Analysis Of The Effect Of Company Age And Capital Structure On Profitability In Primary Consumer Sector Companies Listed On The Indonesia Stock Exchange

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Abstrak

The purpose of research is to analyze the effect of company age and capital structure on profitability in companies engaged in the primary consumer sector listed on the Indonesia Stock Exchange (IDX). The data used in this study are secondary data that can be accessed through S&P Capital IQ. Furthermore, data processing will be carried out with STATA version 15. Profitability is calculated using *Return on Equity* (ROE). The age of the company will be measured by how long the company has been listed on the IDX. Capital structure measurement will be done using *Debt Equity Ratio* (DER). 155 data sets will be used in this study, consisting of 31 companies over a 5-year period. The results of this study, namely
(1) company age has a positive and significant effect on profitability and (2) capital structure has a positive and significant effect on profitability.

Keywords: Company Age, Capital Structure, Profitability.

Abstract

Tujuan penelitian ini adalah untuk menganalisis pengaruh umur perusahaan dan struktur modal terhadap profitabilitas pada perusahaan yang bergerak di sektor konsumen primer yang terdaftar di Bursa Efek Indonesia (BEI). Data yang digunakan dalam penelitian ini adalah data sekunder yang dapat diakses melalui S&P Capital IQ. Selanjutnya, pengolahan data akan dilakukan dengan STATA versi 15. Profitabilitas dihitung menggunakan Return on Equity (ROE). Umur perusahaan akan diukur berdasarkan berapa lama perusahaan tersebut terdaftar di BEI. Pengukuran struktur modal akan dilakukan menggunakan Debt Equity Ratio (DER). Penelitian ini akan menggunakan 155 set data yang terdiri dari 31 perusahaan selama periode 5 tahun. Hasil penelitian ini menunjukkan bahwa (1) umur perusahaan memiliki pengaruh positif dan signifikan terhadap profitabilitas dan (2) struktur modal memiliki pengaruh positif dan signifikan terhadap profitabilitas.

Kata kunci: Umur Perusahaan, Struktur Modal, Profitabilitas.

1. INTRODUCTION

1.1 Background

This is the era of globalization of the industrial revolution 4.0. Definition of globalization based on (Roldán, Brauer, & Rohbeck, 2018) is focusing on the experience of economic, political, ecological, technological or cultural conflicts that are not limited to traditional and from the national stage to the international stage. Globalization encourages economic activities from being limited to domestic transactions to transactions with other countries (abroad). According to (Rymarczyk, 2020) industrial revolution 4.0 is a comprehensive transformation of the *value creation chain* that includes digital production technology through the implementation of *Artificial Intelligence (AI), augmented reality, Internet of Things (IoT), advanced robots, autonomous vehicles, cloud computing,* to *3D printing,*. The industrial revolution 4.0 uses advanced technology that is more precise and accurate when compared to human labor, therefore some industrial sectors prefer to replace labor. Work that is usually done by humans is always replaced by machines equipped with *Artificial Intelligence (AI).*

Stock market or commonly referred to as the capital market is a place where company shares are traded. (Parkin, 2016) . When a company needs funds to expand its business, it issues shares. Shares are certificates of claim and ownership of the profits generated by the company (Parkin, 2016). (Parkin, 2016). When an investor has bought shares of a company and the company makes a profit, a portion of the company's profit belongs to the investor as much as the percentage of ownership.

The primary *consumer* sector (*consumer staples*) has an important role in human life and tends to have *inelastic* demand which means that if there is a change in price, it does not greatly affect the demand for the goods or services and can be said to have a stable performance because it plays an important role in people's daily lives. (Fisher, Cannivet, & Teufel, 2009). . Shopping for monthly basic needs is something that is routinely done and seen as a basic basic need and cannot be separated from daily life, so investing in this sector will provide more

stable returns compared to other sectors because even though economic conditions are bad, people still need primary consumer sector products.

The primary consumer sector consists of several sections, namely food, beverages; personal & household goods; and staple & food retailers. The challenge in the primary consumer sector is when the company is at the *mature* stage (Fisher, Cannivet, & Teufel, 2009).. Based on the *Product Life Cycle* (PLC) theory, after the company reaches the *mature* stage, the business will slowly go to the *decline* stage. In the *decline* stage, sales decline which results in a decrease in profits (Kotler & Armstrong, 2014). (Kotler & Armstrong, 2014).

Age affects the company's skills in increasing production results because with a mature age the company gets the advantage of behavior and experience that is firmly embedded in the company in operational activities. (Nelson & Winter, 1982) . As the age of a company increases, the company's experience becomes more and more. The purpose of the establishment of the company is to make a profit, so the older the age of the company must have learned a lot from previous experiences and tried to make adjustments by carrying out various strategies and methods so that the company can still survive and make a profit in various economic conditions.

Profit is defined as the income earned by an entrepreneur (Parkin, 2016) . Based on Parkin's definition, investors deliberately invest their capital in order to enjoy the income from the capital they invest. Based on research conducted by (Fort, Haltiwanger, Jarmin, & Miranda, 2013) young/small companies are more vulnerable to *business cycle shocks* due to the uncertainty of the situation and various potential constraints. Potential constraints can include limited reputation in the market or when applying for credit loans which results in challenges in reaching customers and obtaining business loans.

A long-lived company is a *profitable* company and its business is able to *sustain* because it can cover *fixed costs* and other costs. A long-lived and large company is a company that in the past was *profitable*, productive, and eventually

managed to grow into a large company. The longevity of a company shows that the company has managed to survive (*sustain*) and has a good way of running their business. According to (Basdekir, Christopoulos, Katsampoxakis, & Lyras, 2020) factors that affect profitability are very important for long-term strategy. Long-term strategy determines the life of the company. The company's goal is to make a profit and remain viable over time. Long-term strategy has an impact on the survival of the company. Managers try to manage resources so that the company can survive and generate profits that can be used to expand the business and maximize investor wealth.

Companies that are *listed* on the stock exchange (*go public* companies) provide offers to the wider community to be able to buy shares or bonds (bonds) that are traded as a funding tool that can be used by companies for business expansion. The funding obtained by a *go public* company from the sale of shares or bonds is unlimited. Some of the advantages of *going public* include getting unlimited funding, easier than getting a loan from a bank, and easier to introduce new products to the market because after *going public* the company tries to maintain transparency so that the public believes and the business continues.

A *publicly listed* company can be established with a mixture of equity, debt, or share capital. *The* definition of capital structure is "*the mix of a company's debt and equity capital is termed its capital structure"* (Schroeder, Clark, & Cathey, 2013).. The *capital* structure is the mix of debt and equity capital owned by the company. A good mix of *capital* structure is a sign that the company is wise in managing its finances and reducing the risk of corporate bankruptcy.

Investor trust in companies that are able to use the capital structure properly will increase *firm value* which attracts investors willing to invest their capital to help the company grow and develop which will produce a *profitable* company. Investors definitely prefer *profitable* companies to invest in because the initial purpose of investors buying the company's shares is because they want to enjoy the benefits of their investment. A measure to find out how an

organization's funding is before investing, investors can use *DER* (*Debt to Equity Ratio).*

DER is a *leverage ratio* with the formula *total liability* divided by *total stockholders' equity*. *DER* compares the amount of debt with the amount of equity carried out in the company's operational activities. The amount of debt and equity of the company must be balanced to create a healthy company. Debt is divided into several parts, namely *short-term* debt, *long-term* debt, and other debt. *Short-term* debt is generally debt that can be paid in full in less than one year, for example, salary debt or material purchase debt to suppliers. *Long-term* debt is debt that can be repaid in more than one year, *long-term debt* is in the form of bank loans or bonds. A good *DER* varies depending on the industry sector. *DER* is a measure of the ability to pay *long-term debt* owned by the company, a reasonable *DER* that can still be tolerated is the range of 1 - 2 for large-scale companies, if *DER* is too high, then the entity's ability to pay long-term debt is doubtful and endangers the survival of the company.

Profitability can be measured through ROE (*Return on Equity)*. ROE as a manifestation of the profitability ratio that calculates the entity's ability to *generate* profits from the capital invested by investors expressed in units of percent. ROE can also be assessed as a benchmark that the company's management is successful in using financing from equity to carry out its operational activities. *Return on Equity* (ROE) varies from various industry sectors. A positive or high *Return on Equity* (ROE) means that the company is successful in generating income funded by capital. Conversely, if the company has a low or minus *Return on Equity* (ROE), it reflects that the company's management is not successful in using capital to generate income.

Based on the phenomena described above, the researcher intends to investigate the impact between company age and *capital* structure on profitability which will be written in a study entitled **"Analysis of the Effect of Company**

Age and Capital Structure on Profitability in Primary Consumer Sector Companies Listed on the Indonesia Stock Exchange".

1.2 Problem Formulation

Based on the background described, the problem formulation in this study is as follows:

1. Does company age have a negative and significant impact on profitability in Primary Consumer Sector Companies that are *listed* on the IDX ?
2. Does capital structure have a positive and significant impact on the profitability of Primary Consumer Sector Companies *listed* on the IDX?

2. THEORETICAL BASIS AND HYPOTHESIS DEVELOPMENT

2.1 Basic Theory

2.1.1 Pecking Order Theory

According to (Myers & Maljuf, 1984) funding using securities with low risk compared to securities with high risk is more desirable. When companies need external funding, debt funding is more desirable than equity funding (issuing shares). Internal funding is more desirable because it is considered to reduce the *conflict of interest of* new shareholders and old shareholders. The action of the company choosing to use internal funds first, then choosing to issue bonds and finally to issue shares is usually referred to as *managerial capitalism*. *Managerial capitalism* is carried out by managers in an effort to try to reduce the risk of *market discipline* for the benefit of shareholders. When existing investors know that the company will issue new shares, the share price will fall. This decline in stock prices is commonly referred to as "*information effects*".

The manager has more in-depth data about the company than the investors, this raises *asymmetric information*. The advantage obtained by managers is that they have *insider information* that can be used to process company funds that will generate profits and increase the prosperity of investors. If *asymmetric information* has more impact on *firm value* than the risk that the company will encounter, the manager will plan to obtain external funds in the form of debt rather than issuing shares. The method chosen by managers by choosing *debt* rather than issuing shares when they need external funds is to minimize risk and keep the stock price stable. From research conducted by (Dann & Mikkelson,

1984) (Dann & Mikkelson, 1984), issuing shares intended to obtain external funding will cause the stock price to fall, but if the company uses debt as an option to obtain external funding, the stock price is not affected. Therefore, managers who have more information try as much as possible to minimize the risks that the company will bear in funding activities.

2.1.2 Company Age

The older a company is, the more likely it is to learn from its past experiences (*learning by doing*) and have superior financial performance when compared to younger companies. Long-established organizations are able to increase their productivity with various techniques and improvements or adjustments learned from their mistakes as economic actors in the past. (Coad, Segarra, & Teruel, 2013).. Long-established firms can hire experts and learn from rival firms in the same industry or other industries. (Loderer & Waelchli, 2010).. The benefits of a mature company include gaining broader and larger business experience, connecting with customers, and accessing resources more easily (Coad, Segarra, & Waelchli, 2010). (Coad, Segarra, & Teruel, 2013)..

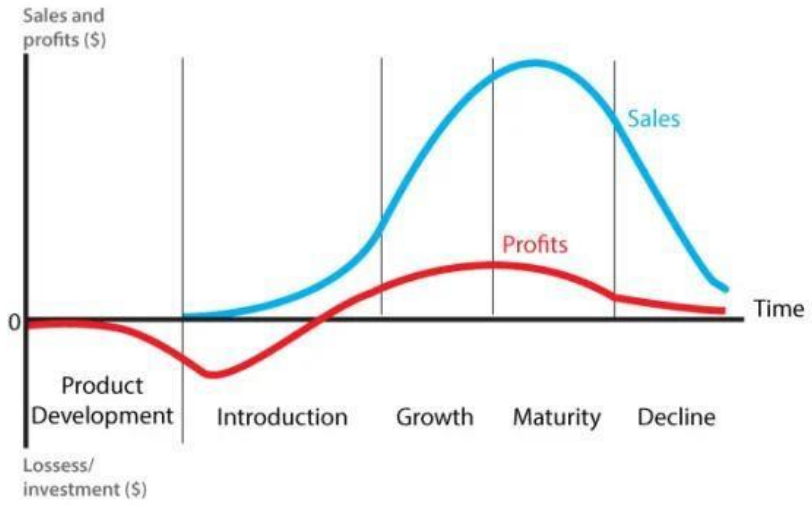
As the age of the company increases, there is a possibility of experiencing a decrease in productivity. The decline in productivity in older companies is often referred to as the *inertia effect (Coad, Segarra*, & Teruel, 2013). (Coad, Segarra, & Teruel, 2013). Especially old and large companies have difficulty responding to changes and miss opportunities. Large companies that once led the economy are gradually unable to compete anymore and lose their role in the market (Barron, West, & Hutchinson, 2013). (Barron, West, & Hannan, 1994). The opportunity to survive is implemented by adapting and responding to changes in a timely manner. When companies find it difficult to respond to changes or take longer to make decisions to change, they are no longer able to compete in the market.

To respond to such changes, large mature firms may establish a new firm and compete with younger firms. Establishing a new firm costs capital, human resources, and business skills (Hannan & Freeman, 1984). (Hannan & Freeman,

1984). The choice of continuing to compete with older firms or establishing a new firm has its own advantages and disadvantages. Newly established organizations have a less high level of productivity when compared to older organizations. It takes time and process for a new company to get used to the routine until it becomes a mature company. Mature companies have the advantage of simply doing the activities that are carried out routinely and just continuing the routines that are already available without having to create new routines, this argument underlies a common economic theory called the *learning* curve. (Nelson & Winter, 1982). Company age is described by the length of time a company has been *listed* on the stock exchange. (Akben-Selcuk, 2016).

Companies that can survive and become general companies start from small companies and can be explained based on the *Product Life Cycle* (PLC) theory. PLC theory explains the passage of sales and profits received over time, divided into five stages as shown in the following diagram illustration.

Figure 2.1 *Product Life Cycle (PLC)*



Source: Ross (2024)

In the early stages, namely *product development*, the company has not started the sales process because it has just found an idea to create a new product

and has increased investment costs. At the next stage, namely *introduction*, sales have started, but have not yet made a profit because the product has just been introduced to the market and at the launch of the product is sold at an affordable price to attract consumers. The third stage is *growth*, where there is an increase in profits due to the market starting to accept the product quickly. The fourth stage, namely *maturity*, what happens is that sales growth begins to slow down and profits decline because the company keeps its products popular in the market and can compete with competitors. The last stage is *decline*, which is characterized by declining sales which causes a decrease in profits. (Kotler & Armstrong, 2014).

2.1.3 Capital Structure

Capital structure is very influential for the profitability of the company. The funding chosen by the company manager will determine the survival of the company because capital can be formed from a combination of *debt* and equity. (Wibowo & Rahim, 2019) . Previous research emphasizes the importance of maintaining a balanced proportion of the capital structure so as not to pose a threat to the survival of the company. Errors in capital structure funding decisions will lead the entity to financial difficulties that will lead to bankruptcy (Eriotis, Vasilou, 2019). (Eriotis, Vasilou, & Ventoura-Neokosmidi, 2007). (Tifow & Sayilir, 2015) (Wibowo & Rahim, 2019).

2.1.4 Profitability

Profitability is a company's power to *generate* profits, which is one of the objectives of a company established. (Permatasari & Puspitasari, 2012) . The company can be said to be successful if in practicing its business it is able to generate profits from the resources it has (Ramadita & Suzan, 2019). (Ramadita & Suzan, 2019). The high profitability of a company illustrates that the company is effective and efficient in carrying out its operational activities. (Gunde, Murni, & Rogi, 2017). . Company profitability can be known using profitability ratios. Profitability is divided into two types according to (Van Horne & Wachowicz, 2013) The *profitability ratio* is related to sales and the profitability ratio is related to investment. The ratios related to sales are *Gross Profit Margin* and *Net Profit*

Margin, while the profitability ratios related to investment are *Return on Assets* and *Return on Equity*.

2.1.5 *Firm Size*

Company size is the total production capacity and variety of production owned by a company or the number of variations of services that can be provided by the company to customers. Large companies have the advantage of *economic of scale* because they can produce goods in large quantities but at low costs, so a large company is able to produce at a lower cost when *compared* to a small company. The large size of the company has advantages, which can reduce production costs and at the same time expand market share. (Shaheen & Malik, 2012).

2.1.6 *Liquidity*

Liquidity is said to be the time it takes for assets to be realized or converted into cash or until a liability can be repaid. (Kieso, Weygandt, & Warfield, 2018).. According to research conducted by (Izati & Farah, 2014)(Izati & Farah, 2014), a high level of liquidity indicates that the company is able to pay debts and reflects good financial performance.

2.1.7 *Leverage*

The ability of a company to pay off all its debts using its assets is the definition of leverage. (Sari, Mendra, & Saitri, 2021). A *leverage* ratio that is too high reflects that the business is funded by excessive use of debt and will eventually result in the company not having enough money to pay its bond obligations. (Bodie, Kane, Marcus, & Jain, 2014)..

2.2 Hypothesis Development

2.2.1 Company Age

The age of the company is proof that the entity is able to survive and carry out its operational activities. (William & Sanjaya, 2017) . As the company ages, the experience it has will increase and this will be an added value for the company. However, with age, living things will grow old, and through this aging process, physical functions decline (Loderer & Waelch, 2017). (Loderer & Waelchli, 2010). Based on this statement, a question arises whether the company will also

experience the same thing if it experiences aging? Many studies state that when the company gets older, the company's performance will gradually decline.

One way to calculate a company's performance is to see if the company can generate profits. Companies that successfully generate profits will be more attractive to investors and have an impact on the survival of the company or in other words, companies that generate profits are predicted to live longer when compared to companies that cannot generate profits. On the other hand, old companies experience a slowdown in responding to the market or normally called the *inertia effect (Barron, West*, & *Hewitt*, 2011). (Barron, West, & Hannan, 1994).. Previous research conducted by (Akben-Selcuk, 2016) explained that the older the company, the worse its performance will be. Similar research conducted by (Loderer & Waelchli, 2010) shows the result that the relationship between company age and profitability is negative and significant. Based on the results of previous studies, the researcher makes the following hypothesis.

H_1 = Company age has a negative effect on profitability.

2.2.2 Capital Structure

Capital structure is an important measurement tool when assessing a company in the capital market. The capital structure of the company is processed by financial managers whose job is to maximize the wealth of investors and use the most optimal combination of capital structure. Another task of the company's financial *manager* is to optimize *firm value* by making the best investment decisions. (Pouraghajan, Malekian, Emamgholipour, Lotfotllahpour, & Bagheri, 2012). . Capital structure can be obtained by combining *debt* and equity. The funding policy is broken down into two sources, namely internal and external capital. Internal capital is obtained from *retained earnings*. Meanwhile, external capital is obtained from loans (debt) or shares. (Grinblatt & Titman, 2002) . Sourced from research conducted by (Dai & Nurahmi, 2016) (Dai & Nurahmi, 2016), the *capital* structure represented by the DER proxy has a positive influence on profitability, which means that if DER increases, the company's profitability

will also increase. Research conducted by (Wibowo & Rahim, 2019) also concluded that capital structure affects profitability positively. Based on the results of previous studies, the second hypothesis is as follows.

H_2 = Capital structure has a positive effect on profitability.

3. RESEARCH METHODS

3.1 Population and Sample

Based on the definition of (Sekaran & Bougie, 2016) population is a group of people, events, or things that interest the researcher so that it needs to be investigated and in the end conclusions can be drawn from the research results.

Based on the explanation above, the intended population is manufacturing industry companies in the primary consumption sector *listed* on the IDX in a five-year period, namely 2019 to 2023. The determination of the research period from 2019 to 2023 is based on the fact that researchers want to obtain economic data that reflects the current conditions of the components that can affect the profitability of a company.

According to (Sekaran & Bougie, 2016) a sample is a subset of the population. It can be concluded that the sample consists of the population but not as a whole.

The sample collection in this study used *purposive sampling*. The *purposive sampling* method is a way of collecting data based on certain categories that have been determined by the researcher. Based on this definition, the researcher determined several criteria to be the limitation in this study. The selected categories are:

1. Primary consumer sector companies *listed* on the IDX in 2019-2023.
2. Primary consumer sector companies that consistently publish financial reports throughout 2019-2023.
3. Primary consumer sector companies that use the Rupiah (IDR) currency when presenting financial statements.

4. Companies in the primary consumer sector that do not suffer losses throughout 2019-2023.
5. Primary consumer sector companies that provide data and information required in the research.

Table 3.1 Criteria and Total Sample

No.	Criteria	Total
1.	Primary consumer sector companies *listed* on the IDX in 2019-2023	85
2.	Primary consumer sector companies that consistently publish financial reports throughout 2019-2023.	64
3.	Primary consumer sector companies that use the Rupiah (IDR) currency when presenting financial statements.	76
4.	Companies in the primary consumer sector that do not suffer losses throughout 2019-2023.	38
5.	Primary consumer sector companies that provide data and information required in the research.	31
Total companies selected as research samples		31
Total sample over the period 2019-2023 (x 5 years)		155

Source: Author's data processing results (2024)

There are 31 companies that match the criteria set in the sampling method, so that the total observations (n) in this study amount to 155 in the observation period of five years, namely 2019 - 2023. Below is a list of sample companies that match the criteria:

Table 3.2 List of Sample Companies

No.	Company Code	Company Name
1	AALI	PT Astra Agro Lestari Tbk.
2	ADES	PT Akasha Wira International Tbk.
3	AMRT	PT Sumber Alfaria Trijaya Tbk.
4	BISI	PT BISI International Tbk.
5	BUDI	PT Budi Starch & Sweetener Tbk.
6	CEKA	PT Wilmar Cahaya Indonesia Tbk.
7	CPIN	PT Charoen Pokphand Indonesia Tbk

8	DLTA	PT Delta Djakarta Tbk.
9	DSNG	PT Dharma Satya Nusantara Tbk.
10	GGRM	PT Gudang Garam Tbk.
11	HMSP	PT H.M. Sampoerna Tbk.
12	ICBP	PT Indofood CBP Sukses Makmur Tbk.
13	INDF	PT Indofood Sukses Makmur Tbk.
14	JPFA	PT Japfa Comfeed Indonesia Tbk.
15	KINO	PT Kino Indonesia Tbk.
16	LSIP	PT PP London Sumatra Indonesia Tbk.
17	MIDI	PT Midi Utama Indonesia Tbk.
18	MLBI	PT Multi Bintang Indonesia Tbk.
19	MYOR	PT Mayora Indah Tbk.
20	RANC	PT Supra Boga Lestari Tbk.
21	ROTI	PT Nippon Indosari Corpindo Tbk.
22	SKBM	PT Sekar Bumi Tbk.
23	SKLT	PT Sekar Laut Tbk.
24	SMAR	PT Smart Tbk.
25	SSMS	PT Sawit Sumbermas Sarana Tbk.
26	STTP	PT Siantar Top Tbk.
27	TBLA	PT Tunas Baru Lampung Tbk.
28	TGKA	PT Tigaraksa Satria Tbk.
29	ULTJ	PT Ultra Jaya Milk Industry & Tra
30	UNVR	PT Unilever Indonesia Tbk.
31	WIIM	PT Wismilak Inti Makmur Tbk.

Source: S&P Capital

3.2 Data Source

The data used in this study is *secondary data* in the form of *financial reports* obtained via *annual reports of* manufacturing companies in the primary consumer sector. Annual reports of primary consumer sector manufacturing companies are accessed through the *S&P Capital website*, the IDX *website* for the 2019-2023 period, and official *websites* that describe the research data category through data collection, data recording, and data analysis.

3.3 Data Collection Technique

Data collection is carried out by researchers by means of literature studies and documentation studies. The literature study method is carried out using the results of previous research, *text books, journal articles,* articles on the *website,*

and other written data sourced to the required information. The documentation study method is carried out by searching and recording the required information sourced from *secondary data* in the form of *financial reports of* companies that are research samples through the *S&P Capital* website, the Indonesia Stock Exchange website for the 2019-2023 period, and the official website. The documents that have been searched and recorded are research data.

3.4 Empirical Research Model

This study used multiple linear regression models to test the research. The model used for this study will be explained as below:

$$ROE_{i,t} = \alpha + \beta_1 AGE_{it} + \beta_2 DER_{it} + \beta_3 SIZE_{it} + \beta_4 LIQ_{it} + \beta_5 LEV_{it} + e$$

ROEi,t = Return on equity of company i in year t

AGEi,t = Age of company i in year t

DERi,t = Debt to equity ratio of company i in year t

SIZEi,t = Company size i in year t

LIQi,t = Liquidity of company i in year t

LEVi,t = Leverage of company i in year t

α = Constant

βi = Variable coefficient

e = Residual error

The above research model is used to test H_1 and H_2 proposed in this study. The test of H_1 is centered on the age of the company (AGE) which is expected to have a negative influence on profitability. Meanwhile, H_2 is focused on the capital structure (DER) which is expected to have a positive influence on profitability.

3.5 Definition of Operational Variables

Based on the understanding given by (Sekaran & Bougie, 2016) (Sekaran & Bougie, 2016), a variable is anything that can express varying values. The

variables used in this study consist of *independent variables*, *dependent variables*, and *control variables*. This study uses two *independent variables*, namely AGE and DER. Meanwhile, the *dependent variable* used in this study is ROE. (Akben-Selcuk, 2016) and (Doucource & Diagne, 2020) in their journals use company age (AGE) as one of the independent variables to measure profitability (ROE) as the dependent variable. (Wibowo & Rahim, 2019) , (Dai & Nurahmi, 2016) , and (Winarno, Hidayati, & Darmawati, 2015) used the debt-to-equity ratio as one of the independent variables to measure profitability (ROE). Due to inconsistent research results, researchers decided to re-examine in order to find out how the influence of the two independent variables (AGE) and (DER) on the dependent variable (ROE). Furthermore, there are three other control variables, namely SIZE, LIQ, and LEV. According to previous research conducted by (Akben-Selcuk, 2016)(Akben-Selcuk, 2016), these three variables also have an influence on ROE. The definition of each variable will be explained below.

3.5.1 *Dependent Variable* (Y)

Dependent variable is the main variable that attracts researchers to conduct research (Sekaran & Bougie, 2016) . *Dependent variable* (Y) this study uses profitability as measured by the *return on equity (ROE)* proxy. *ROE* is a profitability ratio that reveals how much profit is generated from the use of equity in the company's operational activities, so that management knows how much reward the company receives when operating using its company equity. Based on research (Wibowo & Rahim, 2019) ROE can be measured using the formula:

$$() = \frac{}{o\ Eu}$$

3.5.2 *Independent Variable* (X)

Based on a book by (Sekaran & Bougie, 2016) *independent* variable is a variable that has a positive influence or negative influence on the *dependent variable*. The *independent variables* used are company age and capital structure.

3.5.2.1 Company Age (X_1)

The first *independent variable* (X_1) is company age. Company age is the age of the company from the start of *listing* on the IDX until now. Research conducted by (Akben-Selcuk, 2016) states that the age of the company can be obtained using the following formula:

Company age = 2016/2017/2018/2019/2020 - year of *listing*

3.5.2.2 Capital Structure (X_2)

The second independent variable (X_2) is the capital structure represented by *DER (Debt to Equity Ratio)*. *DER* states the capital structure by comparing how much debt is used for the company's operational activities. According to the journal (Wibowo & Rahim, 2019)*DER (Debt to Equity Ratio)* is expressed by the formula:

$$R\ Eu\ oq\ (\ ) = \frac{o\ qqqq}{o\ Eu}$$

3.5.3 *Control Variable*

Control variables are other variables that are assumed to be able to be used to test the relationship between the *independent variable* and the *dependent variable*. The purpose of using *control variables* is to ensure whether an *independent variable* has an influence on the *dependent variable*. The control variables used are *firm size* (SIZE), liquidity (LIQ) and *leverage* (LEV).

3.5.3.1 *Firm Size*

According to (Thi & Phung, 2021)According to (Thi & Phung, 2021), *firm size* can be obtained by using the natural logarithm of total assets.

$$= \log (o\ R)$$

3.5.3.2 *Liquidity*

The period of time to realize assets into cash and can be used to pay liabilities is the definition of liquidity according to (Kieso, Weygandt, & Warfield, 2018) . Research from (Izati & Farah, 2014) explains that as the company's

liquidity increases, the company's performance in paying debts will be better. *The* liquidity proxy is measured using the *current ratio.*

$$= \frac{eR\ R}{eR\ qqqq}$$

3.5.3.3 *Leverage*

The condition in which the company is able to pay off debt using its assets is the definition of *leverage* according to (Sari, Mendra, & Saitri, 2021) . The increasing level of *leverage of* a company symbolizes that the company uses too much debt and is at risk of not being able to pay its obligation obligations. (Bodie, Kane, Marcus, & Jain, 2014). . *Leverage* is calculated using DAR (*Debt to Asset Ratio).*

$$= \frac{o\ R}{o\ R}$$

3.6 Data Analysis Method

This research uses quantitative analysis techniques which will process data in the form of numbers (numerical). The use of multiple linear regression to analyze the effect of *independent variable* on *dependent variable* will be used in this research. The *independent variables* in this study are company age and capital structure, while the *dependent variable* is profitability. The data collected by the researcher is processed using STATA version 15. Data processing begins with testing statistical descriptions, classical assumption tests which include normality, multicollinearity, heteroscedasticity, panel regression tests and general specification model tests so that acceptance or rejection of the hypothesis is known.

3.7 General Specification Model Test

3.7.1 F-test

To calculate the magnitude of the impact of *independent variables* simultaneously on the *dependent variable*, the F test is performed. The significance level in this test is 5% (0.05).

3.7.2 Test t

The purpose of the t test is to find out the impact of the *independent variable* separately on the *dependent variable* and to find out whether the hypothesis is accepted or rejected. If the result of t count <0.05 (5%), then the *independent variable* has a significant impact on the *dependent variable*. However, if the result of t>0.05 (5%) means that the *independent variable* does not have a significant impact on the *dependent variable* and the hypothesis is rejected.

4. RESULTS AND DISCUSSION

4.1 Research Results

4.1.1 Statistical Description Analysis

The use of statistical description analysis to see the number of observation samples (n), *mean, max,* min, and *standard deviation of* each variable used in the study. The results of the statistical description analysis are divided into two parts, namely the raw data presented in table 4.1 and the data after *treatment* using Box-Cox which is presented in table 4.2. The need to *treat* data is intended so that *skewness* and kurtosis become more normal for the purposes of data processing that will be carried out in the next stage.

Table 4.1 Descriptive Statistics - Raw data

Variable	Obs	Mean	Std. Dev.	Min	Max
ROE	155	.221	.324	.004	2.344
AGE	155	20.129	10.131	1	39
DER	155	1.07	.86	.164	4.286
LIQ	155	2.439	1.732	.606	8.638
SIZE	155	6.845	.608	5.75	8.21
LEV	155	.249	.19	0	.88

Source: Author's Data Processing Results (2024)

Table 4.1 presents the results of the statistical description of the entire observation sample, totaling 155 observations. The dependent variable, *ROE*, has a min value of 0.004 held by PT Sekar Bumi Tbk (SKBM), while the *max* value of 2.344 is held by PT Delta Djakarta Tbk (DLTA). The *mean* is 0.221 for five years and the standard deviation is 0.324.

The first independent variable, namely the age of the company (AGE) has a minimum value of 1 held by PT Kino Indonesia Tbk (KINO), while the *max of* 39 is held by PT Multi Bintang Indonesia Tbk (MLBI). The *mean* is 20.129 and the *standard deviation* value is 10.131.

The second *independent variable*, namely capital structure (DER) has a minimum value of 0.164 held by PT Ultra Jaya Milk Industry & Trading Co Tbk (ULTJ), while the *max of* 4.286 is held by PT Midi Utama Indonesia Tbk (MIDI). The *mean* is 1.07 and the *standard deviation* is 0.86.

The first *control variable* is liquidity (LIQ) which has a min value of 0.606 held by PT Unilever Indonesia Tbk (UNVR), while the *max of* 8.638 is held by PT Delta Djakarta Tbk (DLTA). The *mean* is 2.439 and the *standard deviation* is 1.732.

The second control variable, namely company size (SIZE) has a min value of 5.75 held by PT Sekar Laut Tbk (SKLT), while the *max* value of 8.21 is held by PT Indofood Sukses Makmur Tbk (INDF). The *mean* is 6.845 and the *standard deviation* value is 0.608.

The third *control variable*, *leverage* (LEV) has a minimum value of 0 which is controlled by PT BISI International Tbk (BISI), while the *max of* 0.88 is held by PT Akasha Wira Internasional Tbk (ADES).*Mean of* 0.249 and *standard deviation of* 0.19.

Table 4. 2 Descriptive Statistics - Winsor

Variable	Obs	Mean	Std. Dev.	Min	Max
WIN ROE	155	.215	.293	.011	1.451
AGE	155	20.129	10.131	1	39
WIN DER	155	1.067	.848	.169	3.761
WIN LIQ	155	2.435	1.719	.634	8.05
WIN SIZE	155	6.844	.605	5.8	8.02
WIN LEV	155	.248	.189	0	.83

Source: Author's Data Processing Results (2024)

After *treatment* using *winsor*, the data becomes more normal when compared to the raw data. It can be seen that the difference in the minimum value of the dependent variable ROE in the raw data is 0.004 and after *treatment* it

changes to 0.011 while the maximum value of the raw data is 2.344 and after *treatment* it changes to 1.451. The minimum value of the independent variable DER in the raw data is 0.164 and after *treatment* it becomes 0.169 while the maximum value of the raw data is 4.286 and after *treatment* it becomes 3.761. The minimum value of LIQ before *treatment* is 0.606 and after *treatment* it becomes 0.634 while the maximum value in the raw data is 8.638 and after *treatment* it changes to 8.05. The SIZE variable has a minimum value of 5.75 and after *treatment* it becomes 5.8 and the maximum value of 8.21 changes to 8.02 after *treatment*. The minimum value of the LEV variable before and after *treatment* shows a value of 0, while the maximum value of the raw data is 0.88 and after *treatment* it becomes 0.83.

4.1.2 Correlation Analysis

Correlation analysis using *pairwise* correlation can determine how the relationship between two variables is. It can be positive and negative in the range of 0.00 to 1.00. The significance level of the correlation coefficient (r) also helps in interpreting the data. If r = 0.1 then the relationship between the two variables is a weak relationship, r = 0.3 states a moderate relationship between the two variables, r = 0.5 shows a strong relationship between the two variables, and if r = 0.8 then the two variables contain multicollinearity problems.

Table 4.3 Pairwise correlations

Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
(1) WIN_ROE	1.000					
(2) AGE	0.458*	1.000				
	(0.000)					
(3) WIN_DER	0.253*	-0.125	1.000			
	(0.001)	(0.122)				
(4) WIN_LIQ	-0.075	0.056	-0.612*	1.000		
	(0.352)	(0.488)	(0.000)			
(5) WIN_SIZE	0.053	0.120	0.147*	-0.180*	1.000	
	(0.516)	(0.136)	(0.068)	(0.025)		
(6) WIN_LEV	-0.162*	-0.128	0.429*	-0.381*	0.215*	1.000
	(0.044)	(0.111)	(0.000)	(0.000)	(0.007)	

**** p<0.01, ** p<0.05, * p<0.1*

Source: Author's Data Processing Results (2024)

Judging from table 4.3, the first independent variable, namely company

age (AGE) has a value of 0.458 which is positively correlated with profitability (ROE) and the capital structure that has been *treated winsor* (WIN_DER) is worth 0.253 positively correlated with profitability. This is corroborated by the study results from (Dai & Nurahmi, 2016), which prove that DER affects ROE positively and significantly.

4.1.3 Classical Assumption Test

Because this research has more than one *independent variable*, it is necessary to test the hypothesis using multiple linear regression analysis models. In order to fulfill the requirements before conducting hypothesis testing, it is necessary to test classical assumptions to prove the requirements are met. If there is a data problem, it is necessary to do *treatment* once to produce new data and if the data that has been *treated* is not successful, then the data processing will continue using the *treatment* data and recorded as research limitations. The results of the test are presented in the following explanation.

4.1.3.1 Normality Test

This test aims to see whether the data is normally distributed and *bell-shaped*. Normality testing uses three formal tests, namely *Shapiro-Wilk, Shapiro-Francia,* and *Skewness/Kurtosis tests.*

Table 4.4 Normality Test

Shapiro-Wilk W test for normal data					
Variable	Obs	W	V	z	Prob>z
WIN_ROE	155	0.513	58.303	9.233	0.000
Shapiro-Francia W' test for normal data					
Variable	Obs	W'	V'	z	Prob>z
WIN_ROE	155	0.510	64.275	8.467	0.000
Skewness/Kurtosis test for normality					
Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj_chi2(2)	Prob>chi2
WIN_ROE	155	0.000	0.000	.	0.000

Source: Author's Data Processing Results (2024)

Noted from table 4.4, after the three normality tests, the data is still not normally distributed, please note that the WIN_ROE variable is data that has been *treated* with *winsor*. According to the *central limit theorem* (Kwak & Kim, 2016), if the sample size is 30 observations, the sampling distribution approaches the standard normal distribution. With a total of 155 observations, researchers can conclude that the research data is normally distributed.

4.1.3.2 Multicollinearity Test

Multicollinearity testing illustrates whether there is a connection between the *dependent variables* used in the study. The ideal research model is free from multicollinearity. If a high relationship is obtained between *independent variables*, this can disrupt the correlation between the *dependent variable* and the *independent variable*.

Table 4.5 Multicollinearity Test

Variable	VIF	1/VIF
WIN_DER	1.738	0.575
WIN_LIQ	1.659	0.603
WIN_LEV	1.308	0.765
WIN_SIZE	1.087	0.92
AGE	1.05	0.952
Mean VIF	1.368	

Source: Author's Data Processing Results (2024)

Sourced from table 4.5, the results state that capital structure (WIN_DER) and company age (AGE) have VIF<5 and 1/VIF<1, so it can be concluded that both *independent variables* are free from multiconlinearity.

4.1.3.3 Heteroscedasticity Test

Heteroscedasticity testing is done through the Breusch-Pagan test with STATA ver.15 *software* in order to find out whether all residuals have the same

variance or not. Because the ideal data is homogeneous data and does not have heteroscedasticity problems.

Table 4.6 Heteroscedasticity Test Results

Chi2 (1)	Prob>Chi2	Conclusion
102.58	0.0000	Contains heteroscedasticity

Source: Author's Data Processing Results (2024)

Testing through Breusch-Pagan states that the regression model has heteroscedasticity because the *probability* value <*0*.00.

4.1.4 Panel Data Regression Test

4.1.4.1 Chow Test

Chow test is used to determine which model choice is the best, among the *common effect model* or *fixed effect model*. If the chow test results show that the Prob>F at the bottom of the table is smaller than 0.05, then H_1 is accepted, which means that the best model is the *fixed effect* model.

Table 4.7 Chow Test

Prob>F	*Conclusion*
0.000	Using the FE (*Fixed Effect*) model

Source: Author's Data Processing Results (2024)

The chow test results concluded that Prob>F is below 0.05, which means that H_1 is accepted and the best model is *fixed effect*.

4.1.4.2 Breusch and Pagan Lagrangian Multiplier Test

If prob>chi2 is smaller than 0.05, then H_0 is rejected and gives an understanding to use *random effects*. However, when the prob>chi2 result is greater than 0.05, it means using the *common effect*.

Table 4.8 Breusch and Pagan Lagrangian Multiplier Test

Prob>Chibar2	*Conclusion*

0.0000	Using *random effect model* (REM)

Source: Author's Data Processing Results (2024)

Through the table above, it can be seen that the prob>chi2 result is smaller than 0.05, which indicates that the best choice falls on the *random effect* model.

4.1.5 General Specification Model Test

4.1.5.1 F test

The purpose of the F test is to determine whether all *independent variables* affect the *dependent variable* simultaneously. The significance level of this study is 5% (0.05).

Table 4.9 F Test Results

F value	R-squared	Adjusted R-squared
6.20	0.3800 (38.00%)	0.3592 (35.92%)

Source: Author's Data Processing Results (2024)

When viewed from table 4.9, the value of F = 6.20 is significant at prob <0.01, so it can be considered that the independent variables, namely company age (AGE) and capital structure (DER) in this research model simultaneously influence changes in the *dependent variable* (ROE).

The purpose of the *R-squared* test is to see how much the variation of the *dependent variable is* explained by the variation of *independent variable* together. The greater the coefficient of determination, the greater the explanation power of the *independent variable* on the *dependent variable*.

Table 4.9 shows that *R-squared* is 0.3800 which means that 38.00% of variability of profitability (ROE) is explained by the variability of *independent variables*, namely company age (AGE) and DER, the remaining 62% is explained by other *variables* that are not included in the empirical research model.

4.1.5.2 The t-test

The purpose of the t test is to find out whether each *independent variable* has an impact on the *dependent variable*. If the t count> 0.05 (5%) then the hypothesis is accepted. The direction of influence of variables, both positive and negative, can be seen through the coefficient value.

Table 4.10 T-test

	Coef.	Robust Std. Err.	t	P>|t |
AGE	.0138302	.00266377	5.24	0.000
WIN_DER	.1680134	.0408891	4.11	0.000
WIN_LIQ	.0155411	.0199614	0.78	0.437
WIN_SIZE	-.0004985	.0287209	-0.02	0.986
WIN_LEV	-.4262795	.1350058	-3.16	0.002

Source: Author's Data Processing Results (2024)

4.1.5.2.1 Effect of Company Age (AGE) (X_1) on Profitability (ROE) (Y)

The test results for company age (AGE) using the *default* STATA with a *two-tailed test*, resulted in a t-test value = 5.24, p = 0.000 which gives positive and significant results. Because the hypothesis is one-way, using the t test with a *one-tailed test*, the *probability* can be divided by 2, and the result remains p=0.000 <0.01 so that the test results are significant at the 1% level. This indicates that company age (AGE) has a positive and significant impact on profitability (ROE) at 1% *alpha*. It is concluded that the first hypothesis (H_1) is rejected.

4.1.5.2.2 Effect of Capital Structure (DER) (X_2) on Profitability (ROE) (Y)

Capital structure represented by WIN_DER has a *t-test* value = 4.11, p = 0.000 which produces a positive and significant *output* after being processed using STATA *default* with a *two-tailed test*. Hypotheses that have direction (positive or negative), tested using t-test with *one-tailed* test, so that the *probability* can be divided by 2, which gives the result of p=0.000<0.01. this illustrates that the corporate structure (WIN_DER) has a positive and significant impact on profitability (ROE) at 1% *alpha*. So it is concluded that the second hypothesis (H_2) is accepted.

1.1.5.2.3 Effect of *Liquidity* (LIQ) on Profitability (ROE)

Liquidity represented by WIN_LIQ is worth *t-test=0*.78, p=0.437 giving positive and insignificant results with a *two-tailed test*. Directional hypothesis checking uses a *one-tailed test*, so the *probability is* divided by 2, and results in p=0.2185. This explains that *liquidity* has a positive and insignificant impact on profitability (ROE).

1.1.5.2.4 The Effect of *Firm Size* (SIZE) on Profitability (ROE)

Firm size with the variable name WIN_SIZE gives a *t-test=-0*.02, p=0.986 conveying a negative and insignificant result from the *two-tailed test*. Hypotheses that have direction are tested with a *one-tailed test. Probability* is divided by 2 and results in p=0.493 which explains *firm size* has a negative and insignificant effect on profitability (ROE).

1.1.5.2.5 Effect of *Leverage* (LEV) on Profitability (ROE)

Leverage represented by WIN_LEV has a *t-test=-3*.16, p=0.002 showing a negative and significant result from the *two-tailed test*. The directional hypothesis is checked with the *one-tailed test*, so the *probability is* divided by 2 which results in p=0.001 which reveals *leverage* has a negative and significant impact on profitability (ROE) at 1% *alpha*.

4.2 Discussion of Hypothesis Testing

4.2.1 Effect of Company Age on Profitability

Based on the results of the t test = 5.24 and p = 0.000, it illustrates that company age has a positive and significant impact at 1% *alpha* on profitability. This finding is consistent with research done by (Ejigu, 2009) and (Cull, Demirgüç-Kunt, & Morduch, 2006) which revealed that company age positively and significantly affects financial performance and contradicts the results of the study by (Akben-Selcuk, 2009). (Akben-Selcuk, 2016) and (Doucource & Diagne, 2020) which states that company age has a negative effect on profitability. Despite stating different results, there are several explanations by researchers to support the results of this study.

A number of factors that cause (AGE) to have a positive and significant impact on ROE are the convex relationship between company age and profitability. When the age of the company is still young, it gradually decreases profitability, but when the company grows and matures, it will get more profit. (Akben-Selcuk, 2016) . Companies that have been established for a long time (long-lived) have the opportunity to hire experts so that their business runs more smoothly (Loderer & Waelchuk, 2016). (Loderer & Waelchli, 2010).. In line with long-established and mature companies, commercialization will occur (Ejigu, 2009). (Ejigu, 2009) . Although there is a *Product Life Cycle* (PLC) theory that states that companies will experience five stages in their lifetime, not all products will follow the five stages of the *Product Life Cycle* (PLC). Some products will stay in the *mature* stage for a very long time. Some products enter the *decline* stage and return to the *growth* stage after repositioning or strong promotion. In order for the product to last forever, good management is needed (Kotler & Armstrong, 2014).

In the *growth* stage, companies can earn high profits when using a combination of high revenue growth, higher *value-added*, and low investment and expenditure requirements. By conducting efficient production and preparing funds for *research and development*, it is expected that the company can continuously generate profits until it enters the *mature* stage. Another factor affecting the *growth* stage is the emergence of competition that causes the profit generated is not maximized. Therefore, the company must determine whether the company's operational activities can still generate profits in the future, to support this, the company must develop in order to gain a competitive advantage which will ultimately increase the value of the company and generate higher profits (Anderson & Zeithaml, 1984).

The maturity stage generally operates longer than the previous stages (Kotler & Armstrong, 2014) . There is a strong relationship between production efficiency and profit in the *mature* stage. Most cases in the *mature* stage products

that have a competitive advantage will get more benefits because they have gained market share which in turn contributes to more stable profits (Anderson & Zeithaml, 1984). (Anderson & Zeithaml, 1984). . At the *mature* stage, the company has been able to manage its finances well so that the profit generated can be said to be stable and is thought to be the real condition of the company. Sales at the *mature* stage began to slow down due to intense competition which forced the company to provide discounts on the products sold, although the early *mature* stage generated the highest profits, but over time profits began to decline due to intense competition. Under these circumstances, management chose to start introducing new products to replace the old products, but still let the old products circulate in order to increase profits even a little. (Nengzih & Arlita, 2011) . Although many products in *mature* positions do not change for a long time, successful products are those that evolve according to consumer needs.

When the product has entered the *decline* stage, sales decline due to various reasons, such as technological advances, changing consumer tastes, and intense competition between companies. Due to the reasons mentioned earlier, the company must review whether the product will be *maintained*, *harvested*, or *dropped.* If management decides to maintain *the brand*, it can be done by *repositioning* so that it can re-enter the *growth* stage. Management can also decide to *harvest*, which means that the costs incurred by the company are minimal for factory financing, maintenance, advertising, and even employees who work in the sales force can be reduced in number. If this *harvest* activity is successfully carried out, the company will be slightly helped in its short-term profit. The last is the *drop* option, the company can sell its products to other companies in similar industries or a simple way is to liquidate the residual value of the product. (Kotler & Armstrong, 2014).

4.2.2 Effect of Capital Structure on Profitability

The t-test result = 4.11 with p = 0.000 shows that DER has a positive and significant impact at 1% *alpha* on ROE. The results of this study are in line with research conducted by (Wibowo & Rahim, 2019) and (Dai & Nurahmi, 2016)

which explains that DER has a positive and significant impact on ROE. However, this study contradicts the study conducted by (Ramadita & Suzan, 2019) and (Winarno, Hidayati, & Darmawati, 2015) which suggests DER has a negative and insignificant impact on profitability. Although there are differences in research results, there are several reasons that can explain and support the study results.

DER has a positive and significant impact on ROE indicating that entities that have a high portion of debt are able to provide a better return on shareholders' equity and it will increase the company's operating income. (Wibowo & Rahim, 2019) (Dai & Nurahmi, 2016).

5. CONCLUSIONS AND SUGGESTIONS

5.1 Conclusion

This research was conducted to find out the effect of *independent variables*, namely company age (AGE) and capital structure (DER) on profitability (ROE) in primary consumer sector companies *listed* on the IDX in 2019-2023. Based on the research results that have been discussed in chapter IV, this study can draw conclusions, namely:

1. Company age (AGE) has a positive and significant impact on profitability (ROE) of companies engaged in the primary consumer sector. The older the company gets until a certain year, the more its profitability will increase.
2. Capital structure (DER) has a positive and significant impact on profitability (ROE) of companies engaged in the primary consumer sector. As the debt-funded capital structure increases, the profitability of the company will be higher.

5.2 Implications of Research Results

There are similar results from researches conducted by previous researchers (Cull, Demirgüç-Kunt, & Morduch, 2006) and (Ejigu, 2009) stated in their study that company age has a positive and significant effect on profitability.

Management of older firms and regulators should pay good attentions to capital structure policy and the use of debts that can affect profits of the firms. Contrary to the research conducted by (Akben-Selcuk, 2016) and (Doucource & Diagne, 2020) who concluded that company age has a negative impact on profitability. Next (Dai & Nurahmi, 2016) and (Wibowo & Rahim, 2019) conducted research and the result is that capital structure has a positive and significant impact on profitability.

Researchers can see inconsistent research results from research on company age and capital structure on profitability conducted by previous researchers, so researchers decided to research again and try to prove the hypothesis through this research. Then, researchers have the belief that the establishment of a company aims to make a profit so that researchers want to know and want to examine what aspects can affect profitability.

5.3 Research Limitations

The limitations in this study are as follows:

1. The population and research sample are limited (*biased*) to companies engaged in the primary consumer sector *listed* on the IDX, so this research cannot provide results on other sectors on the IDX.
2. The use of this research year is limited to the period 2019-2023, so it cannot reflect the situation before or after that period.
3. *Independent variables* can explain the *dependent variable* only by 38.00%.

5.4 Suggestions for Future Research

Based on the research results and limitations of the research, the researchers can share suggestions for future research as follows:

1. The sample used by future researchers can include other sectors that have not been studied before, thus reflecting more comprehensive results.
2. A larger time period for further research in order to achieve more complete results.

3. Selection of other *independent variables* so that the results of further research are even better.

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