

BUTTERFLY INSPIRED FOLDABLE TABLE

NURUL MANISA BINTI MUHAMAD SAUPI

**Final Year Project Report Submitted in
Partial Fulfilment of the Requirements for the
Degree of Bachelor of Science (Hons.) Furniture Technology
in the Faculty of Applied Sciences
Universiti Teknologi MARA**

JULY 2019

TABLE OF CONTENTS

| | Page |
|--|-------------|
| ACKNOWLEDGEMENTS | iii |
| TABLE OF CONTENTS | iv |
| LIST OF TABLES | vi |
| LIST OF FIGURES | vii |
| LIST OF ABBREVIATIONS | ix |
| | |
| CHAPTER 1 INTRODUCTION | 1 |
| 1.1 Background of the study | 1 |
| 1.2 Problem statement | 4 |
| 1.3 Objectives of study | 4 |
| 1.4 Justification of the study | 4 |
| | |
| CHAPTER 2 LITERATURE REVIEW | 5 |
| 2.1 Raw Materials | 5 |
| 2.1.1 Chengal Wood | 5 |
| 2.2 Nature Inspired Design | 7 |
| 2.2.1 Biomimicry | 7 |
| 2.3 Foldable Table | 10 |
| 2.3.1 The History of Foldable Table | 10 |
| 2.3.2 The Design of Foldable Table | 10 |
| 2.4 Furniture Industry | 11 |
| 2.5 Furniture Market in Malaysia | 12 |
| 2.6 Finishing | 13 |
| | |
| CHAPTER 3 MATERIALS AND METHODS | 15 |
| 3.1 Material Selection | 15 |
| 3.2 Methods | 16 |
| 3.2.1 Case Study | 17 |
| 3.2.2 Problem Identification | 17 |
| 3.2.3 Research Analysis | 17 |
| 3.2.4 Product Design | 18 |
| 3.2.5 Design Confirmation | 21 |
| 3.2.6 Production Start | 21 |
| 3.3 Manufacturing Process | 22 |
| 3.3.1 Selecting Material Process | 23 |

| | | |
|---|---|-----------|
| 3.3.2 | Cutting Process | 24 |
| 3.3.3 | Assembling Process | 25 |
| 3.3.4 | Finishing | 29 |
| 3.3.5 | Survey | 30 |
| CHAPTER 4 RESULTS AND DISCUSSION | | 32 |
| 4.1 | Results | 32 |
| 4.1.1 | Statistical Analysis | 33 |
| 4.2 | Discussion | 35 |
| 4.2.1 | Chengal as a well known species for furniture | 35 |
| 4.2.2 | Suitability of Chengal to produce the Butterfly Inspired Foldable Table | 36 |
| 4.2.3 | Suitability of Chengal to be used indoor and outdoor | 37 |
| 4.2.4 | Suitability of butterfly shape for this table | 38 |
| 4.2.5 | Suitability of hinges used | 39 |
| 4.2.6 | High aesthetic and unique design of the table | 40 |
| 4.2.7 | The usage of clear finish on the table | 41 |
| 4.2.8 | The product price | 42 |
| 4.2.9 | The practicality of the table | 43 |
| 4.2.10 | Commercialization of the table in the market | 44 |
| CHAPTER 5 CONCLUSION AND RECOMMENDATIONS | | 45 |
| 5.1 | Conclusion | 45 |
| 5.2 | Recommendation | 47 |
| CITED REFERENCES | | 48 |
| APPENDICES | | 51 |
| Appendix 1 | | 51 |
| Appendix 2 | | 54 |
| CURRICULUM VITAE | | 62 |

LIST OF FIGURES

| Figure | Caption | Page |
|---------------|--|-------------|
| 2.1 | Fiori Divano's lotus armchair | 8 |
| 2.2 | Onion cell and Biomimicry chair | 9 |
| 3.1 | The flow chart of idea generation methods | 16 |
| 3.2 | The sketch of the foldable table | 18 |
| 3.3 | The 3D view of the table | 19 |
| 3.4 | The front view of the table | 20 |
| 3.5 | The side view of the table | 20 |
| 3.6 | The top view of the table | 20 |
| 3.7 | The flow chart of manufacturing process of the table | 22 |
| 3.8 | The selection of Chengal wood | 23 |
| 3.9 | The wood that has been cut into sizes | 24 |
| 3.10 | The clamping process | 25 |
| 3.11 | The process of drawing the design | 26 |
| 3.12 | The planning process | 26 |
| 3.13 | The cutting of butterfly shape process | 27 |
| 3.14 | The installation of fasteners | 28 |
| 3.15 | The finishing process | 29 |
| 4.1 | Percentage of strongly agreed on Chengal as well known species | 35 |
| 4.2 | Percentage of strongly agreed on suitability to produce this table | 36 |
| 4.3 | Percentage of strongly agreed on suitability of Chengal for indoor and outdoor usage | 37 |

ABSTRACT

BUTTERFLY INSPIRED FOLDABLE TABLE

Nowadays, the design of the furniture is very important in order to attract customer's interest. This is because the unique design will definitely enhance the appearance of the product. In order to enhance the design, I have made a foldable table that have butterfly shape on top of it taking inspiration from the nature. This table also differ from other table because this table is made up from a hardwood species which is Chengal The objective of this study is to design a foldable table using Chengal wood and still fulfil customer requirement. Survey will be done after the project is already finished to evaluate the customer satisfaction on the product.