POLITEKNIK MALAYSIA

SULTAN SALAHUDDIN ABDUL AZIZ SHAH

PROJECT 2 FINAL REPORT

SQUID JIGGING MACHINE

TEAM MEMBERS:	**MATRIX NO:**
MUHAMMAD HAZIQ ZAFRI BIN ZULKAFLI	08DKM19F1010
MUHAMMAD TAUFIQ AIMAN BIN KHAIRULNIZAM	08DKM19F1060
MUHAMMAD SAIFUDIN AMIN BIN RAMLI	08DKM19F1020

SUPERVISOR:

DR. NORASIAH BINTI MUHAMMAD

JABATAN KEJURUTERAAN MEKANIKAL

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ABSTRACT

The scope of this study focuses a designing and improving the techniques of jigging which can be used for the aqua cultural areas. Squid Jigger is a mechanical machine used for jigging squids from the water areas where it is a lot easier than the old techniques. The idea of this project was due to the less quantity of the squids which is unprofitable to the fisherman where only small amount of squids can be jigged during a particular time and expensive to the customers. Besides, there is a lack of awareness of technology on the aqua cultural areas especially marine and this is main factors of why technology is difficult to be applied in a more needed area. Thus, this project's goals are to design a machine for a new technique in squid jigging activities. Also, to fabricate Squid Jigger that can increase the quantity of squids during particular time and freshly from the ocean. Squid Jigger aim also to carry out running test and achieve fisherman's satisfaction towards the new technology which proves that it brings more advantages to them. The design and development of Squid Jigger is modern, adjustable and material used is hard stainless steels. This is because, the major areas of focus while designing are aesthetic, ergonomics, function and cost. Finally, through running test, Squid Jigger can be operated easily and it risen the amount of squids jigged. In the meantime, Squid Jigger will be an automatic machine after the manual techniques is accepted and success.

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CHAPTER 1

INTRODUCTION

1.1 RESEARCH BACKGROUND

There are numerous types of squid accessible on the planet's seas, and since squid jigging requires little change to general hand line gear it is appropriate as an occasional action to enhance existing hand line tasks or some other customary fishery. Since squid is additionally a decent snare fish we trust it is legitimate to incorporate squid jigging in this booklet. Squid jigging frequently happens around evening time with splendid overhead lights to draw in the squid. Dances of different sorts, makes and shading are appended to the hand line at 70 to 90 cm stretches. Frequently upwards of 8 to 12 dances are on one line, and a lot more are utilized on mechanized squid reeling frameworks.
The lines are brought down to 30 to 100 m profundity relying upon the strength of the lights utilized, however less profound on a little boat with a couple of lights.

It is essential to keep the dance moving continually in the water. This is typically done by snapping the line, rapidly pulling in the leeway, jolting by and by, etc, until the dance has returned to the surface (Figure 60). The line is then tossed out and permitted to sink to the ideal profundity, and a similar snapping movement is rehashed over. Squid eat a ton and subsequently become exceptionally quick. They eat nearly anything: crab, shrimp, little fish and surprisingly other squid. They swim quick utilizing water stream drive yet are regularly eaten by whales, seals, birds and huge fish. They have an ink sack from which they produce a dark cloud around themselves where to shroud when they are terrified. They additionally change tone as they move from shade to light and the other way around and are therefore hard to see. This clarifies why they can be hard to catch and why jigging is regularly the best strategy.

1.2 PROBLEM STATEMENT

The primary issue that can be expressed for this venture is that most of anglers in Malaysia actually utilize the conventional technique for utilizing casting poles or fishing line. This strategy brings about a squid catch of just around 240 kg for 12 hours. Homegrown anglers likewise need a great deal of labor on the off chance that they need to create high squid gets.

1.3 RESEARCH OBJECTIVE

i. To develop a new jigging machine for fisherman
ii. To study the capability of squid jigging machine in terms of satisfaction towards the new technology
iii. To design and develop new jigging machine

1.4 RESEARCH QUESTIONS

i. Is it possible to fabricate the first jigging machine that able to increase quantity of squids?
ii. What type of material can be used to make it affordable especially for fishermen?
iii. What are the possibilities of making jigging machine that has a high resistance to corrosion?

1.5 SCOPE OF RESEARCH

i. This product can be exposed to water regularly.
ii. This product could recyclable.
iii. Not suitable for large ships.
iv. Uses stainless steel to increase its strength.
v. Could last for a long time

1.6 SIGNIFICANCE OF RESEARCH

Although, the traditional method of jigging squids are currently popular in Malaysia and jiggers were enjoyed using it. However, some jiggers especially fishermen that work with jigs as an occupation need to catch a lot of squids in a particular time and moreover, the demand of squids in Malaysia are quite huge. Thus, the finding of this study will bring a lot of benefits to fishermen as well as jiggers in which this affordable machine can increase the amount of squids to be jigged. In addition to that, it will show the contribution of technology in the marine areas. It will absolutely benefits Malaysia to sit as low and stand as high with other developed countries.

1.7 DEFINITION OF OPERATIONAL TERMS

Aquaculture: The cultivation of marine or freshwater organisms.

Marine: Relating to or found in the sea.

Technology: The application of scientific knowledge for practical purposes, especially in industry

1.8 CHAPTER`S SUMMARY

In this chapter, the studies was explained on the root of the ideas and motives. The objectives were based on the problem statements that were made during discussion and brainstorming. The main advantage of this machine was its price, in which it is affordable along with functionality to increase the amount of squids to be jigged. Even if it is exposed with water and air, but with the help of the material used, corrosion can be reduced well. Thus, this first jigging machine could be applied into a new method of jigging squids and can last longer with a really good care.

CHAPTER 2

LITERATURE REVIEW

2.1 CONCEPT

Squid resource has emerged as one of the prime commodities in the export market.Most abundant and economically important squid species of Indian waters are Lologoduvaceli, Loliolusuyii, Uroteuthisedulis, Loliolushardwickei, Sepioteuthislessoniana, Sthenoteuthisoualaniensisand Thysanoteuthis rhombus. These priced resources are exploited from four marine states such as Gujarat, Maharashtra, Kerala and Tamil Nadu contributing about 3% of total marine fish production in India (CMFRI, 2017). They are being landed as bycatch of trawl fishery except for very few places. Targeted fishery of squid and other cephalopods are practised in a very limited extent, including hand-jig operation from catamartan at Vizhinjam (Nair, 1985) and plank built boats at Palk Bay (Lipton, 1990) hand-line with multiple hooklike 'Achil' of Kanyakumari and Trivandrum (Lazarus, 1984; Joel & Ebenezer, 1987), locally made jigs operated from Tuticorin (Balasubramanianet al.,1995).

Japanese made handjigs of Keelakkarai, Devipattanam and Palk Bay of Tamil Nadu (Venkatesan&Shanmugavel, 2008), light assisted motorized boat fishing of Ratnagiri, Maharashtra (Sundaram&Sawant, 2013, 2014), FAD (Fish Aggregation Device) assisted aggregation and hand jigging of Karnataka (Sasikumar et.al., 2006). Structural changes from late 90's till now are limited to motorization alone, limiting the area of operation to 30-35m depth from shore. Since lining and jigging fetch extremely fresh catch, value of the commodity is very high and targeted fishery is being operated in stability. In contrast to the trawling operation, these methods are highly selective and bring larger squids.

2.2 HISTORY OF SQUID JIGGING

Very little is known about ancient fisheries, and even for the 18th and 19th centuries information is scarce. According to Erlandson and Rick (2010), the earliest marine fisheries may date back as far as 160,000 years on the South African coast. Ancient communities here seem to have had a substantial impact on the marine ecosystem, frequently reducing the size of exploited populations. However, in contrast to what is often seen in terrestrial habitats (especially on islands) this probably did not result in extinctions. Cephalopods were not specifically mentioned in their study, but it is likely that this prehistoric coastal community and others like it exploited littoral octopods, and probably used squid which stranded on beaches as bait, fertilizer, and fodder for domestic animals, as well as for human consumption. As with primitive communities today, squid have probably been spearfished and caught using jigs (similar to modern jigs made from wood such as amaiki and kusaiki in Japan). There is no technical information about fishing nets used in ancient times. Nevertheless, the octopus culture of the middle to late Minoan period on Crete in the eastern Mediterranean, in which images of octopuses appear on items from earthenware pots to coffins, is clear evidence that these ancient people were, at least, thoroughly familiar with cephalopods (squids). Current squid fisheries began to create in the early twentieth century with the presence of mechanized fishing vessels and the improvement of explicit fishing and jigging gear. It was simply after World War II, with the advancement of marine fishing vessels, that gets of cephalopods or squids specifically began to arrive at a huge number of it and later great many year. Now, they began making a considerable commitment to the complete of marine items got for human utilization. The fishing history of each bountiful and industrially significant types of squid is introduced in the species accounts underneath. Thus, this chapter will explain about the benefits, design principle used, equipment of squid jigging and the characteristic of materials.

2.3 DEFINE SQUID JIGGING MACHINE TECHNOLOGY

Figure 2.3 Squid Jigging Machine

Squid jigger applied the concept of jigging which is jig rod with a hook molded into it and usually fishermen will use a light to attract squid. Jigs are intended to create a jerky motion which to attract squid. Jig rod is pack into a dock with the end of rod facing each side. Multiple squid hook tied to rod about 3 meter gap to create space for squid when they got hook. The dock is mounted on a stainless steel bar and place in the middle. A motor place under the dock is connected and rotate the dock to help the jig rod go upward and downward. The frame for squid jigger are made to be adjustable and suitable for a different size of standard boat. Stainless steel is a perfect choice to use because squid jigger will be place on a boat and use at the sea. Because of that, material with water resistant and rust resistance is on top of the list. Stainless steel bar with roller at the end will facing outside of the boat to help jig rod easily moving upward and downward. The roller act as the pulley in the system so the heavy squid can be lift up with no problem. The base of squid jigger also adjustable for it to be higher and prevent the rod to get stuck. Performance are depends on total of squid in the sea. A different season also determine the total of squid. Usually, fishermen go for jigging at night with dark moon or full moon because it said at that time the sea have a lot of squid.

2.4 EQUIPMENT OF SQUID JIGGING

2.4.1 JIG

A jig is a type of lure that is composed of a lead sinker, a hook, and a very colourful, soft body as Jigs are designed to create a jerky, vertical motion, which attracts the squid. Very little is known about squid psychology, but squids have excellent eyesight thanks to their prominent eyes. They are also highly intelligent, which means one are going to need a jig that realistic enough to lure these creatures.

Figure 2.4 Type of Jig

2.4.2 ROD

Like other types of fishing, almost any rod would do, given that they’re light and long. This enables fisherman or anyone interested in squid jigging to telegraph even the smallest changes. A light bass rod or spinning rod will do just fine for the job. There are specialized squid fishing rods for those who plan to make squid fishing a more 9 frequent activity. However, one should be very careful with the strain to put on these rods as they tend to be rather fragile. A drop net also needed to hold the freshly caught squid.

Figures 2.4 Type of Rod

2.5 BENEFITS OF SQUID JIGGING

Squid Jigger was designed and built to localize the first jigging machine for Malaysian. Numerous of research and studies were carried out to increase its performance and functions. Luckily, this project become a huge achievement to us and hopefully will benefit all parties.

2.5.1 Community

Within a squid jigging activity, Squid Jigger are perfect to those who are new in this activity where they can enjoy and catch lots of squids. This can help them to decrease the burden of not getting any squids at all, even if they are still new and do not have specific skills to jig. Besides, it is also great for those who are skilled with jigging activities, not only can relax themselves but also can held a squid race between friends and family.

2.5.2 Natural Surroundings

Squid Jigger are made up off stainless steel which is 100% recyclable, resistance to corrosion and have high strength to be stable on standard boat. It will not pollute the nature and threaten the species of squids as it agreed upon the concept of traditional method but in modern ways.

2.5.3 Economy

From fishermen to squid seller at market, Squid Jigger deliver both benefits to them. Fishermen can catch lots of squids then sell it to market, while market get more squids' supply according to customers demand.

2.5.4 Country

When there are more Squid Jiggers production, more fisherman can be helped for the whole country. It do not only increase economically, but also step up the living standards of fishermen as they can sell many squids while saves their manpower and time.

2.6 SUMMARY OF CHAPTER

Global demand for cephalopods has been increasing in the recent times compared to early 90's. This creates demand for Indian squid mostly caught by trawl fishery. Since trawling is non-selective and causes indiscriminate catch of the resources whereas squid caught by jigging known to have superior quality and less impact to environment, demand will be more for the later. Considering the existing policy on light fishing, light assisted squid jigging need to go a long way to establish as a fishery. In this context, the responsible fishing of squid has to be emphasized where jigging is known to cause less impact on environment. With introduction of necessary facilities like light and mechanization of operation, squid jigging can be performed responsibly from Indian waters.

CHAPTER 3

METHODOLOGY

3.1 INTRODUCTION

Technique is a relevant structure for research, a rational and sensible plan in light of perspectives, convictions, and qualities, that aides the decisions scientists make. It involves the hypothetical examination of the group of strategies and standards related with a part of information with the end goal that the procedures utilized from contrasting control change depending on their authentic turn of events. This makes a continuum of systems that stretch across contending understandings of how information and the truth are best perceived. This arranges systems inside general methods of reasoning and approaches.

In this section, a great deal of data about the cycle all through the manufacture of Squid Jigger will be explained. There will be stream graph and technique stages appearing start until the end cycle of us fabricating the entire task with its clarification. Then, is the Gantt Cart, which will show the real and arranging all through every one of the 15 weeks of our last year project venture while project spending shows the all out cost for every one of the materials that we have chosen.

Additionally, we likewise incorporate manufacture exercises like welding, penetrating, cutting and amassing to make a more explicit subtleties on the creation of Squid Jigger. These exercises were for the most part applied from the courses we had took during Semester 1 until Semester 4. Subsequently, this part will completely clarified the creation of this venture.

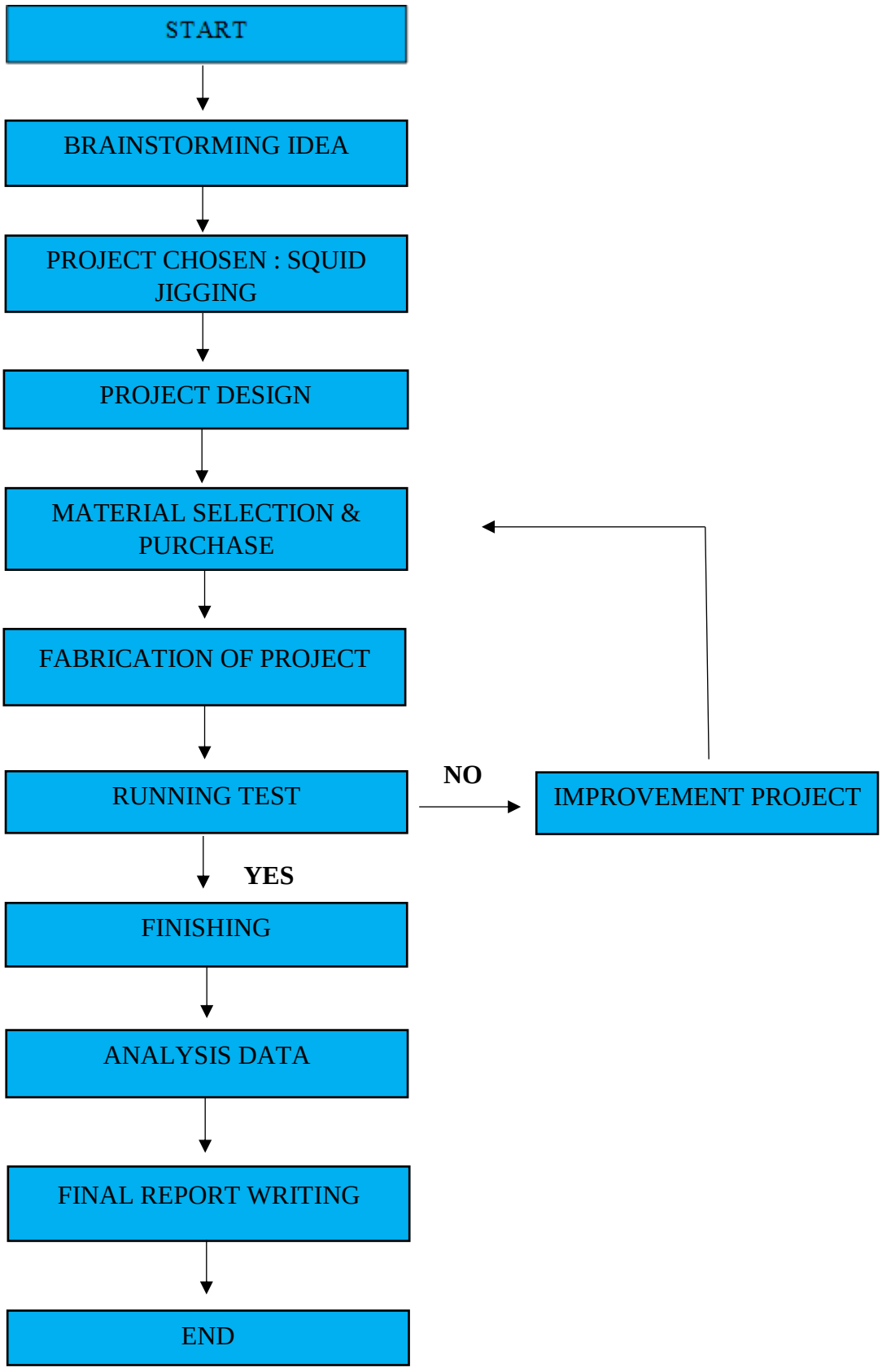
3.2 PROJECT RESEARCH

The project is adapted from the ideas of past senior students. Since this project was disrupted due to unavoidable circumstances, we as a group decided to continue doing this project until it was completed. We will build a Squid Jigging Machine which is a Squid Jigging Machine. In addition, we also get information about this project from supervisors and lecturers who are knowledgeable about this project. We use suitable and recyclable materials for this project. For example we took a Go-kart frame to be used as the body for this project and many more materials were taken such as used irons from the workshop. We started this project from the fourth week of lecture until now.

3.3 FUNCTION OF PRODUCT

The function of this project is to make it easier for fishermen to catch squid. It can also save a fisherman's time. The project is expected to be in use for as long as possible as it uses iron and will not rot. This project was produced using used irons that we got in the workshop. The advantage of this project is that it can increase the number of squid catches at a time and can save fishermen's time. In addition, it can also reduce the manufacturing cost of this project due to the use of used materials. The disadvantage of this project is that it may require the modification of a ship. For example small ships may not be usable due to the risk of ship stability. This machine can be run in all the oceans of the world if it has enough equipment to maintain it and it is arguably the most advanced machine for the future in squid jigging as it can be used on large or small ships depending on its size.

3.4 SQUID JIGGING MACHINE SYSTEM COMPONENTS AND MATERIAL



Figures 3.4 Flow Chart

BRAINSTORMING IDEAS

The way toward conceptualizing thoughts is quite possibly the main interaction in this last year project. This viewpoint incorporate producing thoughts and concoct innovative answers for issues. Conceivable outcomes were opened and separate mistaken suspicions about as far as possible. We needed to conceptualize a novel plan to picked the best one last year project.

PROJECT CHOSEN

Subsequent to conceptualizing, we at long last had picked Squid Jigger as our last year project since it has issues that carry more advantages to specific gatherings. In addition, there is no other machine like this in Malaysia yet. Along these lines, we will ready to restrict it to Malaysian particularly anglers and a promising reasonable cost.

PROJECT DESIGN

Product design describes the process of imagining, creating, and iterating products that solve users' problems or address specific needs in a given market. This project design include base, roller, oblong, bearing and full drawing of assembly.

***BASE**

Figure 3.4 Base

***ROLLER**

Figure 3.4 Roller

***OBLONG**

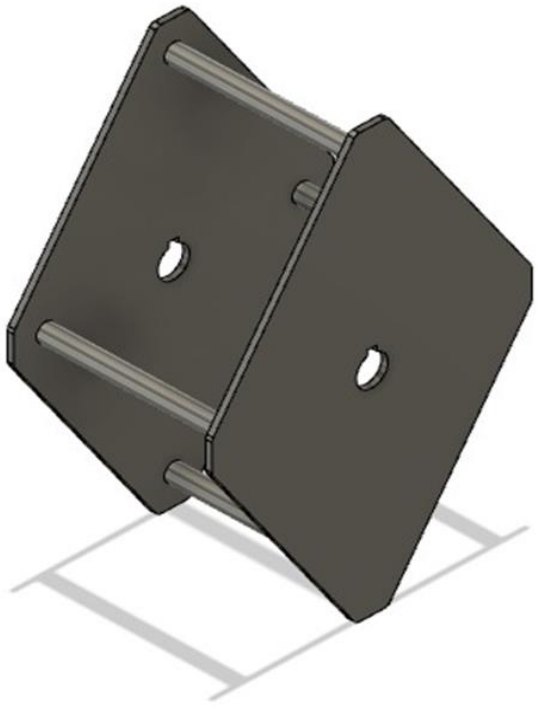


Figure 3.4 Oblong

***BEARING**

Figure 3.4 Bearing

***FULL ASSEMBLY**

Figure 3.4 Full Assembly

MATERIAL SELECTION AND PURCHASE

The material that we will use to build this squid jigging machine consists of round shaped stainless steel to be made our project site. While the bearing is to make it easier for our machine to move evenly and beautifully. Bolt and nuts are used to connect the base to our machine. In addition, stainless cylindrical steel is used to make the shaft rods that bind on the oblong in our machine and some paint cans to beautify the outer view side of our machine.

FABRICATION OF PROJECT

Metal fabrication is the creation of metal structures by cutting, bending and assembling processes. It is a value-added process involving the creation of machines, parts, and structures from various raw materials. Typically, a fabrication shop bids on a job, usually based on engineering drawings, and if awarded the contract, builds the product.

*CUTTING

Tempered steel was cut utilizing cleave saw as demonstrated in picture that we snap. Hack saw is a little hand-held apparatus reasonable for slicing through more slender bits of tempered steel. It is pivotal which type of sharp edge will picked for this cycle. During the working with this gadget, it's important to utilize a full-face safeguard, in light of the fact that the little bits of steel can zoom around. First and foremost, we denoted the spot to cut and gradually bring down the sharp edge onto the material. Then, slice through the steel material gradually, immediately. At long last, a processor with little cleaning wheel was taken to eliminate remaining steel and clean its edges.

Figure 3.4 Cutting Process

*****WELDING

Welding is a manufacture cycle that joins materials, typically metals or thermoplastics, by utilizing high warmth to soften the parts together and permitting them to cool, causing combination. Welding is particular from lower temperature metal-joining methods, for example, brazing and fastening, which don't liquefy the base metal. When confronted with exorbitant welding heat, hardened steel can twist from the high temperatures and even twist during the cooling cycle. In this project, welding measure as demonstrated in picture we snap are done to join every spotless and structure into arms, and base.

Figure 3.4 Welding Process

*DRILLING

Drilling is one of the machining processes, which used to make a hole on component face, creating a round hole in a work piece. For Squid Jigger, drilling process were implemented for nuts and bolts especially for adjustable length and height. This parts cannot be welded to connect it because of its irregular sizes. In picture we snap shows the drilling process of this machine. Drilling of stainless are difficult, but with slow speed and oil, it becomes easier. Also, we used a 6 diameter of drill bit to make hole first and then proceed to 8 diameter one to enlarge it.

Figure 3.4 Drilling Process

ASSEMBLY OF PROJECT

There are three parts to assemble this machine which is oblong, roller and base. Picture that shows the full assembly of Squid Jigger.

Figure 3.4 Assembly Project

RUNNING TEST

Test run is an occurrence in which a product or procedure is tried in order to see if it works correctly. In this project, we were not able to do running tests at the sea or ocean due to Covid-19 Pandemic. However, we have carried out a survey to collect data and make analysis from it by counting the percentages of opinions and enthusiasm on this machine.

FINISHING

Completing cycles plan to change the outside of a produced part to accomplish a specific trademark. Usually wanted qualities incorporate improved feel, bond, solderability, synthetic, erosion, stain or wear-obstruction, hardness, electrical conductivity, blemish expulsion, and surface rubbing control. In restricted cases, these methods might be applied to reestablish unique measurements or to rescue or fix a section. After a couple basic running tests just to check whether the engine can work or not, we continued to paint the hardened steel utilizing splash paint. We were happy with the last tone and usefulness.

ANALYSIS DATA

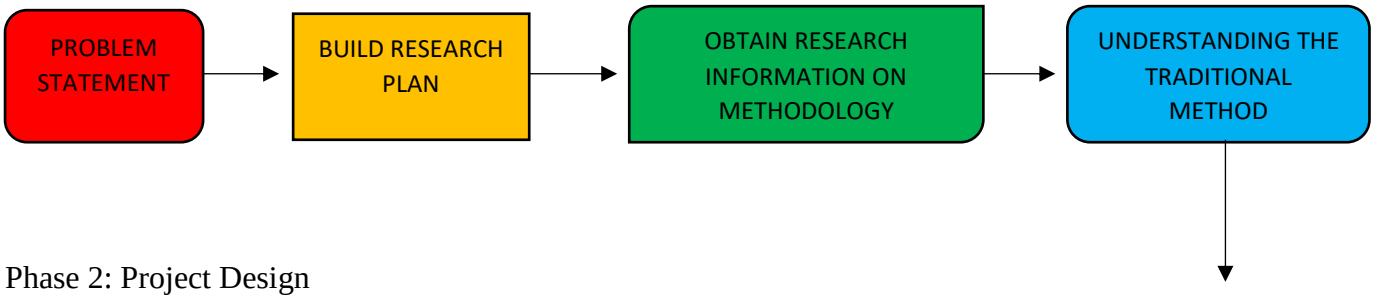
The purpose of data analysis is to extract useful information from data and taking the decision based upon the data analysis. In this project, we will analyse the data collected from survey.

REPORT WRITING

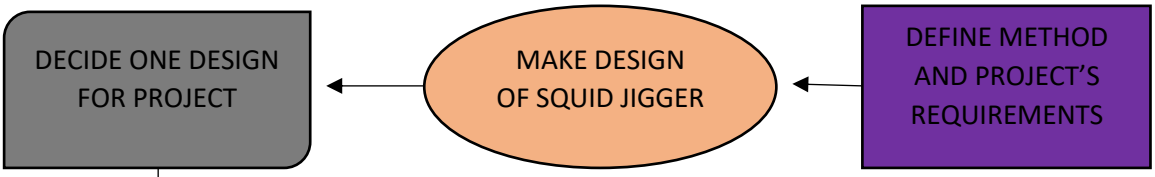
Report writing generally sets outs and analyses a situation or problem, often making recommendations for future action. It is a factual paper, and needs to be clear and well-structured. Our report includes all the details throughout the production of this machine. It is also a requirement for Diploma in Mechanical Engineering.

METHODOLOGY PHASE

Phase 1: Research Plan



Phase 2: Project Design



Phase 3: Implementation

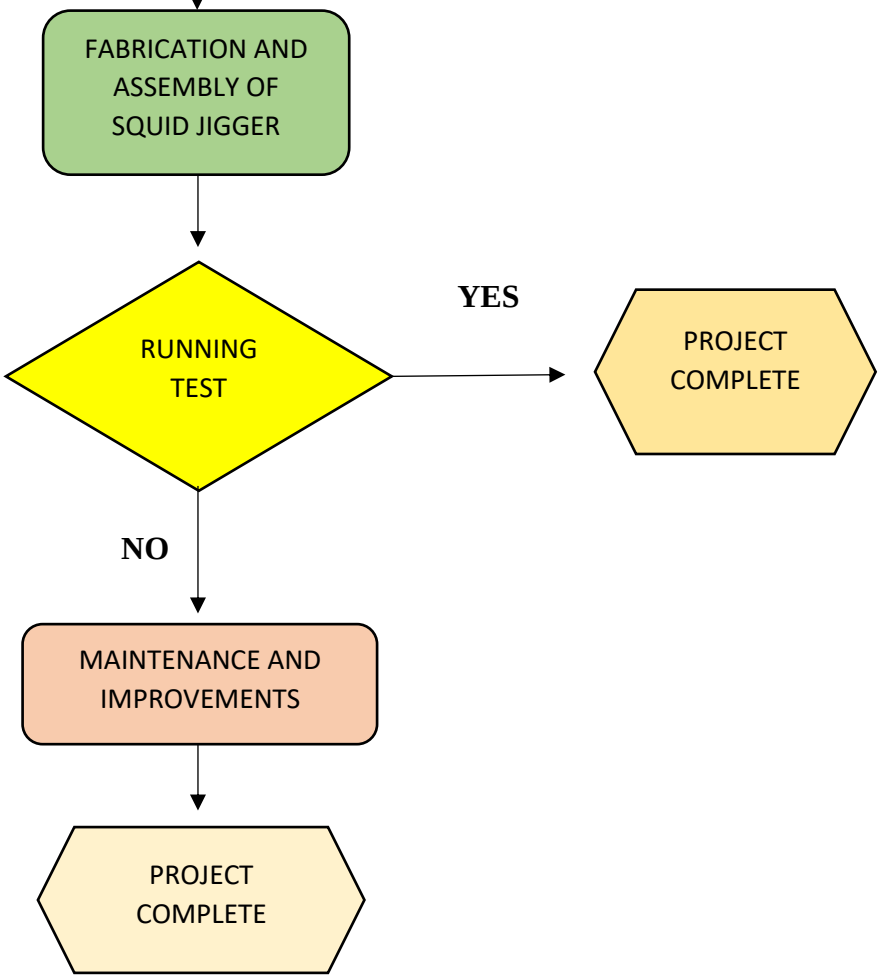


Figure 3.4 Methodology Phases

PHASE 1: RESEARCH PLAN

In stage one, project arranging is done considering the issues and shortcomings that exist in the present items. This investigation was led to acquire crude data and information. Whenever issues are distinguished, a reasonable arrangement is needed to get data about the task that should be done to know the highlights of the undertaking created. Because of this investigation, the extension and particulars of the venture for every idea that will be utilized were gotten dependent on the meaning of the requirements recorded on the following level.

PHASE 2: PROJECT DESIGN

In stage 2, the idea got will be utilized in this task. Venture configuration is done to get more data on the undertaking to be created. From that point, data on security, cost and energy are made between the customary idea and the new idea to be utilized.

PHASE 3: IMPLEMENTATION

In stage 3, run tests were performed. This is recognize issues that emerge. Run tests are directed all through the execution cycle to guarantee the undertaking meets the necessities. Assuming the task that is being constructed neglects to manufacture as required, the support or enhancements will be done on the venture until it is fruitful and amazing to be applied.

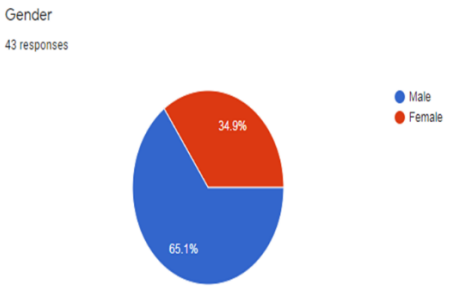
3.5 SUMMARY OF CHAPTER

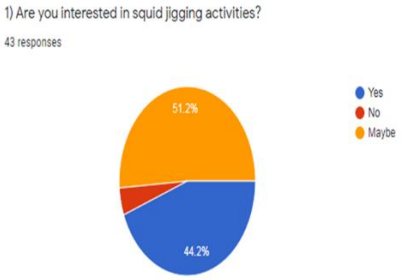
To close this part, despite the fact that the venture couldn't do run test because of Covid-19 Pandemic, the review are an enough outcomes to advertise Squid Jigger since there are very numerous individuals intrigued to attempt it. Also, materials utilized which is spotless steel will incredibly acquire their trust on this venture. Subsequently, the creation of Squid Jigger was the most hardest part yet it gave us heaps of involvement as it is the first mechanized jigging machine to at any point worked in Malaysia.

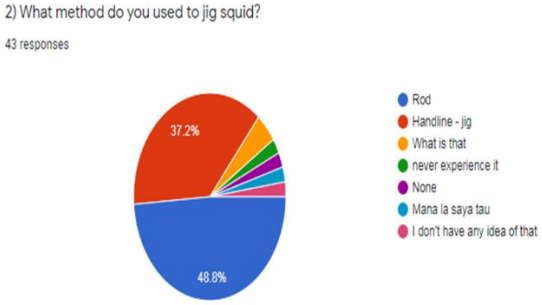
CHAPTER 4

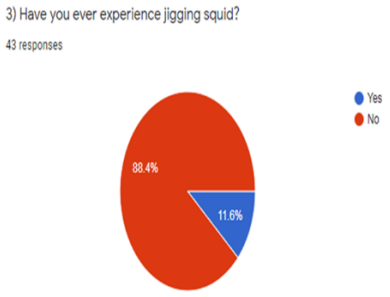
EXECUTION OF PROJECT

4.1 EXECUTION PRELIMINARY PROJECT/RESEARCH



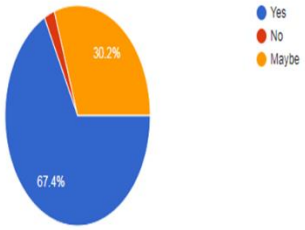






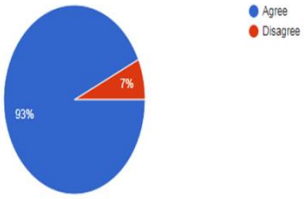
4) Do you think that squid jigging machine will increase the amount of squid jigged?

43 responses



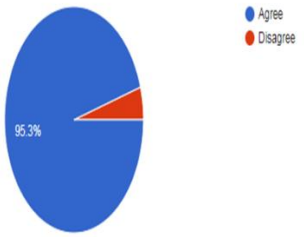
5) The traditional method can cause injury to fisherman, skilled and new jiggers.

43 responses



6) New method are needed in today's society.

43 responses



7) Do you have any opinion regarding squid jigging machine?

- **Reasonable price**
- **Efficient, user friendly, durable but light material**
- **dapat memudahkan lagii para nelayan untuk mencandat sotong dan dapat mengurangkan tenaga manusia apabila menggunakan mesin**
- **squid jigging machine will bring lot of benefits to others.**
- **meningkatkan kelajuan untuk mempercepatkan proses candat sotong**
- **I hope I operate automatically.**
- **Menambah kekuatan untuk beban sotong,**
- **Makes more efficient**
- **I just heard about the squid jigging... Thank you**
- **Great idea, easy way to use machine instead of human energy.**
- **Make it simple and compact is the best jigging machine i guess**
- **lanya bagus untuk para nelayan kerana dapat menghasilkan lebih banyak hasil jualan berbanding menggunakan cara tradisional dalam mencandat sotong**

4.2 ANALYZED PRELIMINARY FINDING

- Our machine can get a large catch of squid in 30 minutes with a weight of 100-200 kilograms (1 minute = 200 squid).
- Squid Jig that we use has an advantage because it is solid in shape and can balance the body in the water so that it is easy to attract squid.
- Our squid jigging machine can do the work that should be done by 1 fisherman to 2 fishermen at the same time.
- The time we do the squid jigging activity is to start at dusk and stop at dawn because the results are more satisfying than doing it when the moon is floating.

4.3 CORREALATE PRELIMINARY RESULTS FINDING WITH THEORY AND LITERATURE REVIEW

In conclusion, through the tasks that we run for 14 weeks using the Squid Jigging Machine can provide a little bit of knowledge to fishermen who want to venture into the field of squid tapping. This is because, it can be used as a follow -up and can strengthen skills in the future. In addition, our machine can provide many benefits to fishermen by increasing the yield of squid. Finally, we hope that this project can be used as well as possible and can produce more projects like this so that the squid catch in the future is better and more abundant.

PROJECT INSTALLATION

Figure 4.3.a

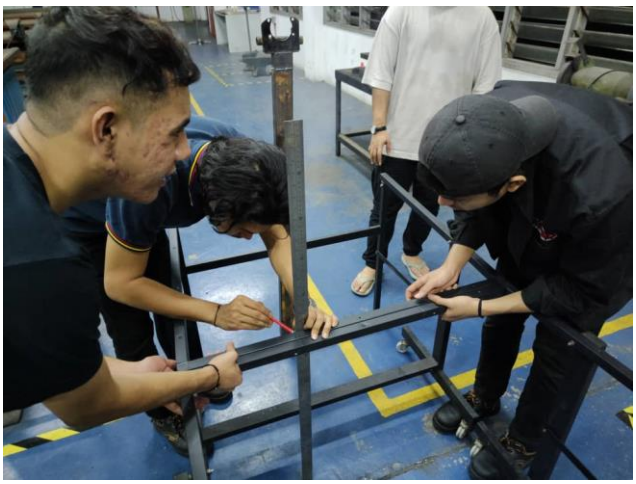


Figure 4.3.b

Figure 4.3.c

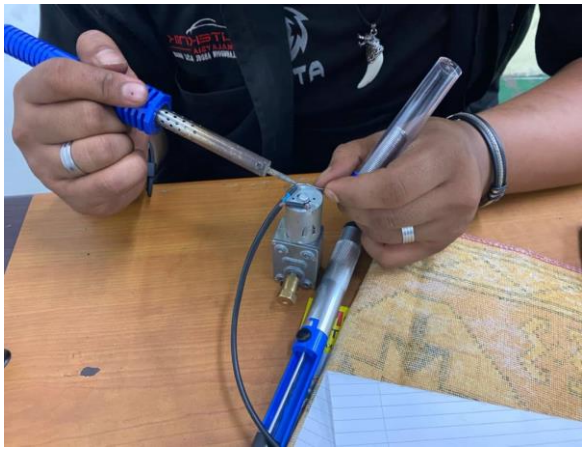


Figure 4.3.d

Figure 4.4.e

4.4 PROJECT VIEW

Figure 4.4.a

Figure 4.4.b

Figure 4.4.c

CHAPTER 5

DISCUSSION, CONCLUSION AND UPGRADE PLAN

5.1 INTRODUCTION

The purpose of the discussion is to explain the central results and potential implications of study. This is where the results and the choice of methods is discussed including the possible influence of methodological biases and errors on data validity. The discussion should also address general limitations and weaknesses of the study and comment on these. Importantly, the discussion of results and upgrade plan should form the basis for conclusions. Meanwhile, conclusions section is where we summarize our answers to the questions posed in our problem formulation. This chapter will explains about discussion, conclusion and upgrade plan for Squid Jigger.

5.2 DISCUSSION

In this project several have been made to build and complete the project. Based on our simple testing, we have find that our project has successfully functioned. The purpose is to identify any problems that may occur when using the product. Among the studies done, we have identify that:

1. The battery need to be refilled when its low.

2. Number of the squid is based on the place of jigging.

3. The switch need to be controlled left and right movement.

5.3 CONCLUSION

In conclusion, through the tasks that we run for 14 weeks using the Squid Jigging Machine can provide a little bit of knowledge to fishermen who want to venture into the field of squid tapping. This is because, it can be used as a follow -up and can strengthen skills in the future. In addition, our machine can provide many benefits to fishermen by increasing the yield of squid. Finally, we hope that this project can be used as well as possible and can produce more projects like this so that the squid catch in the future is better and more abundant.

5.4 UPGRADE PLAN

An upgrade refers to the positive change in an analyst's outlook of a particular security's valuation based primarily on that security's improving fundamentals.

5.4.1 To Add More Roller On Each Side Of Squid Jigger's Arms

The amount of squids jigged can be increased when there are at least three rollers on each side of it. Thus, it is not only affordable for fishermen, but also helpful for them where it shows that technologies can bring great transition from traditional to modern methods

5.4.2 To Add Sensor For A More Automated Machine

A sensor can be added at the bait. When the left sensor touch the seabed the oblong turn to make another sensor touch the seabed. This technique will more effective because users does not need to control the switch just to turn it to the left and right movements.

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APPENDICES

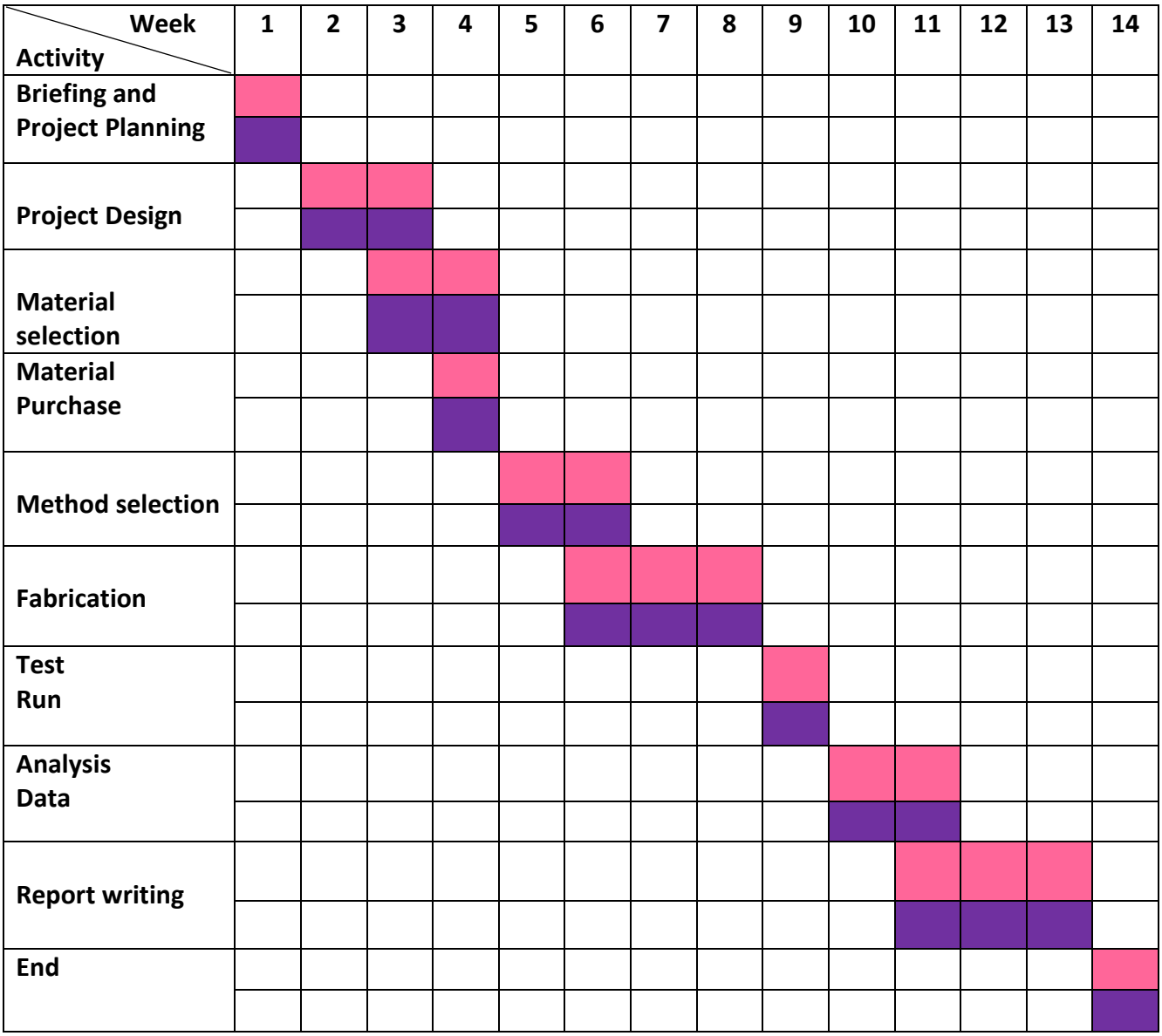
ATTACHMENT A **Gantt Chart (Project 1)**

ATTACHMENT B **Gantt Chart (Project 2)**

ATTACHMENT C **Project Budget**

ATTACHMENT A

GANTT CHART (PROJECT 1)



ATTACHMENT B

Gantt Chart (Project 2)

Week / Activities	W 1	W 2	W 3	W 4	W 5	W 6	W 7	W 8	W 9	W 10	W 11	W 12	W 13	W 14
Course registration														
Write the Final Report														
MyIPO Registration														
Assemble project materials and components														
Product testing														
Finish the entire part of the project														
Data Analysis														
Plagiarism Review (Turnitin)														
Progress Presentation Project Progress Presentation														
Presentation Preparation														
Abstract review by supervisor														
Technical Paper Review by supervisor														
Correction/Refinement of Final Report														
Abstract Review by Interpreter														
Submission of Final Report														
RICE PSA														
Logbook Submission														

ATTACHMENT C

PROJECT BUDGET

Project Budget

NO	ITEM	FUNCTION	MATERIAL	DESCRIPTION	PRICE
1	HOLE STAINLESS STEEL	BASE PROJECT	STAINLESS STEEL	25mm x 25mm	RM 80
2	BEARING	TO MAKE PROJECT MOVE SMOOTHLY	STEEL	150 mm diameter	RM 40x2 =RM 80
3	BOLT AND NUT	CONNECT THE BASE OF PROJECT	STEEL	40 pieces	RM 1.50x40= RM 60
4	CYCLINDER STAINLESS STEEL	SHAFT	STAINLESS STEEL	20mm diameter	RM 85
5	SPRAY	ADD COLOUR TO PROJECT	AEROSOL CAN SPRAY PAINT		RM 7.00x2= RM 14
6	JIG	TO CATCH SQUID	PLACTIC	60 piece	RM2x60= RM120

***BUDGET TOTAL= RM 439**