exhibit greater efforts and motivation to promote corporate environmental sustainability. However, Ezhilarasi and Kabra's (2017) research demonstrates divergent results, indicating that larger companies allocate less budget towards environmental protection and other disclosure practices. Moreover, firms with higher debt-equity ratios disclose fewer environmental concerns in their corporate reports. Older companies have a reduced ability to adapt to environmental changes, resulting in greater cost expenses compared to younger companies (Carnahan et al., 2010).

In recent years, women have played a greater role in preventing and managing environmental damage due to their better understanding of the importance of compassion, communication and a positive attitude. In addition, women typically offer viewpoints and perspectives that often go unnoticed and underrepresented, but they do so without shame (Galletta et al., 2022; Pucheta-Martínez et al., 2021; Zalis, 2020). The different values and attitudes of women and men in the context of board decision-making on environmental issues should also be considered. Women are more likely to prioritize environmental issues while also considering the interests of investors and shareholders due to their leadership style, as shown by several studies (Agarwal et al., 2023; Alonso-Almeida et al., 2017; Boukattaya & Omri, 2021; Burkhardt et al., 2020; Campopiano et al., 2019; Jain & Zaman, 2020; Khatri, 2022; Kyaw et al., 2022; Lu & Herremans, 2019; Naveed et al., 2021; Nielsen & Huse, 2010; Slomka-Golebiowska et al., 2023; Torchia et al., 2018).

MATERIAL AND METHOD

This study utilizes an explanatory quantitative approach. The data can be obtained from the official websites of each company through their financial statements and annual reports in order to access their Financial Statements Ratio data, as well as data on the percentage of female directors on the board of directors. Additionally, the Minister of Environment's Decree on PROPER Ranking Results can be accessed to obtain Environmental Performance data for the years 2018-2022. In this study, the population consists of all financial statements, annual reports, and environmental performance reports of companies registered as PROPER participants of the Ministry of Environment from 2018 to 2022. Specifically, the population encompasses the financial statements of 457 non-financial companies listed on the Indonesia Stock Exchange and participating in the Ministry of Environment's PROPER ranking during the aforementioned period. Over the course of five years, a total of 2,285 financial reports were generated. For the purpose of this study, the sample comprises the Financial Statements, Annual Reports, and Environmental Performance Reports of companies registered as PROPER Participants of the Ministry of Environment between 2018 and 2022 that meet the established criteria. The criteria used in this study is the purposive sampling method, which necessitates various criteria to determine the appropriateness of financial statements used as samples (Cooper & Schindler, 2014). From these criteria, the companies that were able to meet the criteria were 75 non-financial companies spread across various types of businesses as follows:

Table 1. Number of Samples Studied

No	Business Type	Amount	Percentage
1.	Basic Materials	21	28%
2.	Consumer Cyclicals	9	12%
3.	Consumer Non Cyclicals	25	33%
4.	Energy	5	7%
5.	Healthcare	4	5%
6.	Industrials	7	9%
7.	Infrastructures	2	3%
8.	Property & Real Estate	2	3%
Total		75	100%

The study's dependent variable is the Environmental Performance of firms that are public on the Indonesia Stock Exchange and have taken part in the Ministry of Environment's PROPER ranking from 2018 to 2022. Measurements are made employing an ordinal scale proxy that is based on the PROPER Ranking system. The scores are as follows: "5 for firms with a gold rating, 4 for firms with a green rating, 3 for firms with a blue rating, 2 for firms with a red rating, and 1 for firms with a black rating."

The independent variable in this study is financial performance as measured by three financial ratios: return on assets, leverage, and sales (Ghosh et al., 2022; Tjahjadi et al., 2021; Widarwati et al., 2022). The calculation formula is as follows:

Return on Asset = $\frac{Net\ Income\ After\ Tax}{Total\ Asset}$ x 100 % .....(1)

Debt to Equity Ratio = $\frac{Total\ Debt}{Total\ Equity}$ x 100 %.....(2)

Sales Growth = $\frac{Present-Past}{Past}$ x 100 %.....(3)

Another independent variable is Gender Diversity on the Board of Directors, proxied by the percentage of women on the Board of Directors (Birindelli et al., 2019; Boukattaya & Omri, 2021; Cordeiro et al., 2020; Moruff et al., 2021; Nadeem et al., 2020; Nuber & Velte, 2021; Orazalin & Mahmood, 2021) which is calculated by the formula:

Percentage of Women on the Board of = $\frac{Total\ Women\ Directors}{Total\ Directors}$ x 100 % .....(4)

Moderating variable, specifically company size, is quantified using the following formula:
Firm Size = Ln Total Aset Perusahaan.....(5)

Under the study objectives, the model specifications to be built and the parameters to be estimated in this study are:
CEP = α + β1.ROA + β2.DER + β3.SGR + β4.GDV + β5.SZE + e.....(6)
where:
CEP = Corporate Environmental Performance
α = Konstanta
ROA = Return on Asset
DER = Debt to Equity Ratio
SGR = Sales Growth
GDV = Gender Diversity
e = Error

Based on Equation (6), the correlation between research variables by adding moderation variables is:
CEP = α + β1.ROA + β2.DER + β3.SGR + β4.GDV + β5.SZE + β6.ROA*SZE + β7.DER*SZE + β8.SGR*SZE + β9.GDV*SZE + e .....(7)
where:
CEP = Corporate Environmental Performance
α = Konstanta
ROA = Return on Asset
DER = Debt to Equity Ratio
SGR = Sales Growth
GDV = Gender Diversity
SZE = Firm Size
e = Error

RESULT AND DISCUSSION

Descriptive Statistic

Research was conducted on the relationship between the financial performance and gender diversity of environmental performance in 75 companies that met the predetermined sample criteria from 2018 to 2022. The obtained data shows the descriptive analysis of the research as follows.

Table 2. Descriptive Analysis

	CEP	ROA	DER	SGR	GDV	SZE
Mean	3.157333	0.061007	1.006701	0.099889	0.103033	15.93217
Median	3.000000	0.048279	0.735621	0.069004	0.000000	15.94762
Maximum	5.000000	0.585200	17.03686	3.392391	0.800000	19.01087
Minimum	2.000000	-0.375159	0.088142	-0.562530	0.000000	13.10498
Std. Dev.	0.661624	0.098433	1.280288	0.303555	0.158280	1.477876
Skewness	0.538618	0.843713	7.230686	4.093896	1.585218	0.199214
Kurtosis	3.746541	7.742387	80.08420	40.71571	5.120902	2.084243

Jarque-Bera	26.84002	395.9007	96111.01	23273.67	227.3420	15.58368
Probability	0.000001	0.000000	0.000000	0.000000	0.000000	0.000413
Sum	1184.000	22.87772	377.5129	37.45842	38.63747	5974.566
Sum Sq Dev	163.7173	3.623743	613.0377	34.46241	9.369646	816.8600
Observations	375	375	375	375	375	375

Corporate Environmental Performance data shows an average value of 3.1573 with a standard deviation of 0.661624. The return on assets variable shows an average value of 0.061007 with a standard deviation of 0.098433, while the minimum value is -0.375159 and the maximum value is 0.5852. The debt-to-equity ratio variable has a mean of 1.006701 with a standard deviation of 1.280288. The minimum value is 0.088142 and the maximum value is 17.03686. The Sales Growth variable has a mean of 0.099889 and a standard deviation of 0.303555. The minimum value is -0.56253 and the maximum value is 3.392391. The Gender Diversity variable has a mean of 0.103033 and a standard deviation of 0.15828. The minimum value is 0 and the maximum value is 0.8. The firm size moderation variable has a mean of Ln 15.93217 with a standard deviation of Ln 1.477876. The minimum value is Ln 13.10498 and the maximum value is Ln 19.01087.

Furthermore, the significance of the effect of financial performance and gender diversity on corporate environmental performance is tested on the estimated results of the regression equation. In the specifications written in equations 6 and 7, historical data of non-financial companies in Indonesia from 2018 to 2022 are used. Since the data used in this study are panel data, the estimation of regression equations 6 and 7 is carried out using the panel data analysis method.

Before conducting the panel data regression test in this study, it is necessary to perform a model selection test to identify the optimal model from three options: the Common Effect Model, Fixed Effect Model, and Random Effect Model. The model selection test involves the Chow Test, Hausman Test, and Lagrange Multiplier Test (Fauzi et al., 2019; Sanusi, 2017). The test results for model selection indicate that the Fixed Effect Model is the optimal model for the data. These results are detailed below.

Table 3. Chow Test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	3.703684	(74,295)	0.0000
Cross-section Chi-square	246.387251	74	0.0000

The test results shown in Table 3 suggest that the common effects model is not suitable for the data of this study. Therefore, the Hausman test procedure is performed to select one of the best models from the fixed effects model and the random effects model, which can capture the heterogeneity among cross-sectional units, respectively. The hypothesis is as follows:

Table 4. Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	15.612872	5	0.0080

The cross section random value (0.008) is smaller than the predetermined threshold (0.05), indicating that the fixed effect model approach is appropriate for this test.

Based on Tables 3 and 4, the results of the Chow test and Hausman test both show that the best model is the fixed effect model, so the Langrange multiplier test does not need to be done, so it can be concluded that the best model in this study that can be further tested is the fixed effect model.

Panel Linear Regression Test

The best regression model estimation results without and with moderation variable are shown in Tables 5 and 6.

Table 5. Regression Result without moderation variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.871928	2.657585	-0.328090	0.7431
ROA	0.962982	0.474875	2.027863	0.0435
DER	-0.061944	0.031417	-1.971660	0.0496
SGR	0.201674	0.095046	2.121851	0.0347
GDV	1.018186	0.367794	2.768358	0.0060
SZE	0.245278	0.167351	1.465653	0.1438

Table 5 shows that the probability value for financial performance represented by return on assets is greater than the t-table value and has a small probability/beta (β) value of 0.0435 which is smaller than 0.05. Therefore, it can be concluded that the financial performance variable as measured by return on assets has a positive and significant influence on environmental performance, which leads to the acceptance of the first hypothesis. The higher the return on assets of a non-financial company in Indonesia, the higher its environmental rating in the PROPER program organized by the Ministry of Environment and Forestry. Companies with a high return on assets generally get a good environmental performance rating because they can generate large profits from available resources, which in turn, has a positive impact on the return on assets ratio. As a consequence, companies with higher return on asset ratios generally provide more comprehensive disclosures on environmental issues. This pattern is evidenced in the Ministry of Environment and Forestry's PROPER program, where environmental performance ratings continue to improve as the return on assets of non-financial companies in Indonesia increases. The results are aligned with legitimacy theory, which posits that firms adopt environmental measures to satisfy both regulatory requirements and stakeholder demands, such as from the community, and to legitimize their existence in society. Moreover, the study reveals a significant and noteworthy association between environmental performance and return on assets. The results of this study align with earlier research conducted by Fadhilah (2021), Ghosh (2022), Nuskiya (2021), Tanjung (2020), Kansal (2014), and Lu (2019), indicating that profitable firms, as evaluated by return on assets, typically offer noteworthy environmental disclosures. This may be due to the fact that profitable firms have more extensive resources to allocate towards environmental disclosure initiatives. Possessing substantial resources can bolster environmental performance, alleviate social pressures from neighboring communities, and convey a favorable impression to stakeholders while allowing for increased flexibility and autonomy (Giannarakis, 2014; Giannopoulos et al., 2022).

The second hypothesis is not supported because the t-value for the financial performance variable represented by the debt-to-equity ratio of -1.971660 is smaller than the t-table value of 1.96591 and the probability value of 0.0496 is smaller than 0.05. The debt-to-equity ratio variable which is a representation of financial performance has a significant and negative effect on environmental performance. These results confirm that the second hypothesis is rejected. The environmental ratings of non-financial companies participating in the PROPER program, organized by Indonesia's Ministry of Environment and Forestry, tend to improve with decreasing debt-to-equity ratios. Companies with high levels of debt are required to pay higher interest expenses. As a result, the focus of corporate spending is often directed towards meeting these interest payments, which hampers efforts to improve environmental performance. This study aligns with prior research conducted by Omran (2021), Adeneye (2022), Kammoun (2022), and Ghost (2022), which demonstrates a significant and dependable correlation between corporate financial performance and the debt-to-capital ratio. Companies with high leverage tend to rely heavily on external loans to finance their assets. Companies with high environmental ratings tend to have lower debt and avoid earnings manipulation practices. Conversely, companies with low environmental ratings usually have high debt levels as sustainable practices may not effectively mitigate the agency costs associated with borrowing.

The financial performance variable proxied by sales growth shows a calculated t value of 2.121851, exceeding the t table value of 1.96591 with a probability value of 0.0347 which is smaller than 0.05. Therefore, it can be concluded that the financial performance variable proxied by sales growth has a positive and significant influence on environmental performance. Thus, the third hypothesis is confirmed based on these findings. These findings suggest that companies with higher sales levels attain stronger financial performance and cultivate a favorable reputation by exhibiting positive environmental performance in a timely manner. This research aligns with the work of Clarkson (2011) and Hart (2000), which highlights the affirmative influence of sales growth on a corporate's environmental performance.

The gender diversity variable shows a calculated t value of 2.768358, exceeding the t table value of 1.96591 with a probability of 0.0060 which is smaller than 0.05. Therefore, it can be concluded

that the results of this study show a substantial and affirmative impact of the gender diversity variable on environmental performance. Therefore, the fourth hypothesis is accepted. The more female board members a company has, the higher the percentage of gender diversity. This in turn has a positive impact on the company's environmental rating in the PROPER program managed by the Ministry of Environment and Forestry. Companies with female members on the board tend to improve their environmental performance due to the higher ethical standards and sense of responsibility exhibited by women. This finding aligns with both the social theory of gender and upper echelon theory, both of which suggest that leadership characteristics, such as gender, may impact company strategy and performance (Khatri, 2022). Additionally, research conducted by Sara De Masi (2022), Xiaoping He (2019), Przychodzen (2018), Naveed (2021), and Boukattaya (2021) indicates that female directors exhibit a greater sensitivity to environmental concerns. Women prioritize environmentally friendly activities that protect the interests of external stakeholders, specifically the community, in their decision-making process (Burkhardt et al., 2020; Kyaw et al., 2022; Lu & Herremans, 2019; Torchia et al., 2018). Higher representation of women on boards can potentially facilitate the adoption of emission reduction strategies, and in turn, enhance stakeholder awareness of environmental performance (Alsaifi et al., 2020; Galletta et al., 2022).

Table 6. Regression Result with moderation variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.967399	2.838765	-0.693048	0.4888
ROA	12.15301	6.551149	1.855095	0.0646
DER	1.702012	0.464769	3.662057	0.0003
SGR	-1.267626	1.176626	-1.077340	0.2822
GDV	-1.235012	4.369491	-0.282644	0.7777
SZE	0.334150	0.179305	1.863584	0.0634
ROA*SZE	-0.752641	0.417476	-1.802837	0.0724
DER*SZE	-0.128242	0.033674	-3.808356	0.0002
SGR*SZE	0.097712	0.073748	1.324944	0.1862
GDV*SZE	0.143002	0.268090	0.533408	0.5942

For the independent and moderating variable interaction presented in table 6, the regression coefficient indicates that a one unit increase in the interaction between return on assets and firm size leads to a decrease of 0.226013 in the environmental performance variable, holding all other variables constant. The coefficient value resulting from regression analysis indicates that an increase of one unit in the interaction between debt-to-equity ratio and firm size causes a decrease of 0.128242 units in the environmental performance variable, while all other variables are kept constant. The regression coefficient value for the interaction between sales growth and firm size indicates that a one-unit increase in the interaction leads to a 0.097712 increase in the environmental performance variable. This assumes that all other variables remain constant. The regression coefficient indicates that an increase of one unit in the interaction between gender diversity and firm size leads to a 0.143002 increase in the environmental performance variable, holding all other variables constant.

In moderation regression analysis, the objective is to determine whether the moderating variable strengthens or weakens the relationship between the independent and dependent variables. There are four classifications of moderating variables that can operate on the interaction between the independent variable and the moderating variable. These moderating variables are pure moderation, quasi moderation, potential moderation, and predictor moderation.

In the results presented in Table 6 above, firm size cannot moderate the relationship between financial performance and gender diversity on firm environmental performance, except for the leverage ratio. According to this model, firm size can only moderate the relationship between financial performance represented by firm size on firm environmental performance. This finding aligns with the research conducted by Tjoa (2022) and Abdi (2022) , which posits that companies strive to align all activities with external norms and regulations. As a characteristic feature, firms utilize environmental performance and disclosures to legitimize operations while avoiding environmental damage. As a firm's size increases, the relationship between leverage and the firm's environmental performance becomes stronger.

CONCLUSIONS AND SUGGESTIONS

The results of this study provide an important illustration that companies can improve their environmental performance by generating high profits, reducing the intake of low-interest capital, maintaining stable sales growth and giving more share to female directors in the composition of directors. Furthermore, this study shows that company size can only moderate the relationship between leverage and corporate environmental performance so that the larger the size of a company, the stronger the level of leverage on its environmental performance.

This study has several limitations, namely only examining 4 proxies of the two independent variables so that there is still room for other proxies, this study specifically examines companies that participate in the proper program initiated by the ministry of environment and forestry in Indonesia which is still very minimally adopted by public companies in Indonesia, this study includes a diverse sample type in non-financial companies in Indonesia which shows various criteria and elements in their financial statements that fluctuate based on the type of business activities of the company. This study collects samples between 2018 and 2022, a period of time characterized by a significant global event, namely the outbreak of the covid-19 virus, which has an impact on corporate financial statements.

Further research can include other proxies such as return on equity, return on investment and debt to total asset ratio. Future researchers can also expand the sample size by modifying environmental performance measurements. Future researchers can also refine the sample by only examining companies with the same type of business such as mining, manufacturing and others so that the results obtained are more accurate. And further research can also consider exploring the impact of the extraordinary events of the covid-19 crisis on company performance from the beginning of the pandemic to the recovery period. With this approach, it will provide more accurate results because the year is affected by extraordinary circumstances that cause a decrease in overall company performance.

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