POLITEKNIK BANTING SELANGOR

DESIGN AND DEVELOP CHURROS MAKER PROTOTYPE

WAN ISKANDAR DZULQARNAIN BIN WAN HASLAN

(24DKM22F1085)

MUHAMMAD AZFAR SYAHMI BIN MOHD AZIZ

(24DKM22F1020)

NUR AISYAH SYAHIRAH BINTI KASMAN

(24DKM22F1084)

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 CHURROS MAKER PROTOTYPE

1. We, **WAN ISKANDAR DZULQARNAIN BIN WAN HASLAN (NO KP:040108-14-1451), MUHAMMAD AZFAR SYAHMI BIN MOHD AZIZ (NO KP: 040816-14-0599), NUR AISYAH SYAHIRAH BINTI KASMAN (NO KP: 040616-10-0584)** is a Mechanical Engineering Diploma student, Polytechnic Banting Selangor, whose address is **Persiaran Ilmu, Jalan Abdul Samad 42700 Banting, Selangor.** (Hereinafter referred to as 'the Polytechnic')

2. We acknowledge that the 'Project above' and the intellectual property in it are the result of our original work/design without taking or copying any intellectual property from other parties.
3. We agree to release the ownership of the intellectual property of 'the Project' to 'the Polytechnic' to meet the requirements for the awarding of the **Mechanical Engineering Diploma** to us.

Done and truly acknowledged

By that;

1. WAN ISKANDAR DZULQARNAIN BIN WAN HASLAN ……..
(NO KP: 040108-14-1451) WAN
2. MUHAMMAD AZFAR SYAHMI BIN MOHD AZIZ ……..
(NO KP: 040816-14-0599) AZFAR
3. NUR AISYAH SYAHIRAH BINTI KASMAN …….
(NO KP: 040616-10-0584) AISYAH

In front, MS ASIAH BINTI YUNOS ….....

As our group supervisor MS ASIAH

ACKNOWLEDGEMENT

This thesis was made possible with the kind support and help of many individuals. We would like to sincerely thank all of them. First and foremost, we want to offer this endeavor to Allah S.W.T the Almighty for the wisdom He bestowed upon us, the strength, peace of mind and good health in order to complete this research. Although there were many challenges and obstacles that we faced in order to finish our final year project assignment during fabrication and paperwork, we managed to overcome them with patience, hard work and unity among the group members.

We would like to express our gratitude towards our respected supervisor, Mrs. Asiah Binti Yunos, for her encouragement, guidance, invaluable support and motivation which helped us in the completion of this project. We would also like to extend our sincere appreciation to the staff of the Mechanical Workshop for permitting us to use all the required machinery and necessary materials to complete this project.

Thank you as well to the team for coming up with this idea together successfully. Without your encouragement and support, we would not have been able to complete this work as well as our other friends. In addition, many thanks to our colleagues who worked hard to produce this work and exchanged ideas to help us complete this project. Finally, we believe that the work we undertook will broaden our knowledge and improve our cooperation and sense of responsibility.

Thank you.

ABSTRACT

The main goal of this project is to build a machine for making churros, which are a popular fried pastry snack from Spain. It's really important that the machine can make churros that taste and feel just like the traditional handmade ones. The first step is to carefully study how churros are made by hand. This allows the designers to understand all the key steps and techniques that need to be recreated by the machine. Insights from this analysis will guide the selection and setup of all the different mechanical parts, like the dough shaper, the frying section, and the portioning system. One of the biggest challenges is figuring out how to automatically shape the dough into the distinctive rigid cylindrical shape that authentic churros have. Solving this will require creative solutions that combine older traditional methods with modern engineering know-how. Safety is a top priority, so the machine will have robust safety features built in to prevent accidents and keep the operators safe while it's running. Extensive testing of early prototypes is crucial for evaluating how well the machine performs in areas like production speed, churros quality, and ease of use. Feedback from these tests will be used to refine and optimize the final churros maker for commercial-scale manufacturing. The end result will be a cost-effective, scalable solution that allows food producers to efficiently make large quantities of churros while perfectly replicating the beloved taste and texture. Future upgrades could add automated glazing or filling capabilities to the machine.

TABLE OF CONTENT

CHAPTER 1
INTRODUCTION

1.1 INTRODUCTION

Churros originated in Spain, likely descending from a Spanish fritter recipe that made its way to the Americas via the Spanish conquistadors. The name "churro" refers to the ridged, crunchy texture of the fried dough pastry, resembling the shape of the Churra sheep's horns that were once common in Spain. The basic recipe consists of flour, water, and salt that is piped into hot oil and fried until golden brown, then coated with cinnamon-sugar. Churros became popular street food in Spain and quickly spread to Spanish colonies in the Americas.

To make churros, you first need to prepare the dough by bringing water, salt, and butter (or oil) to a boil in a saucepan. Remove the pan from heat and stir in flour until a dough forms. Transfer the dough to a piping bag fitted with a star tip. Next, pipe long churro strips directly into hot oil heated to around 375°F/190°C for frying. Fry the piped churros for 2-3 minutes per side until they turn a golden brown color. Using a slotted spoon, remove the fried churros from the oil and drain them on paper towels. While the churros are still warm, roll or toss them in a mixture of cinnamon and sugar to coat the outside. Finally, serve the warm, freshly coated churros, often accompanied by a thick chocolate dipping sauce on the side. The key step is piping the dough directly into the hot oil to achieve that classic churro shape when fried.

1.2 PROBLEM STATEMENT

Churros is a popular snack that many people enjoy. However, there are some problems with the machines used to make churros. Most churros machines only have one mold. This means sellers have to make the churros dough and fry it in batches. This takes a long time and can cause customers to wait too long, especially during busy times or when there are many customers. This can make customers unhappy and the sellers may lose sales. Another problem is that churros machines are big and heavy. This makes it hard for street food sellers and mobile sellers to carry the machine around, especially for older sellers or those who are not very strong. It limits where the sellers can go and sell their churros to customers. Additionally, most churros machines only make one shape of churros. This limits what the sellers can offer customers. Some machines allow sellers to change the mold to make different shapes, but changing the mold takes a lot of time and effort. This makes the process of making churros slower. Having only one shape means sellers cannot make their churros look different from others, and it may be harder to satisfy customers who want more varieties in their churros selections.

1.3 OBJECTIVE

The idea of this project is to Design and Develop Churros Maker. The project will include several objectives to achieved, there are:

- To identify churros seller's needs of a product.
- To analyze the problem and generate ideas for the solutions.
- To produce concept design of the product based on churros seller's needs.

1.4 SCOPE OF PROJECT

The scope for our product is it can be used at age 15 years old and above because it is easy to use and the machine is not too heavy to lift anywhere. It is also suitable to be used anywhere such as at the stall, home and others. Besides that, we made some improvements to our product which is the mold. It has 3 molds so it can produce churros faster than the old machine. It also used stainless steel for the material because it's suitable for food material construction and easy cleaning.

1.5 SUMMARY

Throughout this we have achieved in showcasing each and every topic. Also be able to identify the problem statement and we also be able to clarify the objective of this project clearly. Furthermore, we also well-constructed the scope of this project clearly above. With that said we are also going to discuss the article review of each and every component we have been used in our project in the following topic which is Literature Review.

CHAPTER 2
LITERATURE REVIEW

2.1 INTRODUCTION

A literature review is a evaluation and summary of previous research on a given topic or field of study. It involves carefully exploring, learning, and reading articles, books, and other sources in order to provide a comprehensive overview of the current state of knowledge on the subject. A literature review helps researchers in identifying gaps in the existing literature, developing a strategy for their research, and explaining their own findings within the larger scholarly debate. It provides as a basis for future study by presenting a information, hypotheses, procedures, and findings from prior investigations.

Next, the literature review conducted was on a research and innovation. Additionally, a previous pattern has been performed, and there are two old churros machine designs. Furthermore, products in the current market have three different types, namely electric churros machines, manual churros machines, and digital churros machines. All of these machines differ in various ways. For example, differences exist in a churros cutting and how the machine is operated, such as auto or manual.

2.2 PREVIOUS STUDY ON CHURROS MACHINE

Many researches and innovations have been made in churros machine design over the past decades. There is various types of churros machines :

2.2.1 Electric Machine Churros

The electric churros machine operates using electric power and is made of metal. It provides convenience with an easy-to-program automatic system and comes with various nozzles for different churros shapes. This machine also has adjustable two-speed levels. In terms of safety, it has a high safety rating, making it a reliable choice. The price for this machine is RM 2389.

Figure 2.2.1 : Electric Machine Churros

2.2.2 Manual Machine Churros

The manual churros machine operates manually and is also made of metal. This machine is easy to install, simple to load with ingredients, and is easy to operate and clean. Like the electric machine, it also has adjustable two-speed levels. However, its safety rating is lower. This machine is more affordable, priced at RM 1162.

Figure 2.2.2 : Manual Machine Churros

2.2.3 Digital Automatic Churros Maker

The digital automatic churros maker operates with electric power and is made of metal. It features a modern design and uses low-energy technology, making it more energy-efficient. Additionally, it is easy to handle. This machine offers a high level of safety. Despite its many advantages, the price is significantly higher at RM 40000.

Figure 2.2.3 : Digital Automatic Churros Machine

CHAPTER 3
METHODOLOGY

3.1 INTRODUCTION

Methodology is the systematic strategy used when performing a research or solving an issue. It explain the methods, strategies, and instruments used to collect, analyze, and translate data in an organized and consistent manner. Methodology refers to different parts of the research process, such as study design, data gathering methods, sample tactics, data analysis procedures, and findings translation. It guarantees that research is performed consistently, transparently, and legitimately, allowing other researchers to reproduce and validate the findings. Methodology is critical to show the reliability, legitimacy, and credibility of research findings.

Next, in this chapter of methodology it should explain and justify the choice of design , methods and technique of making it in the most suitable ways that fits the purpose and objectives of the research. Great methodology provides results meanwhile bad methodology does not provide any. Other than that, this chapter includes a Gantt chart and an flow chart that can demonstrate that the data and project analysis have been carried out.

3.2 GANTT CHART

A Gantt chart is a project management tool that illustrates work completed over a period of time in relation to the time planned for the work. This is a the Gantt chart and tasks that we have carried out from week 1 until week 14.

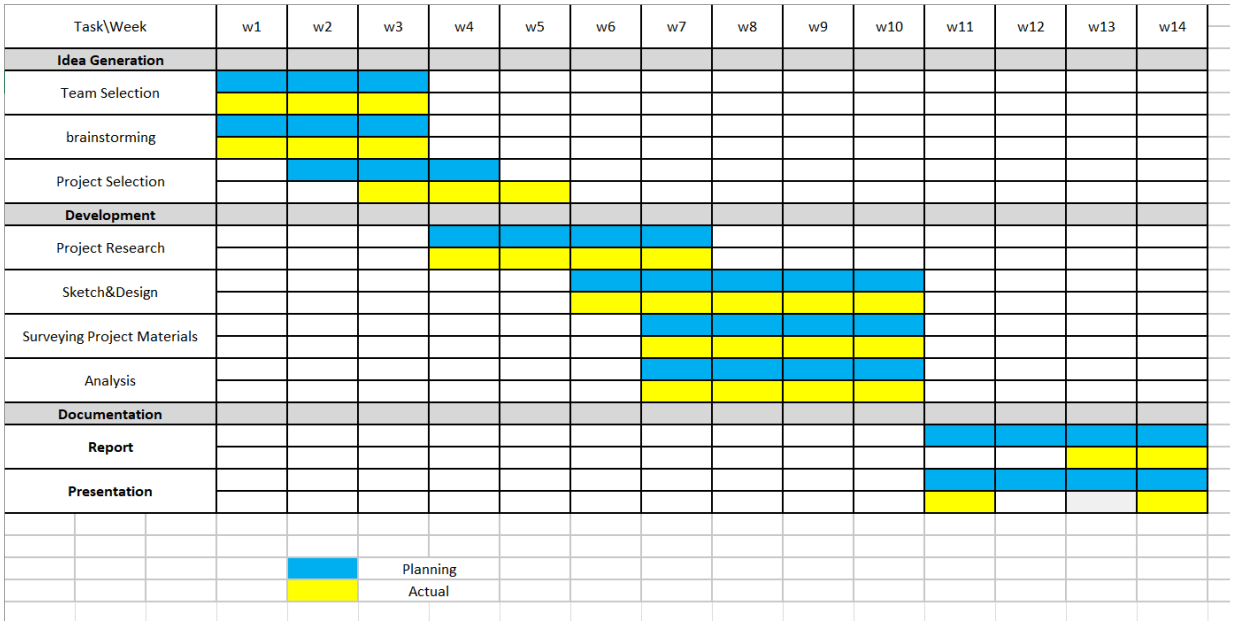

Figure 3.2.1 : Gantt Chart Project 1

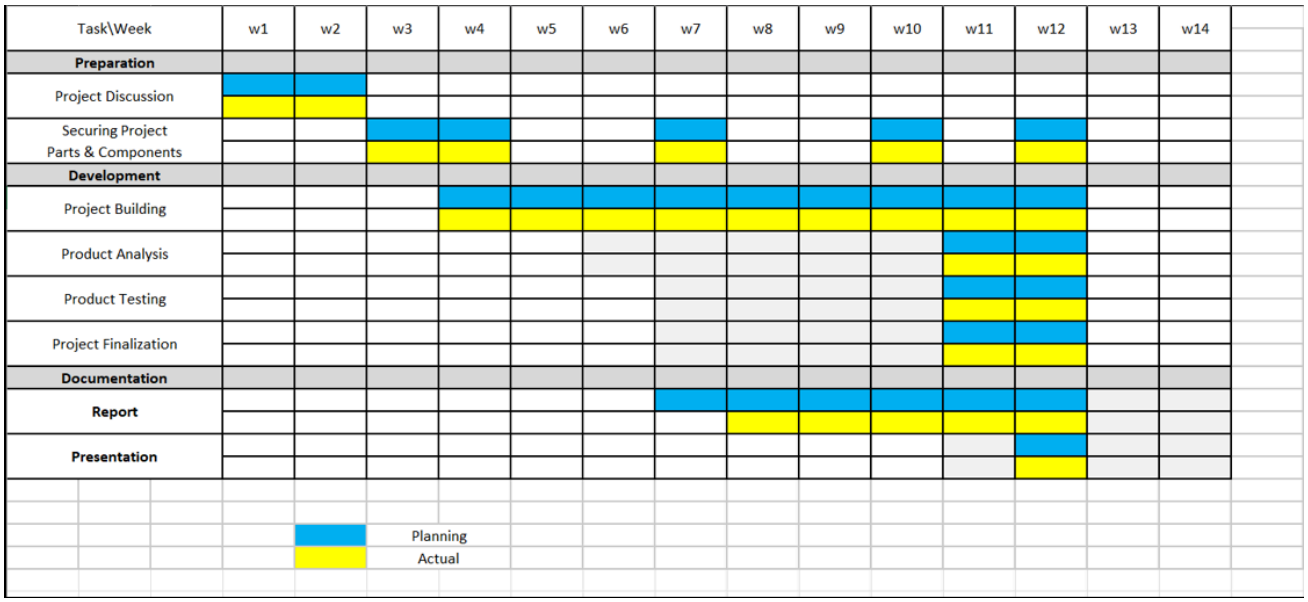

Figure 3.2.2 : Gantt Chart Project 2

3.3 FLOW CHART

It is strongly advised to prepare the project properly in order to guarantee its success. Project planning is important for outlining a project's steps and course. In this instance, Gantt charts and flow charts are used to efficiently manage the project. Additionally, these charts offer a planned timetable. The stages taken to produce the final product are shown in the flow chart in the picture below. In the meantime, the Gantt chart in the following image shows the timetable for every activity, starting with the first meeting and ending with the design phase's completion.

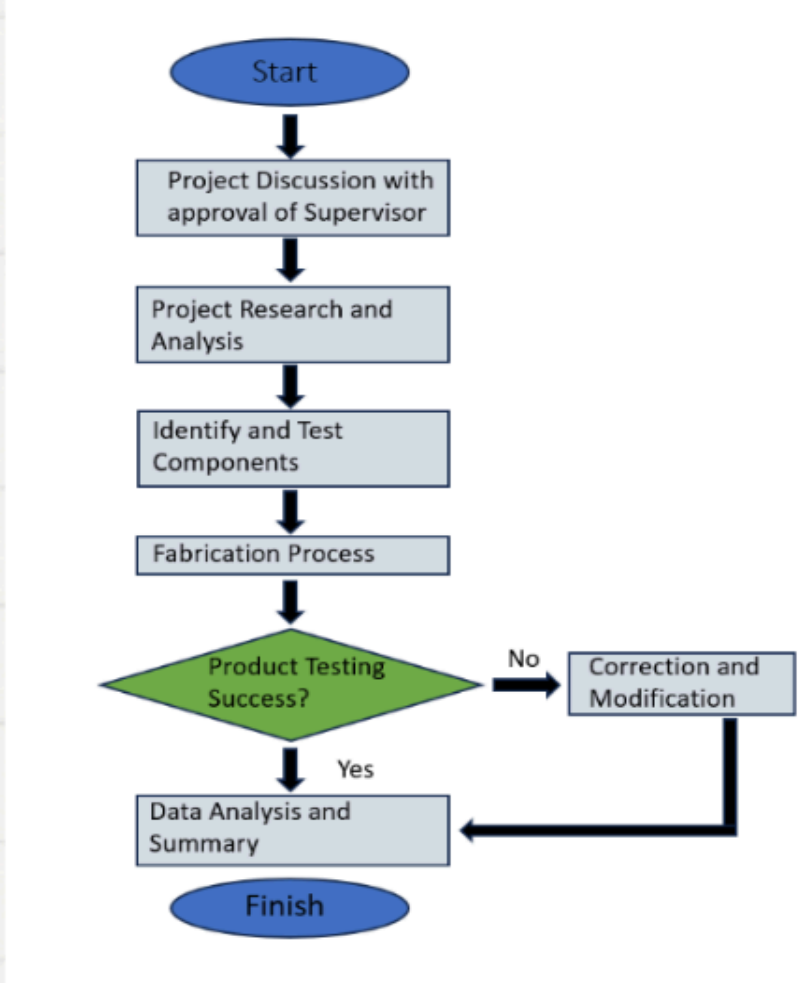

Figure 3.3.1 : Flow Chart Project 1

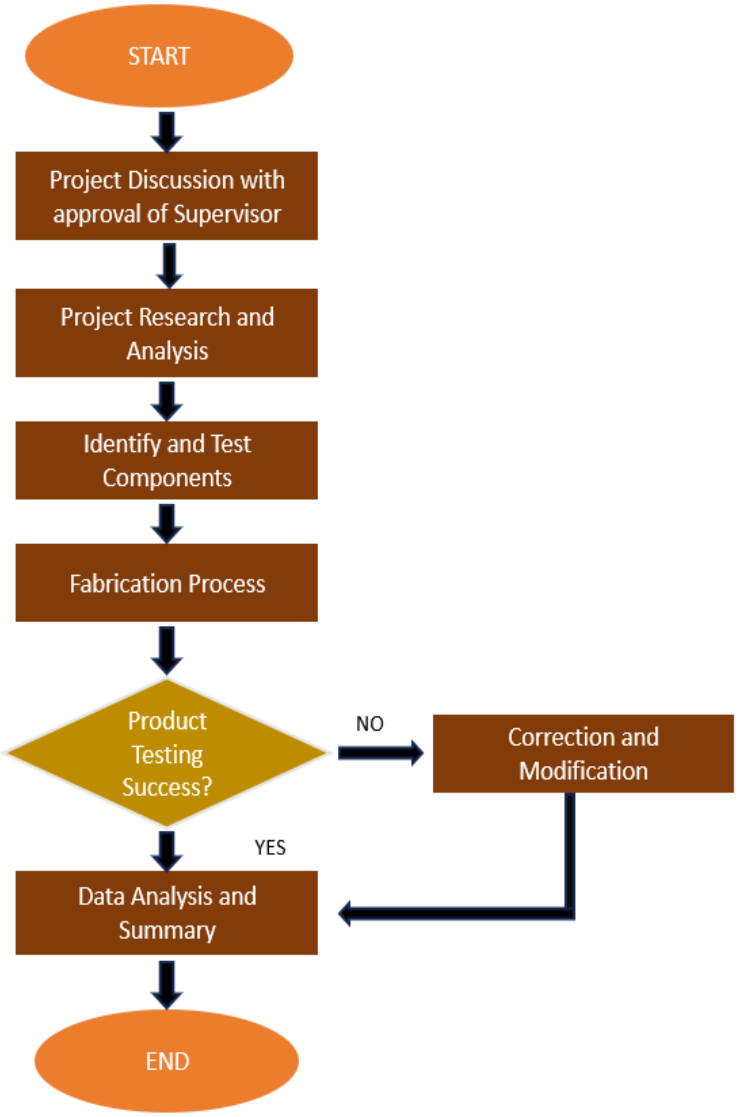

Figure 3.3.2 : Flow Chart Project 2

3.4 PROJECT DESIGN SKETCH

A design sketch is a graphical sketched representation of a design plan and to see an example figure, is a visualization showing the total concept or architecture of a structure. The following refers to the design sketching that we have done.

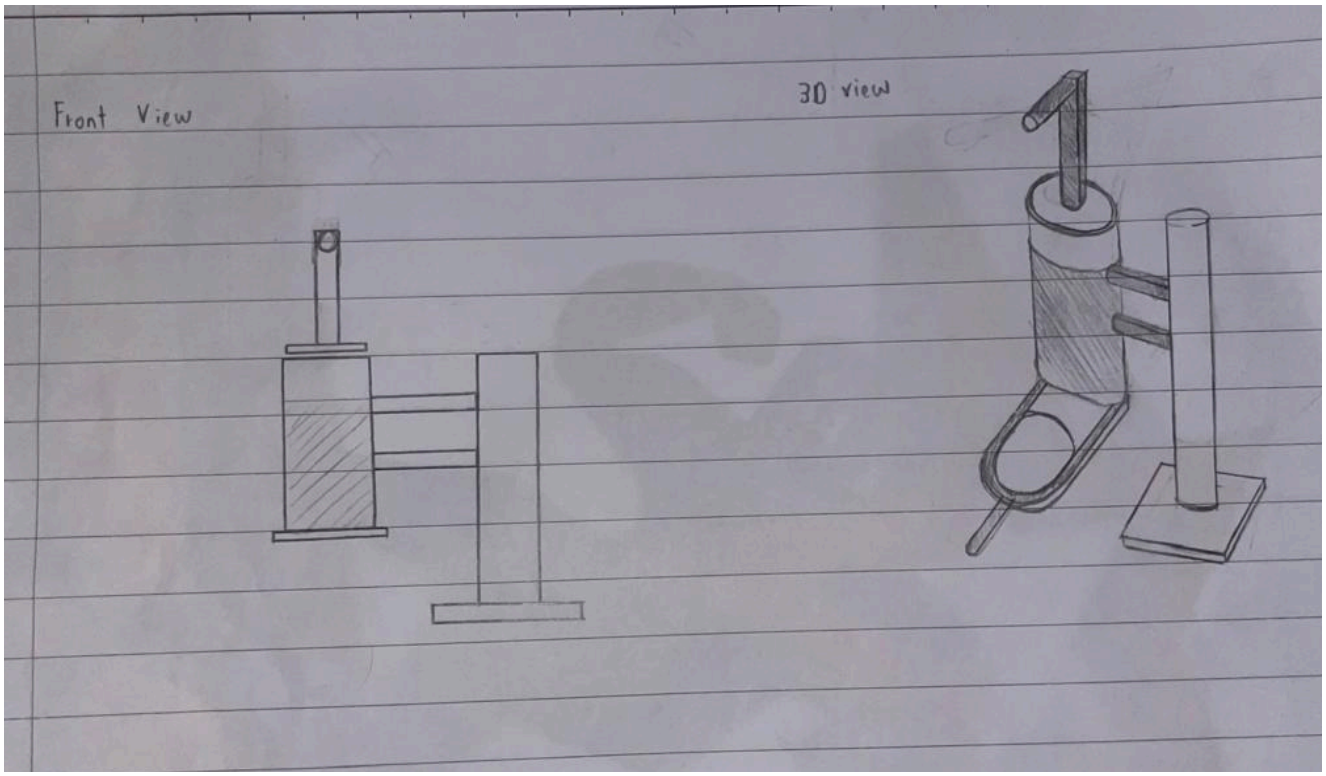

Figure 3.4 : Front View and 3D View

3.5 PROJECT PART DRAWING

Figure 3.5.1 : Cutter

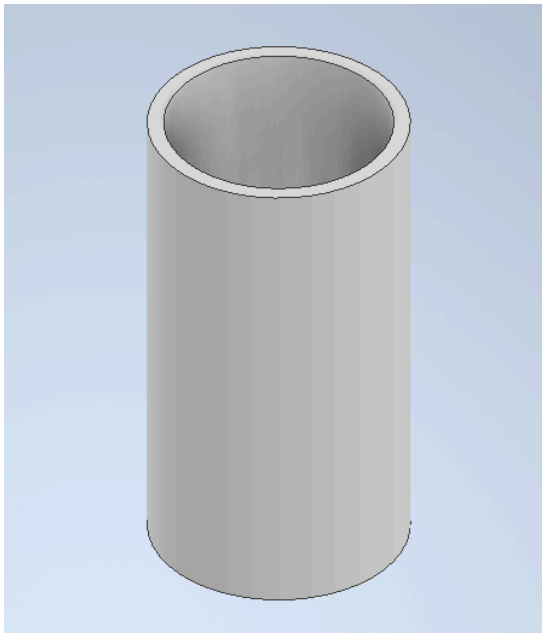

Figure 3.5.2 : Cover Container

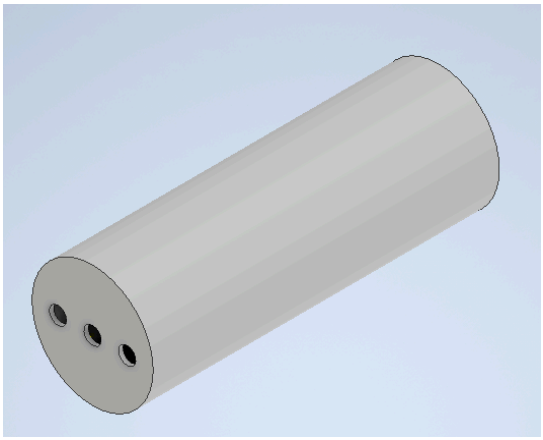

Figure 3.5.3 : Container

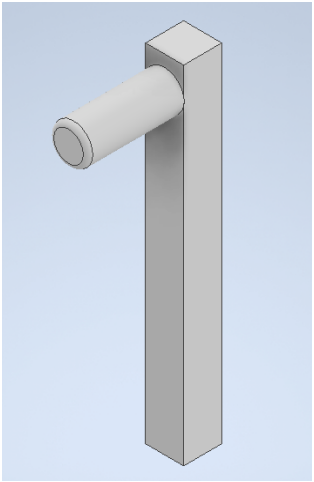

Figure 3.5.4 : Pushing Rod

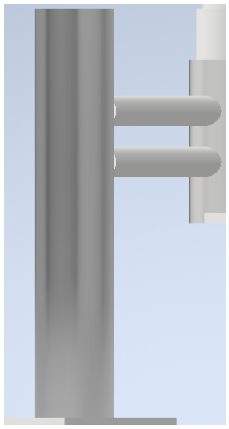

Figure 3.5.5 : Stand

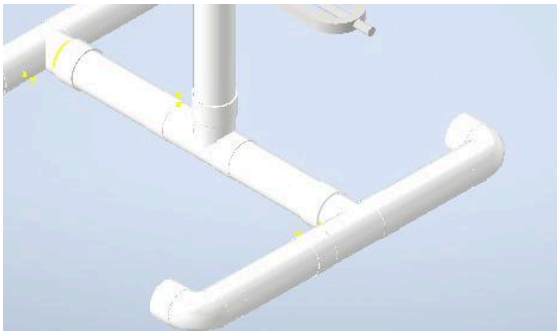

Figure 3.5.6 : Base

3.6 PROJECT DESIGN DRAWING

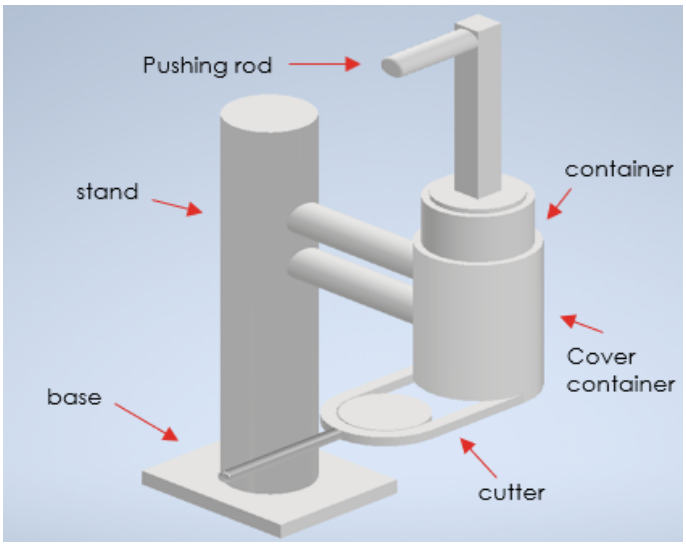

Figure 3.6.1 : 3D View (inventor)

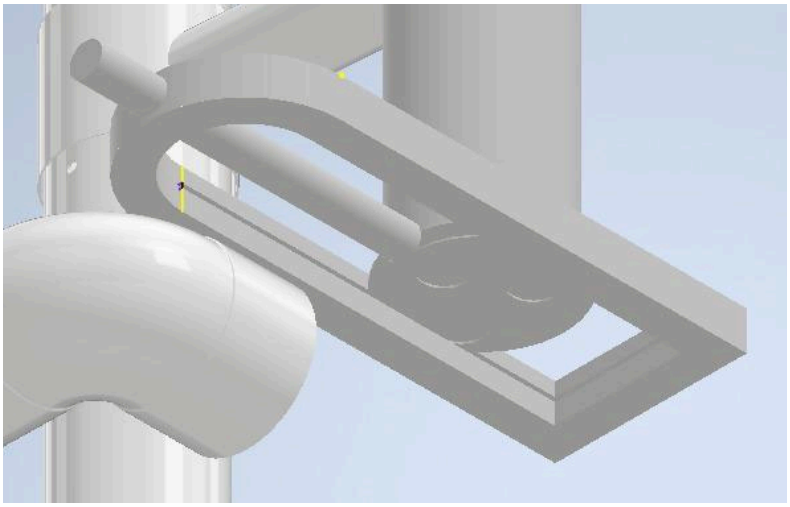

Figure 3.6.2 : Mold View

3.7 PROJECT DESIGN DRAWING (SECOND DRAWING)

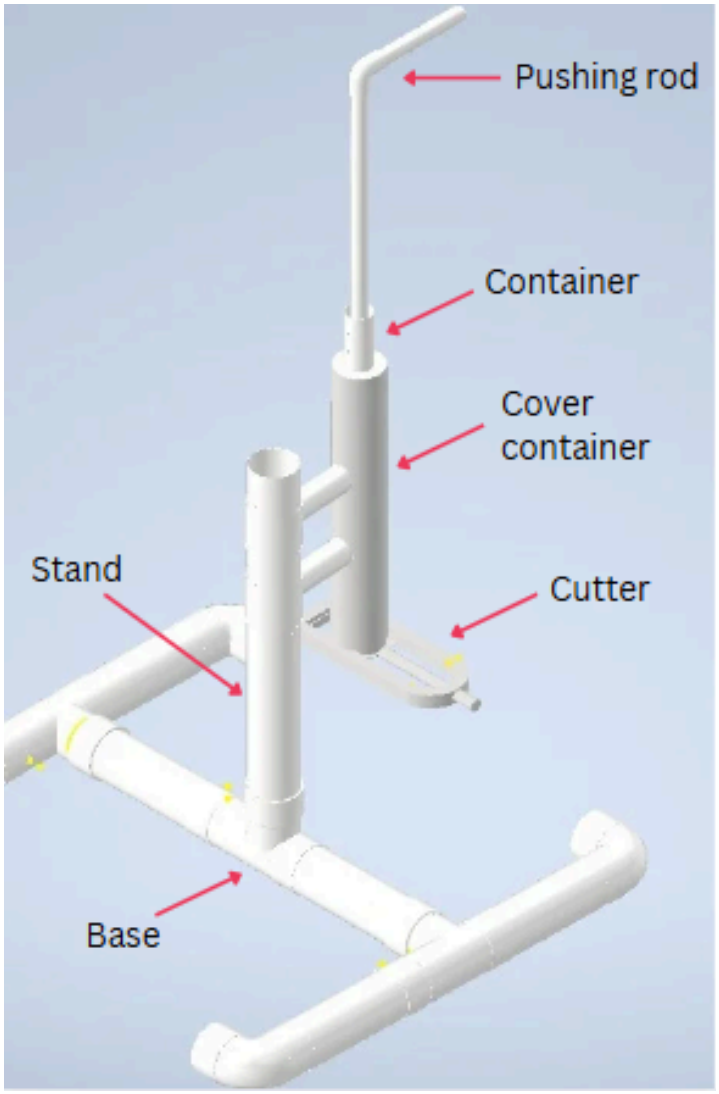

Figure 3.7 : 3D View (inventor)

3.8 MARKET SURVEY

A market survey is a form of research and analysis performed to understand the market demand for a particular product or service. It involves investigating customer preferences and demands. Market surveys study various customer wants such as investment patterns and purchasing power. These surveys serve as a direct tools to gather feedback from the target audience, enabling a comprehensive understanding of their characteristics, expectations, and requirements. The survey has been made using 3 different methods which are questionnaire, interview and observation. The interview and a questionnaire involved 10 individuals from different stalls/locations. Observations were made on some stalls around Cheras and Banting. Some of the stalls are known as 'CHURROS', which are well known around Malaysia. Some prefer using machines as it is easier and more efficient while some prefer homemade (using a piping bag) because they are more comfortable with it.

3.9 LIST OF COMPONENTS AND MATERIALS

A proper selection of materials plays a crucial part in designing churros machines to prevent any mistake of substance or components used. The design consist of these materials such as ;

COMPONENT	MATERIAL
Dough Hopper	PVC
Plunger/Churrera	PVC
Mold/Nozzle	Stainless steel
Metal shaft & base	PVC
Cutter	Stainless steel
Screw	Metal
Cutter frame	PVC & Metal
Foam board	PVC

Table 3.9 : Components and Materials Selection

CHAPTER 4
RESULT AND ANALYSIS DATA

4.1 INTRODUCTION

The prototype churros maker is a innovative device designed to boost production efficiency. After six months of testing, the maker showed potential and great performance. The churros maker's overall efficiency increased since it produced more frequently and faster than other churros makers using a single mold. This increase in molds is expected to improve the churros maker's overall productivity and efficiency. Additionally, the churros maker makes the churros making process less time consuming, easing physical strain and allowing greater optimisation of human resources.

4.2 DATA ANALYSIS AND STATISTICS

To assess the widespread success of the "Churros Machine Prototype" across various communities, we gathered the following statistics and data from users through a survey conducted on the Google Forms platform.

4.2.1 Churros Machine Efficiency Favorably

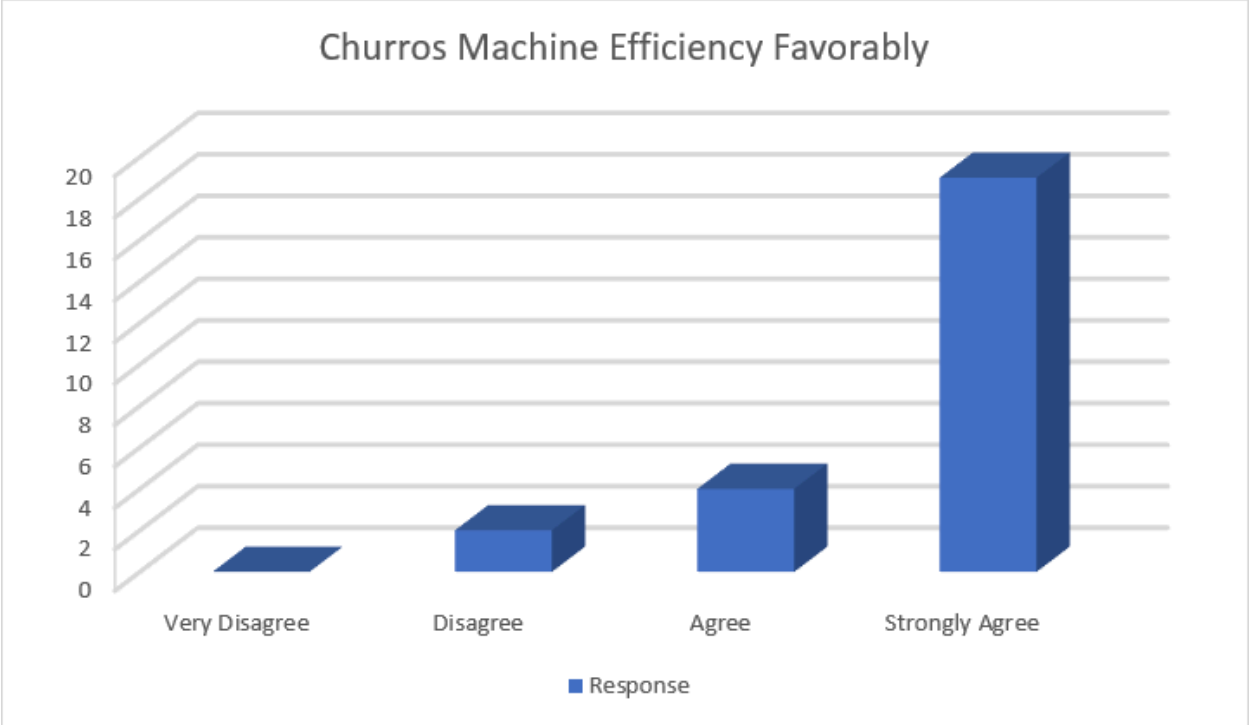

Figure 4.2.1 : Bar Chart Question 1

According to this data, almost all of respondents—92% in total—have an positive opinion of the churros machine's efficiency, with quite a few strongly agreeing, showing that users find it to be effective. Even though they are the minority , the remaining 16% who merely "agree" nonetheless supports this favourable opinion. The machine's success seems to be largely attributed to its user-friendly design, which makes it easy and effective to use. This is probably because of its ergonomic design, easy controls, and clear instructions. The 8% of customers who disagree with the favorable evaluation, on the other hand, might not have agreed with our solution and traditional techniques, which could have changed their opinion. This positive user experience shows how well the machine meets the demands and expectations of customers when producing churros.

4.2.2 Respondent's Opinion on Churros Machine's Ease of Cleaning and Maintenance

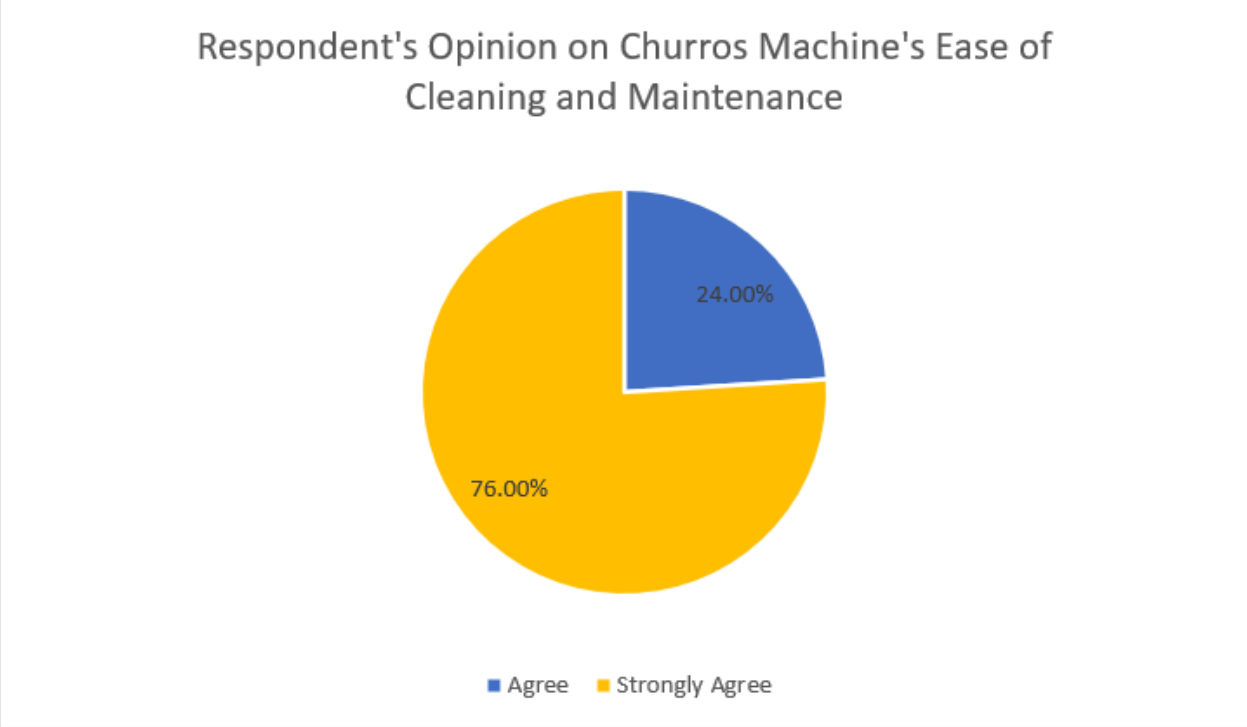

Figure 4.2.2 : Pie Chart Question 2

According to the pie chart, 76% of participants strongly agree that maintaining and cleaning the churros maker is simple. This large proportion shows an significant level of satisfaction and confidence in the machine's design and maintenance needs. In order to guarantee the churros machine's life span and good performance, the cleaning and maintenance procedures are probably simple, effective, and efficient. Although not as strongly, another 24% of respondents agree with this statement. Even if this percentage is lower, it is an sizable user base that values the machine's simplicity in terms of maintaining and cleaning. All things considered, these findings show that the churros machine's maintenance is easy for all users who responded to the poll, with the great majority agreeing it to be very easy.

4.2.3 Consumer Perception of Churros Machine Price

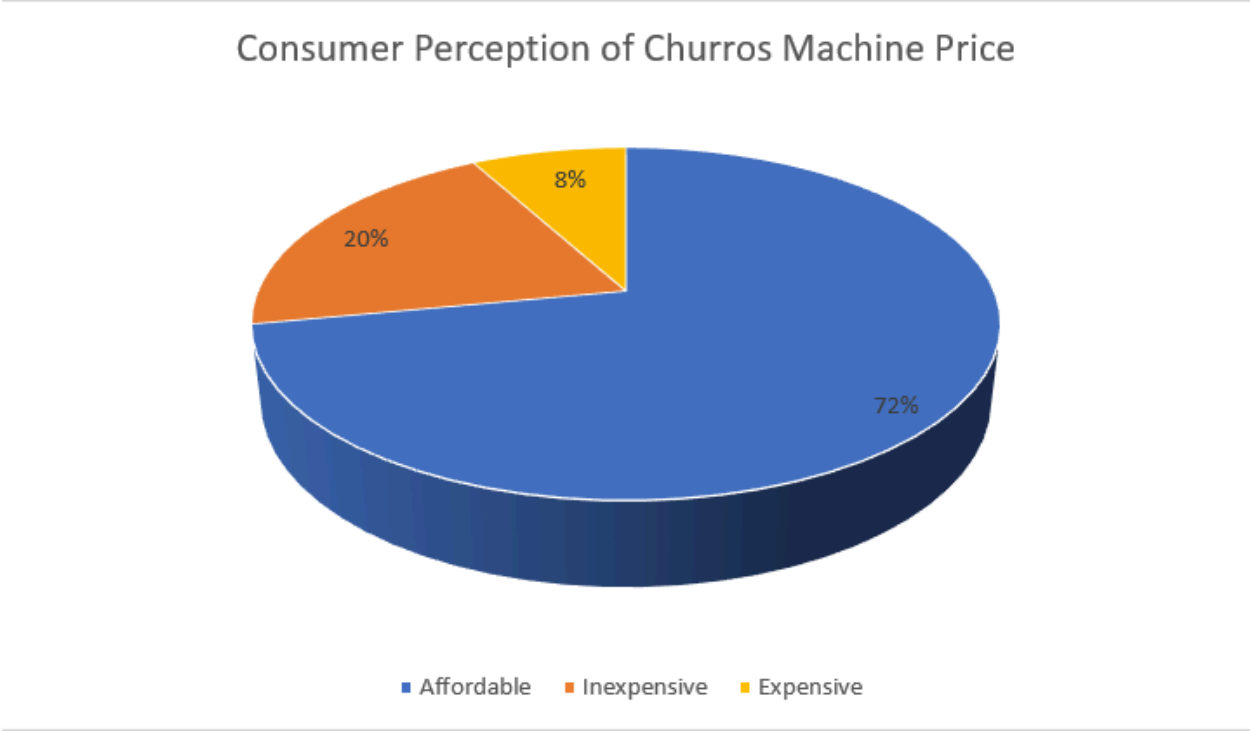

Figure 4.2.3 : Pie Chart Question 3

According to the graph, the majority of customers (72%) think that the RM 600 churros machine is reasonably priced. This shows that a some percentage of users think the prices are fair and fit within their means. Furthermore, 20% of users agree that the churros maker is reasonably priced at RM 600, which adds credits to show its worth. Only 8% of respondents, however, disagree that the churros maker is inexpensive at this price range. For certain users, the price might be too expensive or out of their price range. Overall, the research shows that only a tiny percentage of customers (92%) think the churros machine is pricey, with the majority considering it to be well priced.

4..2.4 Support for Marketing the Churros Machine in Malaysia and Borneo

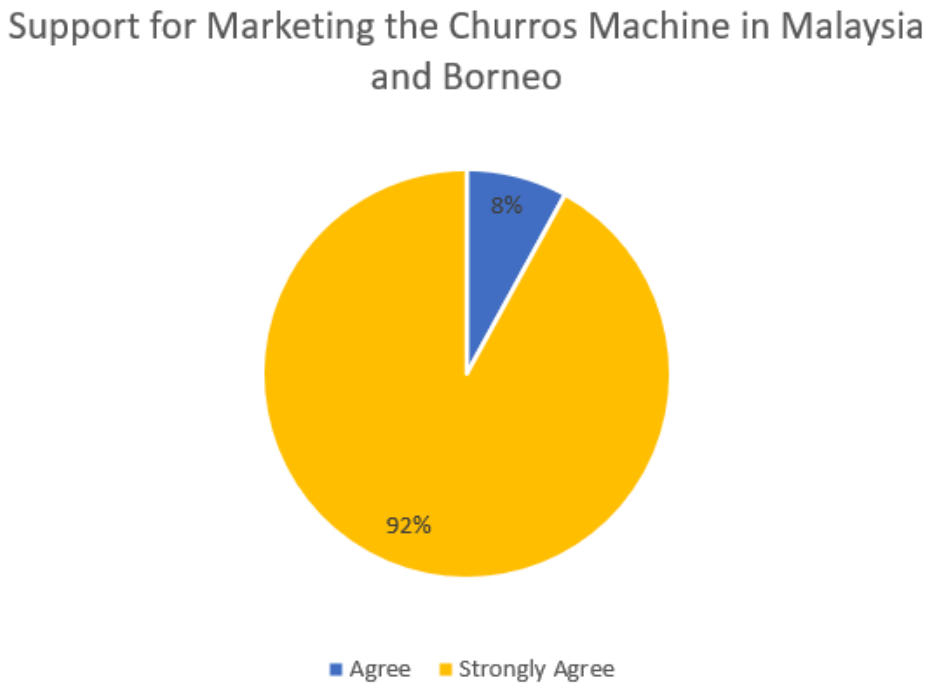

Figure 4.2.4 : Pie Chart Question 4

According to the graph, the large majority of users (92%) strongly agree that the churros machine should be marketed throughout Borneo and Malaysia. This suggests that there is strong support for extending the product's marketing into these areas. Though not as strongly, the remaining 8% of customers support the concept of promoting the churros machine throughout Borneo and Malaysia. They recognise the potential advantages of expanding the machine's market presence in these places, even though their agreement is not as strong as the majority's. This almost positive reaction shows that consumers in Malaysia and Borneo see a lot of potential for the churros machine, either as a result of the product's received demand or cultural fit in these areas.

4.3 PROJECT OUTCOME

The picture below shows the results of a project that we were able to develop in 11 weeks.

Figure 4.3 : Outcome of the Project

4.4 DISCUSSION

We did all the planning for work needed to prepare this project report and in discussion with our guide. From week 1 to week 14, we faced plenty of obstacles and challenges that helped contribute to this report. Though we faced challenges, like the first couple weeks when we had no idea how to start off the project with reviewing all past assessments from Project 1 and existing models already built. Once we had enough knowledge and comfortability in how to produce the project based on a design that was done for Project 1, we started working on creating in the workshop.

In addition, there were also some small injuries that happened due to improper use of machines. Furthermore, during the early weeks of workshop work, we made measurement errors on the project we intended to create, which took a while and effort to correct.

Additionally, there were some other minor issues, such as a lack of experience in material selection. Although we eventually managed to correct it, this process required significant time and effort. Moreover, we also made some improvements to the drawing, slightly modifying the existing design.

After all the difficulties, we continued to work to meet our supervisor's expectations. We successfully completed this report. Our supervisor provided reviews and feedback to help us improved our skills for producing future projects in this advanced industry.

CHAPTER 5

CONCLUSION AND SUGGESTION

5.1 INTRODUCTION

In this chapter, we will discuss the accomplishments of the goals and objectives outlined in “DESIGN AND DEVELOP CHURROS MAKER” . Additionally, we will provide suggestions and recommendations aimed at enhancing the product’s efficiency to attract a wider consumer base and promote its purchase.

5.2 ACHIEVEMENT OF AIMS AND OBJECTIVE RESEARCH

After proper research and data collection, we can confidently state that the early goals and objectives set at the start of this research project have been successfully achieved. The development and finalization of the manual churros machine prototype has demonstrated satisfactory results across all targeted areas.

1. Objective: Develop a user-friendly and manual Prototype Churros Maker for efficient churros making process.
    - Design an easy-to-use, manual churros maker that requires minimal physical effort from the operator
    - Implement easy controls and clear operation steps to allow for efficient churros production
    - Optimize the ergonomics and portability of the machine to enhance user comfort and accessibility

- Incorporate clear safety features and instructions to ensure safe handling and operation
- Create a durable, easy-to-clean machine that minimizes maintenance requirements

2. Objective: Empower Churros Sellers with a Flexible and High-Capacity Solution.
    - Design the manual churros machine to have a high production capacity to meet the demands of small businesses and mobile vendors.
    - Implement features that allow for efficient and consistent churros preparation, reducing labor-intensive manual effort.
    - Ensure the machine's portability and compact size to enable easy transportation and setup in various locations.
    - Develop modular or expandable design options to cater to the scalability needs of growing churros businesses.

To achieve these objectives, we would need to follow a systematic research approach that includes literature review, design and development, testing and evaluation, and iterative improvements. can provide important information that contribute to the successful achievement of the research objectives.

5.3 SUGGESTIONS AND RECOMMENDATIONS

Based on the research conducted on the prototype churros maker, here are some suggestion and recommendation to further improve its efficiency and attract more consumers:

1. **Ergonomic Handle Design:** Enhance the ergonomics of the hand-operated extruder mechanism by designing a comfortable and ergonomic handle. This will reduce user fatigue during prolonged use and make the churros-making process more efficient.

2. **Portability Enhancements:** Consider incorporating features that further improve the portability and ease of transportation, such as a sturdy carrying handle, foldable or detachable components, and a protective storage case.
3. **Non-Stick Surfaces:** Use non-stick materials or coatings on the extruder barrel and nozzle to prevent the churro dough from sticking, making the cleaning process easier and ensuring a smooth extrusion process.
4. **Adjustable Nozzle/Dies:** Incorporate an adjustable nozzle or interchangeable dies that allow users to easily change the size and shape of the churros. This added flexibility will cater to different preferences and recipe requirements.

By improving with these suggestions and recommendations, our prototype churros maker can be optimized to attract customers countrywide, upgrade operational efficiency and contribute to a new era of modern food industry.

5.4 CONCLUSION

In conclusion, the design and develop of the churros machine gives potential to upgrade efficiency, productivity and consistency in churros dough production.

This churros machine demonstrates its effectiveness and potential by being able to produce churros dough through 3 molds simultaneously.

However, a lot of research and development efforts are necessary to improve the churros machine to address any challenges or limitations that may show. Therefore, continuous feedback from users is important to better the machine's design, future proof, and operational efficiency.

Ultimately, this churros machine has the potential to simplify the dough production process for users, making it faster. With upgrades and improvements, it is expected that the use of this churros machine will increase, benefiting users in the food industry as a whole.

APPENDIX

REPORT FYP CHURROS (3).pdf

ORIGINALITY REPORT

17%	9%	1%	14%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Jabatan Pendidikan Politeknik Dan Kolej Komuniti Student Paper	10%
2	umpir.ump.edu.my Internet Source	1%
3	Submitted to Richard Huish College Student Paper	1%
4	foodsense.is Internet Source	1%
5	www.dragon1.com Internet Source	1%
6	www.coursehero.com Internet Source	1%
7	Submitted to Universiti Tunku Abdul Rahman Student Paper	1%
8	www.ubuy.com.my Internet Source	<1%
9	Submitted to Te Pūkenga trading as the Open Polytechnic	<1%

	Student Paper	
10	Submitted to Academy of Information Technology Student Paper	<1 %
11	emails.iproject.com.ng Internet Source	<1 %
12	foodcraveblog.blogspot.com Internet Source	<1 %
13	vdocument.in Internet Source	<1 %
14	repository.psa.edu.my Internet Source	<1 %
15	digitalcollection.utem.edu.my Internet Source	<1 %
16	www.karunya.edu Internet Source	<1 %
17	dspace.christcollegeijk.edu.in:8080 Internet Source	<1 %
18	ir.uitm.edu.my Internet Source	<1 %

Exclude quotes	Off	Exclude matches	Off
Exclude bibliography	Off		

Project Title : DESIGN AND DEVELOP CHURROS MAKER PROTOTYPE

SUB-CHAPTERS	DESCRIPTION
WAN ISKANDAR DZULQARNAIN BIN WAN HASLAN (24DKM22F1085)	
1.1	Introduction
3.2.1	Gantt Chart Project 1
3.3.1	Flow Chart Project 1
3.6	Market Survey
3.7	List of Components and Materials
4.1	Introduction
4.2.1	Churros Machine Efficiency Favorably
4.2.4	Support for Marketing the Churros Machine in Malaysia and Borneo
4.3	Project Outcome
5.1	Achievement of Aims and Objective of Research
MUHAMMAD AZFAR SYAHMI BIN MOHD AZIZ (24DKM22F1020)	

1.4	Scope of Project
2.1	Introduction
3.2.2	Gantt Chart Project 2
3.3.2	Flow Chart Project 2
3.4	Project Design Sketch
3.5.1 - 3.5.6	Project Part Drawing
3.6.1 - 3.6.2	Project Design Drawing
3.7	Project Design Drawing (second drawing)
4.3	Project Outcome
5.3	Suggestion and Recommendations
NUR AISYAH SYAHIRAH BINTI KASMAN (24DKM22F1084)	
1.2	Problem Statement
1.3	Objective
1.5	Summary
2.2	Product in Current Market
3.1	Introduction

3.9	List of Components and Materials
4.2.2	Respondent's Opinion on Churros Machine Ease of Cleaning and Maintenance
4.2.3	Consumer Perception of Churros Machine Price
4.3	Project Outcome
4.4	Discussion
5.1	Introduction
5.2	Achievement of Aims and Objective Research
5.3	Suggestions and Recommendation
5.4	Conclusion
5.5	Reference

Project Supervisor Verification :

…….

Name :

REFERENCES

1. Empresa, I. (8 September 2015). Digital Automatic Churro Maker. *https://www.inblan.com/en/producto/churros-products/digital-automatic-churro-maker/*, 1.
2. Tijuana Flats Restaurants, L. (16 October 2023). What is churro? *https://www.tijuanaflats.com/blog/churros-through-time-a-scrumptious-journey*, 1.
3. Ubuy. (1 December 2022). Electric Churro Maker Stainless Steel. *https://www.ubuy.com.my/en/product/86PXJ5NH8-kitneed-commercial-churro-maker-machine-15l-vertical-type-electric-churro-maker-stainless-steel-latin-fruit-machine-with-4pcs-nozzles-for-commerial*, 1.
4. Wei, W. A. (15 March 2024). Stainless steel shape. *https://www.ajwmetal.com*, 1.
5. https://sites.google.com/view/projek-jkm-pbs/utama?authuser=0
6. Ebook: https://online.anyflip.com/lsexs/guux/mobile/index.html