DEMOGRAPHIC INFLUENCE ON FINANCIAL DECISIONS IN INDONESIA'S CHEMICAL INDUSTRY

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Abstract

Decisions related to financing and investment are crucial for the sustainability and progress of businesses in the chemical goods industry. Various internal and external factors influence these decisions, one of which is the demographic category of corporate decision makers, such as gender, age, and education. The purpose of this study is to determine how the gender, age, and education level of CEOs impact financing and investment decisions in Indonesia's chemical goods industry. Quantitative methods and secondary data were used in this study, with the research sample selected using purposive sampling. The subjects of the study were 21 chemical industry companies listed on the Indonesia Stock Exchange. This study utilized a multiple linear regression model. The results of the study indicate that the age variable influences funding decisions but does not influence investment decisions, while the gender and education variables do not influence either funding or investment decisions.

Keywords: *Gender, Age, Education, Financing Decisions, Investment Decisions.*

Abstrak

Keputusan yang berkaitan dengan pendanaan dan investasi sangat penting untuk keberlangsungan dan kemajuan bisnis di industri barang kimia. Berbagai faktor internal dan eksternal perusahaan mempengaruhi keputusan ini,, salah satunya adalah kategori demografi pengambil keputusan perusahaan, seperti gender, usia, dan pendidikan. Tujuan dari penelitian ini adalah untuk mengetahui bagaimana gender, usia, dan tingkat pendidikan CEO berdampak pada keputusan pendanaan dan investasi dalam industri barang kimia Indonesia. Metode kuantitatif dan data sekunder digunakan dalam penelitian ini, sampel penelitian menggunakan metode purposive sampling, subjek penelitian adalah 21 perusahaan industri bahan kimia yang terdaftar di Bursa Efek Indonesia. Studi ini memanfaatkan model regresi linear berganda. Hasil penelitian menunjukkan bahwa variabel usia berpengaruh terhadap keputusan pendanaan tetapi tidak berpengaruh pada keputusan investasi, sedangkan untuk variabel gender dan pendidikan tidak berpengaruh pada keputusan pendanaan dan keputusan imvestasi.

Kata Kunci: *Gender, Usia, Pendidikan, Keputusan Pendanaan, Keputusan Investasi.*

Introduction

In modern corporate finance studies, attention to the role of demographic characteristics of company leaders—especially Chief Executive Officers (CEOs)—has increased, given that strategic corporate decisions are often influenced by individual

factors. Gender, age, and educational level of CEOs are important determinants that can potentially influence risk preferences, choice of funding sources, and the direction and amount of corporate investment. The Upper Echelons Theory developed by Hambrick and Mason (1984) asserts that the personal background and managerial experience of top executives can shape their perspective on the business environment and ultimately influence corporate strategic decisions, including funding and investment decisions. Several empirical studies support this view, including those conducted by Huang & Kisgen (2013), who found that CEO gender influences corporate financial behavior, and Custódio & Metzger (2014), who demonstrated that CEO education correlates with capital structure and corporate investment decisions. Therefore, analyzing the influence of CEO gender, age, and education is crucial for comprehensively understanding the dynamics of decision-making within companies.

In the ever-evolving business world, funding and investment decisions are important factors for a company's survival and growth. These decisions are not only influenced by external factors such as economic and market conditions, but also by internal factors such as the demographic characteristics of decision-makers. This research will explore how demographic categories—gender, age, and education—influence funding and investment decisions in the chemical goods industry.

The chemical goods industry is one of the sectors that is very vital for the global economy. Chemical products are used in a wide range of applications, from other industrial raw materials to everyday consumer products. As such, funding and investment decisions in this industry have far-reaching implications not only for companies but also for the economy as a whole.

Funding decisions and investment decisions are two crucial aspects in the sustainability and growth of companies in the chemical goods industry. These decisions are often influenced by various internal and external factors of the company. One of the factors that is often overlooked but has a significant influence is the demographic categories of decision-makers in the company, such as age, gender, education level, and work experience.

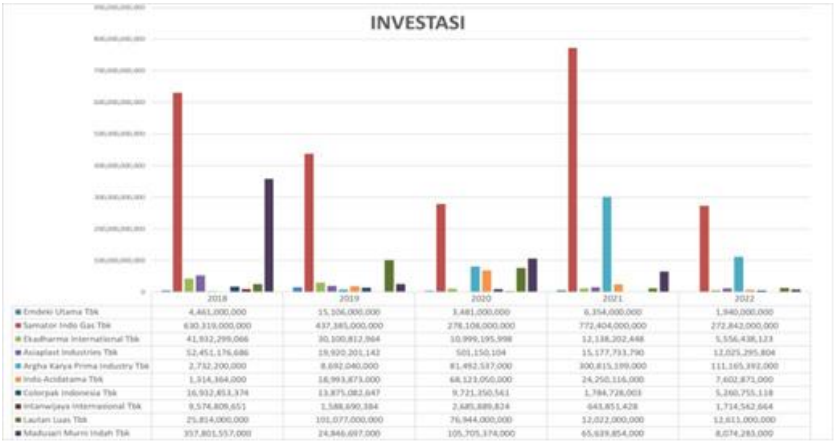
Graph 1 Chemical Goods Industry Funding Decisions in 2018-2022

	2018	2019	2020	2021	2022
Emdeki Utama Tbk	22,330,000,000	30,362,000,000	26,851,000,000	20,452,000,000	630,319,000,000
Samator Indo Gas Tbk	258,233,000,000	20,630,000,000	39,503,000,000	570,388,000,000	421,889,000,000
Ekadharma International Tbk	18,995,203,181	32,801,582,199	34,974,810,716	21,362,000,196	60,706,404,400
Asiaplast Industries Tbk	106,227,240,339	49,052,939,530	7,553,248,115	18,763,291,196	12,224,126,187
Argha Karya Prima Industry Tbk	18,556,921,000	223,017,319,000	158,267,432,000	264,871,928,000	220,156,970,000
Indo Acidatama Tbk	29,240,852,000	27,382,348,000	74,876,347,000	68,384,470,000	27,425,909,000
Colorpak Indonesia Tbk	10,526,050,587	1,003,411,210	40,205,429,898	33,110,389,189	25,319,124,907
Intanwijaya Internasional Tbk	1,517,016,044	660,910,587	4,442,028,171	7,738,037,260	2,752,439,814
Lautan Luas Tbk	52,303,000,000	468,330,000,000	463,916,000,000	327,927,000,000	568,018,000,000
Madusari Murni Indah Tbk	289,012,396,000	42,237,365,000	157,489,183,000	2,449,606,000	109,227,796,000

Source : Data processed in 2023

Based on graph 1, companies that have funding decisions in the chemical goods industry experience increases and decreases every year. In this study, the funding decision refers to (Hayong & Pandin, 2023) and (Maharani, 2020) that uses a DER proxy.

Figure 2 Investment Decisions of the Chemical Goods Industry in 2018-2022



	2018	2019	2020	2021	2022
Emdeki Utama Tbk	4,461,000,000	15,106,000,000	3,481,000,000	6,354,000,000	1,940,000,000
Samator Indo Gas Tbk	630,319,000,000	437,385,000,000	278,108,000,000	772,404,000,000	272,842,000,000
Ekadharma International Tbk	41,932,299,066	30,100,812,964	10,999,195,998	12,138,302,448	5,556,438,123
Asiaplast Industries Tbk	52,451,176,686	19,920,201,142	501,150,104	15,177,793,790	12,025,295,804
Argha Karya Prima Industry Tbk	2,732,200,000	8,692,040,000	81,492,537,000	300,815,199,000	111,165,392,000
Indo Acidatama Tbk	1,314,364,000	18,993,873,000	68,123,050,000	24,250,116,000	7,602,871,000
Colorpak Indonesia Tbk	16,932,853,374	13,875,082,647	9,721,350,561	1,784,728,003	5,260,755,118
Intanwijaya Internasional Tbk	9,574,809,651	1,588,690,384	2,685,889,824	643,851,428	1,714,562,664
Lautan Luas Tbk	25,814,000,000	101,077,000,000	76,944,000,000	12,022,000,000	12,611,000,000
Madusari Murni Indah Tbk	357,801,557,000	24,846,697,000	105,705,174,000	65,639,854,000	8,074,283,000

Source: data processed 2023

Based on graph 2, it can be concluded that there are increases and decreases in companies in the chemical goods industry, Jensen in (Ichwan & Rahayu, 2016) stated that the higher the company's investment, the higher the profit (*return*) that will be obtained by the company. The investment decision used in this thesis refers to (Hayong & Pandin,

2023) that uses ROA proxies. The average ROA value in chemical goods companies listed on the Indonesia Stock Exchange in 2018-2022 has decreased and increased where the ROA in 2018 was at 4.09, in 2019 it decreased by 3.85 while in 2020 it increased by 4.17, in 2021 it increased by 4.51, and in 2022 it increased to 4.72. This shows that the greater the ROA value, the better the company's financial performance because the rate of return on investment is greater. The higher this ratio, the better the company's state. (Winarno, 2019).

Understanding the influence of demographic categories on funding and investment decisions is essential for company management in the chemical goods industry to develop a more effective financial strategy that is in line with the demographic characteristics of the management team, improve the company's ability to access various appropriate funding sources and optimize its investment portfolio and identify potential biases or tendencies in decision-making that can have an impact negatively on the company's financial performance.

By paying attention to the influence of demographic categories, companies in the chemical goods industry in Indonesia can design more strategic and adaptive funding and investment policies. This will not only improve the company's financial performance but also the sector's contribution to the national economy as a whole.

Studies show that demographic characteristics such as gender, age, and education can influence the way decision-makers assess risks and opportunities, as well as their preferences in terms of funding sources and investment types chosen. Research indicates that gender can influence risk preferences and management styles. For example, women tend to be more cautious in their risk-taking than men, which can influence funding and investment decisions (Barber & Odean, 2001). Age also affects experiences and views on risk. Younger managers may be more willing to take risks than older managers (Graham et al., 2013). The level of education and field of study can affect the analytical ability and knowledge of funding and investment strategies. Managers with higher education in finance or economics tend to better understand the complexities of funding and investment decisions (Becker, 1975).

This research will focus on the chemical goods industry in Indonesia, which is one of the rapidly growing industrial sectors. By studying companies within the sector, it is hoped that it can provide more specific insights into how demographic categories affect funding and investment decisions in the industry.

Research Objectives

The purpose of this study is to determine the influence of gender, age and CEO education on funding decisions and investment decisions in the chemical goods industry which are described as follows:

1. To find out the influence of CEO gender on funding decisions.
2. To find out the influence of CEO gender on investment decisions.
3. To find out the influence of CEO age on funding decisions.
4. To find out the influence of CEO age on investment decisions.
5. To find out the influence of CEO education on funding decisions.
6. To find out the influence of CEO education on investment decisions.

Research Methods

This study uses a survey design with a quantitative approach consisting of Gender, Age and Education of CEO, DER and ROA obtained through the official website of the Indonesia Stock Exchange in www.idx.co.id and the official website of companies listed in the chemical goods industry.

The independent variables in this study are Gender (X1), Age (X2), and Education (X3) :

1. Gender (X1), proxy for CEOs is measured using a dummy variable. Companies with male CEOs are assigned a value of 0. If the CEO of a company is female, the value is .
2. Age (X2), The CEO's age is measured using a dummy variable. CEOs under the age of 45 are assigned a value of 0, while CEOs over the age of 45 are assigned a value of 1.

3. Education (X3), The CEO's education level is measured using a dummy variable. CEOs with a bachelor's degree are assigned a value of 0, while CEOs with an education level above a bachelor's degree are assigned a value of 1.

The dependent variables in this study are financial decisions as seen from financing decisions (Y1) and investment decisions (Y2) :

a. Financing decisions (Y1) are financial decisions about where the funds to purchase assets come from. Financing decisions in this study use DER
b. Investment Decisions (Y2) are decisions made by management that will affect cash, sales, net income, debt levels, and company size. Investment decisions in this study use ROA

Population and Sample

The population in this study is all chemical goods industry companies listed on the Indonesia Stock Exchange which totals 21 companies. Sampling in this study uses *Purposive Sampling*. According to (Sugiyono, 2019) *Purposive Sampling* is a technique for determining samples with certain considerations. The sample collection technique based on the determination of the sample was selected with the following criteria:

1) Companies listed on the Indonesia Stock Exchange
2) Companies incorporated in the Chemical Goods industry
3) Companies that issue financial statements in rupiah currency
4) Companies that have financial statements from 2018-2022

Data Collection

The data collection technique in this study was conducted using a documentation approach and library research. The data used was secondary data obtained from annual reports, financial reports, and company profiles of companies listed on the Indonesia Stock Exchange (IDX) or other official sources such as company websites. Information regarding CEO characteristics (gender, age, and educational background) was collected from the corporate governance section or sustainability reports containing the board of directors' profiles. Meanwhile, data on financing decisions were measured using

indicators such as the debt-to-equity ratio (DER), and investment decisions were measured using the investment-to-total-assets ratio or capital expenditure.

Data Analysis

The data were analyzed using Descriptive Statistics, Classical Assumption Test, Normality Test, Multicollinearity Test, Heteroscedasticity Test, Autocorrelation Test, Multiple Linear Regression Analysis, Hypothesis Test to test the influence of demographic variables on funding and investment decisions.

The selection of data analysis methods aims to ensure the validity and reliability of research results that test the relationship or influence between independent and dependent variables simultaneously. Descriptive Statistics are used to provide an overview of data characteristics, such as mean, standard deviation, minimum, and maximum, so that researchers understand the initial patterns in the data. Classical Assumption Tests, including Normality Test, Multicollinearity Test, Heteroscedasticity Test, and Autocorrelation Test, are conducted to ensure that the data meets the requirements for classical linear regression analysis, so that the estimation results are unbiased, efficient, and consistent (Gujarati & Porter, 2009).

Once the classical assumptions are met, Multiple Linear Regression Analysis is used to measure the extent to which independent variables (such as gender, age, and CEO education) influence dependent variables (such as funding decisions and investment decisions). Linear regression is chosen because it can capture linear relationships between more than two variables and control the effect of one variable on another (Wooldridge, 2016). Finally, Hypothesis Testing is conducted through t-tests and F-tests to assess the significance of the influence of each independent variable and the overall influence of the model. With this approach, the research results can be statistically and scientifically validated.

Results and Discussion

Research Results

Descriptive Analysis

Descriptive statistics are *statistics* that are used to analyze data by describing or describing the data that has been collected as it is without intending to make generalized conclusions or generalizations. Sutisna, 2021). The following are the results of the descriptive statistical calculation in this study:

Table 1: Descriptive Statistical Analysis

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Gender	50	.00	1.00	.0600	.23990
Usia	50	.00	1.00	.8000	.40406
Pendidikan	50	.00	1.00	.3200	.47121
DER	50	.08	1.97	.6750	.50073
ROA	50	.51	9.94	4.2796	2.21810
Valid N (listwise)	50				

Source: SPSS 25 processing results

Based on table 1, it can be concluded that the number of data in this study is 50 data. From 50 data, Gender has a minimum value of 0, namely male CEOs and a maximum of 1, namely female CEOs, while the average is 0.600 and the gender deviation standard is 0.23990.

Multiple Regression Analysis

This analysis is used to determine the influence of independent variables, namely gender, age and education on dependent variables Based on data management using SPSS 25, the results shown in the following table are obtained:

Table 2 : Multiple Linear Regression Analysis Test Results Model 1

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	T	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	1.453	.304		4.783	.000		
	Gender	-.170	.365	-.081	-.466	.643	.532	1.880
	Usia	-.807	.294	-.651	-2.744	.009	.288	3.467
	Pendidikan	-.383	.269	-.361	-1.424	.161	.253	3.947

a. Dependent Variable: DER

Source : SPSS Version 25 Processing Results

Based on Table 2, the results of multiple regression show that the variables Gender (X1), Age (X2) and Education (X3) towards Funding Decision (DER) (Y1) can be seen as follows:

Y1= a + b1X1 + b2X2 + b3X3 + e

DER= 1.453-0.170 X1-0.807X2 - 0.383X3+e

Table 3 : Results of Multiple Linear Regression Analysis Test Model 2

Coefficientsa

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	T	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	1.453	.304		4.783	.000		
	Gender	-.170	.365	-.081	-.466	.643	.532	1.880
	Usia	-.807	.294	-.651	-2.744	.009	.288	3.467
	Pendidikan	-.383	.269	-.361	-1.424	.161	.253	3.947

Source : SPSS Version 25 Processing Results

Based on Table 3, the results of multiple regression show that the variables Gender (X1), Age (X2) and Education (X3) to Investment Decision (ROA) (Y2) can be seen as follows:

Y2= a + b1X1 + b2X2 + b3X3 + e

ROA=3,817-0,187X1+0,803X2 – 0,527X3 +e

Discussion

1. The Influence of Gender on Funding Decisions

Based on the results of the t-test, it was shown that the coefficient value was -0.170 with a sig value of 0.643>0.05 which means that the gender variable did not have a significant influence on funding decisions. In the chemical goods industry, there are more male CEOs than female CEOs. From the results of the table above, it can be seen that companies led by female CEOs have a DER result below 1, and for other companies led by male CEOs in the chemical goods industry in 2018-2022, most also have a DER value below 1 each year, this means that there is no relationship with gender in funding decision-making. So it can be concluded that the gender variable has no effect on funding decisions.

The results of this study are in line with the results of the research from (Maharani, 2020) which obtained results where CEO gender had no effect on funding decisions. As well as research (Hayong & Pandin, 2023) those who obtained gender results had no effect on funding decisions. They revealed that CEOs' decisions in choosing funding sources are not related to CEO gender, meaning there is no significant difference between male CEOs and female CEOs in determining decisions related to funding sources. Gender differences between CEOs are not something to be considered, decision-making does not have to look at which gender will handle it.

2. The Effect of Age on Funding Decisions

In the above study, the results of the t-test showed that the coefficient value was -0.807 with a sig value of 0.009<0.05 which means that the age variable had a negative and significant influence on funding decisions. In the chemical goods industry, the average CEO age is >45. This means that older leaders are more cautious in their decision-making. In contrast to a young leader, he is more daring to take risks in the use of debt in

his company. More senior CEOs have experience in identifying opportunities and they are more likely to have little use of debt within their companies.

This is in accordance with research (Maharani, 2020) which states that age affects funding decisions. (Saputri, 2021) Older CEOs prioritize the principle of prudence in decision-making.

3. The Influence of Education on Funding Decisions

Based on the results of the above study with the results of the t-test, it shows that the coefficient value is -0.383 with a sig value of 0.161>0.05 which means that the educational variable has no significant influence on funding decisions. In the chemical goods industry, the average CEO education is with an undergraduate education of S1. From the results of the table above, it can be seen that CEOs with undergraduate education in S1 and above S1 have no difference in making funding decisions as seen from the DER value This proves that the difference in a leader's education will not affect him in making funding decisions. CEOs who have higher education do not necessarily have a strategy to reduce their company's risk and lead to better growth if they do not have experience in managing the company.

These results are in line with research (Santoso & Venusita, 2022) and (Hayong & Pandin, 2023) which states that CEO education has no effect on funding decisions.

4. The Influence of Gender on Investment Decisions

Based on the results of the t-test, the coefficient value of -0.187 with a sig value of 0.918>0.05 shows that gender has no influence on the company's investment decisions. From the table above, it can be seen that companies led by female CEOs have results that are always below the industry average, and for the other 9 companies led by male CEOs in the chemical goods industry in 2018-2022 have increased and decreased in ROA every year, but most of them are below the industry average each year which means it can be concluded that gender variables mean that they have no effect on investment decisions. This means that there is no difference between CEOs of companies led by women or men in investment decision-making. If the CEO of a company does something that is in

accordance with what his company is facing, it will also have a good impact on the performance of his company.

These results are in accordance with research conducted by (Hayong & Pandin, 2023)and (Hohl et al., 2021) which states that gender has no effect on investment decisions. Previous research has said that gender diversity in the board of commissioners and board of directors has no significant effect on both the company's financial performance and the company's investment efficiency.

5. The Influence of Age on Investment Decisions

In the above study, based on the results of the t-test, it shows a coefficient value of 0.803 with a sig value of 0.585>0.05 which means that age does not have a significant influence on investment decisions. From the results of the table above, it can be seen that companies led by CEOs who are young <45 years old and CEOs who are >45 years old in the period 2018-2022 have increased and decreased their ROA every year, but most of them are below the industry average each year, which means that it can be concluded that the age variable has no effect on investment decisions.

Where an older or younger leader will have a different investment situation, investment decisions are not bound by age because every year the investment situation will tend to change. These results are in line with (Santoso & Venusita, 2022), (Setiawan & Gestanti, 2022) which states that the age of the CEO has no effect on investment decisions. They mentioned that the CEO's age has no influence on the company's investment decisions.

6. The Influence of Education on Investment Decisions

Based on the results of the t-test, it can be seen that the coefficient value is -0.527 with a sig value of 0.696>0.05 which is that education does not have a significant influence on investment decisions. In the chemical goods industry, the average CEO education is with an undergraduate education of S1. From the results of the table above, it can be seen that companies led by CEOs with undergraduate education and undergraduate education above S1 in the 2018-2022 period have increased and decreased in ROA every year, but most of them are below the industry average each year, which

means that it can be concluded that the educational variable has no effect on investment decisions. In this industry, there is no difference in investment decisions between CEOs with undergraduate education in S1 and above S1. This research is in line with the research conducted (Santoso & Venusita, 2022)and (Candraningrat. et al., 2023) states that CEO education does not influence investment decisions. A highly educated CEO is a manager who has education, knowledge and experience so that they are able to identify, analyze and take the right business policies to seize the optimal opportunities in order to achieve future performance success.

This means that there are still other factors that need to be considered in seizing opportunities to increase the company's success in the future. It does not mean that the lower the education does not increase the realization of the company's financial achievements, but rather the responsibility that will be carried out after making a decision will later determine it.

Conclusion

Based on the results of the analysis and discussion in the previous chapter, the conclusions are based on the results of the t-Gender test, the CEO has no influence on funding decisions for chemical goods industry companies listed on the Indonesia Stock Exchange for the 2018-2022 period. Based on the results of the t-test, the age of the CEO affects funding decisions in chemical goods industry companies listed on the Indonesia Stock Exchange for the 2018-2022 period. Based on the results of the t test, CEO education has no effect on funding decisions in chemical goods industry companies listed on the Stock Exchange. Based on the results of the t-test, CEO Gender has no effect on investment decisions in chemical goods industry companies listed on the Indonesia Stock Exchange for the 2018-2022 period. Based on the results of the t-test, the CEO's age has no effect on investment decisions in chemical goods industry companies listed on the Indonesia Stock Exchange for the 2018-2022 period. Based on the results of the t-test, CEO Education has no effect on investment decisions in chemical goods industry companies listed on the Indonesia Stock Exchange for the 2018-2022 period.

Suggestion

The suggestions that we want to give based on this research are as follows:

1. For companies, it is better to optimize the use of DER and ROA so that funding decisions and investment decisions taken are more precise. Companies need to pay attention to young CEOs and higher education which will later influence funding decisions so that it will improve the company's financial performance, so that later it will be in accordance with the company's values, vision and mission.
2. For the next research:

a. Adding new variables in this study to the funding decision (DER) and Investment decision (ROA).

b. Using different research methods to better describe and obtain even better data.

c. Using different samples or multiplying samples from this study so that the results of the study are concluded in general and more optimal.

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