**Smart reloading Machine**

**User Survey**

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**EN3022 - Electronic Design Realization**

**Department of Electronic and Telecommunication Engineering**

Group No-4333290

Group Members

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**Content**

**Introduction-Smart Reloading machine**

The telecommunication industry has developed rapidly throughout the world. And even for a developing country like Sri Lanka It’s hard to find a person not having access to a communication device. So as a group we thought that our project should focus more on making that field more accessible and easy for the society to use.

The reloading of mobile phones is an essential part of keeping the communication between people going and making it fast and easy will be convenient to all. The reloading machine is a product that aims to make the reloading facility easy and quick and independent of the shop owner. As we have found out in the user survey although a good product it still has lot of room for improvement in some areas. So this project aims at making the reloading machine easy, secure and more importantly accessible to a wider clientele including differently able people. With the basic idea of our product in mind we carried out a user survey to find out the feasibility and how to actually implement our product.

**Product Goals**

Before carrying out the user survey we developed the basic product goals, functionality, and the expected value of the product.

The product aims to give a solution to the problems associated with reloading by making the machine more user friendly, easy to operate fast and secure.

In achieving these objectives the functionality of the product include

* Audible signals
* Bill issuing
* Brail system keypad
* RFID based identification
* GUI
* Cost effectiveness

The value of the product is aimed to be around Rs.35000/=. With aim being making this product accessible to a bigger crowd making the product cost effective and able to be bought by many shop owners is essential.

The initial volume of production is planned to be 10 machines and with the successful implementation of those we plan to further increase our volume.

**User Need Identification**

**Objective-**

The user survey aims to identify the needs and ideas of the users and buyers of this product and also their idea about the improvements that we plan to make to our product and the practicality of the product. Getting the ideas of the intended users will enable us to come up with a product that is more suited to their needs and how much of a market we have for our product and to come up with a revised product goal concerning price, volume and even functionality

**Methodology-**

As our group members are from different regions of the country we went to our residential areas namely Kandy, Kurunegala, Kadawatha, Kegalle and Kaluthara and carried out the user survey individually. We thought of talking to both the shop owners who will actually buy our product and the users who will use this machine to obtain reloads. By this we will make our product equally beneficial to both the parties. We talked to them about our product and also gave them a feedback-form which will enable us to more methodically analyze the results of our user survey.

**Analysis-**

The results were analyzed on various market segmentations to find out how different segments of the market would want our product and how they responded to our preliminary designs. The market was segmented on the following basis and analyses.

* Geographical Location
* Monthly Income
* Age
* Gender

Nikan thibba ewa demme apita hoda widihakata market segmentation eka karamu

Used Packages Against Living Area

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Kaluthara | Kandy | Kurunagala | Gampaha | Kegalle |
| Pre paid | 5 | 8 | 6 | 6 | 6 |
| Post paid | 3 | 2 | 4 | 5 | 3 |

Table 1

Histogram 1

The analysis shows that most of the people are using pre paid mobile communication packages. But at the same time there are a considerable number of people who are using post page packages as well. This analysis shows us that the reloading machine is a very timely product and it also highlights that the addition of bill payment facility to the product is worthwhile because there are also people who are using post page packages as well. A bill payment facility will enable them to go to the nearest shop and pay their bill instead of going to a separate place. So both pre paid and post paid payments can be done at one place from the same machine.

Analysis of Service Providers Against Living Area

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Kaluthara | Kandy | Kurunagala | Gampaha | Kegalle |
| Mobitel | 4 | 4 | 3 | 4 | 4 |
| Dialog | 2 | 4 | 3 | 3 | 2 |
| Hutch | 1 | 0 | 1 | 1 | 0 |
| Etisalat | 1 | 2 | 2 | 2 | 1 |
| Airtel | 0 | 0 | 1 | 1 | 2 |

Table 1

Histogram 1

Analysis of service providers was done to get an understanding of the variation of users among the service providers. After the research it was seen that most of the users have chosen the two major networks Mobitel and Dialog whereas the other service providers are also be9ing used although by a lesser number of users. But it highlights the need of our product to be able to provide the facility of reloading to users using different service providers.

Is It Easy For You To Pay The Bill From Reload Center?(Post Paid)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Kaluthara | Kandy | Kurunagala | Gampaha | Kegalle |
| Yes | 2 | 2 | 4 | 3 | 5 |
| No | 1 | 0 | 0 | 2 | 1 |

Table 1

Histogram 1

Most of the people agree with the fact that paying the bill is easy at the same place used for reloading since they are available nearby. There are very few people who like to pay the bill in a conventional way but the reason was that there were no shops with bill payment facility nearby to them and hence they found it easy to pay in the conventional manner.. If they had the facility of bill payment they nearby they said they would also consider paying the bill at the communication close to them. This highlighted the need of having a cost effective product so that it can be made readily available in every communication shop.

Most Frequent Way Of Paying Bills (Post Paid)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Kaluthara | Kandy | Kurunagala | Gampaha | Kegalle |
| Reload center | 2 | 1 | 3 | 2 | 0 |
| Bank | 0 | 1 | 0 | 0 | 2 |
| Super center | 0 | 0 | 1 | 3 | 1 |
| Other | 1 | 0 | 0 | 0 | 0 |

Table 1

Histogram 1

Most people are already using the reloading place as the place for their post paid bill payment. But there are security issues involved with the shop owner so if there was a facility to make sure that they are confirmed of their bill payment it would be more convenient to them. Also as mentioned earlier the availability of the bill payment facility is also a problem. So the need of the product to be cost effective and secure at the same time is highlighted in this analysis.

**Distance To The Closest Place To Get A Reload**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Kaluthara | Kandy | Kurunagala | Gampaha | Kegalle |
| 1km | 1 | 2 | 2 | 3 | 3 |
| 2km | 1 | 2 | 5 | 1 | 1 |
| 3km | 3 | 4 | 3 | 4 | 1 |
| 5km | 1 | 0 | 0 | 3 | 3 |
| More than 5km | 2 | 2 | 0 | 0 | 1 |

Table 1

The data shows that most of the people have a reloading place close to their home within 2 or 3 kilometers. Therefore if we are able to make the smart reloading machine available in these places they would have a secure and easy way of getting the reloading facility and at the same time they will be able to pay their bills without having to go to the bank or any place that is relatively far away from their residence. This again highlights the need for the product to be cost effective among other things so that most of the communication shops can afford it.

**Current Method of Obtaining a Reload To The Phone(pre paid)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Kaluthara | Kandy | Kurunagala | Gampaha | Kegalle |
| Reload Machine | 2 | 5 | 4 | 5 | 5 |
| Manual | 3 | 3 | 2 | 1 | 1 |

Table 1

Histogram 1

As seen from the analysis most of the prepaid customers are already using the reloading machine that is available in some of the shops throughout the country. But upon further inquiry we were able to understand that the available machine is not that easy to operate for someone not familiar with it. An elderly person we interviewed specifically said that he would like to see an interface with detailed instructions like in the ATM machines that we have so that anyone can carry out the reloading process without asking the shop owner. The others are not using the machine mainly because they don’t have access to one close by to their home. Therefore this proved that our product is a timely project.

**What is the way you like to reload? (Prepaid)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Kaluthara | Kandy | Kurunagala | Gampaha | Kegalle |
| Vocally | 0 | 0 | 0 | 0 | 0 |
| Writing | 0 | 0 | 0 | 0 | 0 |
| Entering to machine | 2 | 1 | 0 | 1 | 4 |
| Without number | 6 | 7 | 6 | 5 | 5 |

Table 1

Histogram 1

It is easily evident that most of the people don’t like to give away their number. People feel that their number is personal information and that giving it to someone else no matter how much they assure about the security of the information doesn’t feel safe. The people who do like that feel safe that it’s safe since that they have done it for a long time and don’t feel that it can be of any risk. So it is evident that it will be a great addition to the prodct if we can come up with some sort of a mechanism where the user doesn’t need to enter the mobile number to obatain a reload.

**Analyzing Against the Age group**

**Used Packages Against Age group**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 10 - 28(yrs) | 29 - 40(yrs) | 41 - 60(yrs) | 61 yrs and above |
| Pre paid | 13 | 14 | 4 | 0 |
| Post paid | 6 | 4 | 6 | 1 |

Table 1

Histogram 1

The analysis shows that it is mostly the people of younger ages that use pre paid packages for the need of a very user friendly interface so that anyone can get a reload from the machine easily their mobiles. The main reason as we found out in our survey as growing older they found it difficult to understand and carry out the usual reloading methods specially. Above ages of 60 it is really difficult as they are not much familiar with technology. This helped us to understand.

**Analysis of Service Providers Against Age group**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 10 - 28(yrs) | 29 - 40(yrs) | 41 - 60(yrs) | 61 yrs and above |
| Mobitel | 9 | 8 | 3 | 0 |
| Dialog | 0 | 7 | 6 | 1 |
| Hutch | 8 | 1 | 0 | 0 |
| Etisalat | 0 | 2 | 1 | 0 |
| Airtel | 2 | 0 | 0 | 0 |

Table 1

Histogram 1

This analysis shows that the preference of service providers have changed with age. The younger generations have taken on the new comers to the industry while the older people have preferred the old networks. That could be due the different offers and packages these service providers offer to the customers. However what we gain from this study is the need for our machine to cater to any service provider.

**Is It Easy For You To Pay The Bill From Reload Center? With Age group (Post Paid)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 10 - 28(yrs) | 29 - 40(yrs) | 41 - 60(yrs) | 61 yrs and above |
| Yes | 2 | 3 | 4 | 0 |
| No | 4 | 1 | 2 | 1 |

Table 1

Histogram 1

Again what we see is that the younger and middle age people have no trouble in getting reloads but the elderly people find it difficult. This proves the main reason for our new smart reloading machine. The machines and methods available now are not very user friendly and that makes someone who is not very familiar with technology, not very suitable to use such machines. We must make sure that our product can be equally operated by any person of any age group.

**Most Frequent Way of Paying Bills Against Age group (Post Paid)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 10 - 28(yrs) | 29 - 40(yrs) | 41 - 60(yrs) | 61 yrs and above |
| Reload machine | 9 | 10 | 2 | 1 |
| Manual | 4 | 4 | 2 | 0 |

Table 1

Histogram 1

Methana Graph eka weradi neda? Ow ow dan eka haduwa

**Distance To The Closest Place To Get A Reload Against Age group**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 10 - 28(yrs) | 29 - 40(yrs) | 41 - 60(yrs) | 61 yrs and above |
| 1km | 9 | 10 | 5 | 1 |
| 2km | 8 | 7 | 3 | 0 |
| 3km | 2 |  | 2 |  |
| 5km |  | 1 |  |  |
| More than 5km |  |  |  |  |

Table 1

Histogram 1

The distance vs. the age analysis show that the younger generation have reloading places close by but the seniors find it difficult to obtain such facilities. Again this can be due to the fact that senior people mostly live in rural areas and there is less facilities available. But if we make our product cost effective and reliable we can take that product to rural areas as well and then anyone will have access to quick reloading facility close to their home.

**Current Method of Obtaining a Reload To The Phone against Age group (pre paid)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 10 - 28(yrs) | 29 - 40(yrs) | 41 - 60(yrs) | 61 yrs and above |
| Reload machine | 9 | 10 | 2 | 1 |
| Manual | 4 | 4 | 2 | 0 |

Table 1

Histogram 1

This analysis tries to identify if the reloading machine is suitable for all the age groups. As we can see the younger people are very keen on using the machine but the elders are not. The main reason for this is again the lack of user friendliness of the machine. There is very little people above 60 who actually use a pre paid connection let alone use the pre paid machine due to this hectic reloading procedure. Our product can be very useful if we make it easy and simple to operate.

**What is the way you like to reload? Against Age group (Prepaid)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 10 - 28(yrs) | 29 - 40(yrs) | 41 - 60(yrs) | 61 yrs and above |
| Vocally | 0 | 0 | 1 | 1 |
| Writing | 2 | 4 | 0 | 0 |
| Entering to machine | 6 | 4 | 1 | 0 |
| Without number | 5 | 6 | 2 | 0 |

Table 1

Histogram 1

When we categorize according to the age we see that younger generations prefer to go with our method of reloading without entering the mobile phone number while the elders like to give it vocally to obtain the reload. Again this is due to the fact that they don’t know how to operate the machine and hence they find it easy to just give the number and money and obtain the reload. We can remedy this problem if we are able to come up with a product that can be easily operated by anyone.