DESIGN AND DEVELOPMENT OF AN AUTOMATED KALAMAY PACKAGER

THESIS

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DESIGN AND DEVELOPMENT OF AN AUTOMATED KALAMAY PACKAGER

Undergraduate Thesis
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ABSTRACT

EBOÑA, CHARLENE S.and REAL, JOHN MICHAEL R., Design and Development of an Automated Kalamay Packager. Undergraduate Thesis.Bachelor of Science in Computer Engineering.Cavite State University, Indang, Cavite.July2017. Adviser: Prof.Andy A. Dizon.

The study was conducted to design and develop anautomated kalamay packager. The project aimed to help *kalamaybuna* makers to package kalamayfaster and of good quality. Specifically, the studyaimed todesign and construct the microcontroller circuit of the machine; design and fabricateautomated kalamay packager;develop a software for the system;test and evaluate the machine according to its speed, quality, and quantity produced; andconduct 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 machinecan be able topackage 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 1kg kalamay. But, in terms of quantity produced, it failed to producegood 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 sealthe plastic filmand no needfor 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. Butconsidering the recommended design, it can provide a better performance. The automated kalamay packaging machine had a total cost of P 96, 840.00.

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An undergraduate thesis outline submitted to the faculty of the Department of Computer and Electronics Engineering, College of Engineering and Information Technology, Cavite State University, Indang, Cavite in partial fulfilment of the requirements for the degree of Bachelor of Science in Computer Engineering with Contribution No.CEIT 2016-17-Sum-005. Prepared under the supervision of Mr.Andy Dizon.

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.