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EZ-FOLD: AN INNOVATIVE LAUNDRY COMPANION

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ABSTRACT

The increase presence of all-day laundry outlets has help people with busy working schedules to do their laundry at any given time throughout the day. Besides washing, these laundry outlets also provide dryers allowing people to dry their washed clothes. However, these laundry outlets still lack a crucial component that makes doing laundry a complete chore which is clothe folding. Therefore, the main objective of this project is to produce a prototype for a cloth folding machine which can be used to complement the laundry processes of washing and drying at the laundry outlets. The methods used to achieve the objective includes designing the product, fabricating the product, and programming the relevant software for the folding operation. Findings showed that not only can the product help to fold clothes automatically, it also helps reduce the amount of time normally taken when compared to manual folding and using conventional folding board. Less human energy is used during folding clothes because to operate this product, it only requires the push of a button to produce a complete fold. The increase in efficiency and ease of operation during the folding process while doing laundry makes EZ-Fold a product with vast potential for commercialization.

Keywords: laundry, clothing, folding, efficiency

1. INTRODUCTION

All-day self-service laundry outlet have provided those with busy working schedules and for lower income group [1] who are unable to do their laundry at home to perform them at their own convenience. On the business side of things, investing in self-service laundry outlets can be an interesting business proposition during tough financial times [2] and during rainy seasons [3]. Established self-service laundry operators [4,5] are offering investment and franchise opportunity to people with a return of investment (ROI) of around 20-35%. Most of these self-service laundry outlets are equipped with multiple washing machines and dryers to meet their customers laundry needs. However, to make the laundry process complete these outlets still lacks a crucial element at the end which is folding. The only viable option is to fold manual or even with conventional folding board. Therefore, the main objective for this project is to design, fabricate, and produce a prototype for a clothing folding machine which can be used to complement the laundry experience. Current automated clothing machine are either still in their development stage or are sold expensively [6].

2. METHODOLOGY

The entire project took approximately fourteen (14) weeks to complete. Figure 1 shows the process flow chart for was done in order to complete the project.

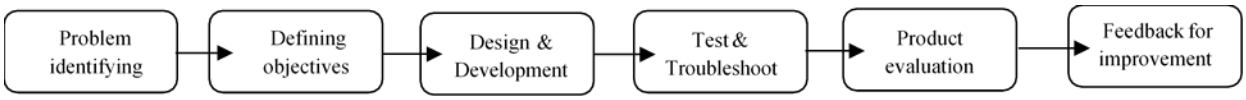
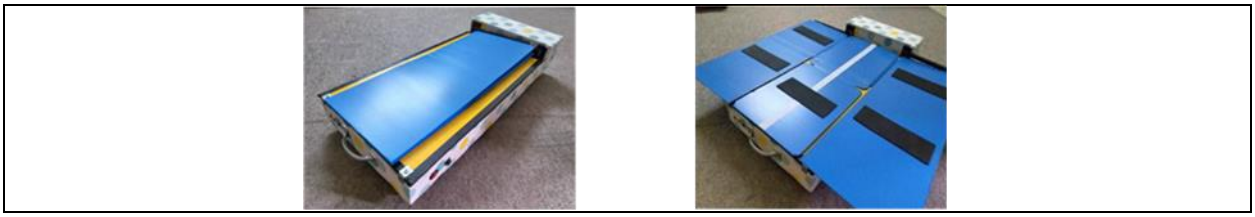


Figure 1. Process Flow Chart

3. RESULTS AND FINDINGS

The design for the final product is shown in Figure 2. Among the key features for this product are its servo motors, LED indicators, Arduino components, and due its simple design it requires minimum maintenance.



(a) (b)

Figure 2. (a) Closed Position, and (b) Open Position

Table 1. below shows the comparison between time taken to fold a single standard size adult T-shirt.

Table 1. Time Taken to Fold A Standard Size Adult T-Shirt

Method	Manual folding	Conventional folding board	EZ-Fold
Time (s)	20.47s	11.13s	6.87s

The result shows that folding a standard size adult T-shirt is only 6.87 seconds, and when compared to manual and conventional folding board it is 66.4%, and 39.8% faster, respectively. The reduce in time will result in more clothes being folded within a specified amount of time. Also, since operating the machine requires just a press of a button, less human energy will be spent during the folding process. In terms of fold tidiness, EZ-fold produces a tidier fold when compared to conventional folding board

4. CONCLUSION AND FUTURE RECOMMEDATION

In conclusion, EZ-Fold is an innovative product which can be used as a companion at self-service laundry outlets to complete the laundry processes. It can also help reduce time and energy spent when folding clothes. It has the potential to be commercialized not only at self-service laundry outlets but also at hostels, and homes. Future recommendation for this product includes using more durable and lightweight material and to make it a modular product to allow folding of different size clothing.

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Kelulusan daripada pihak YBhg. Profesor dalam perkara ini amat dihargai.

Sekian, terima kasih.

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