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NEW PRODUCT DEVELOPMENT (EZ SMART SHOES)

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EXECUTIVE SUMMARY

EZ smart shoes is a new product from a local company, FeetRepeat. It is a shoe that using renewable material, cellulosic nanofiber (CNF) as shoes sole. In addition, with some improvement, we added smart features to the shoes, a chip sensor on the shoes sole that can detect and count almost everything including running and walking steps, calories burnt, travelled distance and many more. The chip sensor that is installed into the sole of the shoes will calibrate according to our body pressure and weight every time we step. It will be linked to the app on the smartphone by the Bluetooth where we can see our daily track records. Furthermore, EZ smart shoes has also been created specifically to ease the disabilities person to wear shoes because it is hands-free shoes where the wearer just requires slipping their foot in and push down to fit in the shoes.

The first stage of developing a new product is about detailing the idea and doing research on how the product should be made. This is an essential step in gaining information on the product features. We will develop the ideas and gather information in the research and development, product designing, concept testing, market testing and building a prototype process. The explanation of our product will be further explained in the research and development process.

Besides, the target market is segmented to the athletes or to who are passionate about sports and this segment is considered as the strongest consumer market. These people are the common users that will always use the product. From that target market, we generated the ideas of having a device that can multifunction and ease their journey whenever they encounter problems. In this part, we sketched the design of the product by combining ideas from the existing products.

Next, we also explained the product's concept testing and how to use it. We distributed the questionnaires through Google Form to gain some information from the respondents whether they were the target market or not. Hence, we will be able to make some improvements on the product to suit the user's likings.

Lastly, we will give the user the view of our product in terms of the design and prototype to be commercialized in the market. We do the prototype based on the information gained from the questionnaires. The suggestions and feedback from the respondents were considered in order to develop the best product. Later, market testing will be done which the users will test the product by themselves before the process of commercialization on the real product. In this part, new feedback and comments received from the users will be collected to make it easier for EZ smart shoes to make the latest product improvement.

2.3.2.1 Product specification

| Specification | Information |
|------------------------|---|
| Product name | EZ Smart Shoes |
| Material of shoe soles | Renewable material: cellulose nanofiber |
| Features | Equipped with smart chip sensor. Linked to smartphone via apps. Hands-free shoes. Sensor battery is replaceable. |

Table 1. Specification of product

Performance

Performance is the main characteristic that represent as unique criteria of a product. The smart sensor shoes performance is determined by the smart chip sensor that equipped on the shoe soles. The smart chip of this shoes is comprising with several sensor with different functions such as accelerometer, gyroscope, magnetometer, pressure sensor and ambient environmental sensor. The accelerometer, gyroscope, magnetometer sensor is an inertial-magnetic measurement unit that is used to evaluate the gait analysis. The gait analysis will measure the users' steps, posture, calories burned, distance and detect the speed. The pressure sensor is sensor to detect and give information on the distribution of body weight mid-gait. Ambient environmental sensor is comprising the atmospheric pressure, light, and sound sensor in which provide acquiring data from altitude-dependent activities and environment.



Figure 3: Overview of chip sensor on the shoe sole