

**DESIGN AND DEVELOPMENT OF AN AUTOMATED
KALAMAY PACKAGER**

THESIS

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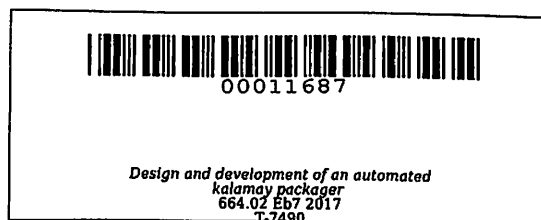
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**DESIGN AND DEVELOPMENT OF AN AUTOMATED
KALAMAY PACKAGER**

Undergraduate Thesis
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College of Engineering and Information Technology
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ABSTRACT

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The study was conducted to design and develop an automated kalamay packager. The project aimed to help *kalamaybuna* makers to package kalamay faster and of good quality. Specifically, the study aimed to design and construct the microcontroller circuit of the machine; design and fabricate automated kalamay packager; develop a software for the system; test and evaluate the machine according to its speed, quality, and quantity produced; and conduct a cost computation for the machine.

The materials that were used in the study were: microcontroller unit, ac current sensor, LCD, circuit breaker, dc motor, piezzo buzzer, photo interrupter, power supply adapter, solid state relays, stepper motors, stepper drivers, and a transformer. Automated kalamay packaging machine can be able to package kalamay faster than the manual process. Dispensing, Stamping, Packaging, and Cutting are the major processes developed for the system.

Result of the evaluation showed that based from the evaluated speed, quantity, and quality, the automated kalamay packager was more than thrice faster compared to the manual process of packaging 1 kg kalamay. But, in terms of quantity produced, it failed to produce good quality of packaged kalamay output because the stamper and the cutter provided a poor performance. Therefore, the proponents conducted another evaluation for each part of the machine to determine the reason of its failure. Results of the evaluation

showed that all the parts of the machine function well according to the program inputted. The problems appeared in the stamper and the cutter. The stamper cannot stamp the 0.5cm kalamay thickness and the proper kalamay thicknes that it can be stamped is 0.3 cm. The cutter cannot cut the plastic film with kalamay. Thus, the proponents recommended to change the roller that can flatten kalamay into 0.3cm and add heating element on the stamper to seal the plastic film and no need for a cutter anymore.

The study failed to meet some of its objectives. Thus, the manual process of packaging kalamay is still better than the automated packager. But considering the recommended design, it can provide a better performance. The automated kalamay packaging machine had a total cost of P 96, 840.00.

LIST OF TABLES

Table	Page
1	Manual packaging of 1 kg Kalamay in terms of quantity.....35
2	Manual packaging of 1kg Kalamay in terms of quality.....39
3	Evaluation of the stamper.....40
4	Evaluation of the roller (flatter).....41
5	Manual packaging of 1 kg Kalamay in terms of speed.....42
6	Automated packaging of 1 kg Kalamay in terms of speed.....42
7	Evaluation of the cutter (nickrome).....48
8	Cost estimate of the materials for the system.....54

LIST OF FIGURES

Figure		Page
1	Block diagram of automated Kalamay packaging system.....	21
2	Schematic diagram of automated Kalamay packager using the arduino nano.....	23
2	Actual design of an automated Kalamay packager.....	25
3	System flowchart of an automated Kalamay packager.....	26
4	The LCD display for refilling extruder.....	30
5	The LCD display when the machine is now running.....	30
6	Program flowchart of an automated Kalamay packager.....	32

LIST OF APPENDIX TABLES

Appendix Table		Page
1	Manual packaging of 1 kg Kalamay in terms of quantity.....	64
2	Manual packaging of 1kg Kalamay in terms of quality.....	64
3	Evaluation of the stamper.....	65
4	Evaluation of the roller (flatter).....	65
5	Manual packaging of 1 kg Kalamay in terms of speed.....	66
6	Automated packaging of 1 kg Kalamay in terms of speed.....	66
7	Evaluation of the cutter (nickrome).....	67
8	Cost estimate of the materials for the system.....	68

LIST OF APPENDIX FIGURES

Appendix Figure	Page
1	Block diagram of automated Kalamay packaging system.....70
2	Schematic diagram of automated Kalamay packager using the arduino nano.....71
3	Actual design of an automated Kalamay packager.....72
4	System flowchart of an automated Kalamay packager.....73
5	The LCD display for refilling extruder.....74
6	The LCD display when the machine is now running.....74
7	Program flowchart of an automated Kalamay packager.....75
8	Sketch-up design side view.....76
9	First trial for 0.5cm Kalamay.....76
10	Second trial for 0.5cm Kalamay.....77
11	Third trial for 0.5cm Kalamay.....77
12	First trial for 0.4cm Kalamay.....78
13	Second trial for 0.4cm Kalamay.....78
14	Third trial for 0.4cm Kalamay.....79
15	First trial for 0.3cm Kalamay.....79
16	Second trial for 0.3cm Kalamay.....80
17	Third trial for 0.3cm Kalamay.....80
18	First trial of the roller.....81
19	Second trial of the roller.....81

20	Third trial of the roller.....	82
21	Evaluation of the stamper (0.5 cm Kalamay thickness).....	82
22	Evaluation of the stamper (0.4 cm Kalamay thickness).....	83
23	Evaluation of the stamper (0.3 cm Kalamay thickness).....	83

DESIGN AND DEVELOPMENT OF AN AUTOMATED KALAMAY PACKAGER

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INTRODUCTION

In the food processing task, packaging provides a very significant role in *Kakanin* food manufacturing. The main objective of the study is to impart knowledge and skills related to designing packaging in *Kalamay* and developing the machines skills to produce good quality of *Kalamay* in a minimized and accurate period of time. In the production of processed foods, one of the important aspects is to assure quality.

Packaging may also be defined as: *a means of safely and cost effectively delivering products to the consumer in accordance with the marketing strategy of the organization.* (www.foodrecap.net). A packaging strategy is a plan that addresses all aspects and all activities involved in delivering the packaged product to the consumer. Packaging strategy should be allied to clearly defined marketing and manufacturing strategies that are consistent with the corporate strategy or mission of the business. The food segment occupies the largest share in the packaging industry, accounting for around 85 percent.