



POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH

SHOE DRYER MACHINE

SITI NURHAFIZAH BINTI 08DKM19F1205

JAMALUDDIN

NUR MIMI IZZATI BINTI 08DKM19F1204

NORGIHAN

SYAFIQAH BINTI MOHD SANIF 08DKM19F1190

DEPARTMENT OF MECHANICAL ENGINEERING

SESI 1 : 2021/2022

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

DEPARTMENT OF MECHANICAL ENGINEERING

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APPRECIATION

Syukur Alhamdulillah and the highest of gratitude is extended to Allah because with his permission we were able to complete the assignment for subject code DJJ50193 Project 2 successfully.

With this opportunity, we are very pleased to present a million thanks to Mr. Mohd Nasir Bin Kamaruddin as the Supervisor of Project 2 for having placed his full trust in us to fulfill the task given. On this occasion, we would also like to thank all parties who do not stop providing guidance in an effort to help complete this task, especially to Mr. Mohd Nasir Bin Kamaruddin for his discretion in providing guidance throughout this task is implemented. In addition, we also thank our fellow team members for their cooperation in realizing the efforts to complete this project successfully. Not to forget, a big thank you to our friends who have helped a lot and sparked our ideas throughout the process of completing the assignment. In completing this project, a lot we have learned throughout the completion of this assignment was done. It gives us a thousand and one meanings in acquiring this knowledge.

This speech is also addressed to all parties who have been involved in the success of this project either directly or indirectly. All the help they have given is very much appreciated because without their help and support all our projects may not be able to be implemented well.

Thank you.

ABSTARCT

The purpose of this project is to study the implementation and effectiveness of shoe drying in the community. Furthermore, we create and contribute in solving the problems that have been studied. Why shoes are needed, it's because for the safety of our feet. The purpose of wearing shoes is to protect our feet from possible dangers. In terms of shoe care, it should always be in a clean condition to ensure we are comfortable wearing it. To make sure our project will help, we do research in finding the problems encountered. Most of them face that drying shoes manually takes a long time. Next, they face odor problems for example, if their shoes are not completely dry it will emit a foul odor. Not only that, it will also affect the shoe users who are inhaled by their feet. It can also affect the quality and germs spread to the shoes. The fabrication method begins with concept generation and brainstorming, followed by an engineering design that uses technical drawings before selecting parts. Soldering the wire and using a stapler gun to install the plywood base completes the manufacturing process. Functional tests were conducted to provide the best performance in each riding situation. The results studied are aimed at resolving the issue, while the proposed remedies meet the design goals. Product and market analysis, risk management, and mass production feasibility studies have all been completed, making the product marketable. "Shoe Dryer" offers functionality at an affordable price and bidding 80% safe to use compared to its competitors. In making this design, we place great emphasis on sustainability in this product so that low -risk consumers are exposed to any hazards. Construction of this product, we are eyeing the best and highest quality materials. In this case, we pay full attention to the product to be made.

ABSTRAK

Tujuan projek ini adalah untuk mengkaji pelaksanaan dan keberkesanan pengeringan kasut dalam masyarakat. Tambahan pula, kami mencipta dan menyumbang dalam menyelesaikan masalah yang telah dikaji. Kenapa kasut diperlukan, ia kerana untuk keselamatan kaki kita. Tujuan memakai kasut adalah untuk melindungi kaki kita daripada kemungkinan bahaya. Dari segi penjagaan kasut, ia hendaklah sentiasa dalam keadaan bersih bagi memastikan kita selesa memakainya. Untuk memastikan projek kami akan membantu, kami membuat kajian dalam mencari masalah yang dihadapi. Kebanyakan mereka menghadapi bahawa pengeringan kasut secara manual mengambil masa yang lama. Seterusnya, mereka menghadapi masalah bau contohnya, jika kasut mereka tidak kering sepenuhnya ia akan mengeluarkan bau busuk. Bukan itu sahaja, ia juga akan memberi kesan kepada pengguna kasut yang terhidu oleh kaki mereka. Ia juga boleh menjejaskan kualiti dan kuman merebak ke kasut. Kaedah fabrikasi bermula dengan penjanaan konsep dan sumbang saran, diikuti dengan reka bentuk kejuruteraan yang menggunakan lukisan teknikal sebelum memilih bahagian. Memateri wayar dan menggunakan senapang stapler untuk memasang pangkalan papan lapis melengkapkan proses pembuatan. Ujian fungsional telah dijalankan untuk memberikan prestasi terbaik dalam setiap situasi tunggangan. Keputusan yang dikaji adalah bertujuan untuk menyelesaikan isu tersebut, manakala remedi yang dicadangkan memenuhi matlamat reka bentuk. Analisis produk dan pasaran, pengurusan risiko, dan kajian kemungkinan pengeluaran besar-besaran semuanya telah selesai, menjadikan produk itu boleh dipasarkan. "Pengering Kasut" menawarkan fungsi pada harga yang berpatutan dan membida 80% selamat untuk digunakan berbanding pesaingnya. Dalam membuat reka bentuk ini, kami sangat menitikberatkan kemampuan dalam produk ini supaya pengguna berisiko rendah terdedah kepada sebarang bahaya. Pembinaan produk ini, kami sedang mengintai bahan terbaik dan berkualiti tinggi. Dalam kes ini, kami memberi perhatian sepenuhnya kepada produk yang akan dibuat.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

So many shoes have been developed in our modern era. Different designs, sizes, fabric kinds, and so forth. As the marketing of shoes has grown, there must be a step in cleaning them. This must be emphasised and highlighted in terms of shoe care. Shoes must also go through the washing and dry processes correctly.

1.2 PROJECT BACKGROUND

In accordance with the modernism of the currents of time, shoes are regularly used by society not only for fashion but also for our foot safety, in accordance with the modernism of the currents of time.

People nowadays are having difficulty drying their shoes correctly, especially during the rainy season or monsoon season. Furthermore, the majority of individuals will dry their shoes by placing them under a fan or behind a refrigerator. Some people may additionally fill up and wrap their shoes in newspaper. The shoe drier machine that will be created will most likely aid in resolving this issue in the time frame that consumers desire.

Using such procedure may have an impact on the quality and pattern of the shoes. Furthermore, if the shoes are not totally dry, they might emit a foul stench. People have been known to dry their shoes in the UV sunshine, but from another perspective, this might reduce the quality of the shoes and not all types of shoes can be dried in the ultraviolet sunlight.

The introduction of the shoe dry machine greatly aided people in drying their shoes. However, when developing a product, various considerations must be made, such as the project's functionality, design, and whether or not it can answer the problem at hand.

1.3 PROBLEM STATEMENT

As far as we know, wearing shoes is vital since it is something we do on a regular basis. The goal of wearing shoes is to safeguard our feet from any dangers that may occur. In order to properly care for the shoes, they must be cleaned, washed, and dried. This is to protect the shoes from any harm that may occur. The drying procedure must also be done precisely to minimise harm to the quality of the shoes and the spread of germs.

So from the point of view, we chose to create a product called Shoe Dryer Machine. It helps in making sure that we are wearing hygienic shoes.

Furthermore, the time spent physically drying shoes was longer. It may take 1-2 days to ensure that it is completely dry. The time required is also affected by the thickness and fabric type of the shoes. As a result, the creation of our project highlights that feature.

Following then, it is determined by the weather. As we all know, leaving shoes to dry outside the home is dangerous. We must inspect the shoes to ensure that the weather does not change. Most of us are probably drying our shoes in the sun. As a result, it is difficult to dry shoes during the monsoon or rain season. So, from that standpoint, we are likely to create an innovative product that is simple to carry, does not depend on weather, and is also portable.

Furthermore, if the shoes are not completely dry, they will emit a foul odour. We will be uncomfortable if we wear shoes in humid weather. Because the shoes aren't totally dry, they get humid. On the negative side, it generated a terrible stench or an unpleasant odour. As a result of this issue, we are attempting to create an innovation to prevent it, which is an add-on scent insert.

1.4 PROJECT OBJECTIVES

The objectives of this study are:

- i. Speed the time taken to dry shoes
- ii. Can be use in whatever weather it is
- iii. Dry shoes completely and produced fragrant smell

1.5 Project Questions

Several research questions were posed to determine the objectives of the study to be achieved.

- i. Is the use of Shoe Dryer Machine able to maintain the quality and can produce a fragrant smell on the shoes during shoe drying among community users?
- ii. Does the use of time to manage shoe drying machines can reduce time wastage among community users?

1.6 Project Scope

The scope project implementation or study should be made as a reference to ensure that each project implementation does not conflict from the objectives to be achieved. The scope of project implementation is indeed set based on the objectives or goals of the project. Therefore, this Shoe Dryer Machine project must not go beyond its goals and functions.

- i. Designing safe Shoe Dryer Machine products.
- ii. Overcoming the problem of users to dry various types of shoes.
- iii. Always prioritize and maintain the elements of environment and sustainability.

1.7 Project Importance

- Took a short time to dry a pair of shoes
- Can be used in any weather, especially rainy weather
- Dries the shoes completely and emits a fragrant odour
- Our products can dry all kinds of shoes with any size such as sports shoes, leather shoes, school shoes and others shoes.
- Easily move from one place to another
- Order the wire position
- Features ventilation space

1.8 Conclusion

At the end of this chapter, users can find out what they want to convey through an introduction about the project. The energy required on this shoe dryer is the heat energy taken from the heating coil. This project has its own special features to the user. This is because it can solve problems that often occur in society. Therefore, in the next chapter, users will better understand the concepts that will be used on this project

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

(SITI NURHAFIZAH BINTI JAMALUDDIN)

A literature review is a combination of fresh and past research on an existing product that requires modification or improvement to address issues. We will be able to develop products of higher quality than those currently available. The research was similar to looking at the elements employed, as well as the materials and work techniques used. The major goal of this research is to see if the product that will be produced will be able to suit the needs and tastes of consumers, or vice versa.

The research is carried out utilising survey methodologies, observations, and product research. Furthermore, the data was gathered from a variety of sources, including internet browsing, relevant scientific research, and a people interview survey. The numerous pieces of information are analysed and referenced accurately. Any weaknesses and benefits of the items might be discovered as a consequence of the investigation. Each of the benefits and drawbacks is addressed in order to develop a higher-quality, well-functioning product that meets the needs of consumers.

There are certain advantages and drawbacks based on the study that has been done. All of the flaws will be addressed in the creation of customer demands.

2.2 Material

2.2.1 Plywood

2.2.1.1 Introduction

In 1797, Samuel Bentham filed patent applications for multiple veneer-making devices. He detailed the notion of glueing numerous layers of veneer together to produce a thicker piece in his patent filings, which was the first description of what we now call plywood. Immanuel Nobel, Alfred Nobel's father, discovered fifty years later that multiple thin layers of wood joined together were stronger than a single big piece of wood. He designed the rotary lathe after realising the commercial possibilities of laminated wood. Plywood was first introduced to the US in 1865, and industrial manufacture began soon after. In 1928, the first standard-sized 4 ft by 8 ft (1.2 m by 2.4 m) plywood sheets for use as a common building material were launched in the United States.

Plywood is made out of thin layers of wood veneer called "plies" that are glued together and have their wood grain rotated up to 90 degrees. It's an engineered wood that belongs to the same family as medium-density fibreboard (MDF), oriented strand board (OSB), and particle board (chipboard).

To create a composite material, all plywoods bond resin and wood fibre sheets (cellulose cells are long, robust, and thin). Cross-graining is a method of alternating the grain that has numerous advantages: it minimizes the tendency of wood to break when nailed at the edges; it reduces expansion and shrinkage, improving dimensional stability; and it makes the panel's strength consistent in all directions.

2.2.2.2 Characteristics

The face veneers on a standard plywood panel are of a higher grade than the core veneers. The primary purpose of the core layers is to enhance the spacing between the outer layers, which are subjected to the highest bending loads, hence enhancing the panel's bending resistance. As a result, thicker panels may cover longer distances while supporting the same weights. The outermost layers, one under tension and the other in compression, experience the highest stress during bending. Bending stress drops from its peak at the face layers to almost nothing at the centre layer. Shear stress, on the other hand, is stronger in the panel's centre and at the outside edges.

Strength - Plywood is a laminate made of many layers of wood chips and shavings that are bonded together. The design of each layer such that the grain of the wood alternates increases the strength of the laminate, making most forms of plywood stronger than an equal piece of the same genuine wood. Plywood is also almost twice as resistant to sheering as solid wood.

Stability - Because of the alternating grains and the usage of adhesives, plywood is as sturdy as or more stable than normal wood. Plywood can be less prone to absorbing and/or releasing moisture at times, and when it does, the alternating grain pattern inhibits expansion and shrinking. As a result, the wood is sometimes less susceptible to shrinking and warping.

Flexibility - Because plywood is a manufactured product, it is not constrained by the size, form, and appearance provided by nature in the same way that genuine wood is. Plywood sheets are available in a variety of thicknesses and, as previously stated, with a variety of facings. Many of the same finishing products that are used on actual wood may be used on plywood with a smooth veneer.

2.2.2 Plastic Pipe

2.2.2.1 Introduction

PVC pipes, perhaps one of the most ubiquitous and adaptable forms of plastic piping, have been in use for over 80 years, serving a wide range of applications in a variety of market sectors all over the world. PVC pipes are particularly sturdy and durable when compared to metal piping, with perfect corrosion resistance and no chance of succumbing to thermal expansion or contraction. Economical and durable, these pipes are available in a variety of diameters with a variety of fittings and may be used for both warm and cold water applications depending on the PVC variation.

PVC pipes are extensively utilised in the construction of sewage pipes, water mains, and irrigation systems. PVC pipes are easy to install, lightweight, sturdy, and durable, as well as easily recyclable, making them cost-effective and sustainable. The smooth surface of PVC pipes promotes quicker water flow because it has less friction than piping constructed of other materials such as cast iron or concrete. PVC pipes may also be made in a variety of lengths, wall thicknesses, and diameters in accordance with international sizing standards such as DIN 8061, ASTM D1785, and ASTM F441.

PVC pipes are made by extruding raw PVC material and usually follow the same stages as standard pipe extrusion operations:

- Raw material pellets/powder are fed into the PVC twin screw extruder.
- Multiple extruder zones are melting and heating at the same time.
- Extruding material through a die to form a pipe
- The shaped pipe is cooled.
- PVC pipes are cut to the required length.

Despite having a comparable manufacturing technique to most plastic piping, PVC pipes have inherent properties that provide significant hurdles to pipe makers in terms of both production and market positioning.

2.2.2.2 Material Characteristics

i. ABS (Acrylonitrile Butadiene Styrene)

ABS (Acrylonitrile Butadiene Styrene) is a polymer that is used to transport potable water, slurries, and chemicals. DWV (drain-waste-vent) applications are the most popular. It has a wide temperature range, ranging from -40 to +60 degrees Celsius. ABS is a thermoplastic polymer that was created in the early 1950s for usage in the oil fields and chemical industries. The material's versatility and relative cost effectiveness have made it a popular engineering plastic. By varying the ratios of the constituent chemical components, it may be adapted to a variety of purposes. They are mostly utilised in industrial applications that need strong impact strength and stiffness. This material is also utilised in non-pressure soil and waste pipe systems.

ii. CPVC (Chlorinated Polyvinyl Chloride)

Many acids, bases, salts, paraffinic hydrocarbons, halogens, and alcohols are resistant to chlorinated polyvinyl chloride (CPVC). Solvents, aromatics, and certain chlorinated hydrocarbons are not resistant to it. It can transport hotter liquids than uPVC, having a maximum working temperature of 200 °F (93.3 °C). Because of its higher temperature threshold and chemical resistance, CPVC is a popular material choice for residential, commercial, and industrial water and liquid transmission.

iii. HDPE (High-Density Polyethelene)

HDPE pipe is robust, flexible, and lightweight. When fused together, it has a 0% leak rate.

iv. uPVC (Unplasticized Polyvinyl Chloride)

uPVC, often known as PVC-U, is a thermoplastic polymer made from common salt and fossil fuels. The pipe material has the most experience of any plastic material. In the 1930s, the first uPVC pipes were manufactured. Beginning in the 1950s, uPVC pipes were utilised to replace rusted metal pipes, bringing clean drinking water to an expanding rural and, subsequently, urban population. uPVC pipes are NSF Standard 61 certified safe for drinking water and are widely used in water distribution and transmission pipelines in North America and around the world. For waste lines in residences, uPVC is permitted, and it is the most often used pipe for sanitary sewers.

2.2.2.3 Feature Characteristics

i. Longevity of Plastic Piping System

Plastic pipes have been in use for more than 50 years. Plastic piping systems have an estimated lifespan of more than 100 years. This forecast has been supported by a number of industry investigations. Long-term pressure testing has historically been used to classify plastic pipe materials. In so-called Regression Curves, the recorded failure times as a function of the stresses in the pipe wall have been proven.

Based on recorded failure times, an extrapolation of 50 years has been determined. The estimated failure stress at 50 years served as the classification's foundation. At 50 years, this figure is known as MRS, or Minimum Required Stress.

ii. Pipe System Failure

Poor product bonding/gluing during installation and naturally occurring physical damage, such as tree root intrusion, are two reasons why plastic pipe systems may fail.

iii. Flexibility

The ring stiffness of plastic pipes is used to classify them. Several product standards specify the desired stiffness classes as SN2, SN4, SN8, and SN16, where SN stands for Nominal Stiffness (kN/m²). Pipe stiffness is critical if they are to sustain external loadings during installation. The stiffer the pipe, the higher the figure.

2.2.3 Sticker Carbon Fibre

2.2.3.1 Introduction

Carbon fibre wrap, also known as vinyl wrap, is a textured film or sticker that looks like carbon fibre. Some manufacturers provide vinyl that closely resembles the appearance and texture of carbon fibre. This adhesive-backed film, on the other hand, lacks the same qualities and is far less expensive than the actual thing.

As the name implies, it may be used to wrap practically anything. Carbon fibre has swiftly become one of the market's most sought-after items. However, the prices of producing carbon fibre components and parts are prohibitively expensive and need a high level of technical expertise. Furthermore, many individuals appreciate the aesthetic of carbon fibre but do not require the structural benefits, so they utilise carbon fibre wrap instead.

2.2.3.2 Material Characteristics

- i. Versatility
- ii. Toughness
- iii. Water proof
- iv. Scratch proof
- v. Durable
- vi. Affordable

2.3 Shoe Dryer System

The goal of the shoe drier machine project's innovation is to assist consumers in resolving their problem of struggling to dry their shoes. The primary goal of this project is to reduce the amount of time it takes to dry a pair of shoes. As an example, the purpose of this shoe drier machine was developed to:

- iv. Speed the time taken to dry shoes
- v. Can be use in whatever weather it is
- vi. Dry shoes completely and produced fragrant smell

Shoe dryer machine is a product that known to dry shoes. Shoe need to go through a neatly process such as washing and drying. Commonly shoe dryer machine were known functioning as shoe drier that can dry variety of sizes, pattern and type of shoe fabric. Besides using shoe dryer machine, consumers used to dry their shoes using heat from ultra violet from sun. Furthermore, consumers also dry their shoes behind the refrigerator to produced the heat from the compressor. Facing to this situation, the shoe sometimes will not completely dry and take a long time to make it fully dry. To add more information, shoe also can gain foul odor if its not fully dry.

Usage of shoe dryer machine has reached worldwide but not all people can afford the most quality and the best of the product. The high demand price make society use the manual way to dry their shoes. Thinking about the safety wiring also make consumers think twice to buy a product. Functionality of a product was a main things that need to take a loo when searching of a product.

2.3.1 Shoe Dryer Design Criteria

There are several criteria need to be taken into count when designing a shoe dryer machine. The purpose of this criteria is to get the maximum effect and effectiveness of the product. The criteria that need to be taken is:

2.3.1.1 Flow Rate

Flow rate area on top of the shoe dryer machine was wrapped with sticker carbon fibre to avoid the water drop from the shoes giving damage to the plywood base. Dropped water from the shoes are depends on the type of the shoes. The critical water drop are usually from the fabric shoes such as sport shoes while the minimum water drop are from the plastic type shoes such as sandals. Pointing on the dropped water, we need to take a deep action in avoiding the water drop get in to the wiring section inside the plywood base.

2.3.1.2 Maintenance

Maintenance in every product are important because it can help in preventing damage and quality decrease of the product. Looking at this point, aspect in designing shoe dryer machine need to be considered to ensure it can be go through maintenance process safely.

2.3.1.3 Approximate Burden

Load estimates are necessary in designing shoe dryers so that they can accommodate all types of shoes and sizes to be dried. shoe dryers are considered to work well if the shoes can be dried perfectly and can remove bad smells.

2.3.1.4 Air Flow Rate

The air flow raate in the shoe dryr machine are the one of important things that need to be focus on. This is because there need a inlet air flow to make the fan blade functioning well in producing air. In this project, the inlet air flow rate are at the back of the plywood base that connected to the inlet pipeline installation. The outlet flow rate are the two pipeline that were locate at the top of the plywood base. The PVC pipe were drill to make holes to ensure there sufficient air output to dry the shoes. The PVC pipes were connected with PVC elbow and PVC tee joint.

2.3.2 Types Of Shoe Dryer

Before the existence of shoe dryer machine, the society were usually use the manual way to dry their shoes such as put in under the ultraviolet or put it behind refrigerator.

Before the shoe dryer machine were invented, there have several method to dry shoes:

1. Drying shoes under the sun
2. Drying shoes behind the refrigerator
3. Drying shoes using newspaper
4. Drying shoes using washing machine dryer
5. Drying shoes using heat from hot bulb



Figure 2.3.2 i : Drying shoes under the sun



Figure 2.3.2 ii : Drying shoes behind the refrigerator



Figure 2.3.2 iii : Drying shoes using newspaper



Figure 2.3.2 iv : Drying shoes using washing machine dryer

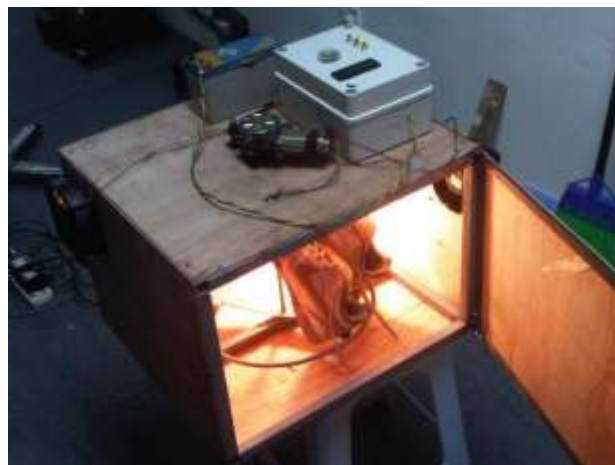


Figure 2.3.2 v : Drying shoes using heat from hot bulb

From all the observation above, we can see that the types of shoe drying can not prevent the decrease of the quality and can give damage to the shoe style. Shoe also can produced bad odor if its not completely dry or take so long to dry.

2.4 Shoe Dryer Management

After shoe being washed, they need to go through suitable and proper drying shoes process in order to ensure the quality of the shoe maintain and to avoid the damage of the shoe pattern. In this aspect, there have several step that need to be seen which are the speed of the air flow to completely dry a pair of shoes. Besides, the smell produced of the shoes are one of the aspects that need to be focus on. This statement can be proven on previous literature review that had been made before which is from a group at a party called TYPE III FESTIVAL in 2008. Which their project were created in square box that have hot bulb inside. There was no air flow so this can make the shoes produced bad odor.

In the case of wiring management, the wiring section need to be prepared properly to avoid any hazardous that might be happen. In our project, the wring section were inside the plywood base and neatly arranged so it won't moving or fall apart. The plywood base also was wrapped with sticker carbon fibre that can prevent the water drop from the wet shoes get inside the wiring section in the plywood base. This part need to be emphasized to prevent any accidents or short circuits from occurring.

2.5 Shoe Dryer Machine

Innovation of shoe dryer machine were design according to the suitable prescribed shape and their function. There were several types and sizes of shoe which are sport shoes, leather shoes, school shoes and other shoes. Therefore shoe dryers are also available in various sizes and have their own characteristic features.

But in creating a new innovation, we must take a look in many aspects which are their functionability, design and wether it can solve the problem faced by the society. So from this aspects, we had been invented a Shoe Dryer Machine that can falitate the society and solve the problem faced.

The most common problem faced is the time taken to dry the shoes were longer. Besides drying their shoes were depending on the weather which is they dry their shoes using UV light. Moreover, the shoe are not completely dry and produce foul odor. From this, we had a discussion on inventing a new shoe dryer innovation.

The product we creating was in square shape which made from plywood while the air flow output we use PVC pipe. Other wiring section, we use components such as AC motor, coil nichrome wire, electric wire, fan blade, fragrance and soldering equipment. Pointing on the bad odour produced from the shoes, we've been created a fragrance insert that connected to the input air flow in the plywood base.

Looking at the safety aspects, we decided to put all the wiring components properly and neatly tighten with the stainless steel band so it won't move of fall apart. The wiring components were located in the wiring section in the plywood base. Furthermore, the plywood were wrapped using sticker carbon fibre that well known have great characteristics which are water - proof, scratch - proof and versatility. This helps to prevent the plywood base expose to the water drop from the wet shoes.

2.6 Conclusion

In a summary, this chapter examines the theoretical framework that was employed prior to the study to predict efficacy. This literature review led to the definition of the notion of effectiveness and efficiency in operation, and it may also cover a variety of topics. This chapter also discusses the information that will be tested. The planning of a product has a significant role in determining the product's quality. Furthermore, designing is the first action in a sequence that leads to the production of shoe dryer items. Furthermore, in Chapter 2, buyers are informed about the effectiveness of drying shoes more successfully. As a result, we attempt to rectify and change the flaws in the items based on the studies and research we have conducted. This planning process is critical in order for us to generate a high-quality product that meets the expectations of our customers.

4

CHAPTER 3

METHODOLOGY

3.1 Introduction

(SYAFIQAH BINTI MOHD SANIF)

The effectiveness of this study is to ascertain whether the shoe dryer machine we produced can lighten the load of drying shoes and save user time. In addition, this chapter describes how a form is selected and its factors. This chapter will provide a detailed explanation of the method of the study conducted for this project

To ensure that this shoe dryer project works well, it needs to be monitored and managed systematically from time to time. Our shoe dryer can dry all kinds of shoes of any size, such as sport shoes, leather shoes, school shoes, other shoes. Also, drying shoes manually is difficult as it depends on the weather and makes the shoe parts not completely dry and emits a foul odor. Therefore, we created a shoe dryer that can lighten the burden of human life.

3.2 Flow Chart Methodology

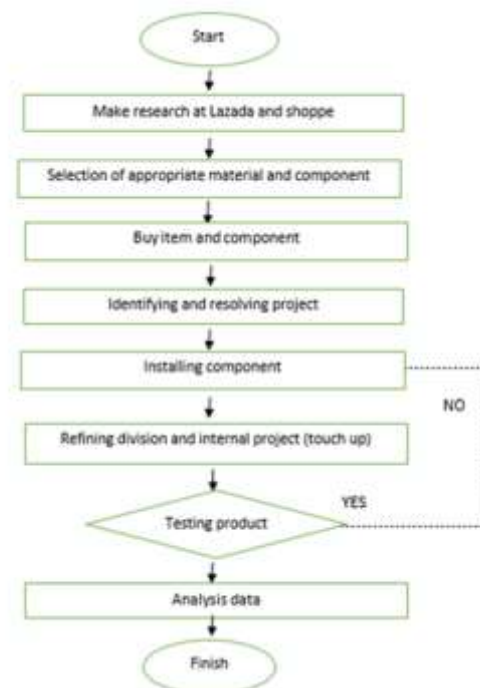


Figure 3.2 Project Flow Chart

3.3 Design

3.3.1 Project Design

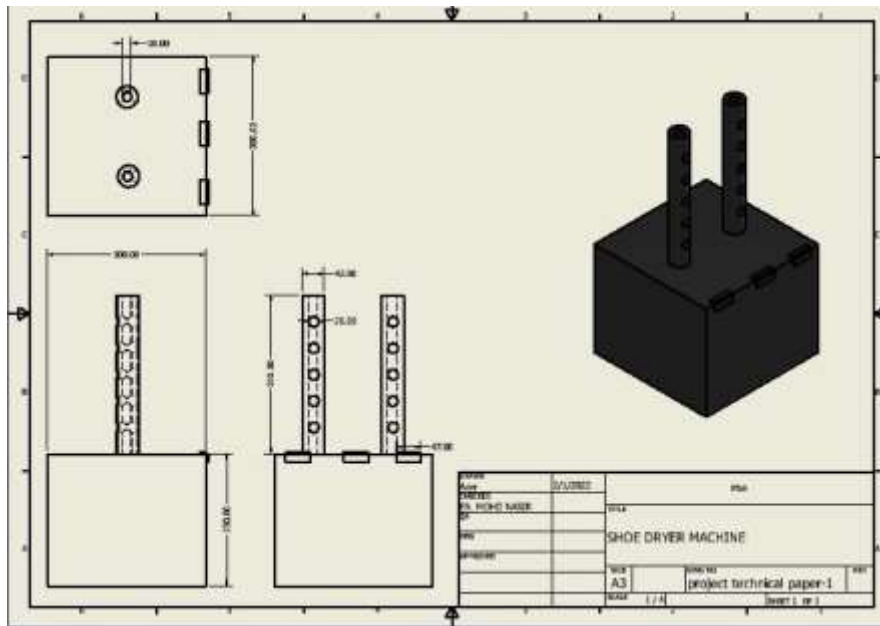


Figure 3.3.1 i : Product Design

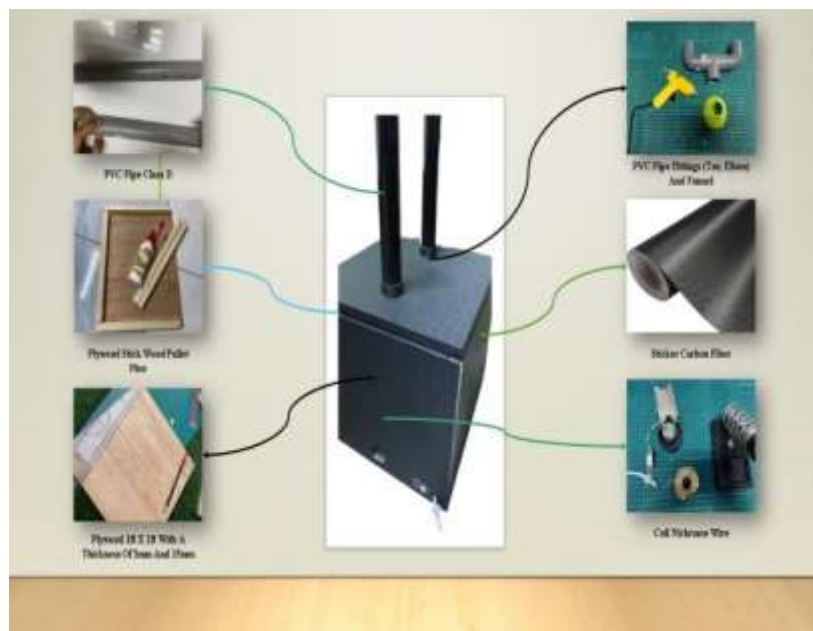


Figure 3.3.1 ii : Product Fabrication

The design of the shoe dryer that we will produce is in the shape of a horizontal cuboid and there are two vertical cylinders on top of the cuboid. We will use plywood to produce the cuboid while we will use 30mm PVC pipe to produce the cylinder. This is because, this design is easy to place and sturdy as it has a horizontal base. In addition, this design does not require a large space to house the machine. The machine is also lightweight and easy to move to any place that has an electrical source. In conclusion, this machine is easy to operate and can facilitate the work of drying shoes as shown in Figure 3.3.1

3.3.2 Study Type Project

a) Sampling

The sampling performed involved shoes to be tested on a shoe dryer. Among the types of shoes categorized for this study are sports shoes, school shoes, workshop shoes and others. Shoes that have been washed and are in a wet state should be dried on the shoe dryer provided. Then it needs to be turned on by pressing the switch and need to set the temperature you want to use. Next, place the shoes in the designated place and wait for at least 30 minutes to dry. Finally, the shoes are dry and ready to wear.

b) Methods of Data Collection

To carry out this study, there are data collection methods have been practiced obtaining data that are important for the analysis stage. Among the data collection methods is the questionnaire method. Data collection can be classified into two types, namely primary data, and secondary data.

Primary Data

Primary data are important data in the study. Without key data, the objectives of the study will not be achieved. The data collection process was done through the distribution of questionnaires to respondents through the website. Therefore, a total of 62 respondents were randomly selected.

Secondary Data

The secondary data consists of literature review and other sources such as websites, books related to the field of study, local newspapers, journals, and other publications related to the study conducted. These materials were analyzed according to their suitability and became the basis of reference for this study.

3.3.3 Project Production Method/ Procedures/ Techniques

Step 1



Figure 3.3.1.1

Prepare the base or housing of components such as switches, motors, wires, fans and so on by cutting boards / wood and cut according to the specified size. Join the pieces of boards that have been cut into a box shape. The box design will make this project more stable and solid.

Next, make a hole in the side of the box to place the switch and for the ventilation flow. We use plywood because it is lighter and easier to move from one place to another.

Step 2



Figure 3.3.1.2

The cover of box we use plywood and attach two CPVC pipes on top of the cover box that has been punched. The purpose of the perforated pipe is to release the heat generated from the heater (coil) evenly. On the edge of the box cover we install hinges to allow us to see the processes that are in the box.

Step 3



Figure 3.3.1.3

For fragrances, we provide a channel made of perforated PVC pipe and the fragrance is placed in the duct so that the placed fragrance can be inhaled through the fan when activated.

Step 4

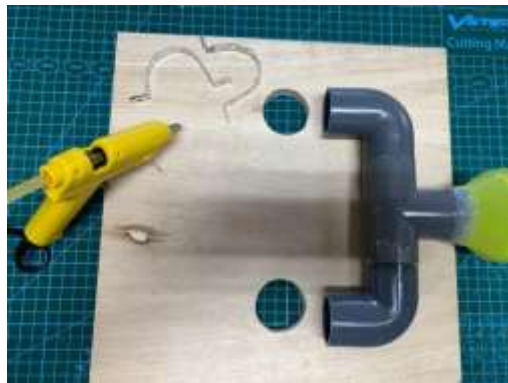


Figure 3.3.1.4

We also make air conductors by connecting T pipes and 2 L pipes of size 25mm. This air flow is connected to a PVC pipe that has been perforated and placed on the funnel to isolate the hot air produced by the coil.

Step 5



Figure 3.3.1.5

Prepare coils, motors, fans, and wires to make it in one circuit. Connect the wires to each component, namely the motor and coil according to the positive and negative currents. The coil is the main source for the heating to be used and the heat will be pushed by the fan towards the CPVC pipe. Next connect the fan with the fan motor to allow the fan to rotate and flow hot air upwards. After that, the component is placed in a container as a moto and coil holder. Finally, connect the circuit to the power source which is a 2 -pin plug.

Step 6



Figure 3.3.1.6

The funnel is placed between the PVC pipe and the coil so that wind movement is limited and can be directed to one place which is the perforated PVC pipe.

Step 7



Figure 3.3.1.7

Not to forget also we will install a switch to stop the flow of electric current or divert the direction of flow from one conductor to another.

3.3.4 Material And Equipment

Material

1. Plywood



Figure 3.3.4.1

To make a box to place the component materials such as fans, coils, and others. Plywood is also easy and quick to apply. The size to be used is 1ft x 1ft with a thickness of 3mm and 15mm. This plywood costs rm2.85 and rm6.80 per sheet. And we also use cheap stick wood pallet pine with size 14mm x 14mm and has a thickness of 1200mm. This plywood costs rm1.80 per sheet

2. PVC Pipe



Figure 3.3.4.2

Used to hose out the hot air from the box to maintain the temperature and prevent overheating. The advantages of PVC pipe are lightweight,

stainless, and easy to operate. Size based on pipe diameter is 1”25mm(3ft) and thickness type is Class D (normal). Cost around RM3.55.

3. PVC Pipe Fitting (Tee, Elbow)



Figure 3.3.4.3

Used to separate hot air into two parts from the box to maintain the temperature and prevent overheating. The size used is 25mm as it is suitable to relate to PVC pipe. the price for item a is rm1.50 and item g is rm1.30.

4. Coil Nichrome Wire



Figure 3.3.4.4

Typically, nichrome is wound in coils to a certain electrical resistance, and when current is passed through it the Joule heating produces heat. Nichrome is used in the explosives and fireworks industry as a bridge wire in electric ignition systems. Coil is used for heat conductor for air heating. The coil will convert electrical current into thermal energy.

5. Fan Blades



Figure 3.3.4.5

Blows air through the fitting on the heated coil which in turn blows hot air out of the PVC pipe. This material can be used over a long period of time. Fan blades will be reused from portable fans that cannot be use.

6. Funnel



Figure 3.3.4.6

A funnel is a tube or pipe that is wide at the top and narrow at the bottom, used for guiding liquid, gas or powder into a small opening. Funnels are usually made of stainless steel, aluminum, glass, or plastic. Also used so that the movement of the wind moves upwards and is limited directly to the perforated PVC pipe.

7. Electric Wire



Figure 3.3.4.7

Electrical wires serve as conductors of electrical sources to appliances in the home as well as in industrial areas. The use and selection of wires must be appropriate to the equipment and safety. Commonly used wire types are enamelled copper wire, single width wire, single core wire, twin core wire and three core wires. 2 core wire is the option that we will use because it is PVC insulated and woven thread.

8. 2 Pin Plug



Figure 3.3.4.8

This plug has 2 terminals namely live (1) and neutral (N). The plug relates to a twin core wire. Used on electrical equipment such as radios and electric clocks that use an electric current not exceeding 2 amperes. This plug has no fuse and earth terminal (N).

9. Fragrance



Figure 3.3.4.9

Fragrances are natural or synthetic essential oils or aroma compounds used in a wide variety of products to impart a pleasant odour, to mask the inherent smell of some ingredients, and to enhance the experience of using the product. to add fragrance to shoes. Adding fragrance to shoes to remove musty odours. Costs around rm3.

Equipment

1. Handsaw



Figure 3.3.4.10

Used for cutting and slicing. There are two types: Wood chipping (cutting across the wood grain splitting wood and cutting parallel to the wood grain). The size of the saw is determined by blade length number of teeth per 25 mm (1 inch).

2. Drill



Figure 3.3.4.11

A drill is a tool primarily used for making round holes or driving fasteners. It is fitted with a bit, either a drill or driver, depending on application, secured by a chuck. Some powered drills also include a hammer function. Drills vary widely in speed, power, and size. In this situation we used this material to drill holes in PVC pipes. We will use an impact drill. Special impact drill to make light work. Besides, we will attach the board parts with screws using a drill.

3. Hot Glue Gun



Figure 3.3.4.12

A hot glue gun is a very useful tool for joining modelling materials and even more substantial materials can be fixed together with it. 'Sticks' of solid glue are pushed into the back of the gun; the trigger is pressed pushing the glue stick forward and molten glue comes out of the nozzle. In this project we use hot glue gun to attach PVC pipe to the machine cover.

4. Screwdriver



Figure 3.3.4.13

Type of hand tool used to install and remove screws and used by rotating the handle counter clockwise to loosen and clockwise to tighten the screws. has an end section that is shaped according to the screw groove to make it easier for the screw to be loosened and tighten.

3.3.5 Data Analysis Method

Theme-Based Analysis

Before the product is produced	After the product produced
Burdens	Human friendly
Musty smell is present on the shoes because the shoes are not completely dry	The smell of shoes is fresher and pleasant
Shoes colour fades	The colour and quality of the shoes do not change

Table 3.3.5.1

- The thermal energy obtained from the heating coil is used to power this shoe dryer. The user will appreciate the unique features of this project. This is due to its ability to tackle problems that arise frequently in society.

Budget And Marketing

Project Cost

No	Material	Quantity	Price (RM)
1	Plywood 1ftx1ft (3mm)	4	11.20
2	Plywood 1ftx1ft (15mm)	2	11.70
3	Stick wood pallet14x14	2	3.60
4	PVC pipe	2	7.10
5	Tee pipe	1	1.50
6	Elbow pipe	2	2.60
7	Funnel	1	1.10
8	Fragrance	1	3
9	Screw	1box	3
10	Hinges 20mmx25mm	3	1.50
11	Stainless steel band (ft)	3	1.50
12	Wood glue	1	10
Total			57.80

Table 3.3.5.2

- Coil Nichrome Wire, Fan blades and 2 Pin Plug we reused from hair dryer that cannot be use.

Marketing

1. Promote our product in social media
2. Such as make live on Instagram and Facebook
 - Give 15% discount to the first 10 buyers
3. Use Facebook Groups to build a community for our brand

3.4 Conclusion

The conclusion that can be made in this chapter is that, after doing this chapter 3 we get the knowledge on how to make the project more clear, detailed, and easy. This further simplifies our work to do the manufacturing work of our project. The data we collect, and we analysed is very important data for us in making this our project. All these data are all collected through various ways such as surfing the internet, reading some related books, and asking our lecturers. Through this chapter we can also identify the appropriate components to be used to ensure the selection of these components is appropriate for the product that we will produce. The selection of components is a very important factor in creating high quality products and meeting the tastes of consumers. Data collection is also very important for the purpose of testing the production of our products. Thus, through work such as component selection and data record, this data can certainly create a quality product as well as create a modern product and can display a conducive and innovative advertising display to attract consumers.

CHAPTER 4

PRELIMINARY FINDINGS OF THE STUDY

4.1 Introduction

(NUR MIMI IZZATI BINTI NORGIHAN)

After gathering all of the data and information, an analysis was conducted to determine the success of the shoe dryer installation. The data presented in this chapter are based on questionnaire and experiments undertaken in the research field. Data from experiments in the research region were evaluated in more depth in order to develop conclusions based on the specified study goals.

The total number of respondents involved was 62 respondents. The major focus is on various things

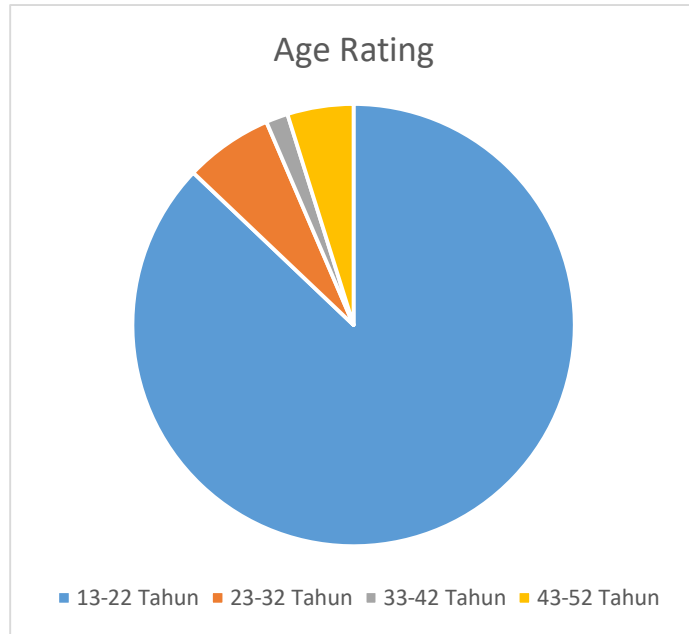
1. Respondent Demographics (gender and age)
2. General views on the study
3. Respondents perspectives on Dwi Function Platform :
 - I. Shape
 - II. Function
 - III. Materials used
 - IV. Advantage

4.2 Respondent Demographics

This section discusses the descriptive data of the study sample i.e. gender. The total number of respondents involved was 62 respondents. Schedule 4.2.i shows the frequency distribution and percentage of respondents by gender. Boy respondents numbered 21 people (39.5%) while girl respondents were 41 people (60.5%). Found that girl respondents were higher than boys respondents.

GENDER	FREQUENCY	PERCENTAGE
BOY	21	39.5%
GIRL	41	60.5%
TOTAL	62	100%

Table 4.2 i : Frequency distribution and percentage of respondents by gender.



Pie chart 4.2.2.2 : Respondent's age rating.

4.2.1 Component Cost

No	Material	Quantity	Price (RM)
1	Plywood 1ftx1ft (3mm)	4	11.20
2	Plywood 1ftx1ft (15mm)	2	11.70
3	Stick wood pallet14x14	2	3.60
4	PVC pipe	2	7.10
5	Tee pipe	1	1.50
6	Elbow pipe	2	2.60
7	Funnel	1	1.10
8	Fragrance	1	3
9	Screw	1box	3
10	Hinges 20mmx25mm	3	1.50
11	Stainless steel band (ft)	3	1.50
12	Wood glue	1	10
Total			57.80

Table 4.2.1: List of Component Costs

4.3 FINDINGS OF THE STUDY

4.3.1 Site Study Data

The information gathered during the research activities will be assessed based on the kind and percentage of shoes that are entirely dry and fragrant (before), as well as the percentage of shoes that dry completely and smell pleasant (current). Finally, the data will be presented in the form of a table and a drying time graph. Sports shoes, school shoes, leather shoes, and a variety of other forms of footwear will be categorised. In addition, the time of drying will be measured and recorded in the given table.

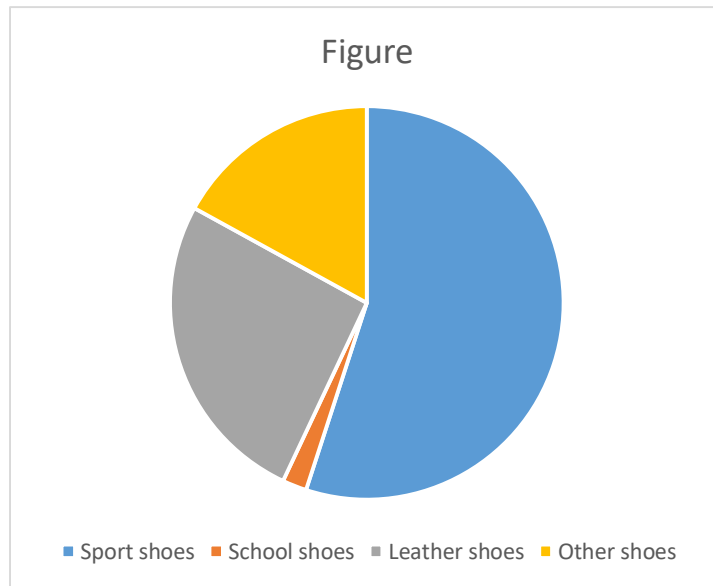
4.3.2 Analysis of Study Data

Graphs, tables, and charts will be used to illustrate the process of analysing the research data. This shoe dryer's study includes a completely drying time. The data acquired will be provided in the form of a histogram as a consequence of the analysis. The shoe dryer machine employed in the observation technique is automated.

4.3.2.1 Survey Questionnaire

After obtaining the required data and information through a questionnaire provided by us. This data set is then analyzed so that conclusions can be seen and generated. Statistics were found to reflect the level of students' agreement on improving the quality of Shoe Dryer Machine. The next figure is the result of the study findings obtained from the questionnaire questions given to the respondents i.e. to classmates and the general public.

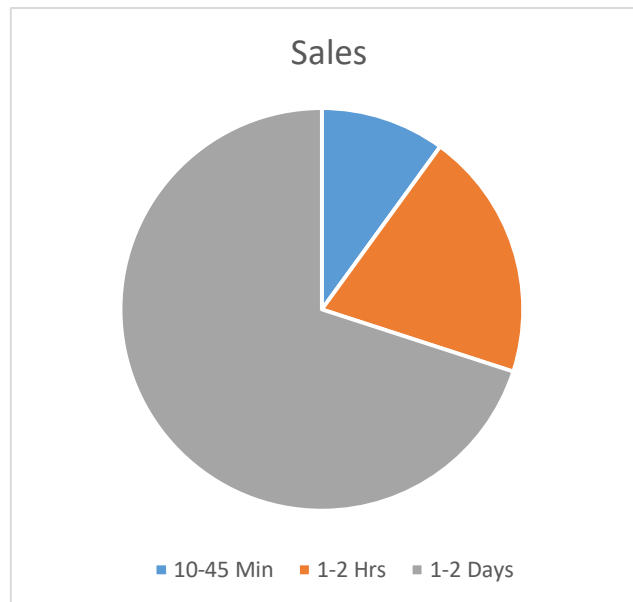
a) General Views on the Study



4.3.2.1 i : Types of shoes often used

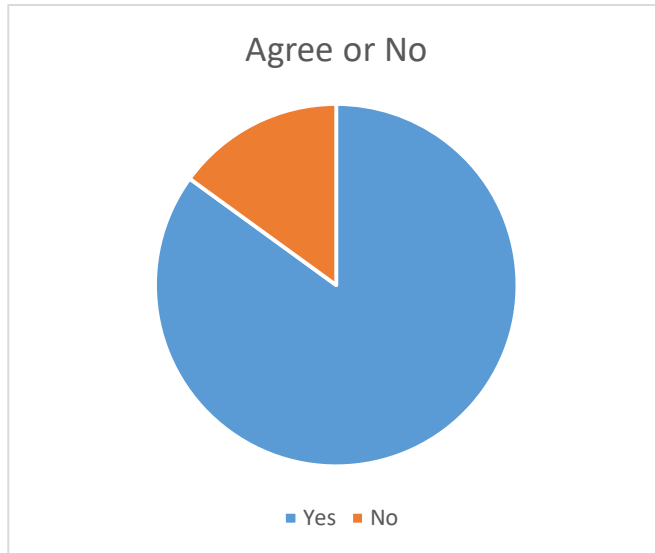
4.3.2.1.i This pie chart shows that the total number of respondents choosing sport shoes is higher than school shoes, leather shoes, and other shoes.

b) Dual Function Platform Perspective Response Against (DFP)



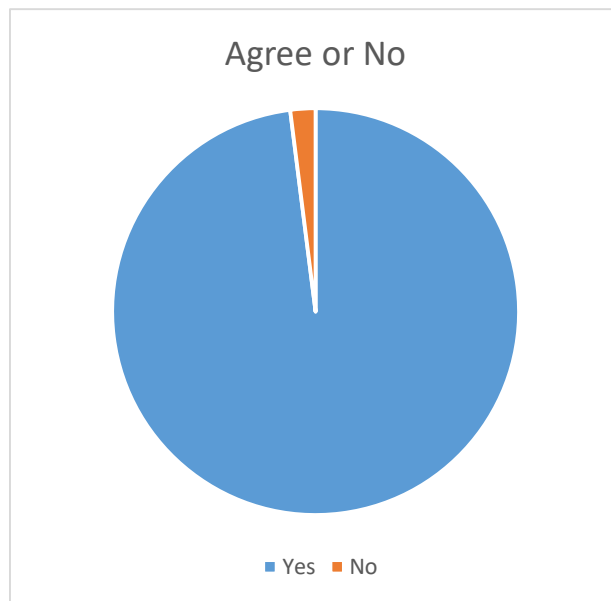
4.3.2.1 iii : The time taken to dry the shoes manually

Refer to this pie chart 10% is a percentage for a time of 10-45 Min, 20% is a percentage for a time of 1-2 Hrs and 70% is a percentage for a time of 1-2 Days.



4.3.2.1 iv : Who agreed the shoe dryer manually gave off an odor

Based on the pie chart, respondents felt strongly agree that manual shoe dryer would emit an unpleasant odor. Only 15% disagreed.



4.3.2.1 v : Who agreed Shoe Dryer Machine helps facilitate daily work

This pie chart shows, our respondents are interested in using our product.

4.3.2.2 Data Observation

I. First Observation (Before)

Date: 15 December 2021

Time: 10:00 a.m



Figure 4.3.2.2 i : Type of shoes that are dried using sunlight

Type of shoes	Time for dry (MIN)
Sport shoes	1440 MIN
School shoes	1440 MIN
Leather shoes	720 MIN
Other shoes	720 MIN

Table 4.3.2.2 a : Observation of December Data (Before)

There are all types of shoes that are used to be dried in the sun which is manually resulting in the time for drying the shoes is too long. Table 4.3.2.2 a shows all types of shoes for drying testing without using a shoe dryer machine.

II. Second Observation (After)

Date: 20 December 2021

Time: 21:00 p.m



Figure 4.3.2.2 ii : Type of shoes that are dried using shoe dryer machine

Type of shoes	Time for dry (MIN)
Sport shoes	45 MIN
School shoes	45 MIN
Leather shoes	30 MIN
Other shoes	30 MIN

Table 4.3.2.2 b : December Data Observation (After)

Table 4.3.2.2 b shows the observation data after using the shoe dryer that we have built to dry completely in the short-term.

4.3.2.3 Histogram of Data Observation Results

The data will be shown in the form of a histogram when all of the data has been viewed and evaluated.

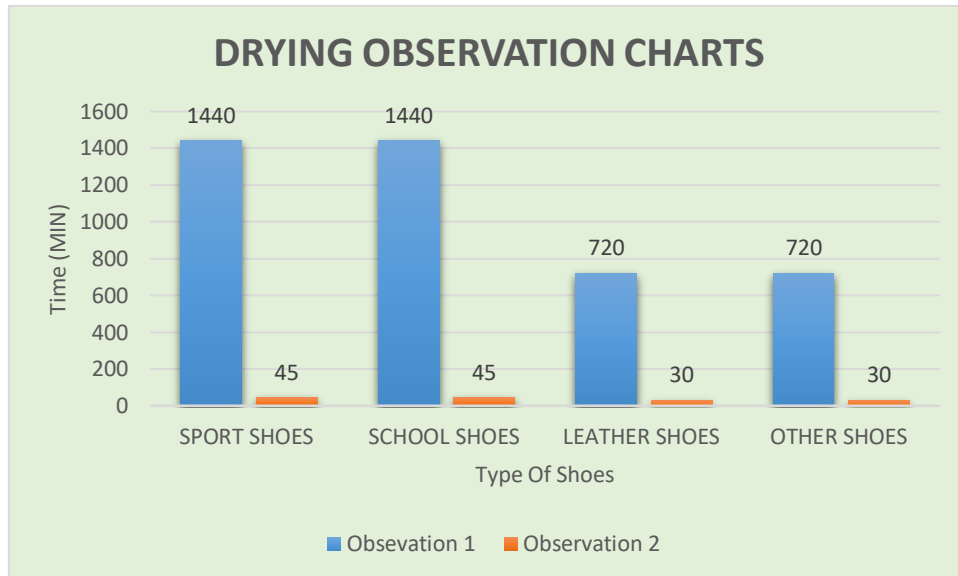


Figure 4.3.2.3 : Observation Histogram Data

Based on figure 4.3.2.3 the time taken to dry shoes using a shoe dryer is very fast, does not waste time waiting to dry and is faster than using manual options such as sunlight. Other shoes are like rubber shoes and casual shoes.

CHAPTER 5

DISCUSSION AND CONCLUSION

5.1 Introduction

Chapter 5 is the last chapter in this study or analysis and in general this chapter will discuss and explain in more depth about the conclusions that have been analyzed in the whole chapter from chapter 1 to chapter 5. In this chapter also, the relevant matters are regarding the objectives of the study as well as recommendations for the study conducted.

5.2 Discussion

(SITI NURHAFIZAH BINTI JAMALUDDIN)

In addition, this Shoe Dryer Machine have its own unique criteria and design. Furthermore, this project has proven to be able to overcome the problems facing society today. however, the project will need to have some modifications in the form of wiring and use of materials in the future. The efficiency and the functionality of this project are the main aspect that need to be take action.

(NUR MIMI IZZATI BINTI NORGIHAN)

Moreover, the level of effectiveness of this shoe dryer machine is very satisfactory to the users in every aspect. In fact, this shoe dryer is not easily brittle and is very sturdy because the materials used are of very high quality and the installation is solid for long used.

(SYAFIQAH BINTI MOHD SANIF)

Our shoe dryer has been tested of all kinds of shoes of any size, such as sport shoes, leather shoes, school shoes, other shoes. The testing was done according to the type of shoes and different shoe sizes, from the smallest size to the largest size, UK. Each member of the group is involved in testing this shoes dryer machine product. Next, we have also done this study and got very satisfactory results

5.3 Conclusion

(SITI NURHAFIZAH BINTI JAMALUDIN)

In summary, there was several aspect need to point in inventing a new creation or project. This is important because it can help in the sale of products that can solve consumer problems. According to the problem statement, there was several objectives states for this project. The time taken to dry shoes are shorter than the manual way and other project that have in market. We had tested our project and successfully reach 45 minutes estimate for drying fabric type of shoes. The shoe was completely dry inside and outside without giving damage to the shoe quality. Besides that, our project can be used in whatever weather which facilitate the consumers in their daily tasks. Furthermore, our project were created with a fragrance insert near to the inlet air flow so the shoes will produce fragrant smell. Eventually, our project named “Shoe Dryer Machine” had achieved all the objectives in order solved the problem faced by the society.

(NUR MIMI IZZATI BINTI NORGIHAN)

Although there were many shortcomings and weakness identified but the objectives for this project were successfully achieved. Based on the result of the analysis in order to create and complete this project, it was found that is designed project can benefit the community and the country. Where it can help overcome the problem encountered to dry the shoes perfectly. Next, with the creation of this project, it can at least help the people to facilitate the process of drying shoes without changing the shape of the shoes or damaging them. The result of this project was created, hoping to be fully utilized, accepted and used as well as in line with the development of technology available today. Finally, hope that our project the ‘SHOE DRYER MACHINE’ can meet the tastes and desires of all users.

(SYAFIQAH BINTI MOHD SANIF)

The main objective of this study was the time taken to dry a pair of shoes completely and produce a fragrant smell in a short time of less than 1 hour. Collection of data and information on shoes dryer machine is through forms that have been distributed through online such as WhatsApp, Telegram and Email. Through the distribution we have got a total of 62 respondents. The data obtained we have taken as a reference and have included in our final report. The data collection was made to

prove how many people need this shoes dryer machine to facilitate the work of drying shoes.

5.4 Recommendation

Like the germination of the mind, recommend strategies for the purpose of improving and strengthening the overall project. There have been some improvements and listing of new ideas that we have come up with based on the research we have done. All the improvements of the existing study will try to be improved and will try to be utilized from time to time to produce a shoe dryer that has its own position and is able to solve the problem of each customer to dry shoes.

Here are some things to suggest further enhance the study to be done on shoe dryers to find out the level of effectiveness:-

(SITI NURHAFIZAH BINTI JAMALUDDIN)

For improvement shoe dryer machine we will use good quality materials in order to withstand damage and can be used for a long time. Most existing shoe dryer used poor quality material for drying shoes. Pointing at the sustainability terms, I suggest to use the reuse materials and equipment. For example, the plywood can be take from the reuse plywood at factory or used plywood from housing area. Besides, the PVC pipe also can be take from the used PVC pipe or rejected PVC pipe at the factory or housing area.

(NUR MIMI IZZATI BINTI NORGIHAN)

Next, in terms of the use of this shoe dryer machine is a very simple and fast to facilitate the drying process at a time. Besides, safety is something that should not be taken lightly and should be taken care of so as not to harm the users. With this, we will be guranteed when using it. For the attention of users, the circuits we use for this shoe dryer are safe in a wooden base and we guarantee there will be no short circuits or cicuit breakdowns that will occur in the future.

(SYAFIQAH BINTI MOHD SANIF)

Suggest taking the necessary materials such as PVC pipes and plywood in the factory as it can reduce the material cost.

5.5 Summary

The summary can be said that there are various advantages and disadvantages of this technology. Its impact on daily life is practically immeasurable. This technology has enabled advances in this field, so perhaps it is used in different ways in everyday life. However, it is generally still used even though it may have a negative impact on humans and society. Technology is always changing, there is always old technology that can be replaced with newer and more efficient technology. As such, this shoe dryer is the best shoe dryer as there are many advantages available on this machine. This shoe dryer can also ensure the safety and comfort of users to use it. With the efficiency of this shoe dryer it can also last a long time. Moreover, the project will not pollute the environment and will not affect any green earth.

5

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5

ATTACHMENT

ATTACHMENT A

Questionnaire Form

ATTACHMENT B

Gantt Chart (Project 1)

ATTACHMENT C

Gantt Chart (Project 2)

ATTACHMENT A

MESIN PENGERING KASUT

Questions Responses 62

MESIN PENGERING KASUT

Kami adalah Siti Nurhafizah Binti Jamaluddin, Nur Mimi Izzati Binti Norgihan dan Syafiqah Binti Mohd Sanif, adalah pelajar Semester 4 Diploma Kejuruteraan Mekanikal, dari Politeknik Shah Alam.

Tujuan kami menjalankan penyelidikan ini adalah untuk mendapatkan maklum balas mengenai produk yang bakal kami hasilkan iaitu 'Mesin Pengering Kasut' yang dapat membantu memudahkan pengguna ketika kesuntukan masa untuk mengeringkan kasut yang basah. Kami akan berterima kasih sekiranya anda dapat melengkapkan borang soal selidik ini.

*Maklumat yang diterima dari borang ini adalah rahsia dan akan digunakan untuk tujuan akademik sahaja. Terima Kasih atas kerjasama yang baik.

Nama

Short-answer text

Jantina

Lelaki

Perempuan

Umur

13-22 Tahun

23-32 Tahun

33-42 Tahun

43-52 Tahun

Bangsa

Melayu

Cina

India

Apakah jenis kasut yang sering anda gunakan?

Kasut Sukan

Kasut Sekolah

Kasut Kulit

Other...

Adakah anda seorang yang sibuk dalam sehari-hari?

Ya

Tidak

Adakah pengering kasut ini akan membantu dalam memudahkan kerja harian anda?

Ya

Tidak

Adakah anda bersetuju bahawa pengering kasut secara manual mengeluarkan bau yang kurang menyenangkan?

Ya

Tidak

Bagi golongan manusia yang mengambil masa agak lama untuk mengeringkan kasut, kami mencadangkan untuk membina 'Mesin Pengering Kasut' untuk meringankan beban manusia. Tak dilupakan juga kami menambahkan aroma wangian yang akan kekal pada kasut. Adakah pihak Tuan/Puan berminat dengan produk kami?

Ya

Tidak

Sekiranya Tuan/Puan mempunyai idea bagi penambahbaikan, boleh Tuan/Puan mencadangkan penambahbaikan tersebut?

Long-answer text



ATTACHMENT B

GANTT CHART (PROJECT 1)

Planning/ Activities	MAC				APRIL				MAY				JUN	
	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14
Project1 Briefing	Orange													
Division Of Groups and Supervisors	Orange													
Preparation Logbook and Gantt	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Discussion On Idea of Project	Orange	Orange	Orange											
Project Flow Chart		Orange	Orange											
Project Design			Orange	Orange										
Early Submission of The Project for Evaluation				Orange										
Writing A Proposal (Introduction)				Orange	Orange	Orange	Orange							
Writing A Proposal (Literature Review)					Orange	Orange	Orange	Orange						
Writing A Proposal (Methodology)					Orange	Orange	Orange	Orange						
Planning Project Materials Survey				Orange	Orange	Orange	Orange	Orange						
Modelling The Product							Orange	Orange	Orange					
Make A Presentation Slide									Orange	Orange	Orange			
Make An Improvements											Orange	Orange		
Proposal Presentation Correcting Errors											Orange	Orange	Orange	
Proposal Submission														Orange

ATTACHMENT B

GANTT CHART (PROJECT 2)

Planning/ Activities	OCTOBER				NOVEMBER				DECEMBER				JANUARY	
	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14
Course Registration	Orange													
Write A Final Report			Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Update Logbook and Gantt	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
Registration My IPO		Orange												
Planning Project Material Survey			Orange											
Buy item			Orange											
Parcel Arrived				Orange										
Product Testing					Orange	Orange	Orange							
Assembling Project Materials and Components						Orange	Orange	Orange						
Make The Finishing of The Project									Orange	Orange				
Data Analysis					Orange	Orange								
Project Progress Presentation										Orange				
Presentation Preparation											Orange			
Abstract review by supervisor											Orange			
Review Of the Technical Paper											Orange			
Update The Final report												Orange	Orange	

Abstract review by an interpreter															
PITEX JKM Video, Technical Paper, Poster, Abstract															
Logbook Submission															
Final Report Submission															
RICE PSA															