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# APPLICATION OF DESIGN THINKING METHOD TO THE INNOVATION BUSINESS DESIGN PROCESS OF AUTOMATIC AQUATIC PET FEEDER WITH IOT

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**Abstract:** This study aims to apply the design thinking method to the process of designing an innovative Automatic Aquatic Pet Feeder with IoT business. This study focuses on discussing design thinking with four stages, namely empathize, define, ideate, and prototype. At the define stage there is a Business Model Canvas which has nine elements, starting from customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partnerships, and cost structure which aims to provide a simpler business model representation. This study uses a qualitative descriptive research method. Collecting data in this study using questionnaires and interviews with a total of 97 respondents. The results of this study are that fish keepers are very interested in Automatic Aquatic Pet Feeder with IoT products and will facilitate decision-making both in terms of business innovation to the design of the product.

**Keywords:** Design Thinking, Innovation Business, Prototype

***Abstrak:*** *Penelitian ini bertujuan untuk menerapkan metode design thinking pada proses perancangan bisnis inovasi Automatic Aquatic Pet Feeder with IoT. Penelitian ini fokus membahas design thinking dengan empat tahapan, yaitu empathize, define, ideate, dan prototype. Pada tahapan define terdapat Business Model Canvas yang memiliki sembilan elemen, mulai dari customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partnership, dan cost structure yang bertujuan untuk memberikan representasi model bisnis yang lebih sederhana. Penelitian ini menggunakan metode penelitian deskriptif kualitatif. Pengumpulan data pada penelitian ini menggunakan kuesioner dan wawancara dengan jumlah responden 97 orang. Hasil dari penelitian ini adalah pemelihara ikan sangat tertarik dengan produk Automatic Aquatic Pet Feeder with IoT dan akan memudahkan pembuatan keputusan baik dari segi inovasi bisnis sampai ke perancangan desain dari produk tersebut.*

***Kata Kunci:*** *Bisnis Inovasi*, Design Thinking, Prototype

## INTRODUCTION

Indonesia is one of the countries that has a very strong culture in the field of fish farming, this is reinforced because Indonesia is a water country (Himawan & Yanu F, 2018). Keeping fish is one of the hobbies that has been in great demand by the community since then and even now. The sense of satisfaction and love of the keepers and the easier way of maintenance and care make most people want to participate in keeping fish (Hayatunnufus & Alita, 2020). However, because of this convenience, many people sometimes forget or ignore giving food on time and according to portions, because they also have other jobs that sometimes like to take up their time.

Pet fish can be kept alive and fish keepers can have peace of mind when they have to leave their fish behind due to busy activities. feel at ease when they have to leave their fish due to busy activities, then an innovative tool to automatically feed fish should be created. The development carried out on fish feeding can be with IoT (Internet of Things). IoT is a communication technology that allows for the existence of an automatic control, communicate, cooperate with various kinds of devices - hardware, communicate data through the internet network (IoT) (Nurmaleni & Yuhandri, 2020). This control capability is what is needed by fish keepers and farmers in caring for fish. In caring for fish, from the above problems, an innovation can be created Automatic Aquatic Pet Feeder with IoT which is expected to be useful for fish keepers.

Automatic Aquatic Pet Feeder with IoT is a product that feeds fish automatically by utilizing IoT as a tool, this product has many uses, starting from helping fish keepers in the aquarium remotely, this product can be used so that keepers can feed and monitor the state of pet fish without having to interact directly with the environment of the aquarium. The innovation in this product is of course its technology. Important features of this product are the ability to feed fish remotely, the ability to allow wireless access, and the product that can provide notifications every time an activity is performed. The problem to be discussed in this research is about the application of the design thinking method to the business design process of the Automatic Aquatic Pet Feeder with IoT innovation which aims to make it easier for fish keepers to reduce their difficulties in keeping fish, especially in feeding fish regularly without having to worry.

Creating an innovation needs to create a Business Model Canvas (BMC) by using the design thinking stages on the Automatic Aquatic Pet Feeder with IoT. BMC was chosen to solve the problem in this study because it provides a simpler representation of the business model, clearly and simply visualizing the nine blocks of business aspects. In addition, BMC shows interconnectedness and is easy to understand the evaluation process and helps to more easily identify Customer Segments, Value Propositions, Channels, Customer Relationships, Revenue Streams, Key Resources, Key Activities, Key Partnerships, and Cost Structure for evaluation steps to improve the business performance of the Automatic Aquatic Pet Feeder with IoT. The design thinking approach is very suitable for the Automatic Aquatic Pet Feeder with IoT Innovation because this approach can see the needs that users want for the innovation product.

Design thinking considers user needs and then combines them with technology that suits the innovation products needed, so that it becomes a good business product because it can provide a feasibility (Saputra & Kania, 2022). The application of design thinking is of course very useful in defining the problems created with consumers, then being able to create many ideas by brainstorming, and using the prototype method, problems that occur start to become clear problems and even unknown problems will be easily resolved by using design thinking. From this statement, it can be concluded that design thinking can be used as a relevant tool in building a business model innovation. The purpose of this research is to find out the business design of the Automatic Aquatic Pet Feeder with IoT innovation according to the needs of raising aquatic animals and to find out the application of the design thinking method in the process of designing the Automatic Aquatic Pet Feeder with IoT innovation business. Based on the description above, this study will discuss further about design thinking with the title "Application of Design Thinking Methods to the Innovation Business Design Process of Automatic Aquatic Pet Feeder with IoT".

## LITERATURE REVIEW

### Design Thinking

Design thinking is an indispensable concept in the present or future because design thinking is essential with humans as the center of the innovation process that emphasizes observation, collaboration, fast learning, visualization of ideas, rapid concept prototyping, and business analysis, which has a major influence on innovation and strategy in a business (Aman et al., 2021).

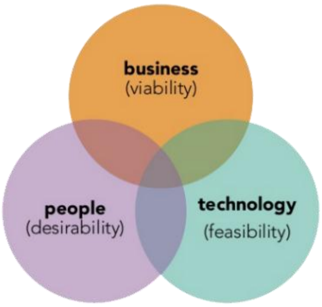


**Figure 1.** Elements of Design Thinking

Figure 1. shows that design thinking has three elements that are important for consideration in creating an idea that is needed. Consideration in design thinking is to consider the desirability of people, namely the needs required by users (users) then combined with the appropriate technological capabilities (feasibility of technology), in order to become a product that is in accordance with what is needed or expected (viability of business) and of course provides feasibility and effective solutions in a problem (Madanih et al., 2019) in (Kelley & Brown, 2018).

Design thinking can be defined as a human-centered approach to innovation taken from a design tool to integrate the needs of many people, technology, and various requirements for the success of a business (Kelley & Brown, 2018). Design thinking has 5 (five) stages, namely Empathize, Define, Ideate, Prototype, and Test. In this study only uses 4 (four) stages, where the Test stage is not carried out because the Automatic Aquatic Pet Feeder with IoT product is still in prototype form.


**Figure 2.** The Stages of Design Thinking

1. Empathize

   This stage is useful for knowing how the target persona is by paying attention to various aspects, such as aspects of the needs, problems, emotions, and situations that the target persona is feeling. Empathize in theory is to put yourself as the target of the persona in order to feel or empathize to get deeper into the problems that are happening. at this stage you can use the empathy map.
2. Define

   This stage means collecting the needs that are being needed or wanted by the target persona by describing the concept or using the view from the persona's side in answering and overcoming the problems experienced by the persona. In this process, the classification of problems, needs and desires is carried out after the empathize stage is carried out.
3. Ideate

   Ideate is the process of describing big ideas that are carried out by expanding the problem space in order to produce an alternative solution with reference to various aspects of the problems that occur and are associated with the needs and desires of the target persona. In general, this stage also determines the creative way to get new ideas that can later be developed.
4. Prototype

   In this process, a flow and a design of a general product description is made which will be used to test ideas for the best solution. Prototype in Indonesian can be interpreted as a prototype, which is an initial form or standard size of a model. This process or step is carried out to provide an overview for the persona about the ideas that have been generated.
5. Test

   This process is useful for collecting various user feedback from the design that has been done in the previous stage.

**Business Model Canvas**

Alexander Osterwalder and Yven Pignuer invented the Business Model Canvas for the first time. The definition of Business Model Canvas is a business model that provides a comprehensive picture of an organization in creating, capturing, and delivering value (Osterwalder & Pigneur, 2010). The Business Model Canvas has 9 building blocks.

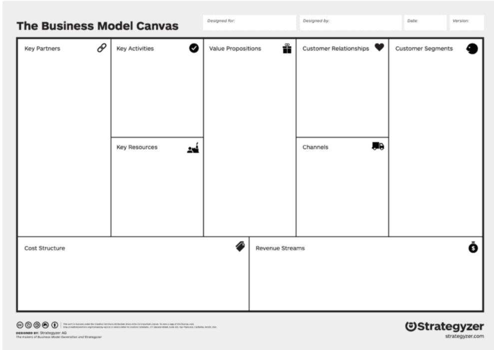


**Figure 3.** The Nine Elements of Business Model Canvas

The following is an explanation of the 9 elements (Building Blocks) of the Business Model Canvas:

1. Customer Segments, is an activity in determining consumers who are the target market of the business being developed. Consumers are grouped by the characteristics possessed by these customers.
2. Value Proposition, is identifying the value that is able to meet customer needs. This value must have advantages and even have distinctive characteristics in order to differentiate it from the value that competitors offer.
3. Channels, a way to distribute value to customers, about how the value offered can be received and can be felt well by customers.
4. Customer Relationship, is an emotional bond that has been planned by the company in attracting customer segments to buy the company's products, by providing assistance or being able to utilize a community so that the product can be felt by customers.
5. Cost Structure, is the cycle of costs incurred during the operation of the activity.
6. Revenue Streams, is the way the company/pathway in obtaining funds/money from each Customer Segment (Herlina, 2022).
7. Key Activities, are the main activities that can be value-added and profitable.
8. Key Partnership, an operational way or process to reduce company risk and typically builds buyer and supplier relationships or describes a network of suppliers and partners.
9. Key Resources, the resources needed are in order to provide added value to customers, also consider them as company assets to support the business. what resources need to be determined as the business model should be. Key resources are a description of the most important determining assets for a company to successfully operate a business model (Yuliani et al., 2022).

## RESEARCH METHODOLOGY

### Types of Research

This research uses descriptive qualitative research methods to provide an overview of business model innovation in research subjects (design thinking). Qualitative research has a descriptive nature and tends to use analysis. In this research, the process and meaning are more emphasized by utilizing the theoretical basis as a guide so that the research focus is in accordance with the facts in the field (Ramdhan, 2021).

**Data Collection Methods**

The data collection method in this study was carried out by distributing questionnaires online with the help of google form in order to obtain primary data. The population in this study are people who keep fish. The technique used in this study is to use the Cochran formula sample. Calculation of sample size can be determined using the Cochran formula because the population is unknown. According to (Sugiyono, 2019) the calculation of the sample size with the Cochran formula for unknown populations is as follows:

$$n = \frac{z^2\,pq}{e^2}$$

$$n = \frac{(1{,}96)^2(0{,}5)(0{,}5)}{0{,}1^2}$$

$$n = \frac{(3{,}8416)(0{,}25)}{0{,}01}$$

$$n = \frac{(0{,}9604)}{0{,}01}$$

$$n = 96{,}04$$

Description:
n = Number of samples required
z = Price in the normal curve for a 5% deviation, with a value of 1.96
p = 50% chance of being correct = 0.5
q = 50% chance of being wrong = 0.5
e = 10% margin of error

Based on the calculation results using the Cochran formula above, the sample size in this study obtained 96.04 samples which will be rounded up to 97 samples to serve as respondents in this study. This questionnaire utilizes the features found in the google application, namely google form. The list of questions asked relates to the interest of fish keepers with Automatic Aquatic Pet Feeder with IoT products. The respondents in this study are considered appropriate because the population of this questionnaire is respondents who keep fish so that respondents know more about what they complain about, need, and are interested in keeping fish. The results given from the questions that have been set will be the basis for conducting the next stage of research, namely on the Empathy Map and Define. The following is a list of questions and objectives.

**Table 1.** Questionnaire Questions and Objectives

| No. | Questionnaire Questions | Purpose of the Questionnaire |
|---|---|---|
| 1. | Do you love fish, especially ornamental fish? | To determine the level of respondents' preference for ornamental fish |
| 2. | How long have you been keeping fish? | To find out the comparison of how long respondents keep fish |
| 3. | Do you ever forget to feed your pet fish because you're busy? | To find out if respondents often forget to feed pet fish |
| 4. | Do you know about automatic fish feeding products? | To find out the respondents' knowledge about automatic fish feeding |

| | | |
|---|---|---|
| 5. | Can the design of Automatic Aquatic Pet Feeder with IoT help you leave your pet at home? | To find out if the automatic fish feeder can help respondents when they have to leave their pet fish. |
| 6. | Can this Automatic Aquatic Pet Feeder with IoT reduce the burden on your mind regarding the maintenance of fish animals? | To find out if this product can reduce the burden on the mind of fish rearing |
| 7. | Will you be using this Automatic Aquatic Pet Feeder with IoT in activities that keep you busy watching your fish? | To find out whether this product will be used by respondents |
| 8. | What is your price expectation for this Automatic Aquatic Pet Feeder with IoT? | To find out the expected price of respondents for Automatic Aquatic Pet Feeder products |
| 9. | Are you interested in the Automatic Aquatic Pet Feeder with IoT? | To find out respondents' interest in products |

The next data collection technique is to use the interview method to confirm the suitability of respondents' answers with facts in the field. The method used was to ask several questions directly to the source regarding their activities. The source in question is an aquarium fish keeper who likes fish and wants this product.

## RESULT AND DISCUSSION

The research results are organized based on only 4 stages in the design thinking method, which are as follows:

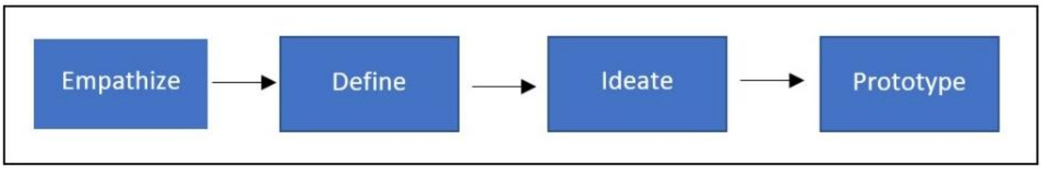


**Figure 4.** The Stages of Design Thinking

### Empathize

### Target Markets

In the innovation business design process, the determination of the target market is carried out at an early stage in order to become a reference in validating the Automatic Aquatic Pet Feeder with IoT business idea. The main target or main target market that will use our product is ornamental fish keepers from various layers, from the middle to the upper class. By using this product, the maintenance burden of feeding their aquatic pets will be eliminated and overcome.

### Data Source

In this process, an information data collection is carried out, the source of information used is primary data. The use of primary data, namely the results of an online questionnaire by utilizing the google form feature shared through social media and direct interviews with aquarium fish keepers. The purpose of doing this is to find out the interests, needs and desires of potential users. The questions given are questions that lead to the behavior of potential users of the automatic fish feeder innovation product. The following are the results of the questions that have been filled in by 97 respondents.

Question 1:

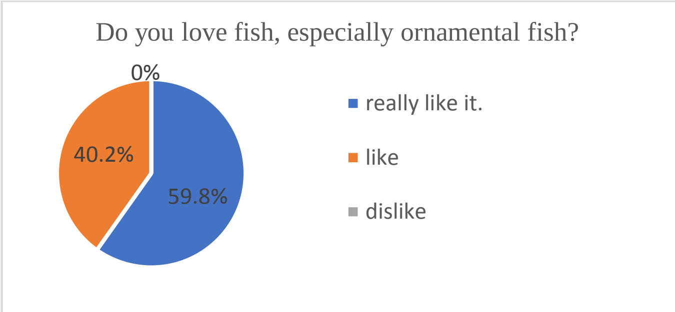


**Figure 5.** Respondent Results Question 1

The results obtained in Figure 5 above are that out of 97 respondents who filled in as many as 59.8% or 58 respondents liked fish, especially ornamental fish and as many as 40.2% of respondents or around 39 respondents answered that they liked fish, especially ornamental fish, no respondents answered that they did not like it. Thus, it can be interpreted that most people like to keep fish.

Question 2:

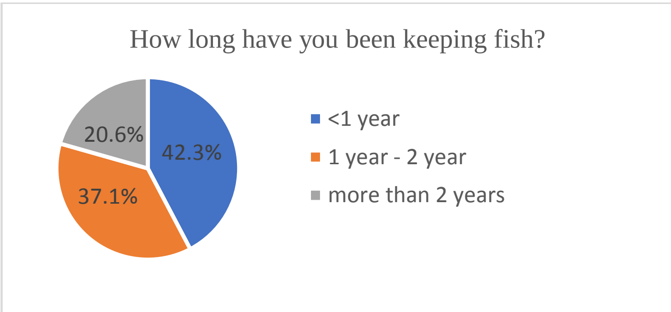


**Figure 6.** Respondent Results Question 2

The results of this question are very diverse, namely, 42.3% or 41 respondents keep fish for less than 1 year, 37.1% or 36 respondents keep fish for 1 to 2 years, then the remaining 20.6% or 20 respondents have kept fish for more than 2 years. This means that most fish keepers have been keeping fish for a long period of time or above 1 year.

Question 3:

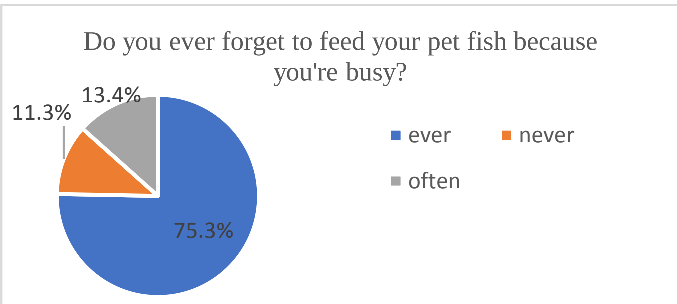


**Figure 7.** Respondent Results Question 3

The results of this questionnaire question were dominated by 75.3% or 73 out of 97 respondents who had forgotten to feed pet fish due to the respondents' busy schedules. 13.4% or 13 respondents answered that they often forgot and the remaining 11.3% or 11 respondents

never forgot to feed pet fish. This means that only a few respondents never forget to feed the fish and the rest have forgotten.
Question 4:

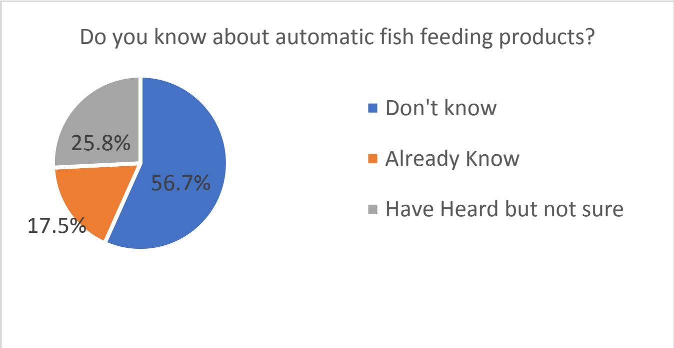


**Figure 8.** Respondent Results Question 4

The results of the questions in the next questionnaire were that 56.7% or 55 people did not know about the automatic fish feeder product, 25.8% or 25 respondents had heard of the product but were still not sure, and the remaining 17.5% or 17 respondents already knew about the automatic fish feeder product. This means that most respondents do not know about the Automatic Aquatic Pet Feeder with IoT product.
Question 5:

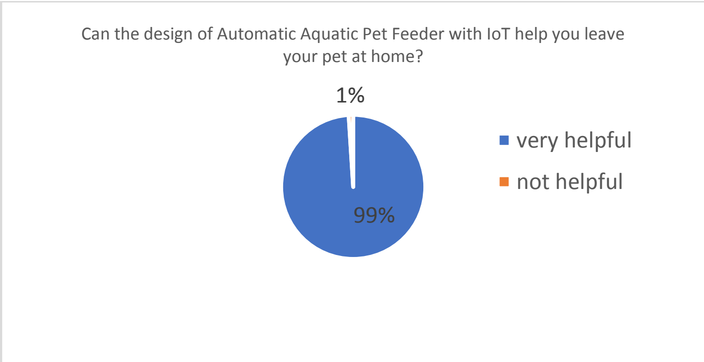


**Figure 9.** Respondent Results Question 5

The results of the answers were dominated by 99% or 96 respondents who felt that the design of the Automatic Aquatic Pet Feeder with IoT could help respondents when required to leave pets at home.
Question 6:

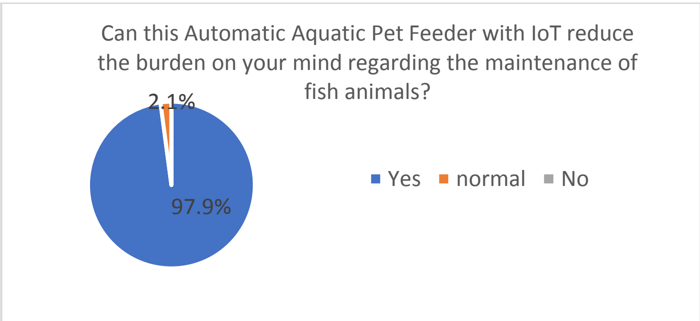


**Figure 10.** Respondent Results Question 6

The results of the questionnaire on question 6 were dominated by 97.9% or 95 respondents who felt that the Automatic Aquatic Pet Feeder with IoT could reduce the burden on respondents' minds regarding the maintenance of fish animals.
Question 7:

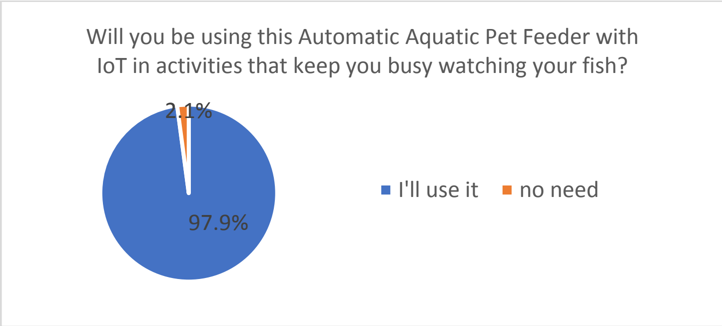


**Figure 11.** Respondent Results Question 7

The results of the questionnaire on question 7 are dominated by 97.9% or 95 respondents will use the Automatic Aquatic Pet Feeder with IoT product in activities that keep respondents busy to pay attention to pet fish. Thus it can be interpreted that respondents need an Automatic Aquatic Pet Feeder with IoT to feed fish when they are not at home (busy working).
Question 8:

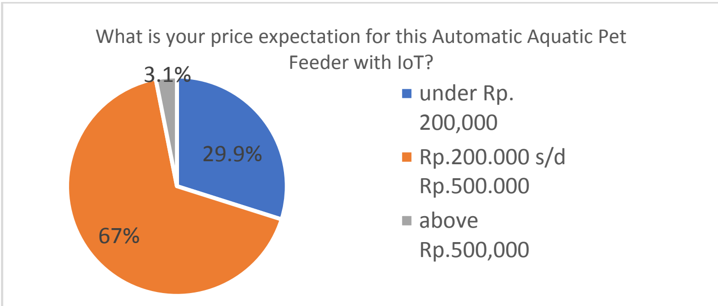


**Figure 12.** Respondent Results Question 8

Respondents in this question predominantly gave price expectations of Rp. 200,000 to Rp. 500,000, and the rest expected prices below Rp. 200,000.
Question 9:

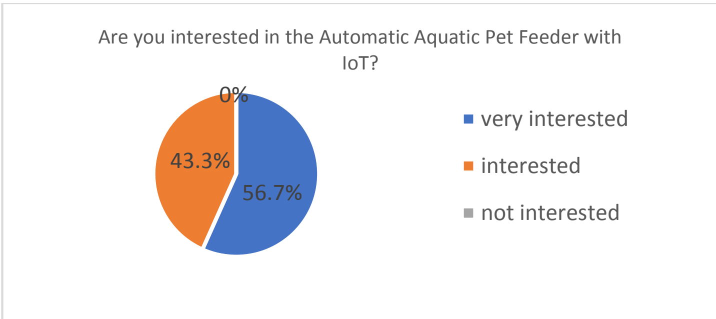


**Figure 13.** Respondent Results Question 9

A total of 56.6% or 55 respondents were very interested in the Automatic Aquatic Pet Feeder with IoT product. Then, 43.3% or 42 respondents were interested in the product. This means that all respondents are interested in the Automatic Aquatic Pet Feeder with IoT product. Based on the results of interviews conducted with fish keepers, it is known that fish keepers have several obstacles in feeding fish, including when the keeper is required to leave the house because of work that cannot be left behind and does not have time to feed the fish in a timely manner. This causes fish keepers to worry more often. Fish keepers are very interested and hope that the existence of an innovative product for automatic fish feeders or Automatic Aquatic Pet Feeder with IoT can reduce worries when the keeper has to be away from his pet fish.

## Empathy Map

In the design thinking method, the next step at the Empathize stage is to create an Empathy Map. Empathy map has six components such as says, does, thinks, feels, pain, and gain. In addition, empathy maps can be used as a tool in the interview process and present a picture of consumer behavior and characteristics in developing business models (Cairns et al., 2021). The following is a form of empathy map from the Automatic Aquatic Pet Feeder with IoT innovation business.

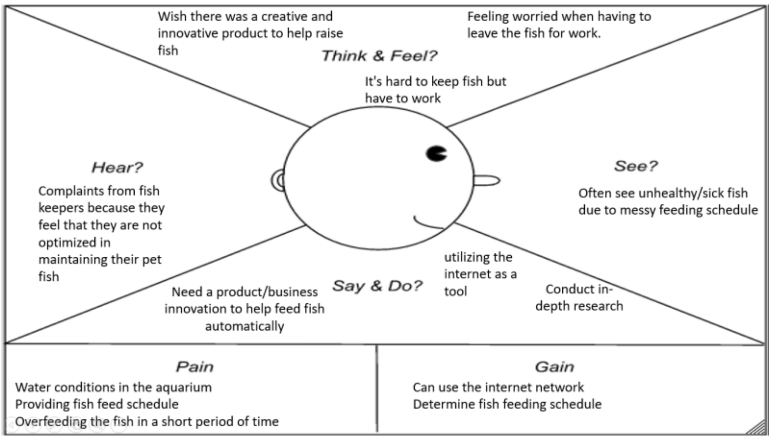


**Figure 14.** Empathy Map Automatic Aquatic Pet Feeder with IoT

1) Think & Feel

In this component contains what the user thinks and about what the user feels when the fishkeeping activity takes place or when starting to raise fish, based on the results of the questionnaires and interviews that have been conducted, the results obtained are the difficulties of fish keepers when they are busy working and their need for innovative products that can help to maintain fish and fish keepers feel worried when they have to leave pet fish because of important business or because of work.

2) See

This component contains what the user sees. Based on the results of questionnaires and interviews, users often see unhealthy / sick fish due to messy feeding schedules.

3) Say & Do

This component contains what the user says and will do. Based on the results of questionnaires and interviews, fish keepers or prospective users need an innovative product/business to help feed fish automatically and prospective users or fish keepers do in-depth research on an innovative product and utilize the internet as a tool.

4) Hear

This component contains what is heard by the user. Based on the results of questionnaires and interviews are complaints from fish keepers because they feel that they are not optimal in maintaining pet fish.

5) Pain

This component contains the discomfort that is being felt by the user. Based on the results of questionnaires and interviews, worry about the condition of the water in the aquarium, giving fish feed schedules, feeding fish excessively in a short period of time.

6) Gain

This component contains what benefits the user gets. Based on the results of questionnaires and interviews, fish keepers and prospective users can use the internet network and can set or determine fish feeding schedules.

**Define**

After the Empathize stage is complete, the next step is to collect the information that will be needed and then analyze the information that has been obtained. This define stage is the stage to analyze and identify the data that has been obtained at the empathy stage. The process of collecting information at the empathize stage is carried out by distributing questionnaires online using the google form feature.

The questionnaire results that potential users as the target market of the Automatic Aquatic Pet Feeder wit IoT business are very interested in the product. Respondents find it difficult to feed fish because they are busy and often forget to feed their pet fish. Another problem found is that many respondents are not aware of the latest technology related to automatic fish feeding, and respondents' concerns with the time they have with the schedule of feeding fish that they have to do regularly. Respondents really hope that the Automatic Aquatic Pet Feeder with IoT business innovation can help them continue their favorite activity, namely keeping fish without having to worry or interfere with their daily activities.

The next step after analysis is to identify the initial problem in the process of designing an innovation business for Automatic Aquatic Pet Feeder with IoT. The following is a statement of the problems that have been found:

1. Initial concept of the automatic fish feeder product
2. Ensure the database can store data, such as the feeding schedule of pet fish.
3. Ensuring the hardware of the product works properly according to the input entered by the user.
4. Availability of internet access so that users can monitor pets remotely.

**Business Model Canvas (BMC)**

After determining the problem statement at the define stage, the next step is to prepare the Business Model Canvas to focus on aspects that are easy to understand for development and validation reference.

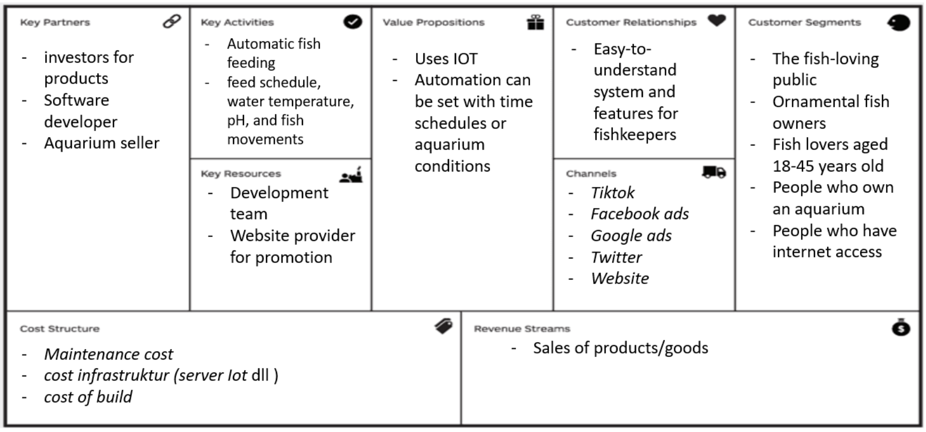


**Figure 15**. Business Model Canvas Automatic Aquatic Pet Feeder with IoT

1. Customer Segments, in the Automatic Aquatic Pet Feeder with IoT innovation business are fish lovers, ornamental fish owners, fish lovers aged 18-45 years, people who have aquariums, people who have internet access.
2. Value Proposition, in the Automatic Aquatic Pet Feeder with IoT innovation business is using IOT, automation can be set with a time schedule or aquarium conditions.
3. Channels, in this innovation business is to utilize the TikTok application, Facebook ads, Google ads, Twitter, and the website as a place to distribute innovation business products.
4. Customer Relationship, the Automatic Aquatic Pet Feeder with IoT innovation business uses systems and features that are easily understood by potential users or fish keepers.
5. Cost Structure, the costs required in this innovation business are maintenance costs, infrastructure costs (IoT servers etc.), and cost of build.
6. Revenue Streams, in this business is the result of sales of products/goods.
7. Key Activities, activities carried out are feeding the fish automatically, providing a meal schedule, temperature, water pH, and fish movements.
8. Key Partnership, this innovation business cooperates with investors for products, software developers, aquarium sellers.
9. Key Resources, the main resources in this innovation business are the development team and website providers for promotion.

## Ideate

After doing the next stage of define is exploring ideas based on the stages that have been done before. Ideate in design thinking is a stage in developing ideas. In this process, brainstorming is very important to do, because it can bring up many creative and innovative ideas that are possible to become solutions to the problems raised. All ideas found have a very important and useful value.

After brainstorming, the initial concept of an automatic fish feeder product is an object in which there is a fish feed storage area, then the fish feed will be given to the fish according to the schedule and commands given by the user or fish keeper, via remote access or by using the internet (Internet of Things). The idea that has been obtained is to create a system that involves two parties, namely the user (user) and the product. The user will do the setup and settings, and receive reports. On the other hand, the product will feed and calculate the time according to the settings given and provide a report after feeding. The next problem is to ensure that the hardware of the product works properly according to the input entered by the user, the idea is to create an activity diagram that aims to describe the workflow based on the roles owned by the system.

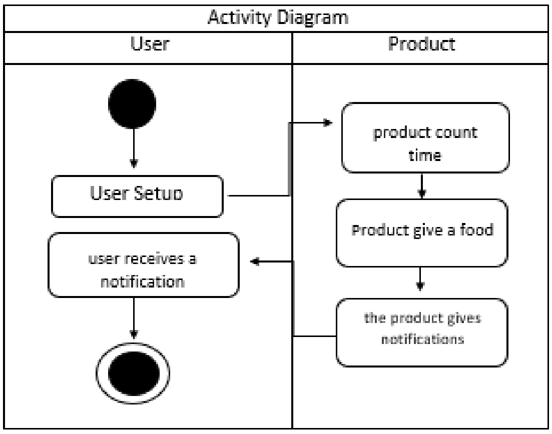


**Figure 16.** Activity Diagram Automatic Aquatic Pet Feeder with IoT

**Prototype**

At this stage, the prototype of the Automatic Aquatic Pet Feeder with IoT innovation business is made as a picture or visualization of the results of ideas and concepts that have been designed. This stage also aims to see the needs of potential users or fish keepers and implement these needs into the desired innovation business product. This stage includes how the system design of the automatic fish feeder. The system used in this product is the communication between the user and the product. The stages used in this product will be made in various forms of diagrams.

1. User

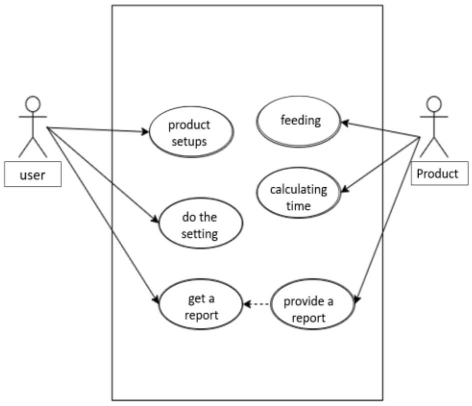


**Figure 17**. Diagram of User Communication with Product

The system created in this Automatic Aquatic Pet Feeder with IoT product involves two parties, the first party is the user and the second party is the product itself. Figure 17 shows that user setup products and settings and receive or get reports. On the other hand the product will feed, calculate the time according to the settings made by the user then the product will provide a report after the feeding activity is carried out.

2. State

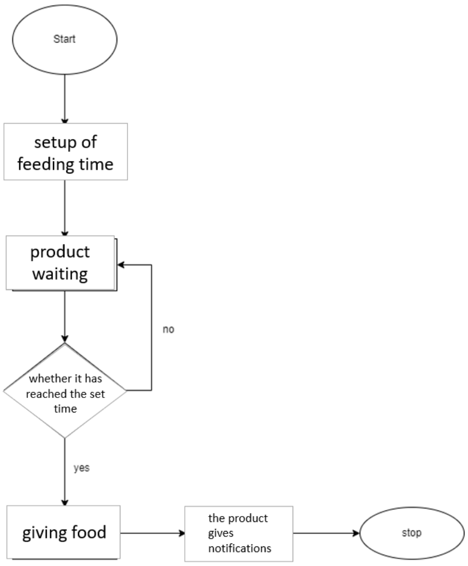


**Figure 18.** Diagram State

This diagram explains the path or workings and the state of each stage in the automatic fish feeder product. The first state is when the user turns on the product, then the user sets up the product. When the time has reached the specified time, the product will feed and also notify the user, after which the product will stop operating and will start its performance when the product is turned on again by the user.

3. Product Design

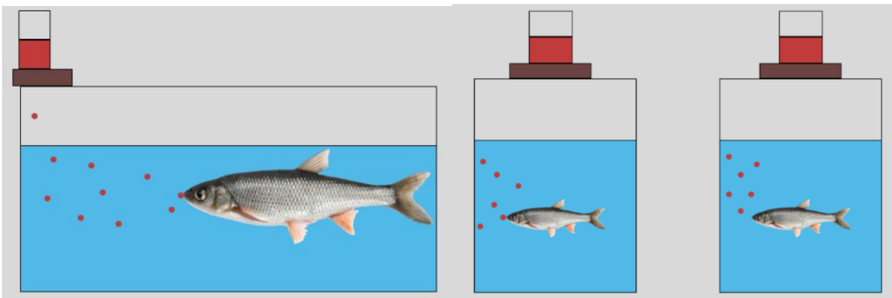

**Figure 19.** Product Side View and Product Front View

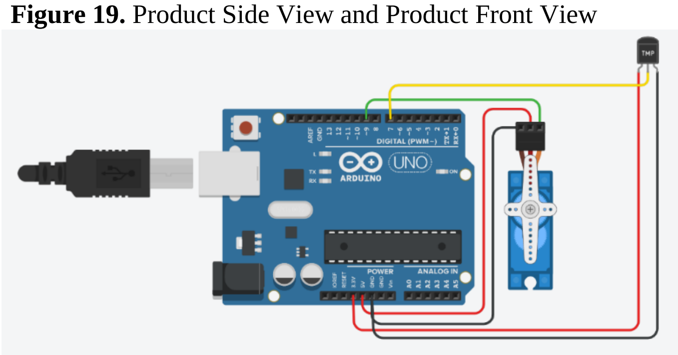


**Figure 20.** Series of Systems

In Figure 20. is a series of systems that are connected components that cannot stand alone in one scope that can connect and interact with each other so that the purpose of building the product can be achieved.

## CONCLUSION

The conclusion obtained is from the application of the design thinking method in the business design process of the Automatic Aquatic Pet Feeder with IoT innovation is that by applying the design thinking method the benefits obtained are to facilitate decision making both in terms of business innovation and even to the design of the product. The design thinking method can also produce solutions to problems that exist in society and can help and reduce the worries of fish keepers who like or hobby of keeping fish but they have difficulty in the feeding schedule because they are not always near the aquarium where their pet fish live. Then, the use of Business Model Canvas also makes it very easy for users to provide a simpler business model representation and focus on aspects that are easy to understand for design reference and validation and can produce a solution to existing problems.

In designing this innovation business, it is far from perfect. Therefore, suggestions for further research are expected to include the last stage of design thinking, namely the test stage of the business model built, expanding the scope of problems and solutions when designing these business innovations.

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# THE EFFECT OF FRAUD HEXAGON ON FINANCIAL STATEMENT FRAUD IN PROPERTY AND REAL ESTATE SECTOR COMPANIES LISTED ON THE INDONESIA STOCK EXCHANGE (IDX) IN 2017-2021

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**Abstract:** This research aims to determine the effect of hexagon fraud proxied by external pressure, change in directors, political connections, nature of industry, change in auditors and frequent number of CEO picture on financial statement fraud. This research uses quantitative research methods. The sample in this study was selected using a purposive sampling technique which obtained 13 property and real estate sector companies listed on the Indonesia Stock Exchange in 2017-2021 with a total sample of 65. Data collection techniques in this study using documentation techniques and library research. The data collected is the company's financial reports and annual reports. Data analysis technique used logistic regression analysis with Eviews 12 software. The results showed that external pressure, nature of industry and change in auditors had an effect on financial statement fraud, while changes in directors, political connections, and frequent number of CEO picture had no effect on financial statement fraud.

**Keywords:** fraud, financial statement fraud, fraud hexagon, Beneish M-Score

**Abstrak:** *Penelitian ini bertujuan untuk mengetahui pengaruh fraud hexagon yang diproksikan dengan external pressure, change in director, political connection, nature of industry, change in auditor dan frequent number of CEO picture terhadap financial statement fraud. Penelitian ini menggunakan metode penelitian kuantitatif. Sampel dalam penelitian ini dipilih dengan menggunakan teknik purposive sampling yang diperoleh sebanyak 13 perusahaan sektor property dan real estate yang terdaftar di Bursa Efek Indonesia tahun 2017-2021 dengan total sampel sebanyak 65. Teknik pengumpulan data dalam penelitian ini menggunakan teknik dokumentasi dan penelitian kepustakaan. Data yang dikumpulkan adalah laporan keuangan dan laporan tahunan perusahaan. Teknik analisis data menggunakan analisis regresi logistik dengan software Eviews 12. Hasil penelitian menunjukkan bahwa external pressure, nature of industry dan change in auditor berpengaruh terhadap financial statement fraud, sedangkan change in director, political connection, dan frequent number of CEO picture tidak berpengaruh terhadap financial statement fraud.*

***Kata Kunci:*** fraud, financial statement fraud, fraud hexagon, Beneish M-Score

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## INTRODUCTION

Financial statements are the result (output) of the accounting process made by the company's management. The financial reports contain information about the company's financial condition, performance and operational activities in a certain period which are intended for users of financial statements. Therefore, financial reports must be presented in a relevant, reliable, free from fraud, and full of integrity. However, some company management still commit fraud so that financial reports can provide a good and stable company financial condition (Siregar and Surianti, 2022).

At the time of issuance of financial statements, companies have an obligation to submit convincing financial reports because they affect the decision-making process for interested parties. This is what drives and motivates the management to present the company's financial condition in good condition. In fact, the company's financial condition is not always good, there are times when the company's financial condition is unstable. The existence of this encouragement, forcing the management to present the company's financial condition is always good in a way that is not honest and is not relevant to manipulating material values in financial statements. This event is one of the things that can trigger acts of fraud (Izza, 2021).

According to the Association of Certified Fraud Examiners (ACFE), which is the largest anti-fraud organization in the world, there are three main categories of fraud contained in the fraud tree, namely corruption, asset misappropriation, and financial statement fraud. ACFE regularly conducts research on fraud cases that occur in all countries which are published in the Report to The Nations (RTTN) on Occupational Fraud.

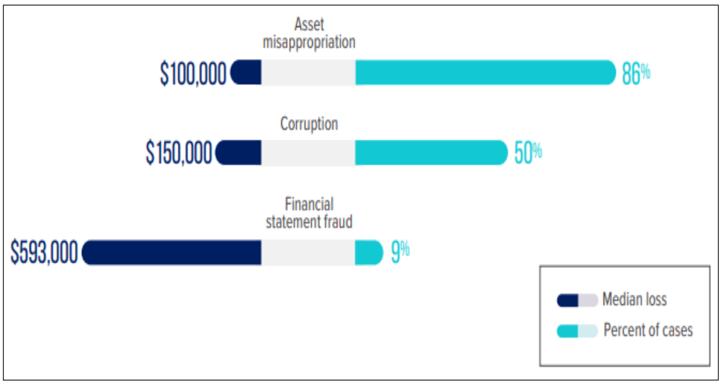


**Figure 1.** Fraud Categories

Based on Report to The Nations (2022), the biggest loss was found in financial statement fraud with 9% of cases causing an average loss of $593,000 compared to the other two types of cases, namely 86% of cases of asset misappropriation with an average loss of $100,000 and 50% corruption cases with an average loss of $150,000. In the report, ACFE also mentions industries that are victims of fraud. Real estate is the industry with the highest average loss due to fraud, amounting to $435,000 (ACFE, 2022).

The phenomenon of financial statement fraud cases is common, both in the world and in Indonesia. A popular case that has shocked the world regarding financial statement fraud is the Enron case which occurred in the 2000s. Enron collaborated with the Arthur Andersen Public Accounting Firm which audited its financial statements. Enron managed to manipulate profits of USD 600 million which caused losses to investors and other parties, resulting in the Enron company going bankrupt. Likewise, Toshiba Corporation has overstated company profits of USD 1.2 billion for several years (Indriani and Rohman, 2022).

Meanwhile, cases of financial statement fraud in Indonesia occurred in the property and real estate sector, namely PT Hanson Internasional Tbk. The 2016 financial report manipulation case belonging to PT Hanson Internasional Tbk it only opened in 2019 when the PT Jiwasraya case emerged. Manipulation carried out by PT Hanson Internasional Tbk, which is related to the accounting presentation of income on the sale of ready-to-build plots made the income recorded in the financial statements that year overstated with a material value of IDR 613 billion.

Since the disclosure of the problems of these fraud cases, the financial reports have experienced a decrease in reliability in the public eye. Basically, financial reports reflect information on the company's financial condition. The information is expected to help users in terms of decision making. Financial reports that contain elements of fraud or manipulation will mislead the public who use these financial reports as a basis for decision making (Kartikasari and Irianto, 2010).

This study uses the fraud hexagon theory approach which consists of stimulus (pressure), capability, collusion, opportunity, rationalization, and ego (arrogance) in detecting financial statement fraud and is measured by the formula put forward by a professor at the Kelley School of Business, Indiana University, Messod D. Beneish (Beneish, 1999). The variable elements of fraud risk cannot be measured directly (Sihombing et al., 2014). Therefore, the measurement is carried out through variable proxies. Research related to financial statement fraud has been widely studied in previous studies using the variable external pressure (Ginting, 2020), change in director (Melisa, 2022), political connection (Kusumosari, 2020), nature of industry (Sari and Witosari, 2022), change in auditor (Aviantara, 2021) and frequent number of CEO pictures (Aprilia, 2017).

This study aims to determine the effect of fraud hexagon proxied by external pressure, change in director, political connection, nature of industry, change in auditor and frequent number of CEO pictures on financial statement fraud. It is important that this research is carried out so that financial statement fraud can be detected as early as possible so that the potential for financial statement fraud can be avoided and does not cause harm to many parties.

## LITERATURE REVIEW

### Financial Statement Fraud

Fraud is an act (in terms of crime, namely a prohibited act) designed to deceive one or several people resulting in the victim suffering a loss and/or the perpetrator gaining profit (Tuanakotta, 2019:240). The Association of Certified Fraud Examiners (ACFE) categorizes fraud into three main branches which have more specific branches known as the "fraud tree". ACFE classifies fraud into three main branches which consist of corruption, asset misappropriation, and financial statement fraud. Financial Statement Fraud is the type of fraud is well known to auditors who conduct general audits (opinion audits). Financial statement fraud is divided into two forms, namely financial and non-financial. Fraud in the preparation of financial statements is fraud in the form of misstatements, both overstatements and understatements. Meanwhile, fraud in compiling non-financial reports is in the form of submitting non-financial reports in a misleading manner, which is better than the actual situation and is often falsification or twisting the situation. It can be listed in documents used for internal and external purposes (Tuanakotta, 2016:203). According to the Indonesian Institute of Accountants (IAI) (in Andriani, 2019), financial statement fraud described in section 316 of the Public Accountant Professional Standards (SPAP) states that: (a) Misstatements arising from disclosure of financial statement fraud, namely intentional misstatements or omissions of amounts or disclosures in financial statements to deceive users of financial statements, (b) Misstatements arising from improper treatment.

Financial statement fraud measured by Beneish (1999) developed the Beneish M-Score Model, which is a calculation used to detect manipulation or fraud of financial reports. The calculation consists of: (1) Days Sales in Receivables Index (DSRI); (2) Gross Margin Index (GMI); (3) Asset Quality Index (AQI); (4) Sales Growth Index (SGI); (5) Depreciation Index (DEPI); (6) Sales General and Administrative Expenses Index (SGAI); (7) Leverage Index (LVGI); and (8) Total Accruals to Total Assets (TATA). By using these variables, Beneish was able to identify that 76% of the sample companies manipulated their financial statements. According to research conducted by Safitri and Sari (2018), the Beneish M-Score Model can ensure immediate detection of reports manipulation actions through potential financial report fraud carried out before public announcements by stock exchange authorities and to narrow disclosure gaps (Hernanda, 2022).

## Fraud Hexagon Theory

The fraud hexagon is the result of the development of the fraud triangle, fraud diamond, and fraud pentagon theories put forward by Georgios L. Vousinas in 2019. The development of fraud theory began with the fraud triangle theory put forward by Cressey Donald in 1953 in his research entitled "Other People's Money: A Study in the Social Psychology of Embezzlement". The research explained that there are three factors in fraud situations, namely pressure, opportunity, and rationalization. Furthermore, the fraud triangle theory was developed by D. T. Wolfe & Hermanson in 2004 to become the fraud diamond theory. Fraud diamond theory perfects the fraud triangle theory by adding one factor that can influence fraud, namely capability. Theory continued to develop until the fraud pentagon theory was proposed by Crowe in 2011 by adding one factor from the previous theory, namely arrogance. This theory consists of five factors. The latest theory regarding fraud is refined into the fraud hexagon theory put forward by Georgios L. Vousinas in 2019. Fraud hexagon is often referred to as S.C.C.O.R.E. The model consists of six factors, namely stimulus, capability, collusion, opportunity, rationalization, and ego.

**Figure 2.** Fraud Hexagon


In the fraud hexagon theory, stimulus is a condition that pressures someone to commit fraud. There are various forms of pressure, such as pressure to achieve high targets, so it is necessary to report better results, especially during times of crisis. During this crisis, the potential for committing acts of fraud will be higher due to an economic recession and company pressure so that its business objectives can still be fulfilled (Vousinas, 2019). Capability is a trait or ability of a person who has the intention or desire to commit fraud. Capability refers to the traits and abilities of a person who plays a major role in fraud. This is caused by pressure, opportunity, and rationalization. Opportunities open doors, while pressure and rationalization pull potential fraud actors toward an open door (opportunity). In addition, actors also need the ability to pass open opportunities. Financial statement fraud will not occur if it is not carried out by people who have the right capabilities which can lead to fraudulent acts (Vousinas, 2019).

Collusion is an agreement between two or more parties that deceives the other party, so that one party acts against another party for an evil purpose, such as to seize the rights of a third party (Vousinas, 2019). According to Venter (2007) in Vousinas (2019), parties involved in collusion can be employees within an organization, a group of individuals spanning several organizations and jurisdictions or members of a dedicated criminal organization or collective. Opportunity is a situation or there are loopholes and opportunities that the perpetrator believes that his fraudulent actions will not be detected. Opportunities for committing fraud can occur because of weak internal controls owned by a company. The higher the position and authority of a person in the company, the greater the opportunity to commit fraud because they have the power and ability to manage circumstances (Vousinas, 2019). Rationalization is an act of justification for all mistakes in fraud and fraud committed. The perpetrators of fraud will feel that they are ordinary people who are honest and do not feel guilty, and they will also provide reasons to defend their actions so that they can be accepted to cover up the fraud committed (Vousinas, 2019). The last, ego is an attitude that encourages someone to achieve something they want regardless of the method used (Vousinas, 2019). In addition, arrogance is an attitude of arrogance of a person who believes himself to be able to commit acts of fraud. There is arrogance because management has a big and prominent selfish nature.

**External Pressure**

External pressure is a condition that is felt by management who feels pressured due to pressure from outside, namely a condition in which the company can obtain loans from external parties and is able to fulfill these obligations (Mardianto and Tiono, 2019). The pressure in this study uses the external pressure factor. External pressure can be used as a proxy for stimulus because there is high external pressure faced by management so that it can encourage the emergence of potential fraud. To deal with these pressures, management must seek debt as an external source of funds so that the company can continue to run. The potential for fraud arises when the company has a lot of debt. External pressure is measured by the leverage ratio, namely by comparing total liabilities with total assets (Ginting, 2020). This ratio is used to assess a company's ability to repay loans. If a company has a high ratio, it indicates that the company has a large debt so that the credit risk owned by the company is also high (Imtikhani and Sukirman, 2021). This makes creditors hesitate and worry about giving loans to companies so that management tries to make creditors believe that they can repay loans by committing financial statement fraud.

**$H_1$ : External Pressure has an effect on Financial Statement Fraud.**

### Change in Director

Change in director is a change or transfer of duties and authority from the old directors to new directors in a company. A change of directors in a company can cause the company's performance to decline, giving rise to stress management which can trigger the potential for financial statement fraud (Melisa, 2022). The proxy for capability in this study is the change in director factor. Substitution of directors can be an effort to improve the performance of the previous directors by changing the composition of the directors or recruiting new directors who are considered more competent (Imtikhani and Sukirman, 2021). However, the change of directors does not always have a good impact on the company. Change of directors can cause a stress period which can increase the potential for fraud (Wolfe and Hermanson, 2004) so that a change of directors may be an attempt to remove traces by trying to get rid of directors who are believed to know about fraud occurring in the company.

**$H_2$ : Change in Director has an effect on Financial Statement Fraud.**

### Political Connection

Political connection is a relationship owned by a company that can help in getting what it wants. Collusion in this study uses the factor of political connection. This political connection can be beneficial and make it easier for companies to deal with third parties outside the company. The management of companies that have political connections can obtain convenience and a special relationship which causes a decrease in oversight within the company so that this will be used by management as the manager of the company to place more importance on their interests than the interests of shareholders (Melisa, 2022). Companies with president commissioners and/or independent commissioners who have political connections can trigger management to run the company arbitrarily. This is because management feels that the company has a special relationship with politicians which makes the company more flexible in complying with existing regulations and makes it easier to carry out company operations. This special relationship can be exploited by management to commit financial statement fraud that are useful for fulfilling personal interests, namely obtaining the maximum personal profit without having to spend more effort in running the company's operations, as well as being useful for deceiving shareholders by giving hope that the company operates in an efficient manner which can provide a high rate of return on investment. Therefore, companies that have political connections can indicate that they have a greater potential for financial statement fraud (Kusumosari, 2020).

**$H_3$ : Political Connection has an effect on Financial Statement Fraud.**

**Nature of Industry**

The nature of the industry describes an ideal condition that a company wants to achieve when carrying out its processes in a particular industry. The company's ideal conditions can also be influenced by the economic environment and industrial growth that occur around the entity carrying out its operational activities (Hadi et al., 2021). Opportunity in this study uses the nature of industry factor. Fraud can occur if the company's conditions are supportive, such as weak internal controls on an account. One of them is controlling the nature of the industry, which includes receivables and sales. The condition of accounts receivable in a company is a form of one of the natures of industry (Himawan and Wijanarti, 2020). Receivables are one of the assets with a high probability of being manipulated. According to Skousen, et al. (2009), a company can be said to be good if the company can reduce and reduce the amount of company receivables and is able to increase the receipt of a company's cash flow. Limited cash due to the large number of receivables can be an impetus for management to manipulate financial reports (Sari and Witosari, 2022).

**$H_4$ : Nature of Industry has an effect on Financial Statement Fraud**

**Change in Auditor**

Auditor change is a change or transfer of duties and authority of the old auditor to the new auditor. For management, this is an act of rationalization when committing financial statement fraud because they do not feel guilty for the fraudulent actions they have committed or when planning to commit fraud (Melisa, 2022). The rationalization in this study uses the change in auditor factor. The effect of changing auditors within the company can be an indication of the occurrence of fraud. The old auditor may be better able to detect all possible fraud committed by management, either directly or indirectly. However, with a change of auditors, the possibility of fraud will increase (SAS No. 99 in AICPA, 2002). The change of auditors by the company can be assessed as an effort to eliminate fraud trails found by previous auditors. The change of auditors by the company can be assessed as an effort to eliminate fraud trails found by previous auditors. Several studies state that the incidence of audit failure increases when there is a change of auditors within the company (Skousen et al., 2009). This can be used by management to reduce the detection of fraud. Not only that, changing auditors provides a transition period that can be used by management to commit fraud (Aviantara, 2021).

**$H_5$ : Change in Auditor has an effect on Financial Statement Fraud**

**Frequent Number of CEO Pictures**

The frequent Number of CEO’s Pictures is the number of photos displayed in a company’s financial statements. Ego in this study uses the frequent number of CEO pictures factor. Ego is the arrogant or haughty nature of someone who commits an act of fraud. The Committee of Sponsoring Organizations of the Treadway Commission (COSO) conducted a study which showed that 70% of fraudulent acts had a profile that combined pressure and arrogance and 89% of the fraud cases involved were CEOs (Horwarth, 2011). The level of arrogance or superiority possessed by the CEO can be represented by the large number of CEO photos appearing in the company's annual report. It is assumed that the more photos of the CEO in the company's annual report indicate the high arrogance of a CEO in a company (Aprilia, 2017). The high attitude of arrogance can lead to the possibility of fraud due to the arrogance and superiority possessed by the CEO so that he feels that every internal control does not apply to him because of his status and position.

**$H_6$ : Frequent Number of CEO Picture has an effect on Financial Statement Fraud**

## RESEARCH METHODOLOGY

### Population and Sample

The object of this study is based on the identification and formulation of predetermined problems, namely financial statement fraud, external pressure, change in director, political connection, nature of industry, change in auditor, and frequent number of CEO pictures in the property and real estate sector listed on the Indonesia Stock Exchange (IDX). Furthermore, this study uses a period with an annual system, namely 2017 to 2021. The data used in this study were obtained through the IDX's official website, namely www.idx.co.id and the official website of each company. The sample used a purposive sampling method, namely selecting a sample based on criteria (1) property and real estate sector companies listed on the Indonesia Stock Exchange (IDX) for 2017-2021; (2) Companies in the property and real estate sector that continuously report their financial reports and annual reports on the IDX website or company website from 2017-2021; (3) Companies in the property and real estate sector that did not suffer losses during 2017-2021; (4) Companies in the property and real estate sector issuing financial reports in rupiah currency; (5) Companies in the property and real estate sector whose financial reports and annual reports present complete data according to the variables to be studied.

### Variable Measurement

The variables used in this research are the dependent variable and the independent variable.

**Table 1.** Definition and Measurement of Variables

| Variable | Definition | Formulation | Measurement Scale |
|---|---|---|---|
| **Dependent** | | | |
| Financial Statement Fraud | Financial statement fraud is a material misstatement in the form of understateme | **Beneish M-Score**<br>a. DSRI $= \frac{\left(\frac{Receivables_t}{Sales_t}\right)}{\left(\frac{Receivables_{t-1}}{Sales_{t-1}}\right)}$<br>b. GMI $= \frac{\left(\frac{Sales_{t-1} - Cost\ of\ Goods\ Sold_{t-1}}{Sales_{t-1}}\right)}{\left(\frac{Sales_t - Cost\ of\ Goods\ Sold_t}{Sales_t}\right)}$ | Nominal |

| | | | |
|---|---|---|---|
| | nt or overstatement in financial statements that is done intentionally to achieve a certain goal. | c. $AQI = \frac{1-\frac{(Current\ Asset_t + PPE_t)}{Total\ Asset_t}}{1-\frac{(Current\ Asset_{t-1} + PPE_{t-1})}{Total\ Asset_{t-1}}}$<br>d. $SGI = \frac{Sales_t}{Sales_{t-1}}$<br>e. $DEPI = \frac{\left(\frac{Depreciation_{t-1}}{Depreciation_{t-1} + PPE_{t-1}}\right)}{\left(\frac{Depreciation_t}{Depreciation_t + PPE_t}\right)}$<br>f. $SGAI =$ $\frac{\left(\frac{Sales,General,and\ Administrative\ Expense_t}{Sales_t}\right)}{\left(\frac{Sales,General\ and\ Administrative\ Expense_{t-1}}{Sales_{t-1}}\right)}$<br>g. $LVGI =$ $\frac{\left(\frac{Long\ Term\ Debt_t + Current\ Liability_t}{Total\ Asset_t}\right)}{\left(\frac{Long\ Term\ Debt_{t-1} + Current\ Liability_{t-1}}{Total\ Asset_{t-1}}\right)}$<br>h. $TATA =$ $\left(\frac{Income\ from\ Operation_t - Cashflow\ from\ Oper}{Total\ Asset_t}\right.$<br>$M\ SCORE = -4{,}84 + 0{,}920DSRI + 0{,}528GMI + 0{,}404AQI + 0{,}892SGI + 0{,}115DEPI - 0{,}172SGAI + 4{,}679TATA - 0{,}327LVGI$<br>Code 1, if the company commits fraud with an M-Score > -2.22.<br><br>Code 0, if the company does not commit fraud with an M-Score < -2.22.<br>(Hernanda, 2022) | |
| **Independent** | | | |
| External Pressure | External pressure is pressure felt by management to meet external financing sources in the form of capital and debt from external parties. External pressure can be measured using a leverage ratio of the Debt to | $DAR = \frac{\text{Total Debt}}{\text{Total Asset}}$<br>(Ginting, 2020) | Ratio |

| | | | |
|---|---|---|---|
| | Assets Ratio (DAR) type. | | |
| Change in Director | Substitution of directors is a change or transfer of duties and authority of the old directors to new directors in a company. | Code 1, if there is a change of directors in the company during the 2017-2021 period.<br>Code 0, if there is no change of directors in the company during the 2017-2021 period.<br>(Melisa, 2022) | Nominal |
| Political Connecti on | Political connection is a relationship owned by a company that can help in getting what it wants. | Code 1, if a company with a president commissioner and/or independent commissioner has political connections during the 2017-2021 period.<br>Code 0, if a company with a president commissioner and/or independent commissioner has no political connections during the 2017-2021 period.<br>(Kusumosari, 2020) | Nominal |
| Nature of Industry | The nature of industry describes an ideal condition that a company wants to achieve when carrying out its processes in a particular industry. | $\text{NOI} = \frac{\text{Receivables}_t}{\text{Sales}_t} - \frac{\text{Receivables}_{t-1}}{\text{Sales}_{t-1}}$<br>(Sari and Witosari, 2022) | Ratio |
| Change in Auditor | Auditor change is a change or transfer of duties and authority of the old auditor to the new auditor. | Code 1, if the company changes auditors during the 2017-2021 period.<br>Code 0, if the company does not change auditors during the 2017-2021 period.<br>(Aviantara, 2021) | Nominal |
| Frequent Number of CEO Pictures | The frequent Number of CEO's Pictures is | The number of CEO photos that appear in the company's annual report for the period 2017-2021.<br>(Aprilia, 2017) | Ratio |

| | | | |
|---|---|---|---|
| | the number of photos displayed in a company's financial statements. | | |

## Data Analysis Technique

Data analysis used in this study used logistic regression analysis using the Eviews 12 program to test the research hypothesis. The logistic regression analysis technique no longer requires normality tests and classical assumption tests on the independent variables (Ghozali, 2011: 333). However, for the multicollinearity test because it only involves independent variables, logistic regression still requires the test to be carried out. Logistic regression analysis in this study uses an equation with six independent variables which can be stated as follows:

$$\mathbf{FSF} = \alpha + \beta_1\mathbf{DAR} + \beta_2\mathbf{DCHANGE} + \beta_3\mathbf{PLC} + \beta_4\mathbf{NOI} + \beta_5\mathbf{AUDCHANGE} + \beta_6\mathbf{CEOPIC} + \varepsilon$$

**Information :**

FSF = Financial Statement Fraud
$\alpha$ = Constant
$\beta_{1,2,3,4,5,6}$ = Regression Coefficient
DAR = External Pressure
DCHANGE = Change in Director
PLC = Political Connection
NOI = Nature of Industry
AUDCHANGE = Change in Auditor
CEOPIC = Frequent Number of CEO Picture
$\varepsilon$ = Error

## RESULT AND DISCUSSION

### Research Samples

The research objects used in this study are property and real estate sector companies listed on the Indonesia Stock Exchange (IDX) for the 2017-2021 research period. The data used in this study were obtained through the IDX's official website, namely www.idx.co.id and the official website of each company. The sample uses a purposive sampling method, namely the selection of samples based on the required criteria. The sample selection process was carried out with the criteria obtained by 13 companies that were used as samples with a five-year observation period so that the total was as many as 65 data samples.

### Multicollinearity Test

The multicollinearity test aims to determine whether or not there is a correlation between the independent variables in this regression.

**Table 2.** Multicollinearity Test Results

| | **DAR** | **DCHANGE** | **PLC** | **NOI** | **AUDCHANGE** | **CEOPIC** |
|---|---|---|---|---|---|---|
| DAR | 1.000000 | 0.270507 | 0.089141 | 0.217493 | 0.122400 | 0.381923 |
| DCHANGE | 0.270507 | 1.000000 | 0.053098 | 0.311755 | 0.034544 | 0.058164 |
| PLC | 0.089141 | 0.053098 | 1.000000 | 0.046722 | -0.059906 | 0.111166 |
| NOI | 0.217493 | 0.311755 | 0.046722 | 1.000000 | 0.049636 | 0.032190 |
| AUDCHANGE | 0.122400 | 0.034544 | -0.059906 | 0.049636 | 1.000000 | -0.013238 |
| CEOPIC | 0.381923 | 0.058164 | 0.111166 | 0.032190 | -0.013238 | 1.000000 |

Based on testing the correlation coefficient values above, each variable has a coefficient value of less than 0.8, so it can be concluded that the model does not experience multicollinearity problems.

### Hosmer and Lemeshow's Goodness of Fit Test

This test is used to test the suitability of empirical data with the applied research model.

**Table 3.** Hosmer and Lemeshow's Goodness of Fit Test Result

| | Quantile of Risk | | Dep=0 | | Dep=1 | | Total | H-L |
|---|---|---|---|---|---|---|---|---|
| | Low | High | Actual | Expect | Actual | Expect | Obs | Value |
| 1 | 9.E-18 | 0.0116 | 6 | 5.98561 | 0 | 0.01439 | 6 | 0.01442 |
| 2 | 0.0158 | 0.0349 | 7 | 6.82713 | 0 | 0.17287 | 7 | 0.17725 |
| 3 | 0.0426 | 0.0579 | 5 | 5.71069 | 1 | 0.28931 | 6 | 1.83426 |
| 4 | 0.0693 | 0.1660 | 7 | 6.10736 | 0 | 0.89264 | 7 | 1.02311 |
| 5 | 0.2006 | 0.2345 | 4 | 4.66245 | 2 | 1.33755 | 6 | 0.42221 |
| 6 | 0.2524 | 0.4085 | 4 | 4.74767 | 3 | 2.25233 | 7 | 0.36593 |
| 7 | 0.4153 | 0.5751 | 5 | 2.92854 | 1 | 3.07146 | 6 | 2.86227 |
| 8 | 0.6012 | 0.7473 | 1 | 2.07471 | 6 | 4.92529 | 7 | 0.79121 |
| 9 | 0.8220 | 0.9018 | 1 | 0.80429 | 5 | 5.19571 | 6 | 0.05500 |
| 10 | 0.9020 | 1.0000 | 0 | 0.15156 | 7 | 6.84844 | 7 | 0.15491 |
| | | Total | 40 | 40.0000 | 25 | 25.0000 | 65 | 7.70057 |
| **H-L Statistic** | | | **7.7006** | | **Prob. Chi-Sq(8)** | | **0.4633** | |
| Andrews Statistic | | | 21.6256 | | Prob. Chi-Sq(10) | | 0.0171 | |

Based on the test, the value of the H-L statistic is 7.7006 with a significance probability of 0.4633. With a probability value of 0.4633, which is greater than 0.05, it indicates that the model is able to predict the observed values in the study, or it can be said that the model is acceptable because it matches the observation data.

### Expectation-Prediction Evaluation Test

This test is used to determine the estimated value of the correct and incorrect percentage of the dependent variable or it can be said to show the level of match percentage of cases that are classified correctly and cases that are classified incorrectly.

**Table 4.** Expectation-Prediction Evaluation Test Result

| | Estimated Equation | | | Constant Probability | | |
|---|---|---|---|---|---|---|
| | Dep=0 | Dep=1 | Total | Dep=0 | Dep=1 | Total |
| P(Dep=1)<=C | 34 | 7 | 41 | 40 | 25 | 65 |

| | | | | | | |
|---|---|---|---|---|---|---|
| P(Dep=1)>C | 6 | 18 | 24 | 0 | 0 | 0 |
| Total | 40 | 25 | 65 | 40 | 25 | 65 |
| Correct | 34 | 18 | 52 | 40 | 0 | 40 |
| % Correct | 85.00 | 72.00 | **80.00** | 100.00 | 0.00 | 61.54 |
| % Incorrect | 15.00 | 28.00 | 20.00 | 0.00 | 100.00 | 38.46 |
| Total Gain* | -15.00 | 72.00 | 18.46 | | | |
| Percent Gain** | NA | 72.00 | 48.00 | | | |

Based on the test results, in the estimated equation column it is known that the total results from the percentage value of correct prediction accuracy are obtained by 80%, which means that the percentage of accuracy of the model in predicting financial statement fraud in this study is 80%.

### McFadden R-Squared Test

McFadden R-Squared is used to measure the ability of existing models to explain the dependent variable.

**Table 5 : McFadden R-Squared Test Result**

| | | | |
|---|---|---|---|
| **McFadden R-squared** | **0.458432** | Mean dependent var | 0.384615 |
| S.D. dependent var | 0.490290 | S.E. of regression | 0.362363 |
| Akaike info criterion | 0.937055 | Sum squared resid | 7.615788 |
| Schwarz criterion | 1.171220 | Log likelihood | -23.45429 |
| Hannan-Quinn criter. | 1.029448 | Deviance | 46.90857 |
| Restr. deviance | 86.61620 | Restr. log likelihood | -43.30810 |
| LR statistic | 39.70762 | Avg. log likelihood | -0.360835 |
| Prob(LR statistic) | 0.000001 | | |
| Obs with Dep=0 | 40 | Total obs | 65 |
| Obs with Dep=1 | 25 | | |

Based on the test results, it was shown that the McFadden R-Squared value was 0.458432. This can be interpreted if the dependent variable, namely financial statement fraud, can be influenced by independent variables (external pressure, change in director, political connection, nature of industry, change in auditor, and frequent number of CEO pictures), which is equal to 45.84% and the remaining 54.16% is influenced by other variables outside this research model.

### Logistic Regression Analysis

Logistic Regression Analysis is used to determine the relationship that occurs between the dependent variable and the independent variable.

**Table 6.** Logistic Regression Analysis Result

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -2.333195 | 1.298547 | -1.796773 | 0.0724 |
| DAR | 5.801294 | 2.820459 | 2.056862 | 0.0397 |
| DCHANGE | 2.176114 | 1.703853 | 1.277173 | 0.2015 |

| | | | | |
|---|---|---|---|---|
| PLC | -0.684443 | 0.748346 | -0.914608 | 0.3604 |
| NOI | 34.05498 | 9.720998 | 3.503239 | 0.0005 |
| AUDCHANGE | 2.070341 | 0.808589 | 2.560438 | 0.0105 |
| CEOPIC | -0.418737 | 0.264903 | -1.580717 | 0.1139 |

## Likelihood Ratio Test

The likelihood ratio (LR) statistical test was conducted to test whether all independent variables simultaneously affect the dependent variable.

**Table 8.** Likelihood Ratio Test Result

| | | | |
|---|---|---|---|
| McFadden R-squared | 0.458432 | Mean dependent var | 0.384615 |
| S.D. dependent var | 0.490290 | S.E. of regression | 0.362363 |
| Akaike info criterion | 0.937055 | Sum squared resid | 7.615788 |
| Schwarz criterion | 1.171220 | Log likelihood | -23.45429 |
| Hannan-Quinn criter. | 1.029448 | Deviance | 46.90857 |
| Restr. deviance | 86.61620 | Restr. log likelihood | -43.30810 |
| **LR statistic** | **39.70762** | Avg. log likelihood | -0.360835 |
| **Prob(LR statistic)** | **0.000001** | | |
| Obs with Dep=0 | 40 | Total obs | 65 |
| Obs with Dep=1 | 25 | | |

Based on the test results, the statistical LR or chi-square calculated value was 39.70762, while the chi-square value of table df 6, $\alpha = 0.05$ was 12.5916. Statistical LR value or calculated chi-square is 39.70762 > table chi-square value is 12.5916. In addition, it can be seen that the LR test compares the Prob (LR statistic) to $\alpha$, the Prob (LR statistic) value is 0.000001 <0.05, so the decision is to reject $H_0$ and accept $H_1$ which means all independent variables simultaneously or together affect the dependent variable.

## Statistical Z Test

The Z test was conducted to determine whether the independent variables partially affect the dependent variable. The Z test is carried out by comparing the value of probability to $\alpha$, if probability < $\alpha$, then $H_0$ is rejected, which means that the independent variable affects the dependent variable, whereas if probability > $\alpha$, then $H_0$ is accepted, which means that the independent variable does not affect the dependent variable. The recapitulation of the results of the hypothesis testing analysis in this study is presented in the following table:

**Table 7.** Recapitulation of Hypothesis Test Results

| Num. | Hypothesis | Coefficient | Prob. | Conclusion |
|---|---|---|---|---|
| 1 | External Pressure has an effect on Financial Statement Fraud | 5,801294 | 0,0397 | $H_1$ Accepted |
| 2 | Change in Director has an effect on Financial Statement Fraud | 2,176114 | 0,2015 | $H_2$ Rejected |
| 3 | Political Connection has an effect on Financial Statement Fraud | -0,684443 | 0,3604 | $H_3$ Rejected |
| 4 | Nature of Industry has an effect on Financial Statement Fraud | 34,05498 | 0,0005 | $H_4$ Accepted |
| 5 | Change in Auditor has an effect on Financial Statement Fraud | 2,070341 | 0,0105 | $H_5$ Accepted |
| 6 | Frequent Number of CEO Picture has an effect on Financial Statement Fraud | -0,418737 | 0,1139 | $H_6$ Rejected |

### Effect of External Pressure on Financial Statement Fraud

Based on the results of testing the external pressure variable on financial statement fraud, a probability value of 0.0397 <0.05 is obtained with a coefficient value of 5.801294. This shows that the stimulus (pressure) which is proxied by the external pressure variable and is measured using the leverage ratio, namely the debt to asset ratio, has an effect on financial statement fraud. That is, the higher the value of the leverage ratio owned by a company indicates that the company has a large debt so that the credit risk owned by the company is also high. This will certainly be a great pressure for the company to maintain the good name of the company in the eyes of investors and creditors.

The results of this study are in line with the research of Melisa (2022), Sari and Witosari (2022), Imtikhani and Sukirman (2021) which proves that external pressure has an effect on financial statement fraud. High external pressure faced by management can encourage the emergence of potential fraud or fraud. A high debt value also has a high credit risk so that this can be a note and consideration for investors and creditors to provide loans to the company. This will make the company's management do whatever it takes to attract investors and creditors to enter into cooperative relations with the company. Management seeks to make creditors believe that they are able to repay loans by committing fraud or fraud against financial reports.

### Effect of Change in Director on Financial Statement Fraud

Based on the results of testing the change in director variable on financial statement fraud, a probability value of 0.2015 > 0.05 is obtained with a coefficient value of 2.176114. This shows that the capability proxied by the change in director variable has no effect on financial statement fraud.

The results of this study are in line with the research of Melisa (2022), Novarina and Triyanto (2022), Imtikhani and Sukirman (2021) which proves that change in directors has no effect on financial statement fraud. Substitution of directors may indicate management's efforts to get rid of the previous directors who are considered aware of the fraud that has been committed. However, the change of directors that occurs within the company may not always be because they want to cover up fraud committed by the previous directors, but to improve the performance of the old directors by selecting new directors who can carry out their duties and authorities better to improve company performance. In addition, a company that changes directors may also indicate that the director who previously served has entered retirement, is sick or has passed away which causes the director to no longer be able to continue his duties and authorities in the company. The change of directors must also be carried out by the company referring to OJK Regulation No. 33/POJK.04/2014 Article 3 Paragraph 3, where after 5 years of serving as directors, the directors must be replaced so that the replacement of directors carried out by the company may indicate that the year of mandatory replacement of directors related to regulations coincides with the period when the study this is done.

### Effect of Political Connection on Financial Statement Fraud

Based on the results of testing the political connection variable on financial statement fraud, the result is that the probability value is 0.3604 > 0.05 with a coefficient value of -0.684443. This shows that the collusion proxied by the political connection variable has no effect on financial statement fraud.

The results of this study are in line with the research of Melisa (2022), Hernanda (2022), Imtikhani and Sukirman (2021) which states that political connections have no effect on financial statement fraud. Companies with political connections may indicate that the company is taking advantage of good relations with politicians. Companies that have political connections are likely to have the motivation to maintain the good name of the company because of their political connections, the company hopes to be better known by stakeholders which can make the company more advanced. Companies also tend to avoid legal entanglements that can eliminate consumer trust in the company to maintain good relations and trust, companies will establish a good track record and be careful not to commit fraud or fraud. Therefore, political connections owned by a company are not always used for interests that lead to fraud, but to be used for the betterment of the company.

### Effect of Nature of Industry on Financial Statement Fraud

Based on the results of testing the nature of industry variable on financial statement fraud, the result is that the probability value is 0.0005 <0.05 with a coefficient value of 34.05498. This shows that opportunity is proxied by the nature of industry variable as measured using changes in receivables, namely the ratio of receivables to sales has an effect on financial statement fraud.

The results of this study are in line with the research by Sari and Witosari (2022) which prove that the nature of the industry has an effect on financial statement fraud. Fraud can work if the company's conditions are supportive, such as weak internal controls on a company account, one of which is accounts receivable. An increase in the amount of the company's receivables in the previous year may indicate that the company's cash turnover is not good. A significant increase in trade receivables can be a serious indication of the existence of financial statement fraud in a company because an increasing number of company trade receivables will certainly reduce the amount of cash that a company can use for its operational activities. This cash limitation can be an impetus for management to manipulate financial statements. In addition, the financial statements contain certain accounts whose balances are determined by the company based on an estimate, for example the bad debts account. With a subjective assessment in determining the value of the account, management can use the account as a tool to commit fraud in preparing financial statements. This can be an opportunity for companies to commit acts of fraud.

### Effect of Change in Auditor on Financial Statement Fraud

Based on the results of testing the change in auditor variable for financial statement fraud, a probability value of 0.0105 <0.05 is obtained with a coefficient value of 2.070341. This shows that the rationalization (rationalization) proxied by the variable change in auditors has an effect on financial statement fraud. This indicates that the more auditors change in a company, the greater the potential for financial statement fraud.

The results of this study are in line with research by Aviantara (2021) which prove that change in auditor has an effect on financial statement fraud. The change of auditors carried out can be used by management to cover up fraudulent financial statements that have been committed. For management, this is an act of rationalization when committing financial statement fraud because they do not feel guilty for the fraudulent actions they have committed or when planning to commit fraud. In addition, the change of auditors can also be used by management who plans to commit financial statement fraud. This is because the new auditor needs to learn in advance about information relating to transactions carried out by the company, so it will be more difficult for the new auditor to detect fraudulent acts being committed. The old auditor may find it easier to detect all fraud committed by management, either directly or indirectly because the old auditor is used to examining financial reports prepared by management so that the auditor can find out information relating to transactions carried out by the company. Therefore, management will take advantage of this auditor change to cover up fraudulent financial statements that have been committed or even plan to commit acts of fraudulent financial statements aimed at gaining personal gain, as well as to trick shareholders that the company's performance is "good" so that shareholders will believe in continuing to invest in the company.

### Effect of Frequent Number of CEO Pictures on Financial Statement Fraud

Based on the results of testing the frequent number of CEO picture variable on financial statement fraud, the probability value is 0.1139 > 0.05 with a coefficient value of -0.418737. This shows that Ego (Arrogance) is proxied by the frequent number of CEO picture variable (frequency of CEO image appearance) measured by counting the number of CEO image appearances in the company's annual report has no effect on financial statement fraud.

The results of this study are in line with research by Hernanda (2022) which proves that the frequent number of CEO pictures has no effect on financial statement fraud. The high attitude of arrogance can lead to the possibility of fraud or fraud due to the arrogance and superiority possessed by the CEO so that he feels that every internal control does not apply to him because of his status and position. In presenting the company's annual report there is an obligation to provide profile information on the management of the company where the CEO is held by the president director or main director. Presentation of CEO profile information is used to introduce the CEO to interested parties. The profile can be in the form of CEO personal information as well as CEO images such as when carrying out various company activities that need to be presented in the company's annual report as proof that the CEO participates actively and has responsibilities so that there are many CEO photos, achievements, and the entire CEO's track record. which is displayed repeatedly in the annual report may not always describe the presence of arrogance in a person, but rather to introduce the personality of the CEO in more depth through reports addressed to users.

## CONCLUSION

Based on the results of the research that has been carried out with the data that has been collected, tested, and analyzed, stimulus factor proxied by external pressure, opportunity factor proxied by nature of industry and rationalization factor proxied by change in auditor effect on financial statement fraud. Temporary other factors such as the capability factor proxied by change in director, collusion factor proxied by a political connection and ego factor (arrogance) proxied by the frequent number of CEO pictures have no effect on financial statement fraud. The Implications for the auditors are to include all the tested variables in this study through the list of questionaries when performing initial meeting in order to assess the risk of fraud, even for all the stakeholders can be signalling tools to adopt a scepticism manner if any conditions encountered.

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# THE EFFECT OF FINANCIAL LEVERAGE, PROFITABILITY, AND INSTITUTIONAL OWNERSHIP TOWARDS INCOME SMOOTHING IN BASIC INDUSTRY AND CHEMICAL, MISCELLANEOUS INDUSTRY, AND CONSUMER GOODS INDUSTRY LISTED ON INDONESIA STOCK EXCHANGE FOR THE PERIOD 2019-2021

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**Abstract:** The purpose of this study is to obtain empirical evidence about the effect of financial leverage, profitability, and institutional ownership towards income smoothing in basic industry and chemical, miscellaneous industry, and consumer goods industry listed on Indonesia Stock Exchange for the period 2019-2021. This study used 65 samples and 195 data from companies in basic industry and chemical, miscellaneous industry, and consumer goods industry that have been selected using purposive sampling technique. The data was processed using Eviews version 12 software. The result of this study shows that financial leverage and profitability have significant negative effect towards income smoothing, while institutional ownership has no effect towards income smoothing.

**Keywords:** income smoothing, financial leverage, profitability, institutional ownership

**Abstrak:** *Tujuan dari penelitian ini adalah untuk memperoleh bukti empiris mengenai pengaruh financial leverage, profitabilitas, dan kepemilikan institusional terhadap perataan laba pada industri dasar dan kimia, aneka industri, dan industri barang konsumsi yang terdaftar di Bursa Efek Indonesia periode 2019-2021. Penelitian ini menggunakan 65 sampel dan 195 data dari perusahaan industri dasar dan kimia, aneka industri, dan industri barang konsumsi yang diseleksi dengan teknik purposive sampling. Data diolah dengan menggunakan software Eviews versi 12. Hasil dari penelitian ini menunjukkan bahwa financial leverage dan profitabilitas berpengaruh negatif signifikan terhadap perataan laba, sedangkan kepemilikan institusional tidak berpengaruh terhadap perataan laba..*

***Kata Kunci:*** *Perataan Laba, Financial Leverage, Profitabilitas, Kepemilikan Institusional*

## INTRODUCTION

Generally, financial statements are used as an indicator in evaluating a company. IAI confirms in PSAK No. 1 that financial reports provide reporting entity information regarding economic resources, claims against the entity, and changes in resources and claims. Financial reports are crucial for stakeholders because financial reports are a form of management accounting in managing the business to stakeholders such as owners or investors. Especially for investors, assessing the business performance of an entity from its financial statements is one of the benchmarks in investing. When faced with investment options with long-term goals, investors will certainly be more interested in entities that have good business performance fundamentals. The importance of the information presented in financial reports for its users coupled with the current instability of the country's economy and increasingly fierce competition in the business world has motivated management to work more effectively and efficiently so that entities can survive, maintain their existence, and obtain more optimal results. Not infrequently, the management makes efforts to manage earnings in order to make the financial statements look more satisfactory and achieve this goal.

One of the components in the financial statements that can reflect the success or failure of an entity's business operations objectives is profit. Users of financial statements often focus on the profits presented in financial reports. Changes related to profit information will affect the decisions of stakeholders. The importance of earnings information for users of financial statements is often an impetus for management to manipulate earnings. This tendency will give the impression that the financial statements presented look good and attractive. In fact, this will result in a misleading interpretation for users of financial statements because the profit information contained therein does not reflect the actual economic conditions and company value.

One of the efforts made by management to ostensibly increase the quality of the firm performance is by practicing income smoothing. Income smoothing is intentionally done by management so the profits obtained by the entity look stable from time to time so that it seems attractive for the users (Haniftian, R. A. & Dillak, V. J. ,2020) . The importance of profit in influencing stakeholders' decision is often become a motive for management to manipulate it. In fact, this tendency will result in misleading interpretations for the users of financial report because the earnings information contained in it does not reflect the actual economic condition of the entity. Management also often does income smoothing to achieve their personal goals since some companies have a profit target and promise bonuses or even promotions if the target is achieved.

One of the phenomena related to the practice of income smoothing that has occurred in Indonesia is the case of PT Garuda Indonesia Tbk. PT Garuda Indonesia Tbk reported a significant increase in their net income for the year 2018 while in the previous quarter, the company recorded to have loss. Based on Siaran Pers Otoritas Jasa Keuangan (OJK) Nomor SP/26/DHMS/OJK/VI/2019, PT Garuda Indonesia Tbk and their external auditors were given administrative penalty following the order to restate the annual financial report for the year ended 2018. Another phenomenon that was revealed by OJK was the financial report issues of PT Truba Alam Manunggal Engineering Tbk based on Pengumuman Nomor PENG-1/PM.1/2021. The company has been revealed to manipulate their financial report by not doing impairment on its receivables, decreasing receivables without any supporting evidence or mutations, and applying procedures related to material transactions that are not compliance.

There are several factors that influence income smoothing based on the results of previous studies. Some of them are profitability, financial leverage, company size, cash holding, institutional ownership, and tax avoidance. In this study, the factors that are used as independent variables or variables that affect income smoothing itself are financial leverage, profitability, and institutional ownership. The determination of variables in this study is based on the emergence of different results from previous studies so further research is needed.

One of the factors that influence the practice of income smoothing is financial leverage. Financial leverage is a measurement of the proportion of an entity in using debt and equity as a source of its financing (Brigham & Houston ,2019). Theoretically, entities with high level of financial leverage tend to perform income smoothing because the more the entities' using debt as their source of financing, the higher their financial risk. This unhealthy condition tends to discourage investors to invest their funds or raises doubt from creditors to loan their funds. (Maharani & Putra. ,2021) concluded in their study that financial leverage has a positive significant effect on income smoothing, but ( Sarra& Mikrad ,2021). In states that financial leverage does not have significant effect on income smoothing.

Another factor that is thought affecting income smoothing is profitability. Profitability is a ratio that measures the effectiveness and ability of an entity to generate profits in a period of time. The low level of profitability of an entity can be a motive for management to perform income smoothing to affect the investors' outlook. (Indrawan, et. al 2018) argue that profitability has a negative significant effect on income smoothing which the greater the profitability of an entity, the lower its participation in practicing income smoothing. However, (Inayah & Izzaty , 2021) concluded that profitability has no influence on management's decision to perform income smoothing.

In addition, institutional ownership is also considered as one of the factors that influence income smoothing. Institutional ownership is share owned by institutional parties such as insurance companies, pension funds, securities companies, and other forms of companies (Edison, A. 2017). The existence of institutional investors can prevent the possibility of managerial opportunistic behavior including income smoothing since they indirectly have a supervisory role to the management. ( Inayah & Izzaty , 2021)] concluded that institutional ownership has a negative effect on income smoothing, but (Suyono,2018). shows that institutional ownership has no effect towards income smoothing.

Based on the explanation that has been described, this study aims to provide contributions in identifying factors that affect income smoothing, especially in basic industry and chemical, miscellaneous industry, and consumer goods industry listed on Indonesia Stock Exchange for the period 2019-2021. Therefore, the purpose of this study is to answer (1) does financial leverage affect income smoothing (2) does profitability affect income smoothing (3) does institutional ownership affect income smoothing?

## LITERATURE REVIEW

### Agency Theory

Agency theory was first introduced by Jensen and Meckling (1976) provides an understanding of the contractual relationship between principal and agent. Manager as an agent is the party contracted by shareholder as a principal to work in the interests of the shareholder. For this reason, managers have the authority to make decisions and are responsible for their decisions to the shareholders. Agency theory illustrates that the interests between agent and principal are not always aligned and can lead to a conflict known as the agency problem. Agency problem is a result of information asymmetry where the agent has more information about the company internally and has the information faster than any external parties. Agent will probably misuse the information to perform income smoothing or manipulating other components of the financial report to maximize their personal interests because of the information asymmetry.

### Positive Accounting Theory

Positive accounting theory developed by Watts and Zimmerman in 1986 explains that not all entities apply the same accounting policies because the management has the right to choose it according to their judgement are the most appropriate on the basis of an understanding of accounting in order to obtain benefits from its application in certain conditions. This theory is related to the practice of income smoothing since management will always try to show good performance to the stakeholders so that they will choose to apply accounting procedures and practices that are considered as the most beneficial in its application, including income smoothing.

### Income Smoothing

Income smoothing is a manipulative act in accounting to balance profits over time with the aim of reducing excessive risk. The manipulation in income smoothing can be interpreted as the ability to increase or decrease profits (Di Fabio, Ramassa & Quagli, 2021). The effort to increase profits in a period aims to make the firm performance look favorable and management's decision looks effectively executed. On the other hand, lowering the profits is also an effort to reduce the firm's tax expense. Managers will also perform income smoothing to get benefits in the form of compensation as a result of achieving a profit target (Fasipe & Sun, 2020). The practice of income smoothing often lead to question of whether it is a financial crime or an action that can be justified. Income smoothing is defined as a way for management to use accounting method and transactions to reduce fluctuations in company profits so their performance looks favorable (Toni, Simorangkir, & Kosasih, 2021).Because it is said that the practice still uses accounting methods that are in accordance with the standards, income smoothing practice is often considered reasonable even though it will reduce the reliability of the financial report.

### Income Smoothing

Income smoothing or income smoothing is management's effort to reduce abnormal profit fluctuations. The aim is to make it easier for companies to obtain creditor loans and attract the attention of investors and also to reduce excessive risk. So, this income smoothing action is carried out by managers to gain profits, but considerations for reducing or increasing profits are adjusted again to the objectives of management and the conditions of the company.

**Financial Leverage**

Financial leverage is the use of debt to maximize company assets and income. Financial leverage is an important financial scheme in managing the continuity of a business. This condition occurs because there is insufficient capital owned and there is a desire to generate greater profits to increase the value of the company. Therefore, the company seeks financing and hopes to get more than expected profits. The high financial leverage makes it difficult for companies to pay their obligations and there is a big risk.

**Cash Holding**

Cash holding according to is cash available within the company which in time can easily be used to assist operational activities and meet the needs desired by the company. Cash is one of the current assets that is ready to be converted into other assets and is also very easy to hide, move, and much desired. The financial manager is the party responsible for cash-holding policies as a measure of protecting the company from cash shortfalls

**Institutional Ownership**

Institutional ownership is share ownership by large investors who invest on behalf of certain institutions such as insurance companies, mutual funds, and pension funds. Explain the definition of institutional ownership as the proportion of share ownership by institutional parties such as banks, insurance companies, investment companies, and other companies. In the ownership structure, institutional investors act as parties who monitor company management. Monitoring actions carried out by institutional investors will encourage managers to focus on company performance so as to reduce arbitrary actions .

**Financial Leverage and Income Smoothing**

Financial leverage is the use of debt in the company's capital structure where if the company has more debt, the higher the company's financial leverage (Rose et al. , 2018). The high level of financial leverage can cause a negative effect on the company since the interest expense will increase, but it will have a positive effect if the debt is used wisely and make the company's income greater than the cost incurred when obtaining the debt. Financial leverage can be measured using debt to equity ratio (DER) which will also be used in this study. High financial leverage with low profits could give an outlook that the company's is not healthy. The company's ability to pay interest and repay its debts in accordance with the term could be doubtful if the financial leverage is too high and it would discourage investors to invest their funds or raises doubt from creditors to loan their funds. Therefore, a company with high level of financial leverage has more potential to perform income smoothing to influence the outlook and decisions of the financial report users. This argument is supported by the result of the study by (Maharani & Putra. ,2021) which concluded that financial leverage has a positive effect on income smoothing.

**Profitability and Income Smoothing**

Profitability is a financial ratio that reflects the performance of an entity in generating profits by using its resources through sales activities, asset utilization, and the use of capital (Hery, 2018). Evaluation of the profitability ratios aims to measure the success of an entity's operation in certain period of time (Weygandt, Kimmel, & Mitchell, 2020). The ratio used in this study to represent the companies' profitability is return on assets (ROA). Return on assets is a effectiveness measurement of asset management in generating profits. Companies with low profitability tend to practice income smoothing since the low profitability looks unattractive to investors. Investors invest to expect high returns and consider the risks of their investment. For that reason, management often perform income smoothing to show a good performance in providing returns for investors, lowering investment risks, and basically to get the investors' attention. This correlation is supported by ( Angraeni, Bastian & Lestari, 2022) which argues that profitability has a negative effect towards income smoothing.

**Institutional Ownership and Income Smoothing**

Institutional ownership is share owned by large investors on behalf of certain institutions such as insurance companies, banks, mutual funds, and pension funds (Al-Sartawi, & Sanad, 2019). Large investment from the institutions is a source that support the existence of managers and the company. Institutional investors are also considered not to be easily fooled by the information presented in financial report and have a better understanding of management activities that the average investors. With this advantage, institutional investors are able to monitor management decisions and limit management to act in their own interest. The more significant the institutional ownership in a company's ownership structure, the stricter the monitoring to prevent opportunistic behaviour of the managers such as practicing income smoothing. This argument is supported by (Inayah & Izzaty , 2021) which stated that institutional ownership has a negative effect towards income smoothing.

Based on the theory and the interrelationships between the variables as previously described, the framework and the research model of this study is depicted in the following chart:

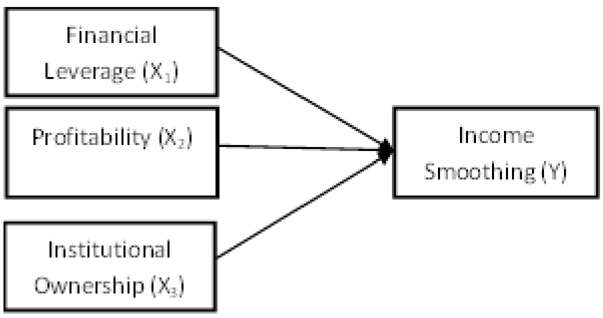


**Figure 1.** Research Framework

## RESEARCH METHODOLOGY

The research design used in this study is descriptive quantitative with the research subjects are companies in basic industry and chemical, miscellaneous industry, and consumer goods industry listed on Indonesia Stock Exchange for the period 2019-2021. Sample is selected using the purposive sampling with the following criteria: Companies in basic industry and chemical, miscellaneous industry, and consumer goods industry listed on Indonesia Stock Exchange consecutively in 2019-2021, do not experience relisting, suspend, and delisting during the observation period, use the Rupiah currency for the financial report, prepare the financial report for the period ended December 31, do not have negative value for the net income, and have institutional ownership data.

This study using binary logistic regression to analyse the data because income smoothing is a dummy variable. 0 represents the company that does not perform income smoothing and 1 represents the company that does income smoothing. Binary logistic regression does not require the normality assumption, heteroscedasticity, and autocorrelation since the dependent variable is a dummy variable (Ghozali, 2018). The test includes McFadden R-squared to measure the ability of a model to explain the variation of particular variable, likelihood ratio test to know whether the independent variables simultaneously affect the dependent variable or not, Hosmer-Lemeshow test to determine whether the model fit or not, and test of percent correctly predicted to measure the accuracy of the model in predicting the dependent variable.

Variable operationalization is summarized in Table 1 below.The research methodology section describes actions to be taken to investigate a research problem and the rationale for the application of specific procedures or techniques used to identify, select, process, and analyze data and information.

**Table 1.** Variable Operationalization

| No. | Variable | Measurement | Scale | Source |
|---|---|---|---|---|
| 1. | Income Smoothing | $Eckel\ Index = \frac{CV\Delta I}{CV\Delta S}$ | Nominal | [17] |
| 2. | Financial Leverage | $DER = \frac{Total\ liabilities}{Total\ Equity}$ | Ratio | [4] |
| 3. | Profitabilitas | $ROA = \frac{Net\ Profit}{Total\ Assets}$ | Ratio | [6] |
| 4. | Institutional Ownership | Institutional Ownership $= \frac{Number\ of\ shares\ comed\ by\ institution}{Total\ Outstanding\ shares} x\ 100\%$ | Ratio | [8] |

**Source:** data processed by researchers

## RESULT AND DISCUSSION

The population in this study were 165 companies and based on the sampling criteria, 65 companies were selected as the sample with a total of 195 data to be examined.

### Descriptive Statistics

Descriptive statistics is an analysis that provides a general description of the characteristics of each variable in the study as seen from mean, median, maximum, minimum, and standard deviation.

**Table 2.** Descriptive Statistics Result

| | Income Smoothing | Financial Leverage | Profitability | Institutional Ownership |
|---|---|---|---|---|
| Mean | 0.723077 | 0.727930 | 0.076141 | 0.699960 |
| Median | 1.000000 | 0.599890 | 0.062470 | 0.750430 |
| Maximum | 1.000000 | 3.824770 | 0.416320 | 0.997110 |
| Minimum | 0.000000 | 0.003470 | 0.000410 | 0.025940 |
| Std. Dev. | 0.448630 | 0.531763 | 0.066281 | 0.197269 |

**Source:** data processed by researchers

Based on Table 2, which is the result of descriptive statistical data, the number of observational data is 195 obtained from 65 sample companies with observations for 3 years (2019, 2020 and 2021) as follow :

1) Income smoothing in this study is a dummy variable where the number 1 represents companies that carry out income smoothing and the number 0 represents companies that do not perform income smoothing. From the observed data, it is known that the minimum income smoothing value is 0.000000 and has a maximum value of 1.000000. The mean income smoothing value in this study itself is 0.723077 where the value is closer to the maximum value so it can be said that companies in the basic and chemical industries, various industries, and the consumer goods industry in Indonesia are doing more income smoothing than those who are not doing income smoothing. The standard deviation value is 0.448630 which is smaller than the mean, meaning that the data pattern reflects income smoothing well and does not vary too much.
2) Descriptive statistics from the first independent variable, namely financial leverage, which is the independent variable in this study. It is known that the minimum value is 0.003470 and the maximum value is 3.824770. The lowest financial leverage is owned by PT Buana Artha Anugerah Tbk in 2020 and the highest financial leverage is owned by PT Pyiridam Farma Tbk in 2021. The mean financial leverage is 0.727930 which is greater than the standard deviation value of 0.531763 so it can be concluded that the data pattern reflects financial leverage well and the data does not vary too much.
3) The descriptive statistics of the second independent variable, namely profitability, show that the minimum value of profitability is 0.000410 and the maximum value is 0.416320. The lowest profitability belongs to PT Cahayaputra Asa Keramik Tbk in 2020 and the highest is the profitability of PT Multi Bintang Indonesia Tbk in 2019. The mean value of profitability is 0.076141 where the standard deviation value is not greater than the mean value, namely 0.066281. A standard deviation value that is smaller than the mean means that the data pattern reflects profitability well and the data does not vary too much.
4) The descriptive statistics of the third independent variable, namely institutional ownership, show that the minimum value of institutional ownership is 0.025940 and the maximum value is 0.997110. The company with the smallest proportion of institutional ownership is PT Emdeki Utama Tbk in 2020 and the company with the largest proportion of institutional ownership is PT Fajar Surya Wisesa Tbk for 3 consecutive years (2019, 2020, and 2021). The mean value of institutional ownership is 0.699960 and it can be

concluded that most of the shares in basic and chemical industry companies, various industries, and the consumer goods industry are owned by institutions. The standard deviation is 0.197269 and is smaller than the mean value so it can be concluded that the data pattern reflects institutional ownership well and the data does not vary too much.

**Coefficient of Determination Test (McFadden R-squared)**

The coefficient of determination test in logistic regression can be seen from the McFadden R-Squared value which the aim is to measure the ability of a model to explain the variation of the dependent variable. Based on the result of Table 3, the McFadden R-squared value is 0,058804 which means the contribution of financial leverage, profitability, and institutional ownership in predicting variations in income smoothing is 5,88% and the remaining 94,12% is explained by other variables that are not discussed in this study.

**Table 3.** Coefficient of Determination Test Result (McFadden R-Squared) and Likelihood Ratio Test Result

| | | | |
|---|---|---|---|
| McFadden R-squared | 0.058804 | Mean dependent var | 0.723077 |
| S.D. dependent var | 0.448630 | S.E. of regression | 0.436882 |
| Akaike info criterion | 1.151682 | Sum squared resid | 36.45543 |
| Schwarz criterion | 1.218820 | Log likelihood | -108.2890 |
| Hannan-Quinn criter. | 1.178865 | Deviance | 216.5779 |
| Restr. deviance | 230.1093 | Restr. log likelihood | -115.0546 |
| LR statistic | 13.53136 | Avg. log likelihood | -0.555328 |
| Prob(LR statistic) | 0.003618 | | |

**Source:** data processed by researchers

**Likelihood Ratio Test**

The likelihood ratio test aims to determine the contribution of the independent variables to the dependent variable simultaneously. Based on the Table 3, the Prob(LR Statistic) value is 0,003618 which is less than the value of α (0,05). Therefore, it can be concluded that financial leverage, profitability, and institutional ownership simultaneously affect income smoothing.

**Goodness of Fit Test (Hosmer-Lemeshow's Goodness of Fit)**

The goodness of fit test with Hosmer-Lemeshow's goodness of fit aims to predict whether the empirical data is in accordance with the research model or not.

**Tabel 4.** Goodness of Fit Test Result (Hosmer-Lemeshow's Goodness of Fit)

| | | | |
|---|---|---|---|
| H-L Statistic | 3.1899 | Prob. Chi-Sq(8) | 0.9219 |
| Andrews Statistic | 4.0930 | Prob. Chi-Sq(10) | 0.9431 |

**Source:** data processed by researchers

The result shows that the prob. chi-sq from the test is 0,9219. The probability value is greater than 0,05 so it can be concluded that the model is fit or there is no difference between the model and the data so that the model can predict the observation value.

**Percent Correctly Predicted**

The test of percent correctly predicted is used to measure the model accuracy in predicting the dependent variable in the study where the result is in percentage form. Based on the Table 5, the total % correct is 73,85% which can be concluded that accuracy of the model in predicting income smoothing is 73,85%. This percentage is already relatively high so that the accuracy of the model in predicting the dependent variable is classified good.

**Table 5.** Percent Correctly Predicted Result

| | Estimated Equation | | | Constant Probability | | |
|---|---|---|---|---|---|---|
| | Dep=0 | Dep=1 | Total | Dep=0 | Dep=1 | Total |
| P(Dep=1)<=C | 5 | 2 | 7 | 0 | 0 | 0 |
| P(Dep=1)>C | 49 | 139 | 188 | 54 | 141 | 195 |
| Total | 54 | 141 | 195 | 54 | 141 | 195 |
| Correct | 5 | 139 | 144 | 0 | 141 | 141 |
| % Correct | 9.26 | 98.58 | 73.85 | 0.00 | 100.00 | 72.31 |
| % Incorrect | 90.74 | 1.42 | 26.15 | 100.00 | 0.00 | 27.69 |
| Total Gain* | 9.26 | -1.42 | 1.54 | | | |
| Percent Gain** | 9.26 | NA | 5.56 | | | |

**Source:** data processed by researchers

**Binary Logistic Regression Analysis Result**

Table 6. Binary Logistic Regression on Income Smoothing

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | 1.826297 | 0.684784 | 2.666969 | 0.0077 |
| FINANCIAL_LEVERAGE | -0.989595 | 0.355285 | -2.785353 | 0.0053 |
| PROFITABILITAS | -8.338582 | 2.866441 | -2.909037 | 0.0036 |
| INSTITUTIONAL_OWNERSHIP | 0.781341 | 0.873662 | 0.894329 | 0.3711 |

**Source:** data processed by researchers

The coefficient column shows the direction and magnitude of the influence of the independent variable on the dependent variable while the probability column shows the significance of the independent variable on the dependent variable. If the probability value is less than 0,05, the independent variable has a significant effect on the dependent variable and if the probability value is greater that 0,05, the independent variable has no significant effect on the dependent variable. Based on the Table 6, the results can be explained as follows:

1. Income smoothing has a constant value 1,826297 which means if all the independent variables in this study are assumed to have a value equal to zero, the level or value of income smoothing is 1,826297.

2. Financial leverage has a negative and significant effect on income smoothing where every increase in one financial leverage will decrease income smoothing by 0,989595 in assumption that the other independent variables are constant.
3. Profitability has a negative and significant effect on income smoothing where every increase in one profitability will decrease income smoothing by 8,338582 in assumption that the other independent variables are constant.
4. Institutional ownership has a positive insignificant effect on income smoothing where every increase in one institutional ownership will increase income smoothing by 0,781341 in assumption that the other independent variables are constant.

**The Effect of Financial Leverage Towards Income Smoothing**

Based on the Table 6, the probability value of financial leverage is 0,0053 and the coefficient value is -0,989595. It can be concluded that financial leverage has a significant positive effect towards income smoothing. Therefore, the first hypothesis (H1) in this study is rejected. The result explains that if the value of financial leverage increases, the company's potential to perform income smoothing will decrease and vice versa. This could happen since companies with high level of financial leverage will get more pressure and supervision from stakeholders such as creditors and shareholders as a result of high financial risk which also will limit management from making arbitrary decisions such as income smoothing. In addition, companies with high financial leverage will certainly use their profits to pay their obligations which in this case are debts and the interest, making it more difficult to practice income smoothing. The result in this study is in line with the research conducted by (Maharani & Putra. ,2021) which also found a significant negative relationship between financial leverage and income smoothing. However, the result of this study contradicts the result of research by (Anwar& Chandra,2017). and ( Sarra& Mikrad ,2021). which both found that financial leverage has no effect towards income smoothing.

**The Effect of Profitability Towards Income Smoothing**

Based on the Table 6, profitability has probability value of 0,0036 with coefficient value of -8,338582. It can be concluded that profitability has a negative and significant effect on income smoothing. If the value of profitability increases, the company's effort to practice income smoothing will decrease and vice versa. Therefore, the second hypothesis (H2) in this study is accepted. The main goal of investors in investing is to get positive return either in the long term or short term of period. Surely, companies with high and stable of profitability are very attractive to investors, especially who wish to invest for the long-term purpose. Having low profitability can be a motive for companies to perform income smoothing because it is naturally less attractive to investors. Therefore, companies often perform income smoothing as an option to attract investors and one of the efforts not to lose their shareholders while companies with fairly high profitability and stable in each period have less background for management to perform income smoothing. The result in this study is consistent with the research conducted by ( Angraeni, Bastian & Lestari, 2022)and (Indrawan, et. al 2018) which concluded that profitability has a significant negative effect towards income smoothing. However, the research conducted by ( Dewi, 2018). shows that profitability has a positive significant effect towards income smoothing while (Inayah & Izzaty , 2021) found in their research that profitability has no significant effect towards income smoothing.

### The Effect of Institutional Ownership Towards Income Smoothing

Based on the Table 6, the probability value of institutional ownership is 0,3711 with the coefficient value of 0,781341. The result shows that institutional ownership cannot be considered as a factor affecting management's decision to perform income smoothing or not. Therefore, the third hypothesis (H3) in this study is rejected. Company with large proportion of institutional ownership in its ownership structure does not always encourage management to perform income smoothing and small proportion of institutional ownership is also not a factor that will reduce the company's potential to perform income smoothing. This could happen because the supervisory role that is owned and carried out by the institutional investors on management is still not effectively done so that management's decisions and actions that only beneficial for particular party cannot be prevented, including income smoothing. The result in this study is in line with the research conducted by (Suyono,2018) which concluded that institutional ownership has no effect towards income smoothing. However, (Florentina& Hastuti, 2022). found that institutional ownership has a positive and significant effect towards income smoothing.

## CONCLUSION

Based on the statistical tests that have been carried out on basic industry and chemical, miscellaneous industry, and consumer goods industry for the period 2019-2021, the conclusions from this study are financial leverage and profitability has a negative significant effect towards income smoothing and institutional ownership has a positive insignificant towards income smoothing.

It can be concluded that financial leverage and profitability are the factors that influence management's decisions in conducting income smoothing. Both financial leverage and profitability influence the views and decisions of the stakeholders so that management often performs income smoothing to influence the outlook and decisions so as to achieve the goals desired by management. Write the output of the work or investigations in summarized form.

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# DETERMINANT OF AUDIT DELAY: EMPIRICAL STUDY OF COMPANIES IN INDONESIA

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**Abstract :** This study investigates how profitability, solvability, auditor opinion, and reputation relate to audit delays (AD) in Indonesian companies. This is an example of quantitative research. This study employs a sample of 40 property and construction firms that are trading at the Indonesian Stock Exchange from 2016 until 2018, the time before Covid 19 pandemic hit. The sampling method used is the purposive judgment sampling method. This study was measured by using multiple linear regression analysis. The annual audited financial statements are used as the data. The findings demonstrate that profitability significantly affects AD. Nevertheless, there is no evidence that solvability, audit opinion, or auditor reputation are connected to the audit report's timeliness. The outcome supports the signalling hypothesis, which states that a company with positive earnings or income will swiftly submit the financial report to investors to inform them about the firm's favorable economic situation.

**Keywords:** audit delay, audit report lag, developing economics, profitability, solvability, auditor opinion, and reputation

**Abstrak:** *Penelitian ini menyelidiki bagaimana profitabilitas, solvabilitas, opini auditor, dan reputasi berhubungan dengan audit delay (AD) di perusahaan Indonesia. Ini adalah contoh penelitian kuantitatif. Penelitian ini menggunakan sampel 40 perusahaan properti dan konstruksi yang diperdagangkan di Bursa Efek Indonesia dari tahun 2016 hingga 2018, sebelum pandemi Covid 19 melanda. Metode pengambilan sampel yang digunakan adalah metode purposive judgment sampling. Penelitian ini diukur dengan menggunakan analisis regresi linier berganda. Laporan keuangan tahunan yang telah diaudit digunakan sebagai data. Temuan menunjukkan bahwa profitabilitas secara signifikan mempengaruhi AD. Namun demikian, tidak ada bukti bahwa solvabilitas, opini audit, atau reputasi auditor terkait dengan ketepatan waktu laporan audit. Hasil tersebut mendukung hipotesis pensinyalan, yang menyatakan bahwa perusahaan dengan pendapatan atau pendapatan positif akan dengan cepat menyampaikan laporan keuangan kepada investor untuk memberi tahu mereka tentang situasi ekonomi perusahaan yang menguntungkan.*

***Kata kunci:*** *audit delay, audit report lag, ekonomi berkembang, profitabilitas, solvabilitas, opini auditor, dan reputasi*

## INTRODUCTION

This research investigates some of the elements that contribute to ADs in Indonesia. According to Law Number 8 of 1995 concerning "Capital Market Regulations," all businesses that are registered on the capital market (issuers) are required to provide periodic financial reports to the Otoritas Jasa Keuangan (OJK) and make them public. Public companies are required to submit the findings of an annual financial report audit no later than 90 days following the date the annual financial statements are announced, according to an attachment of Regulation of the Chairman of BAPEPAM and Financial Institutions Number: KEP-460/BL/2008 concerning the requirement to submit periodic reports. Hence the issuers might be prudent to provide their yearly financial reports on schedule.

The process of auditing is a time-consuming task that uses a variety of resources. The Bapepam-LK-imposed time constraint (AD) will undoubtedly cause delays in releasing financial reports. The audit may take longer to complete if audit reports are delayed because they may point to issues with the issuer's financial statements. The time between the end of the fiscal year and when the audit report is issued is known as an AD (or audit report lag) (Ashton et al., 1987).

Audit report delays are one of the few externally apparent audit output factors that may be evaluated for audit effectiveness (Bamber et al., 1993). Investors prefer that the audit report be released quickly after the fiscal year ends as it contains the auditor's assessment of the validity of the financial statements. ADs may cause earnings announcements to be delayed, reducing earnings informativeness and resulting in a lower market response to earnings (G. P. Whittred, 1980; G. Whittred & Zimmer, 1984). Some research looked at the factors that contribute to ADs (audit report lag), such as corporate governance (Kaaroud et al., 2020; Nor et al., 2010), board characteristics, CEO duality, audit committee existence and independence (Abernathy et al., 2017; Bhuiyan & D’Costa, 2020), profitability (Ambarwati & Putri, 2016; Fujianti, 2019; Ismail et al., 2022; Lai et al., 2020), audit firm attributed , financial reporting complexity (Chen et al., 2022).

Financial statements should be provided relevant, reliable, and timely information to assist users in making decisions. As a result, in order for financial reports to be relevant and reliable, some means must be provided to encourage high-quality earnings reporting. Some decisions require timely financial reports due to competitive business challenges. Timeliness, as a key qualitative qualities of financial information is the availability of information to decision-makers before the usefulness of that information in influencing those decision-makers as stated to the Financial Accounting Standards Board (FASB) in Statement of Financial Accounting Concepts No. 8 (FASB, 2010). The greater value of useful financial information decreases when the preparation of financial reports requires a lot of time and consequently delays the availability to the public. A key aspect of financial reporting that is crucial to the information market and consumers' investment decisions is the timely release of financial information by businesses (Sultana et al., 2015).

Academics continue focusing on finding the reasons of ADs due to investors value timely audits. Previous research has found that the length of the lag in the issuance of the audit report is the most evident indicator of timely financial report production. (Ashton et al., 1987; Bamber et al., 1993; Bhuiyan & D’Costa, 2020; Chen et al., 2022; Ismail et al., 2022; Kaaroud et al., 2020; Nor et al., 2010). Financial reports must be audited and verified by external auditors to confirm quality and fairness. Depending on the business, there may be a different amount of time between the end of a corporation's fiscal year and the date of the audit report (Afify, 2009). In Egypt, the average AD is 67 days, in Vietnam takes 63 days (Lai et al., 2020), while in Australia it takes roughly 10 weeks to generate audited financial reports (Sultana et al., 2015).

Considering to the significance of timeliness for investors, past research has looked into a range of factors that might impact delays in auditing, such as earnings, firm attributes such as size, the nature of audit firm and qualifications, and the firm's complexity, internal control, and governance. Meanwhile, an examination of existing studies reveals that AD, both developed and developing nations, have been investigated, and the result is still unanswered whether the determinants studied have an impact to AD. Yet it should be noted that still needed to investigate to confirm the various results (Kaaroud et al., 2020).

The primary goals of this research are to investigate the extent and causes of ADs. This study is driven by the fact that financial reports are an informative tool for investors to make investment decisions. Information asymmetry is exacerbated and investment decision uncertainty is increased by delays in revealing an auditor's opinion on management's representation of the financial facts in an accurate and fair manner. Making business decisions with timely information would be more beneficial, especially in growing markets like Indonesia. It prompts the current study to do more empirical research.

The study, especially in emerging nations, adds to the body of literature on timely financial reporting by examining the problems with AD. The implications of the findings will assist Indonesian authorities in giving feedback on previous and present company reporting procedures, compliance with financial reporting submission requirements, and some proper recommendations to enhance them.

## LITERATURE REVIEW

Prior researchs on the antecedent of financial reporting timelines examined a similar set of enterprise characteristics, including age, size, the end of the fiscal, profitability, solvability, and complexity of the firm and its clients complexity, governance, internal control, auditor size, auditor reputation, audit opinion, and earnings quality, as well as bankruptcy (Ashton et al., 1987; Bamber et al., 1993; Bhuiyan & D'Costa, 2020; Ismail et al., 2022; Kaaroud et al., 2020; Nor et al., 2010; Sultana et al., 2015; G. Whittred & Zimmer, 1984). The first research was carried out by (Ashton et al., 1987) examines comprehensive assessment of the factors that affect audit report delays. Clustered by country, such as United States (Ashton et al., 1987; Bamber et al., 1993; Chen et al., 2022), Malaysia (Kaaroud et al., 2020; Nor et al., 2010), Australia (Al-Mulla & Bradbury, 2020; Azizkhani et al., 2021; Bhuiyan & D'Costa, 2020), Afrika (Chalu, 2021; Gontara & Khlif, 2020; Ismail et al., 2022), Arab (Bazrafshan & Dehghani Madise, 2022), Cina (Song & Zhou, 2021), and Tunisia (Lajmi & Yab, 2021).

Despite the significance of audit latency to investors, recent studies have shown that academics and researchers are interested in examining the causes of audit lag (see Abernathy et al., 2017; Afify, 2009; Chen et al., 2022; Ismail et al., 2022; Kaaroud et al., 2020; Raweh et al., 2019). However, empirical investigations of the variables influencing AD in emerging nations remain unexplored. By addressing the relationship between distinct firm attributes and audit report lag in developing markets that are known for their high levels of opacity and absence of openness, this research occupies a gap in the body of research.

Prior research on the drivers of AD were distinct, with some studies concluding that the factors driving AD are business characteristics, corporate governance attributes, and other aspects. Companies that are profitable or have the potential to be profitable often submit their financial reports more quickly. This is due to the fact that businesses with high profit margins frequently release their financial reports more rapidly, ensuring that consumers of financial statements, such as investors, receive the good news right away, which will ultimately influence their investment choices. An earlier study revealed that a company's profitability had an effect on the audit report delay (Rusmin & Evans, 2017). Longer reporting delays are observed to be related to the businesses with worse financial performance.

Profitability (rate of return on investment) determines how well a company uses its resources to generate revenue. Profitability is a relative measure of the success or failure of a business. Profitability indicates the company's capacity to generate a profit. Profitability is a message from the firm to investors and good news for current and prospective investors. It encourages enterprises to publish their financial accounts as soon as possible. Given the competing arguments, we develop the first hypothesis:

H1. The AD is significantly impacted by the firm's profitability.

The capability of an enterprise to meet its commitments is referred to as leverage or solvability. High leverage might put the firm at danger. Companies must now prepare financial accounts with extra care due to the current circumstance. Additionally, debtors will exert significant pressure on enterprises with high levels of debts because they want the audited financial accounts to be produced sooner, which will minimize the AD estimations. Based on the discussion above, our second hypothesis is:

H2: The firm's leverage significantly influences AD

The audit opinion has a negative and significant impact on AD because it confers on the auditor the authority or right to audit the financial statements of the company. When the auditor issues an opinion other than an unqualified opinion, it necessitates greater care in carrying out the audit procedures, which extends the time required for financial reporting.

Qualifications or concerns voiced may be one of the elements which lead to delays. Consequently, a qualified Audit report Delay opinions are frequently taken as reflecting a poor assessment of the business's financial circumstances, which causes the company to delay the publication of the audited report and spend more time consulting with the auditor, which slows down the audit process. Furthermore, because qualified opinions are always perceived as "bad news," companies may fail to react to the auditor's suggest within a reasonable time frame. It indicates an auditor-management disagreement, which might also result in ADs. To evaluate the effect of this variable, the third hypothesis is posited

H3: The AD is significantly impacted by the audit opinion.

A further factor that may affect audit time is audit firm size, specifically the Big 4 vs. non-Big 4 comparison. According to prior research, Big 4 auditors shorten the auditing process since they hire knowledgeable staff and have access to innovative technology tools (Ashton et al., 1987). According to (Bazrafshan & Dehghani Madise, 2022), top-rated auditing firms are going to offer better, quicker services and produce audit results with less delays. One may claim that top or large auditing firms have more resources, are more at risk for reputational damage, have greater and more competent resources, and can thus deliver an audit of a high standard. A top-tier audit company or one of the Big 4 auditors is anticipated to offer a quicker, higher-quality service that will result in shorter audit reporting delays (Rusmin & Evans, 2017). The possibility that an audit report will be completed faster is higher for audit firms with more resources. Following the discussion above, we convey the following as our fourth hypothesis:

H4: The AD is greatly influenced by the auditor's quality.

## RESEARCH METHODOLOGY

We use sample from 40 Indonesian firms that were listed on the Indonesian Stock Exchange (IDX) between 2016 and 2018. Property and construction firms make up the corporations. After deleting businesses with missing data, there are 118 firm-year observations in the final sample whereas the primary source of data for this study was yearly reports retrieved from IDX.

AD is the dependent variable, which is assessed by the amount of days among the end of the financial year and the day the external auditor signs. The net profit margin (NPM) measures profitability. The NPM indicates how much of each dollar of sales remains as net income after all expenditures are deducted. The formula is Net Income / Net Sales. The debt-to-equity ratio is used to calculate leverage. This ratio computes the proportion of debt and equity that a corporation employs to support its operations. It is a key financial measure that demonstrates how a firm finances its activities. Total Liabilities / Total Shareholder Equity is the formula used to compute it. Dummy variables are employed to represent auditor opinion and reputation. Value 1 represents an unqualified audit opinion, whereas value 0 represents anything other. Meanwhile, auditor reputation is assessed by Big 4 or non-Big 4, with a score of 1 for Big 4 auditing firms and a rating of 0 for everyone else.

## RESULT AND DISCUSSION

Table 1 displays descriptive statistics for the variables integrated into our model. The dependent variable, AD, has a variability of 43 to 119 days and a mean of 78 days. There are four independent variables; profitability has a mean value of 3,394 and a standard deviation of 4,544. The profitability has a maximum value of 25,852 and a lowest value of -8,653. Leverage is the second independent variable, with a mean value of 3,335 and a standard deviation of 4,739 as a consequence. Additionally, the minimum value is 0.045 and the greatest value is 28,021. According to data in Table 1, 89,1% of the sampled enterprises had an unqualified audit opinion, which is 0.891. Additionally, the Big 4 audit firms conduct audits of 95,8% of the companies in our sample.

**Table 1.** Results of Descriptive Statistics

| Variabel | N | Mean | Min | Max | Std. Dev |
|---|---|---|---|---|---|
| AD | 120 | 77.533 | 43 | 119 | 14.675 |
| Profitability | 120 | 3.394 | -8.653 | 25.852 | 4.544 |
| Leverage | 120 | 3.335 | 0.045 | 28.021 | 4.739 |
| Audit Opinion | 120 | 0.891 | 0 | 1 | 0.312 |
| Audit Reputation | 120 | 0.958 | 0 | 1 | 0.200 |

**Source:** data processed by researchers

As demonstrated in Table 2, the order model of regression has a significant power for the explanation of 0.0184 (F statistic p 0.000). At the same time, the modified R2 suggests that independent factors explain 6.7% of the AD variance overall. The findings demonstrate that just one variable (profitability) is statistically significant at the 5% level, with a negative sign in explaining AD. Yet, the leverage, audit opinion, and audit reputation coefficient variables are all negative and negligible. Overall, delays in audits are shorter for organizations with more profitability. If a company's profitability is powerful, to convey the "good news" to investors, management is probably urged to release the company annual report. We can say the result confirms the signaling theory.

Table 2. Regression Result

| Variable | Coeffisien | P-value | |
|---|---|---|---|
| Constanta | 80.8 | 0.00 | |
| Profitability | -0.88 | 0.00 | *) |
| Leverage | -0.13 | 0.61 | |
| Audit Opinion | -4.92 | 0.22 | |
| Audit Reputation | -4.47 | 0.47 | |
| Observations | | 118 | |
| Prob>F | | 0.0184 | |
| Adj.R-squared | | 0.0670 | |
| Notes: *significant coefficient at 5% | | | |

**Source:** data processed by researchers

## CONCLUSION

Profitability is confirmed as one of the key variables related to AD, according to the data. The result confirms some studies (see Ambarwati & Putri, 2016; Fujianti, 2019; Lai et al., 2020; et al., 2020). This study's primary goal is to investigate the associations between audit reporting timelines and several variables, including profitability, leverage, audit opinion, and audit reputation. The evidence indicates that firms with high profitable are more inclined to publish audit results quickly or on schedule. The firms with high level of earning has good news and the company will immediately publish the financial statements for potential investors, investors, governments, creditors, and public. This study also shows that the other factors such as leverage, audit opinion, and audit reputation are not as essential as profitability in affecting audit report latency as well.

There are various limitations to this study. Because the study only covers three years, the pattern of AD and other effects on audit report timeliness could not be explored. To increase the audit lag model's explanatory power, further study may look at the firm's ownership structure, internal controls, and ownership robustness as well as complex transactions such special items and related party transactions.

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# WHAT DETERMINANTS INFLUENCE STUDENTS TO START THEIR BUSINESS? EMPIRICAL EVIDENCE FROM UNIVERSITAS PANCASILA

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**Abstract:** This study aims to identify determinants in influencing students' decision to become entrepreneurs. Seven indicators were employed in order to investigate which determinants that has bigger effect on student's decision. Those indicators are (1) parents' work, (2) household expenses, (3) entrepreneurial orientation, (4) attitudes towards risk, (5) innovation ability, (6) perceptions of financial difficulties, and (7) university support. 100 students in faculty of economics and business Universitas Pancasila were chosen as samples to be empirically tested using a series of questionnaire's questions. Logistic regression technique was applied to obtained targeted results. The results revealed that all the seven analyzed variables shown positive and significant effects on students' intention to become entrepreneurs. Moreover, parent's job (POT) is shown as the most influencing determinant followed by Entrepreneurship orientation (OKW) and perception of financial difficulties (PKK). Accordingly, this research contributes practically how to develop student's intention effectively to become entrepreneur where family and environment factors are the main determinants.

**Keywords:** Business, Entrepreneurship, Innovation

**Abstrak:** *Penelitian ini bertujuan untuk mengidentifikasi faktor determinan yang memengaruhi keputusan mahasiswa menjadi wirausaha. Tujuh indikator digunakan, yakni (1) pekerjaan orang tua, (2) pengeluaran rumah tangga, (3) orientasi kewirausahaan, (4) sikap terhadap risiko, (5) kemampuan inovasi, (6) persepsi kesulitan keuangan, dan (7) dukungan perguruan tinggi. Sebanyak 100 mahasiswa Fakultas Ekonomi dan Bisnis Universitas Pancasila dipilih sebagai sampel untuk diuji secara empiris dengan menggunakan serangkaian pertanyaan angket. Teknik regresi logistik diterapkan untuk mendapatkan hasil yang ditargetkan. Hasil penelitian menunjukkan bahwa ketujuh variabel yang dianalisis menunjukkan pengaruh positif dan signifikan terhadap niat mahasiswa menjadi wirausaha. Selain itu, pekerjaan orang tua (POT) ditampilkan sebagai determinan yang paling berpengaruh diikuti oleh orientasi Kewirausahaan (OKW) dan persepsi kesulitan keuangan (PKK). Dengan demikian, penelitian ini memberikan kontribusi praktis bagaimana mengembangkan niat mahasiswa secara efektif untuk menjadi pengusaha dimana faktor keluarga dan lingkungan menjadi penentu utama.*

***Kata Kunci:*** *Bisnis, Kewirausahaan, Inovasi*

## INTRODUCTION

Entrepreneurship recently has been considered as one of the motors of economic growth and national competitiveness (Rideout and Gray, 2013), and also as a catalyst for improving the quality of life and changing society (Ooi and Nasiru, 2015). McClelland (1961) implies that a country to be prosperous requires a minimum of two percent entrepreneurs from the total population.

In the last five years, Indonesia has shown a remarkable development of entrepreneurship but that is not enough to meet the entrepreneur ratio according to McCelland (1961). Therefore, Indonesia needs to produce more and more new entrepreneurs. Furthermore, Indonesia is currently experiencing the phase of demographic bonus, which marked by the large number of productive age population. With an abundance of productive labor, the country has a greater opportunity to be able to accumulate consumptions and accelerate the circulation of economic activities. Numbers of countries have become advanced and developed because they have succeeded to optimize the advantage of demographic dividend.

However, the realization of economic benefits from demographic bonus is not as simple as it says. Demographic bonus could be changed to a demographic burden if not utilized properly. The productive age population will become unproductive if they do not have a place to work and in the end, they will increase the accumulation of dependent citizen that must be borne economically and socially. This condition definitely causes an increase in the cost of social security and pension funds. In addition, this condition also potentially trigger stagnation in the economy as savings from the productive age diverted to finance the non-productive activities. Accordingly, to prevent this problem worsening, plenty of efforts need to be done to create broader employment opportunities. In February 2020, total of unemployment in Indonesia has reached 6.88 million people. This number is estimated to increase by 4-6 million people due to the pandemic Covid-19. Thus, the total will reach 10-12 million unemployment. The majority of these unemployed are productive citizens, not to mention the problem of additional labor each year which reaches 2 - 2.5 million people. Therefore, creation of large and accessible job opportunities is urgently needed. Furthermore, unemployment rate for university graduates increased from 5.71 percent in 2019 to 7.51 percent in 2020. In fact, Indonesia ranks the third after India and Brazil, as the country with the highest growth of university graduates. Data from the Central Statistics Agency (BPS) shows that average tertiary education graduate (PT) in Indonesia reaches 350 thousand students per year. The increase in the share of educated unemployment is because university graduates are deemed not to have standard of expertise and *critical skills* required by the industry. However, the orientation of university graduates in general is still looking for work, not creating jobs.

The situation with the high number of unemployed is exacerbated by the diminishing elasticity of investment in relation to new job opportunities in Indonesia. Data from the World Bank states that in 1998 - 2000, each additional new investment of IDR 1 billion from GDP could generate 41 new jobs. Meanwhile, in the following period, each additional investment of Rp. 1 billion only resulted in 13 new jobs. This decrease in labor absorption occurs because business actors prefer to allocate new investment to increase productivity rather than business expansion. Due to the relatively high real cost of labor, investors also prefer to invest in the capital-intensive sector which results in reduced employment opportunities.

According to this issue, the college-graduated-job-seeking pattern that commonly apply in higher education in Indonesia must be changed to graduate-college-creating jobs through entrepreneurial activity program. Therefore, Faculty of Economics and Business, Universitas Pancasila (FEB-UP) encourages students to shift their paradigm of job seeker after graduation to job creator after graduation of even before graduation. In order to achieve this target, FEB-UP has implemented several policies as well as programs. *First*, every student's compulsory to take introductory courses (MK) on entrepreneurship. At the end of semester, students create a product as the last assignment and commercialize both *offline* and *online* via social media. Second, FEB-UP provides infrastructure in the form of entrepreneurial galleries that students can use as a *show case* for their products. Third, the faculty cooperates with Student Activity Unit (UKM) to organize various student-level entrepreneurial activities for instance, *business competitions, business weeks, entrepreneurial festivals and bazaars (entrepreneur day).* Apart from these programs, FEB UP has also made two work units that directly support the deepening of entrepreneurial practices, namely Business Incubator Unit and Creative Economy Unit. These units provide assistance in the form of mentoring student's business to be more applicable in the real industry.

Unfortunately, there was no significant differences as the result of these programs. Number of FEB-UP graduates who actually become entrepreneurs only 5.5 percent, while the rest work in private or public institutions (94.5%). For graduates who became entrepreneurs, majority (80.2) of them built their business after graduation, while 19.8% have had their business since college. Moreover, according to the *tracer study,* more than 95.2 percent of alumni's businesses run by themselves, while the rest (4.8 percent) in the form of partnerships.

Based on a program that is far from the target to be achieved, this study aims to see what determinants are the most dominant in increasing students' intention to choose entrepreneurs as their main career choice in the future. This research employs six variables as follow: (1) parent's job, (2) household expenses, (3) entrepreneurial orientation, (4) attitudes towards risk, (5) innovation ability, (6) perceived difficulties. finance, and (7) university support (Zwan et.al, 2016; Pauceanu et.al, 2018). By surveying 100 entrepreneurship student program, the collected data will be analyzed using logistic regression technique to investigate which determinants have bigger effect on the development of entrepreneurial intention. The contributions that are expected to present from this research are in two folds. First is practically, for educational institutions, especially at the university level, to effectively provide effective programs to increase the intention and skills of students to enter the world of entrepreneurship as the main career choice. The second is the theoretical implication, this study will enrich the theme of entrepreneurship, especially among young people, to continue to identify and explore what factors most dominate the development of their intention to become entrepreneurs.

## LITERATURE REVIEW

Over the past three decades, entrepreneurship has been considered as the main driving force for the local economy. It has a positive impact on the growing business ideas and initiatives that support the creation of new job markets, boost the economy, develop new solutions for problems, creating technologies that increase efficiency (Acs, Szerb and Lloyd, 2017). Moreover, entrepreneurship is seen as a strategy for the country's economic growth and maintaining a sustainable competitive advantage during the globalization era (Shamsudin et.al, 2017). Many scholars emphasize the role of entrepreneurship as a solution to problems that are constantly emerging in a dynamic and fast changing world (Pauceanu, 2016). It may because the nature of entrepreneurship is not only related to one discipline, but also many other disciplines such as psychology, sociology, culture, and environmental studies (Gaddam, 2008). Because the perceived value of entrepreneurship is very high, many universities and colleges then include entrepreneurship as a discipline of study and sometimes as a study program. Entrepreneurship education is the main instrument for strengthening entrepreneurial intentions, mindsets and behavior; However, it is debatable whether such education has been effective or not (Singh, Verma, and Rao, 2015).

Entrepreneurship is more than just starting a new business or venture, but more as a way of thinking, reasoning, and acting (Schoof, 2006). The theory of personality traits places more emphasis on personal characteristics in building entrepreneurial intentions such as need for achievement, locus of control, risk taking, innovation and tolerance (Simpeh, 2011). Another important aspect of identifying potential entrepreneurs is locus of control. It was first introduced by Julian Rotter (1966), who referred to an individual's perception of the main causes underlying events in his life. In other words, control locus orientation is a belief about whether the results of our actions depend on what we do (internal control orientation) or on events outside our personal control (external control orientation).

Entrepreneurial intention has been shown to be the basic construct and most often used in research on entrepreneurship (Carr & Sequeira, 2007). Several results have confirmed that intention effectively predicts behavior and attitudes towards entrepreneurship. Shinnar et al. also explained that the sample of students is very suitable for the study of entrepreneurial intentions because students directly face the problem of career choice after graduating and during the study process in college, they continuously consider various career possibilities and entrepreneurship is one of their choices consideration (Shinnar, Giacomin & Janssen, 2012).

The individual factor model, often known as the traits model, is primarily concerned with the personality qualities of businesspeople (Gürol and Atsan, 2006; Karabulut, 2016; Koh, 1996; Popescu et al., 2016). Koh (1996) asserts that this paradigm is based on the premise that entrepreneurs have particular distinctive qualities, values, and attitudes that set them apart from other people. In the study of entrepreneurship, this approach has received good marks (Gürol and Atsan, 2006). With the use of this model, several studies (De Pillis and Reardon, 2007, Gürol and Atsan, 2006, Karabulut, 2016, Karimi et al., 2015, Koh, 1996, Lián and Rodrguez-Cohard, 2015, Popescu et al., 2016, Uddin and Bose, 2012) have looked at certain traits of entrepreneurs. For instance, the utilization of locus of control, need for achievement, tendency for taking risks, and innovation is prevalent in the studies mentioned above.

According to Jaafar and AbdulAziz (2008), the large number of small and medium-sized businesses in Malaysia's construction sector highlights the important role that entrepreneurship education plays in particular courses, such as construction management. According to Othman et al. (2012), students at Malaysia's public universities have a high level of entrepreneurship readiness. According to Ahmad (2013), entrepreneurial education should be integrated into all stages of the educational process rather than being restricted to any particular institutions. According to Milian and Gurrisi (2017), the purpose of entrepreneurship education is to provide students with a collaborative learning environment, practical hands-on skills that have real-world applications, and an entrepreneurial mindset.

Several studies in Indonesia have been carried out related to entrepreneurial intentions among university students, both within Indonesia itself as a sample and comparative studies with other countries, some based on gender comparisons or events. For example, Anggadwita and Dhewanto, (2016) who analyzed the influence of environmental factors on perceptions of behavioral control on the intention of women entrepreneurs who do SMEs. The results showed that perceptions of behavioral control significantly influenced women's entrepreneurial intentions and also influenced the competitive environment rather than government support. On the other hand, Rizki, Burhanuddin, Budi (201 7) in their research analyzed entrepreneurial characteristics and factors that influenced the intention of 189 respondents in three different provinces, namely Bogor, Lampung and Bandung. The results of the study found that attitudes towards behavior and perceptions of behavior control did not affect entrepreneurial intentions in the agricultural sector. Factors that influence entrepreneurial intentions in agriculture are subjective norms or external factors.

Rokhman and Ahamed (2015) stated differently that both social factors such as family background, education system and social status as well as psychological factors such as need for achievement, propensity to risk and locus of control, were quite prominent and were significant indicators of becoming entrepreneurs among Islamic students. As an extension of her work, in 2008 Indarti compared 3 different countries namely Indonesia, Japan and Norway to show entrepreneurial interest among students and emphasize the factors that influence it. Unlike his previous research, educational background is the main factor influencing students' interest in entrepreneurship. Correlation analysis shows that youth entrepreneurial intentions are positively correlated with their personality traits (propensity to take risks, innovation and tolerance for ambiguity), and social learning (knowledge and experience and family care). Other study also reveals that family influences (subjective norm) is the most dominant antecedent to encourage youth intention to become entrepreneurs through a survey of 377 Muslim youth in Indonesia (Baharuddin and ab Rahman, 2021).

Another research by Karyaningsih, (2020) their findings shows that the entrepreneurial mindset, knowledge, and intention are three factors that are impacted by entrepreneurship education. Entrepreneurial knowledge affects students' desire to start their own businesses, but it has little bearing on their entrepreneurial mindset. Their implications research stated that given its crucial role in educating aspiring entrepreneurs, such as through curriculum revitalization, entrepreneurship education in Indonesia should be further expanded.

With regard to entrepreneurship and educational institutions, it has been proven empirically that students who have taken entrepreneurship classes at universities have a greater intention for entrepreneurial activities than those who have not (Alloway and Brown, 2002). In Spain, this kind of course develops self-efficacy, pro-active and risk-taking abilities (Sanchez, 2013). University and entrepreneurship curricula became the biggest influence of students' entrepreneurial attitudes in a study conducted among 1500 Arab undergraduate students at government universities (Bakri and Mahrez, 2017). One empirical study conducted among Pakistani students revealed that educational support is perceived as the most important factor in developing students' desire for entrepreneurship (Saeed, Muffato and Yousafzai, 2014). This is in line with a study in the Philippines which has supported the hypothesis that entrepreneurial knowledge positively affects students' perceptions of entrepreneurial desire and self-efficacy (Roxas, 2014). Further evidence points to the same results among Saudi students. The likelihood of expressing entrepreneurial intentions was significantly and positively influenced by previous qualifications and training (Almobaireek and Manolova, 2012).

Based on the discussion in the literature review, this study decides to measure the extent of student decisions at the University of Pancasila by considering several factors that can influence entrepreneurial decisions, namely (1) the work of parents, (2) household expenses, (3) entrepreneurial orientation, ( 4) attitudes towards risk, (5) innovation ability, (6) perceived difficulties. finance, and (7) university support (Zwan et.al, 2016; Pauceanu et.al, 2018).

## RESEARCH METHODOLOGY

This study involved 100 active students as the sample study from the Faculty of Economics and Business, Pancasila University who were randomly selected. FEB UP was chosen as the object of research because the faculty has permanent program to prepare students to become entrepreneurs. Further, six measurements to investigate student's intention towards starting a business will be analyzed with logistic regression. Following table is the presentation of those six variables altogether with the notation and its descriptions in the questionnaires.

**Table 1.** Detail of Independent Variables

| **Variable** | **Notation** | **Variable Description/Questionnaire Item** |
|---|---|---|
| Parent's Occupation | POT | One of the parents work as an entepreuner = 1<br>Both the parents are not entrepreuner = 0 |
| Household Expence | PRT | Respondent's Perception toward the family expence condition<br>(Very insufficient = 1; Insufficient = 2; Sufficient = 3; Very Sufficient = 4) |
| Entepreuner Orientation | OKW | Work independently (self employed) = 1<br>Working as an employee = 0 |
| Attitude toward the risk | STR | Generally (Totally disagree = 1; Disagree = 2; Agree = 3; Very Agree = 4) |
| Inovation Competences | KIN | I am a person with full ideas/opinion<br>(Totally disagree = 1; Disagree = 2; Agree = 3; Very Agree = 4) |
| Financial Difficulties Perception | PKK | It's difficult to start a business if it doesn't have financial support<br>(Disagree = 0; Agree = 1) |
| University Supports | DUS | The teaching, Curriculum, facilities and infrastucture are available on campus that build the interest to become the entrepreneurs.<br>(Totally disagree = 1; Disagree = 2; Agree = 3; Very Agree = 4) |

Source: Data analysis, 2023.

## RESULT AND DISCUSSION

The results show that the variables analyzed can affect the entrepreneurial decisions of the students. Parents 'occupation (POT) is statistically proven to have a positive and significant effect on students' decisions to become entrepreneurs. In this case, if a student's parent works as an entrepreneur, the student is most likely to become an entrepreneur 116 times higher than student whose parents are not entrepreneurs. Among the variables studied, the influence of POT on students' business intentions is the greatest. As an external factor, family factor especially parents is a role model figure by children. Specifically, having an entrepreneurial mother and father inspires children to become entrepreneurs.

**Table 2.** Research Estimation Result

| **Variables in the Equation** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Variabel** | **Koef** | **Std. Error** | **z** | **Prob** | **Odds Ratio** | **95% C. I. For EXP (B)** | |
| | | | | | | **Lower** | **Upper** |
| POT | 4.754 | 1.928 | 2.47 | 0.014 | 116.139 | 2.651 | 5087.517 |
| PRT | 1.978 | 0.949 | 2.08 | 0.037 | 7.230 | 1.125 | 46.464 |
| OKW | 3.937 | 2.327 | 1.69 | 0.091 | 51.287 | 0.535 | 4913.068 |
| STR | 2.002 | 1.136 | 1.76 | 0.078 | 7.404 | 0.798 | 68.685 |
| KIN | 2.182 | 1.021 | 2.14 | 0.033 | 8.869 | 1.197 | 65.717 |
| PKK | 2.490 | 1.534 | 1.63 | 0.100 | 12.068 | 0.596 | 244.109 |
| DUS | 2.536 | 0.704 | 3.60 | 0.000 | 12.634 | 3.177 | 50.237 |
| Constant | -23.608 | 7.659 | -3.08 | 0.002 | $5.58e^{-11}$ | $1.69e^{-17}$ | 0.001 |

Source: Data analysis, 2023.

Entrepreneurial orientation (OKW) also has a positive and significant effect on student decisions toward entrepreneurship. OKW is an internal factor that influences student decisions. Related to this, the study found that the likelihood of students to become entrepreneurs is 51 times higher than students whose orientation willing to work in a company. To be effective therefore, entrepreneurship education must encourage harder to change student’s orientation from employment to self-employed orientations.

Perceptions of financial hardship (PKK) measures student responses to financial support in starting a business. The result found a positive and significant effect on student entrepreneurial decisions. The majority of respondents stated that they disagreed with the statement that it is difficult to set up a business if they have no financial support. The study describes that students who believe that limited financial access was not an excuse. The Odds ration of 12 illustrates that students think that financial limitation is not an obstacle to become entrepreneurs has higher 12 times rather than students who felt that it is difficult to set up a business without financial support.

This study also found that students who come from families with higher levels of expenditure (PRT) have a greater entrepreneurial intention. This factor is closely related to the support of financial needs (funds) in the initial period of business formation. Although it is not the only one, this study proves that the level of household expenditure is a strong external factor and privilege to encourage students to become entrepreneurs.

In addition, students' attitudes toward risk (STR) also determine their decision to become entrepreneurs. The result found that students with a high risk tolerance level are 7.4 times more likely to become entrepreneurs than students with a low risk tolerance level. This is reasonable considering that risk is an inherent factor in business activities, thus people with a higher risk tolerance have more intention to start a business.

With regards to internal factors, this study found that students with innovation abilities have a positive and significant effect on their intention to become entrepreneurs. In this case, students who are innovative have a greater chance about 8.8 times than those who are less innovative to become entrepreneurs. This is because the ability to innovate is related to a person's ability to generate ideas/ ideas / perspectives that are different from before, so that they can put these ideas into reality to get high added economic value. Therefore, the ability to innovate is basically an important prerequisite for entrepreneurs.

Regarding to university support (DUS), respondents considered that the role of university is important in encouraging them to become entrepreneurs. This is evidenced by the statistical result, that this variable has a positive and significant effect on students' intention to become entrepreneurs. Studying entrepreneurship subject, facilities and infrastructure can build students' interest in becoming entrepreneurs. University support can increase students' intention to become entrepreneurs 12.6 times greater than if there is no support.

## CONCLUSION

This study aims to identify what factors can influence students' decisions to become entrepreneurs. For this reason, there are several factors being tested, namely (1) parents' work, (2) household expenses, (3) entrepreneurial orientation, (4) attitudes towards risk, (5) innovation ability, (6) perceptions of financial difficulties, and (7) university support. These factors themselves are a combination of internal and external aspects that can influence individual decision making (intention). By taking 100 students of FEB UP as a sample, this study found that all the variables analyzed have a positive and significant effect on students' intention to become entrepreneurs.

Among the variables analyzed, parental occupation (POT) was proven statistically to have the greatest positive and significant effect on student decisions to become entrepreneurs. This shows that the family environment, especially parents, as a role model figure by the children. In this case, having an entrepreneurial mother and father inspire their children to become entrepreneurs. Regarding to the university support (DUS), respondents consider university plays an important role to encourage them to become entrepreneurs. This is evidenced by the results which show that DUS has a positive and significant effect on students' intention to become entrepreneurs. In this case, the DUS supports in the form of teaching entrepreneurship subjects, facilities and infrastructure which can build students' interest to become entrepreneurs.

This research expects to contribute practically as well as theoretically. The study suggests for educational institutions, especially at the university level, to carefully formulates curriculum and programs in the field of entrepreneurship to be effectively influence the student’s intention toward entrepreneurship. If the indicators studied in this research listed, thus parent’s working background is the first place. This also illustrates that university needs to create program that involved student’s parent thus the student feels that they have full support from their families. The second place is entrepreneurship orientation (OKW) then followed by University support (DUS), perception of financial difficulties (PKK), Innovation ability (KIN), attitude towards risk (KIR) and the last indicator is household expenses (PRT). For theoretical implication, this study expects to enrich more references in the discourses of entrepreneurship especially from education institutions specific theme.

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