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Design Project Problem Validation

(1)How do you detect occupancy accurately?

We detect intake and exit counts by using two IR sensors. According to the order of intersection in IR sensors, we can identify if it is an entrance or exit using a time delay. We need to classify those cases., then the consuming unit will wait some time, and if anyone will not attend the room, then turn off the power switch.

(2) How and where do you mount it?

We are planning to install two IR sensors inside the room near the door using screws, and we hope to cover the sensors with an enclosure for protection. The main controller unit is planned to be mounted on the inner wall of the building using screws and dry wall anchors. It will also be included in the enclosure to ensure safety and for the finishing of the product.

(3) Will this be battery powered or AC power?

We use AC power there.

(4) How do you do wiring for existing rooms or spaces?

We are wiring separate wire lines to existing switches.

Problem Identification

We started doing a survey on 18th March regarding the problems associated with energy wasting in unoccupied rooms. The analytics of the survey is as follows.

Out of the over 80 participants who took part in our survey about 85% of the sample are forget to power off electrical devices when they leaving a room.[fig.(1)]. These people are willing to have that kind of power-saving unit in their households, and they see that that is very important. [fig.(2)].
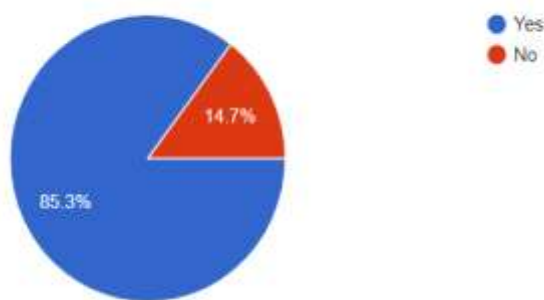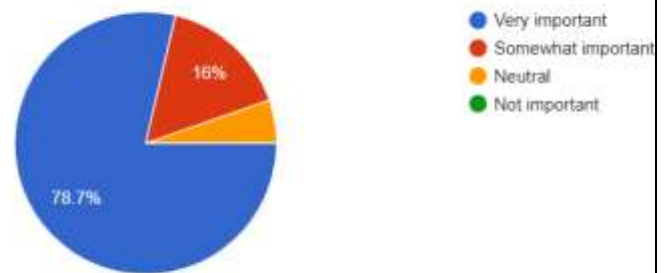
fig.(1) forget to turn
off devices

fig.(2)Importance

The fig(3) shows how they previously experienced that kind of product. The fig (4) below shows that what kind of price range people willing to afford an unit like that.
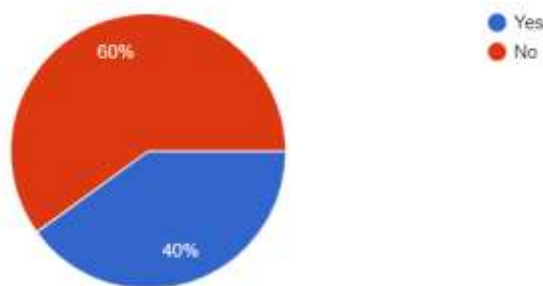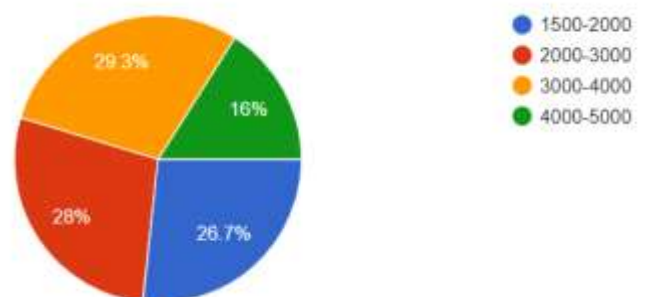
fig.(3) previous experience

fig.(4) price range

The responses to the sheet of the form we used is given below.
https://docs.google.com/spreadsheets/d/1k1RGEsTEs5iT598s1Q40joygOkgmCzgF8XPflNR25YQ/edit?usp=sharing