POLITEKNIK BANTING SELANGOR

DESIGN AND DEVELOP CEKODOK MAKER PROTOTYPE

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This report was submitted to the Mechanical Engineering Department as part of the requirements for the award of the Mechanical Engineering Diploma

MECHANICAL ENGINEERING DEPARTMENT

STATEMENT OF AUTHENTICITY AND PROPRIETARY RIGHTS

RESEARCH OF DESIGN AND DEVELOP CEKODOUGH MAKER PROTOTYPE

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In front, MS ASIAH BINTI YUNOS As our group supervisor MS ASIAH

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ABSTRACT

This study aims to design and develop a maker for the production of cekodok, a popular Malaysian snack. The machine incorporates several key features to ensure efficient and consistent production while maintaining the quality and taste of traditional handmade cekodok. The design process begins with a thorough analysis of the manual cekodok-making process to identify critical steps and parameters. This analysis guides the selection and integration of components such as mechanisms, and portioning devices. A key challenge in designing the cekodok machine is replicating the manual shaping process to achieve the characteristic round shape and texture of traditional cekodok. To address this challenge, innovative shaping mechanisms are developed, drawing inspiration from both traditional techniques and modern engineering principles.Safety features are also integrated to prevent accidents and ensure operator protection during operation. Prototype testing is conducted to evaluate the performance of the cekodok machine in terms of production efficiency, product quality, and user-friendliness. Feedback from testing is used to refine the design and optimize the machine for commercial production. The final cekodok maker offers a scalable and cost-effective solution for food producers looking to simplify the production of this popular snack while preserving its authentic taste and texture. Further research may focus on enhancing the cekodok maker capabilities.

CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

Cekodok is a popular traditional fritter in Brunei , Singapore , Indonesia and Malaysia . It is usually served during breakfast or tea time because it's simple and easy to make .
The shape is normally round and of a variety of sizes . Plus , there's also several types of *cekodok* such as banana , prawns , onion and anchovies.

Many small business experience a variety of problems in terms of processing foods.
some of them are maintaining the quality and time taken for the foods to be served. By using manual ways, they have to use bare hand while making the *cekodok* and consuming more energy from it. From that, *cekodok* maker machine can promote business, economic growth and prioritize quality.

The process of making the *Cekodok* is very simple because it doesn't use many ingredients . For *Cekodok* Banana , we need to smash the banana until fully crushed . Secondly , add salt , sugar and wheat flour little by little and don't add too much wheat flour at one time, it depends on how many bananas we use . Thirdly , put the *cekodok* in rounded shape into hot oil and flip until it turns brown . Lastly , *cekodok* is ready to be
served .

1.2 PROJECTS BACKGROUND AND PROBLEM STATEMENT

1.2.1 PROJECTS BACKGROUND

This *cekodok* maker machine is rarely used by the community, especially for people who work in small restaurants or stalls. After studying, some of them usually use manual ways that use a lot of energy and time by making a round shape and fry near to the hot oil which is very dangerous and can lead to serious injury at any time. This method is often used because it uses a large amount to make a machine.

1.2.2 PROBLEM STATEMENT

Nowadays , people use advantages in a wrong way while doing business, especially in the food industry . Mostly they use barehand to make *cekodok* and serve to customers without worrying about the quality of the *cekodok*. According to the article made by the Ministry of Health Malaysia on 19 April 2012 “Food Poison” written by Dr. A’aisah, Malaysia reported 14,455 cases of food poisoning in 2007. The reason why the cases are high is because of how the food is produced. This will cause symptoms of food poisoning such as aching muscles, diarrhea, stomachache and more. In order to solve that problem, we created a model called a cekodok machine maker. This model will reduce food poisoning cases and save more time and energy while making cekodok.

1.3 OBJECTIVE

1. To design Cekodok Maker Machine
2. To fabricate Cekodok Maker Machine
3. Able to solve the unhygienic, safety factor and inconsistent size problem**.**

1.4 PROJECTS SCOPE

This project can be used by users on average 13 years and above because of its medium size that can easily lift anywhere . The storage for this machine can hold up to 500 – 600 gram dough that can make a lot of *cekodok* in one time without worrying to refill the dough . This machine is made from PVC because we created as a prototype before we proceed with final product. In the final product, we used stainless steel to prevents corrosion and damages the quality of *cekodok* .

1.5 BENEFITS OF MAKING THIS PROJECT

- Costs less time to produce *cekodok* at one time .
- Consume less human energy .

CHAPTER 2:
LITERATURE REVIEWS

2.1 INTRODUCTION

Literature means research articles that are referred to understand and to study the research issues. The literature review is used to provide contextual studies by looking at the research that has been conducted in the field of research and not just summarizing the research conducted by other researcher such as systematically searching, evaluating, and synthesizing scholarly articles, books, and other sources to provide a comprehensive understanding of the current state of knowledge on the subject. In addition, through the study of the literature the researcher can also identify the weaknesses and strengths of the resulting project. Therefore, the literature review is important as it can be used from several aspects as a guide and reference for the researcher in completing this study. It serves as a foundation for new research by providing insights, theories, methodologies, and findings from previous studies.

This literature review aims to provide a comprehensive understanding of the cekodok machine, its technological underpinnings, operational mechanisms, and the impact it has had on the food industry, particularly in the context of Malaysian cuisine. By examining a range of scholarly articles, industry reports, and technological developments, this review seeks to elucidate the factors driving the adoption of cekodok machines, their benefits and limitations, as well as potential avenues for future research and innovation in this domain.

Properties	Automated cekodok machine	Handmade cekodok
		
Mode operated	Electric operated	Manually operated
material	Stainless steel	Stainless steel
features	Automatically cut cekodok to the same size	To make cekodok
safety	high	low
price	rm1300	rm15

TABLE 2.1: Types of cekodok maker

2.2 CEKODOK MACHINE DESIGN THAT'S AVAILABLE IN THE MARKET

From the research that has been made, it has many design shape like cylinder and put it horizontally. However , the design oval or circle can be get at the market with limited amount of sales. Hafiz and Alif has made an analysis about the design by using big cylinder so that it can produce more banana cekodok at one time. This opinion has been support by team members Reeza and Haqeeme that the machine can produce 6 banana cekodok at one time compare to manual handmade banana cekodok.

2.3 COMPONENT IN THE CEKODOK MACHINE

The main component that in the cekodok machine :

a) PVC Pipes

b) Bolt and Nut

c) PVC Cap

d) PVC Base

PVC cylinder function as container before the cekodok goes into the stove. We created this product as a prototype , that's why we use PVC as our main components . Not all design for cekodok machine has compress handle. The compress worked as presser to push the cekodok dough through the hole at the end of the cylinder which is has a hole .

CHAPTER 3 :
METHODOLOGY

3.1 Introduction

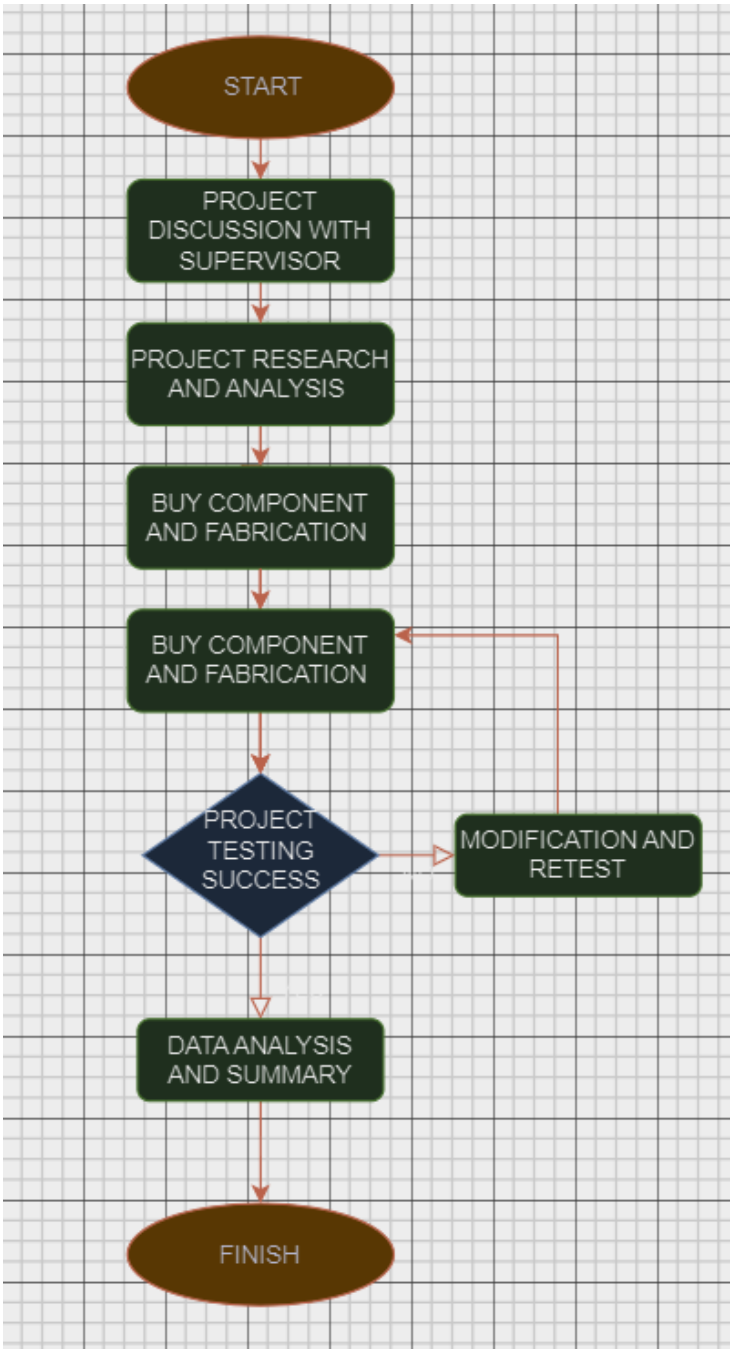
Methodology is essentially the framework or systematic approach used in a particular field of study or activity to gather data, analyze information, and draw conclusions. In this case we are doing a few researches about our cekodok machine maker. In this chapter of methodology it should explain and justify the choice of design, methods and technique of making it with the most suitable ways that fits the purpose and objectives of the research.great methodology provides results meanwhile bad methodology does not provide any.

This specific cekodok machine maker is a self-design based on a group discussion and opinion. The innovations done must take into account aspects and theories of origin in building this cekodok machine maker. The design produced must be not very complicated, long lasting and portable. Component selection is based on studies and tests, so that it can work perfectly without any problem occurring. Even the safety and ergonomic aspects are considered.

Flow chart

In order to achieve a successful project it is highly recommended to have a project planning, project planning is needed and required to show the process of a project.In this case, flow chart and gantt chart are used to manage the project and it also provides a planning schedule. Flow chart shown in figure below shows the steps taken to achieve the final product. Meanwhile, the gantt chart shown in figure below shows the time taken of each task given along the process from the first meet until the design is completed.

FLOW CHART OF PROJECT IMPLEMENTATION STEPS

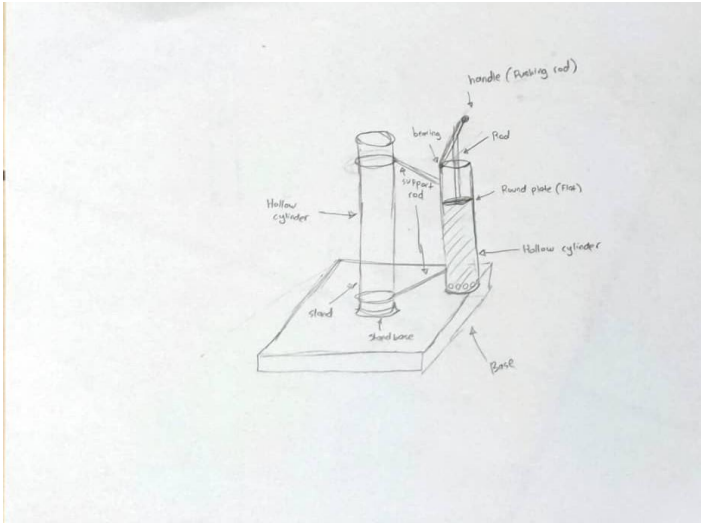


3.1.1 Flowchart

3.2 Project Design

A detailed mechanical cekodok machine maker design will describe clearly about the layout of the product parts and components itself. Even the location or position of each component can be identified precisely and correctly based on the size of the components and the suitability of the component placed and connected . Here is the first design that has been made before the final product is carried out.

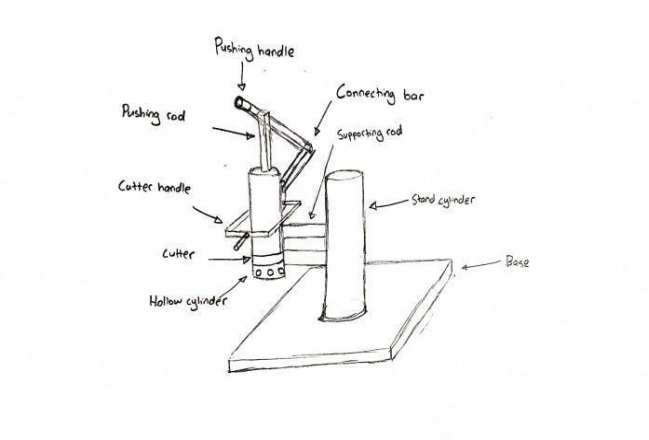
First sketch



3.2.1.1 diagram sketch design example

ADVANTAGES	**DISADVANTAGES**
Simple design	Not stable
Lightweight	High chance of failing

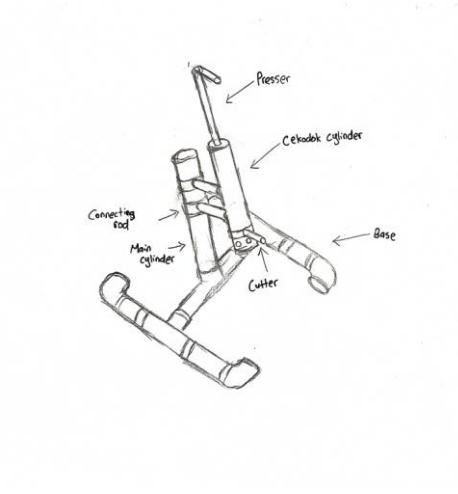
Second Sketch



3.2.1.2 diagram sketch design example

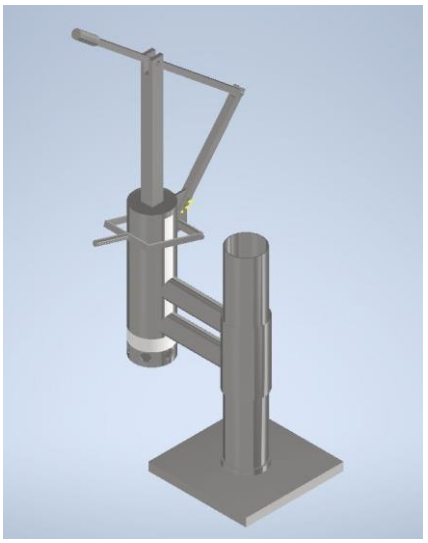
Advantages	**Disadvantages**
Low cost	Low melting point
Ergonomic design	Brittle

Third Sketch



3.2.1.3 diagram sketch design example

3.2.1 Computer Aided Design

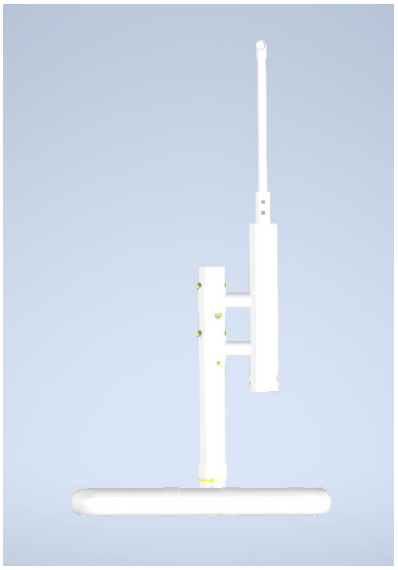


3.2.1.4 inventor overview

3.2.1.5 Inventor review (side view)

Second Design

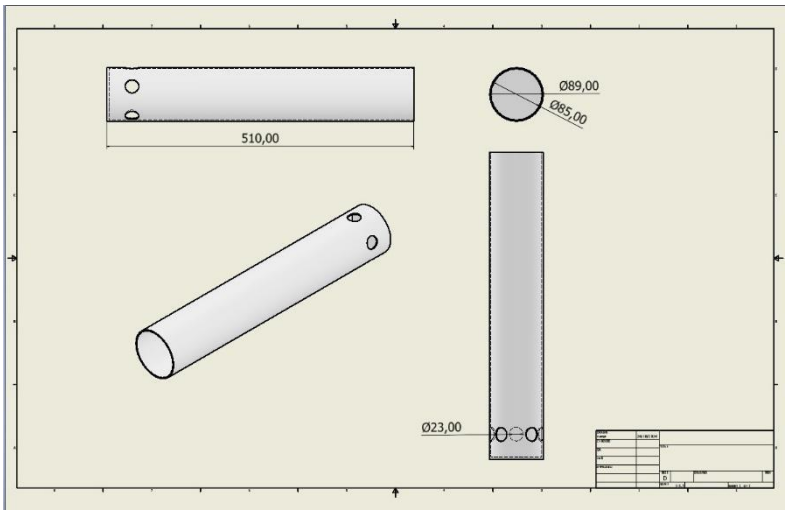
3.2.1.6 Inventor overview



3.2.1.7 Inventor review (side view)

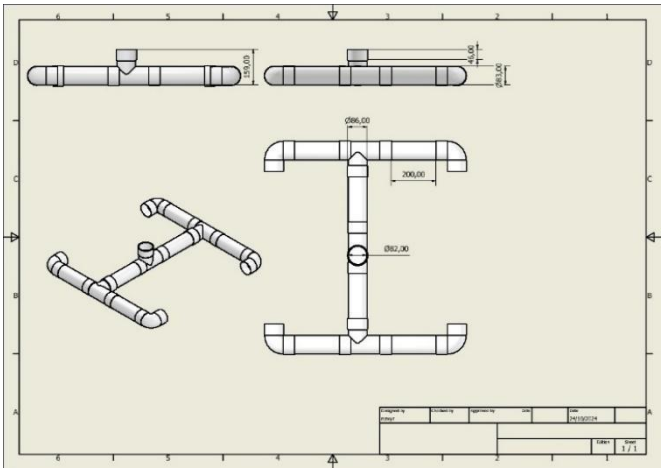
3.2.1.8 Project Part Drawing

3.2.1.8 Cekodok Cylinder



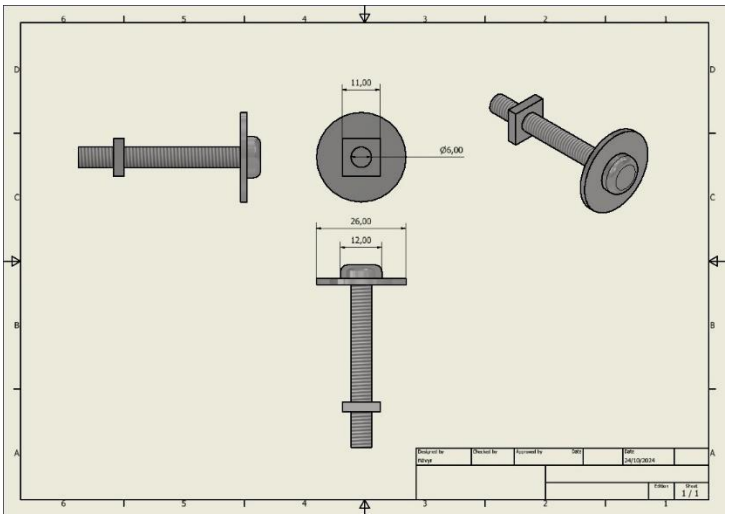
Cekodok cylinder form solid solutions with PVC, resulting in improved strength and hardness. PVC, or **Polyvinyl Chloride**, is a widely used synthetic plastic polymer. It is known for being durable, lightweight, and versatile, which makes it popular in various applications.

3.2.1.9 Base



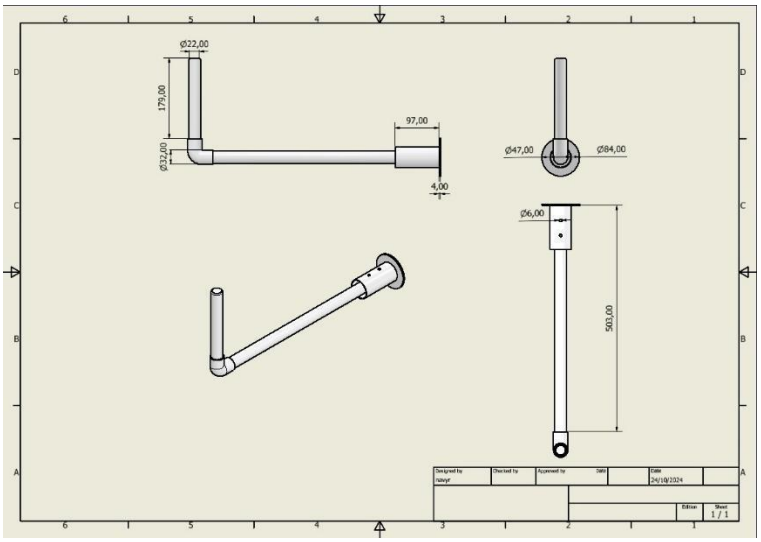
This image shows a technical drawing of a base holder assembly, likely designed using PVC pipes and fittings. This design likely serves as a support or base structure, with the vertical section providing stability. Various fittings such as elbows (90-degree bends) are used to create the ends of the “T” shape and form the corners. This assembly could be used as a base for supporting other structures, holding up a vertical rod or pole, or serving as a stabilizing framework. PVC-based base holders are common in DIY or lightweight support structures.

3.2.2.0 Screw



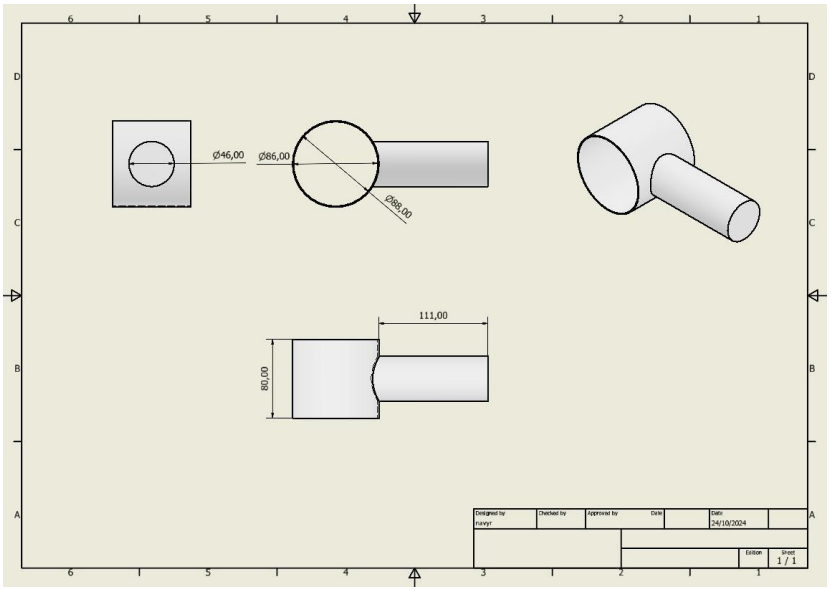
Technical drawing of a screw assembly, which includes the screw, a washer, and what appears to be a square plate or nut. The thread allows it to be tightened into a material or a nut, providing a secure hold. This screw assembly is likely used to secure two components or materials together firmly. The combination of the washer and square plate/nut indicates that this screw assembly is intended for a stable, long-lasting connection, potentially in applications where vibration or movement could otherwise loosen the screw.

3.2.2.0.1 Presser



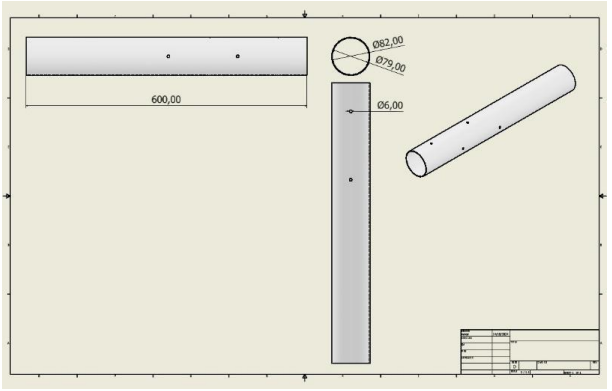
Given these features, this component could serve as a lever arm or presser, possibly part of a mechanical press or a handle that applies force to another part. Its dimensions and mounting suggest it’s designed to withstand applied force, possibly for pressing or securing materials.

3.2.2.0.2 Connector



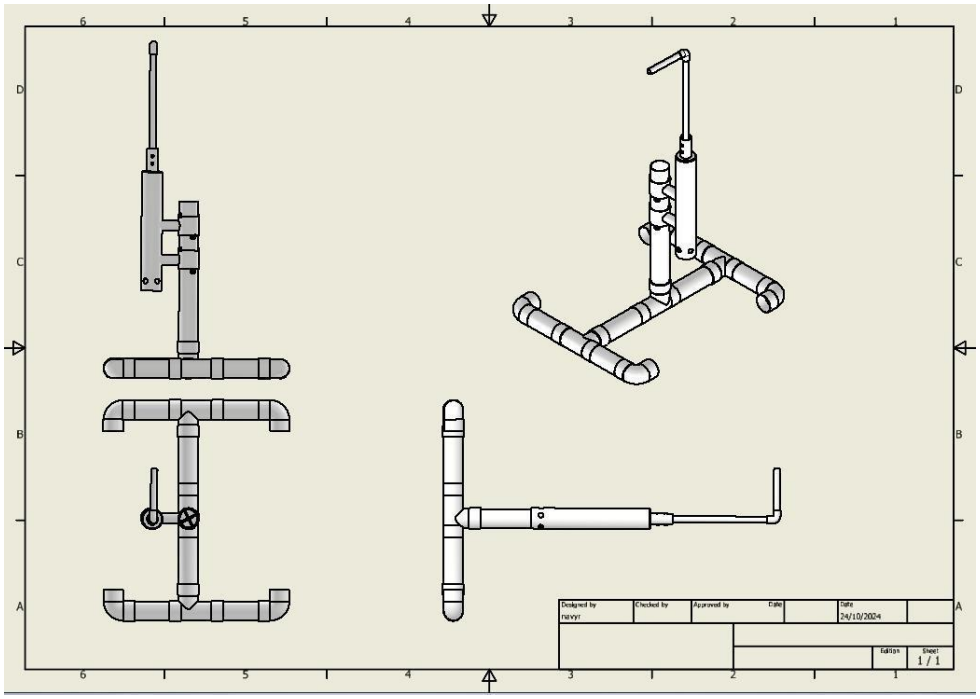
A connector component with a cylindrical shape and a smaller cylindrical extension attached to it. This connector appears to function as a joining or coupling part, likely designed to connect two cylindrical parts together. The internal diameter of the larger cylinder suggests it could slide onto or be fitted around another part with an outer diameter of 46 mm.

3.2.2.0.3 Stand Holder

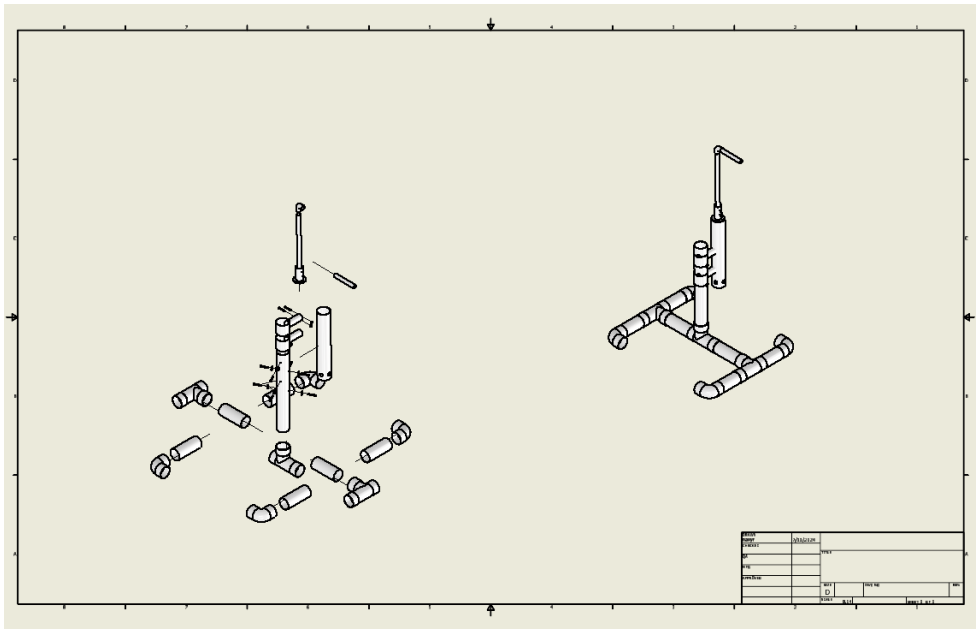


The tube's design, with multiple drilled holes, serves as a stand or support post that can be mounted securely to another surface. There are several 6 mm diameter holes along the length of the tube, likely intended for mounting or fastening purposes. The holes allow for attachments, possibly to secure them to a base, or to connect other components that would need to be held in place.

3.2.1.8 Project Design Drawing



Assembly Drawing



Exploded And Assembly Drawing

3.2.2 Materials And Equipment

A proper selection of materials plays a crucial part in designing a cekodok machine maker to prevent any mistake and misuse of substance or components used . the design consist of these materials such as ;

1. Polyvinyl Chloride (PVC) (base , cap , hollow cylinder , rod)

3.2.2.1 example of PVC

The world's third-most widely produced synthetic polymer of plastic, it comes in rigid and flexibe form. Thermoplastic material known for its durability, chemical resistance, and affordability.

2. Bolt and Nut

3.2.2.2 example of bolt and nut

It is specifically used to bind or connect two or more components together . It comes with a variety of sizes that is suitable for fastening and securing components . it is detachable compared to welding

3. Rubber grip

3.2.2.3 Example of grip

Specifically rubber is used for the handle grip , it is to reduce the friction or lost of grip in between machine and operator . the grip will be greater compared to bare material exposure .

4. PVC Glue

3.2.2.4 Example of PVC glue

Solvent cement, often known as PVC glue, is a type of adhesive that people use to form an airtight seal between PVC pipe and connection fittings. You can use solvent cement to join pieces of PVC pipe and fittings.

Equipment

1. Hacksaw

3.2.2.5 Example of Hacksaw

A **hacksaw** is a fine-toothed saw, originally and mainly made for cutting metal or plastic. The equivalent saw for cutting wood is usually called a bow saw. Hacksaw blades are normally quite brittle, so care needs to be taken to prevent brittle fracture of the blade. Standard hacksaw blade lengths are 10 to 12 in (250 to 300 mm). Blades can be as small as 6 in (150 mm). Powered hacksaws may use large blades in a range of sizes, or small machines may use the same hand blades. The most common blade is the 12 inch or 300 mm length. Hacksaw blades have a hole at each end for mounting them in the saw frame and the 12 inch / 300 mm dimension refers to the center to center distance between these mounting holes.

2. Steel Files

3.2.2.6 Example of steel files

Steel files in hardware and metalworking is tool of hardened steel in the form of a bar or rod with many small cutting edges raised on its longitudinal surfaces which is used for smoothing or forming objects, especially of metal.

3. Grinding machine

3.2.2.5 Example of grinder

A grinding machine is a tool or piece of equipment used for removing material from a workpiece via abrasion. They typically employ rotating abrasive wheels to shape, smooth, or finish workpieces through grinding. The machining process uses abrasive particles to remove material from a workpiece's surface. As the moving abrasive particles come into contact with the workpiece, they function as minuscule cutting instruments, with each particle shearing off a small chip from the workpiece.

4. Disc Cutter

3.2.2.6 Example of disc cutter

A disc cutter is a specialized, often hand-held, power tool used for cutting hard materials, ceramic tile, metal, concrete, and stone for example. This tool is very similar to an angle grinder, chop saw, or even a die grinder, with the main difference being the cutting disc itself (a circular diamond blade, or resin-bonded abrasive cutting wheel for a disc cutter vs. an abrasive grinding wheel for an angle grinder). This tool is highly efficient at cutting very hard materials, especially when compared to hand tools.

5. Hand drill

3.2.2.7 Example of hand drill

The hand drill consists of a cranking handle that turns pinion gears on the main shaft. A chuck at the end of the shaft holds a drill bit. The opposite end of the shaft has a second handle that is held stationary while the chuck turns. The drill bit is selected to cut a hole of a specific width,

3.2.3 Estimates material cost

Number	Material	quantity	price per unit (RM)	overall price (RM)
1	Stainless steel square plate (400mm X 400mm)	1	71.56	71.56
2	solid stainless steel (100mm X 500mm)	1	276	276
3	hollow stainless steel (130mm X 400mm)	1	90	90
4	hollow stainless steel (115mm x 300mm)	1	83	83
5	solid shaft (50mm X 50mm)	2	35	70
6	stainless steel round plate (200mm)	2	18.35	37
7	flat bar (300mm x 25mm)	4	16	48
8	flat bar (200mm x 25mm)	2	16	32
9	flat bar (400mm x 38mm)	2	25	50
10	flat bar (150mm x 100mm)	1	80	80
11	solid shaft (15mm x 150mm)	1 (5)	33	33
12	grip rubber	1	15	15
			Total	880

3.2.4 Summary

In the initial stage, the design of the study, the method of collection data, study instruments, data sampling techniques and data analysis methods were made systematically in the study of the methodology to find out the facts and information to support the instruments of study and illustrate more clearly in this study. After the analysis of the data is performed, it is important to formulate or infer the same results and hypotheses whether there are such pitfalls effective or not.

3.3 Data analysis method

The data collection and analysis for cekodok machine makers involves measuring and stating parameters such as maximum loads that can be held by the base , weight of dough in the cylinder , presser tension , cutter friction , center of gravity . By interpreting the collected data , insights can be gained into the scrubber's efficiency , limitations and performance that leads to conclusions and recommendations for future improvements.

3.4 Project gantt chart

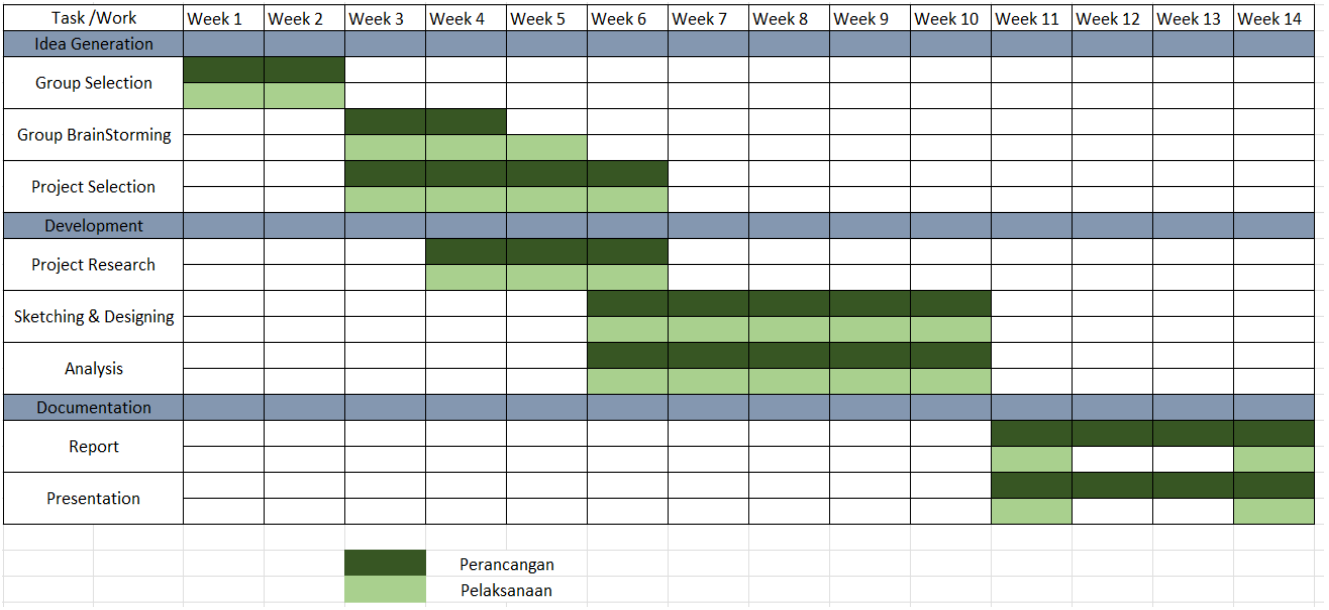


Figure 3.4 : Gantt chart

CHAPTER 4
RESULTS ANALYSIS AND DATA

4. INTRODUCTION

A manual cekodok maker machine created to produce many cekodok in one time for users to serve for themselves or customers such as street vendors. The machine displayed excellent performance and showed good results of the cekodok throughout a six-month testing phase. This result has been compared to certain methods and it's came out with consistent size of cekodok. Since the machine produces cekodok quickly and continuously than barehand could, the time taken to produce was decreased. The machine's cutter also ensure that each cekodok was cut through the hole at the same time precisely and the size of cekodok can be determined by pulling down the presser depending on the users. In addition, this prototype easing physical strain, eliminate unhygienic accommodation and enabling greater optimization for human needs.

4.1 DATA ANALYSIS AND STATISTICS

In order to determine the success of the “Design and Develop Cekodok Maker Machine” to all society, we had gathered the data and statistics to be analyzed from the users using the Google Forms platform.

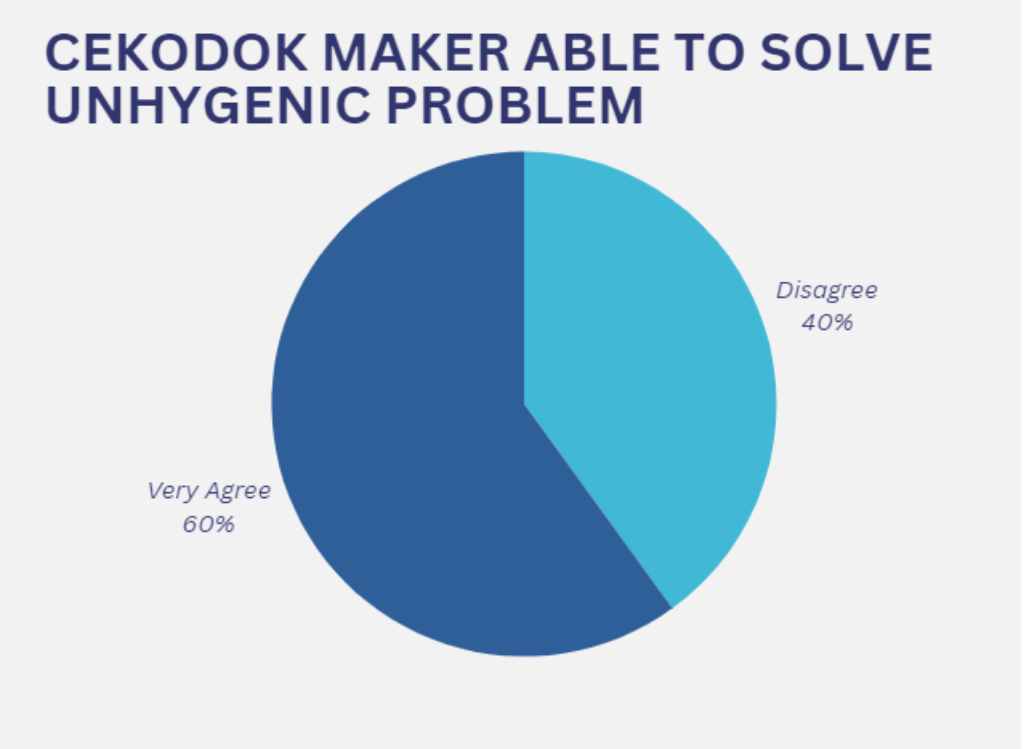


Figure 4.1 Pie Chart Question 1

Based on the pie chart above, 60% of users very agree and 40% disagree with our product. The majority of user very agree that our product be able to solve unhygienic problems because this product prevented contact between barehand and cekodok. This include the design that allowing users to operated without any complain

Figure 4.2 Bar Chart Question 2

According to this analysis, as much as 10 users had a various opinion for this product about the time taken. A significant majority of respondents chose “very agree” that cekodok maker gave a big impact on time taken to produce cekodok especially for street vendors. Furthermore, 5 users who chose “agree” because they has another though which is using barehand can do as quickly as this cekodok maker do. Meanwhile, other 3 users disagree because they did not want to spent any cost and compare our product with other conventional method.

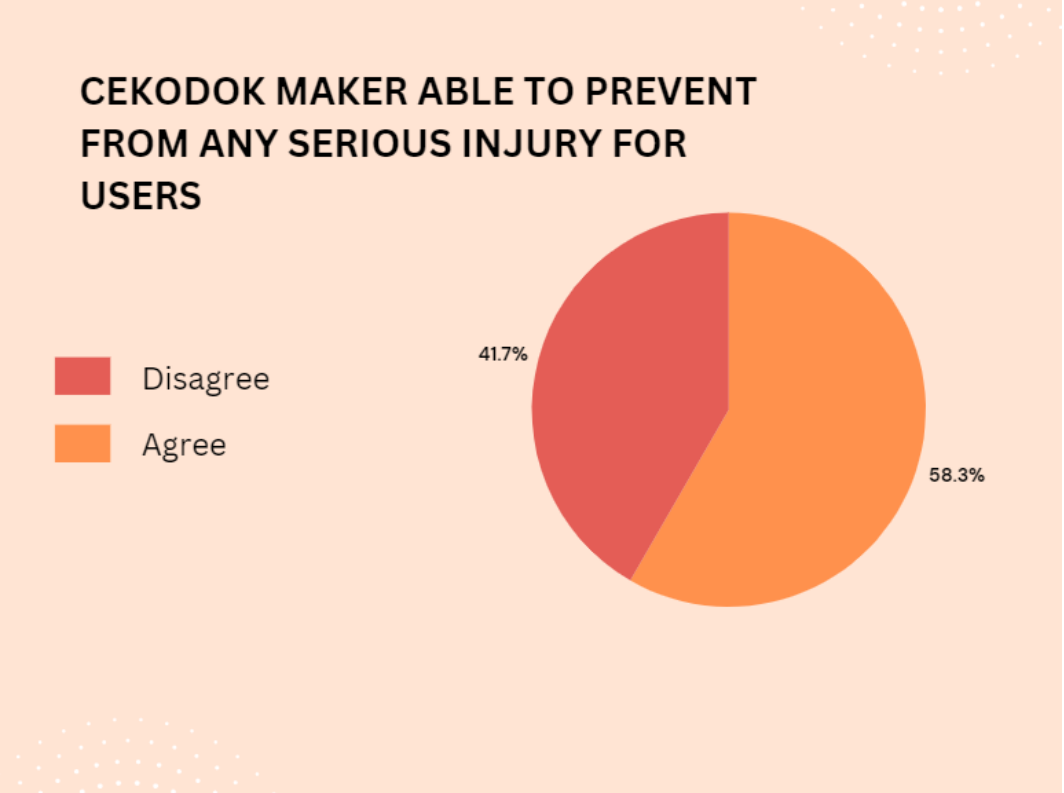


Figure 4.3 Pie Chart Question 3

From the pie chart above, the overwhelming majority of responders (58.3%) chose “agree”, showing that this product is safe to use for daily usage and maintaining users safety such as it can prevent unsafety action between barehand to hot oil pan while producing cekodok. In addition, 41.7% disagree with this product because based on their opinion, its still can caused an injury to the users whether with or without using this product.

4.2 PROJECT TESTING AND PERFORMANCE ANALYSIS

Table 4.1 : Project performance analysis

First Attempt	
Height	75 cm
Weight	Moderate
Material	Stainless steel
Quantity of cekodok produced at a time	3 pieces
Durability	High
Second Attempt	
Height	78.8 cm
Weight	Light
Material	PVC
Quantity of cekodok produced at a time	5 pieces
Durability	Moderate

4.3 ANALYSIS

After the design and develop cekodok maker prototype Q&A session, an analysis of the findings and information gathered was done. According to user feedback, 60% of respondents very agree believe that the cekodok maker can effectively solve hygiene issues, indicating strong support for this idea. 40% of respondents disagree, do not believe the cekodok maker will address the unhygienic problem, suggesting some scepticism about its effectiveness.

In terms of cekodok maker able to reduce time taken to produce cekodok 7 responses agreed. Most respondents strongly believe that the cekodok maker significantly reduces production time. This high level of agreement shows confidence in its efficiency. Meanwhile 5 responses agree. A fair number also agree, though less strongly, suggesting that they see some benefits in time reduction but might have minor reservations. Finally, 3 responses disagree. A smaller portion disagrees, implying skepticism or doubt about the cekodok maker's ability to save time.

Finally, are opinions on whether the cekodok maker can prevent serious injuries for users. 58.3% agreed, over half of the respondents believe that the cekodok maker helps to prevent serious injuries, indicating confidence in its safety features. Meanwhile, 41.7% disagreed. A substantial minority disagree, suggesting that they might have concerns about safety risks or potential injury hazards when using the cekodok maker.

The cekodok maker is generally viewed favorably, with many respondents acknowledging its potential for improving hygiene, efficiency, and safety. However, there are still notable concerns in each area, especially regarding hygiene and safety.

4.4 DISCUSSION

The process of creating the report and developing the cekodok machine maker involved thorough planning, frequent discussions with our supervisor, and substantial teamwork. Throughout the 14-week project period, we encountered a variety of challenges, requiring resilience and continuous learning. For example, In the early stages, we struggled to find inspiration and establish a clear direction for our project. To overcome this, we reviewed previous Project 1 assessments and examined the model we had developed thus far. We also conducted extensive online research, which gave us a clearer understanding and fresh ideas to move forward. Once we had a solid foundation, we initiated the design phase in alignment with the prior project's framework.

Additionally, we've also encountered workshop and machinery difficulties. Working in the workshop posed its own set of challenges. We encountered unfamiliar machinery, including bending, riveting, and grinding tools. This unfamiliarity extended our learning curve, as we needed to understand and adapt these machines for our specific purposes. The lack of experience with these tools also led to minor accidents, particularly when using the grinding equipment. Additionally, our initial attempts at bending parts of the machine led to incorrect dimensions, requiring significant time and effort to rectify.

Other than the workshop and machinery difficulties, we've also encountered material selection issues. Another challenge we faced was a lack of expertise in material selection. Early on, we chose the wrong type of propeller for our machine, which set us back in terms of both time and resources. Correcting this required additional research and experimentation, but we eventually selected a more suitable propeller type that aligned with the project requirements.

With our supervisor's support, we managed to complete the project report and gained insights that will be beneficial for future projects in this field. Overall, this project has not only increased our technical skills but also strengthened our problem-solving and adaptation abilities in a real-world industrial environment.

CHAPTER 5
CONCLUSION AND SUGGESTION

5.1 INTRODUCTION

In this chapter, we will explore the achievements of the goals and objectives set forth in "DESIGN AND DEVELOP CEKODOUGH MAKER PROTOTYPE". Furthermore, we will offer insights and recommendations to improve the product's performance, with the aim of appealing to a broader audience and encouraging its adoption.

5.2 ACHIEVEMENT OF AIMS AND OBJECTIVES RESEARCH

After comprehensive analysis and data collection, we can confidently assert that the initial goals and objectives established at the onset of this research project have been successfully achieved. The design and assessment of the cekodok machine maker have yielded positive results in all intended areas.

1. Objective: Able to solve the unhygienic.
    - The machine eliminates the need for shaping of the cekodok dough, reducing direct hand contact with the ingredients and ensuring a more sanitary preparation process.
    - The machine's enclosed design prevents exposure to external contaminants, dust, or insects, which can compromise the cleanliness of the food during preparation.
    - All parts of the machine that come into contact with food are made of non-stick, food-grade materials and7 are designed to be easily disassembled and cleaned, reducing the risk of bacterial buildup.
    - The machine ensures that every cekodok is cooked uniformly, reducing the risk of undercooked dough that may harbor bacteria.

2. Objective: Improving the efficiency and consistency of cekodok production.
    - By streamlining the preparation process, the machine significantly reduces the time required to shape and fry each batch, allowing for higher output in a shorter timeframe, thus improving overall efficiency.
    - By minimizing manual intervention, the machine decreases the likelihood of human error in portioning leading to a more reliable and standardized production process.
    - The machine can handle multiple cekodok at once, allowing for batch production, which not only speeds up the process but also ensures consistent quality across larger quantities, catering to high-demand situations efficiently.

To accomplish these objectives, a systematic research approach will be essential, encompassing a literature review, design and development, testing and evaluation, followed by iterative refinements. Engaging a diverse group of experts, such as experienced cekodok makers, food technologists, agricultural engineers, and equipment manufacturing specialists, can offer valuable insights that are crucial for the successful realization of the research goals. Leveraging this collective expertise enables the project team to gain a deeper understanding of the technical, operational, and market-specific requirements needed to develop an efficient and high-quality cekodok maker prototype.

5.3 SUGGESTION AND RECOMMENDATIONS

Based on the research conducted on the cekodok machine maker prototype, here are some proposals and recommendations to boost its efficiency and attract a wider audience:

1. **Manual Pump-Activated Press**: Instead of using electricity, the press mechanism could operate through a manual pump or lever system. By simply pressing or pumping the handle, users could create consistent, evenly shaped dough portions. This would automate the shaping process without the need for electrical components, making it more sustainable and easier to use in any setting.

2. **Heat-Resistant, Non-Stick Coating for Easy Release**: Use high-quality, heat-resistant non-stick materials for the machine's dough compartments. This would prevent the dough from sticking, making it easier to release the cekodok and reducing the need for frequent cleaning, all while functioning without any electrical components.
3. **Add a Built-in Oil Filtration System**: To maintain the quality and hygiene of the frying oil, consider integrating a built-in oil filtration system. This feature would help extend the oil's lifespan by removing food particles and impurities, resulting in cleaner frying and healthier cekodok. It would also reduce waste and lower operating costs.

By incorporating these suggestions and recommendations, our design and develop cekodough machine maker prototype can be enhanced to reach a nationwide market, increase operational effectiveness, and pave the way for a new era in the modern food industry.

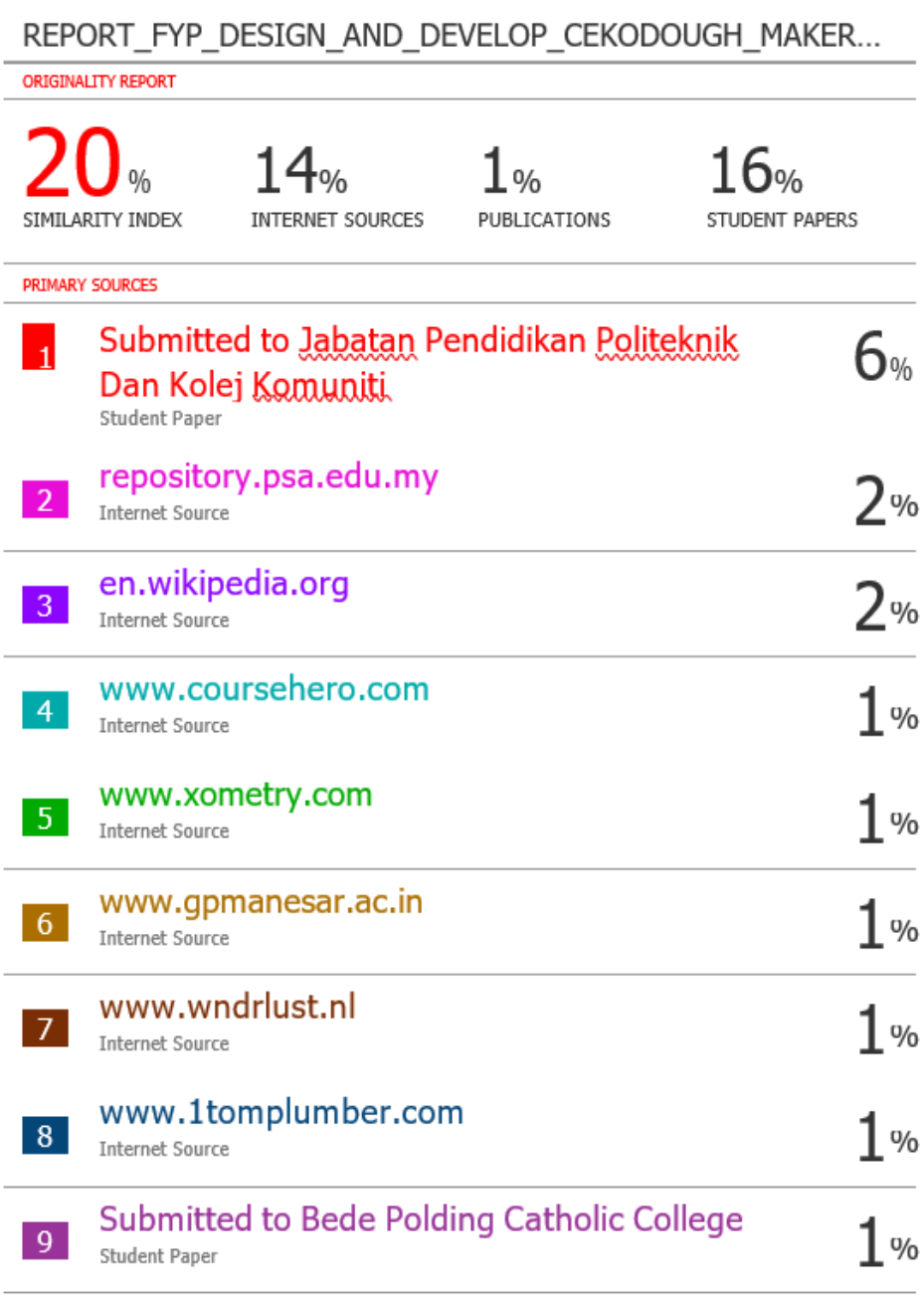
5.4 CONCLUSION

In conclusion, the **Cekodok Maker Prototype** demonstrates great potential in revolutionizing the production of cekodok by improving efficiency, consistency, and hygiene.

Other than that, with its ability to produce five pieces at a time, it significantly enhances production efficiency. This feature allows users to quickly and consistently produce a larger quantity of cekodok in a shorter period, meeting high-demand situations with ease. While the prototype shows great promise in improving productivity, further refinement and testing are essential to ensure optimal performance and address any potential limitations.

With continuous development, this capability has the potential to greatly benefit users in the food industry by streamlining the production process and increasing overall output.

5.5 APPENDIX



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MUHAMMAD HAQEEME BIN MOHAMAD SUHAIMI (24DKM22F1048)	
3.1	**introduction methodology**
3.2	**Project design**
3.2.2	**Materials and equipment**
3.2.3	**Estimate material cost**
3.2.4	**Summary**
3.3	**Data analysis method**
ALIF QAYYUM BIN NOOR AZMAN (24DKM22F1033)	
2.1	**Introduction**
2.2	**Cekodok machine design that's available in market**
	Abstract
	Acknowledgement
	First sketch
	Second sketch
3.2.1	**Computer aided design**
3.2.1.8	**Project part drawing**
4.4	**Analysis**
4.5	**Discussion**
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1.5	**Benefits of making this product**

ENDORSEMENT SECTION	
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