

# Mobile Phone Usage Survey among Students and Staffs of Universities Using Data Mining Technique

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**Abstract:** Data mining refers to extracting knowledge from large amount of data. Real life data mining approaches are interesting because they often present a different set of problems for data miners. Here the Study explored the extent of various mobile phone model and service providers usage among Students and staffs of various colleges and Universities in Kanchipuram. The analysis had been carried out by using a survey dataset and using the J48 decision tree algorithm implemented in Weka. The WEKA (Waikato Environment for Knowledge Analysis) system provides a Comprehensive suite of facilities for applying data mining techniques to large data sets. Additionally, the study determined Gender differences in Mobile Phone usage and duration details, Purpose of Mobile Phone usage, problems dealing with Mobile Phone, Satisfaction of the service provider, Type of service in terms of prepaid and post paid and General opinion of the respondents about MP. The data has collected from various colleges and universities in Kanchipuram, from the huge dataset the sample of (N= 158) Including Students and Staffs chosen randomly from SCSVMV university in 2011(Nov-Mar) for this study. The Method of Data collection was a questionnaire developed by the researcher.

**Keywords:** WEKA, J48, Data Mining, Mobile phone survey, Mobile phone usage, Mobile phone use pattern, problem mobile phone use.

## 1. INTRODUCTION

The mobile phone has gained popularity among the teen in the world. Teens use their mobile phones in anytime and anyplace to maintain their social relationships as well as to have fun. The survey which was conducted to understand the usage of MP (Mobile Phone) and various service providers among students and staffs using the Data Mining Technique. We used Questionnaire as an instrument to collect the data. We received huge amount of data, from the huge dataset the sample of N=158 Including Students and Staffs chosen randomly from SCSVMV university and used for this study .The analysis had been carried out by using a survey dataset and using the Data Mining's J48 decision tree algorithm implemented in Weka.

The **WEKA** software was developed in the University of New Zealand. A number of data mining methods are implemented in the WEKA software. Some of them are based on decision trees like J48 decision tree, some are rule-based like ZeroR and decision tables, and some of them are based on probability and regression, like Naïve Bayes algorithm. The data that is used for WEKA should be made into the ARFF (Attribute Relation file format) format and the file should have the extension dot ARFF (.arff). WEKA is a collection of machine learning algorithms for solving real world data mining problems. It is written in Java; WEKA runs on almost any platform and is available on the web at [www.cs.waikato.ac.nz/ml/weka](http://www.cs.waikato.ac.nz/ml/weka).

The J48 algorithm represents the implementation of the C4.5 algorithm. This implementation produces decision tree

models. It recursively splits a data set according to tests on attribute values in order to separate the possible predictions. The algorithm uses the greedy technique to induce decision trees for classification. A decision-tree model is built by analyzing the training data and the model is used to classify the trained data. J48 generates decision trees. The node of the J48 decision trees evaluates the existence and the significance of every individual feature.

## 2. METHODOLOGY

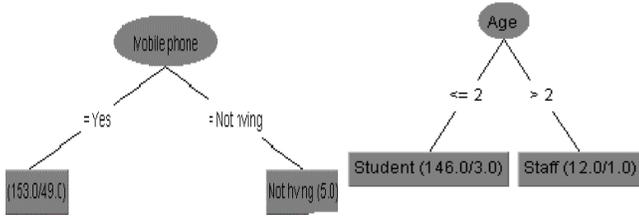
Respondents for the present study were selected using a random sampling technique. All students and staffs residing in various colleges and universities in Kanchipuram are invited to participate in the study. The Self-administered questionnaire developed and distributed to respondents and got back the reply.

From the total of huge data the sample of 158 responses from SCSVMV University are selected and used for the study. Consequently 158 students comprising 92 males and 66 females were included this study. 97% of the respondents own MP where as 104 Members are using the MP >2 Years, 22 are using the MP <=1 Year, 27 are using the MP >1-2 Years and 5 are not having the MP.

There are 22 varieties of MP's are in use, in that highly used MP brand is Nokia and 10 varieties of MP Service providers are in use in that Airtel is mostly used. Based on some attributes 134 service holders are satisfied with their provider, 19 are unsatisfied and 5 are not having the MP. In the General opinion 101 People thinks that MP may cause some side effects and rest of the 56 thinks that it doesn't affect and 153 says having a MP is Advantage and 5 said it's a Disadvantage.

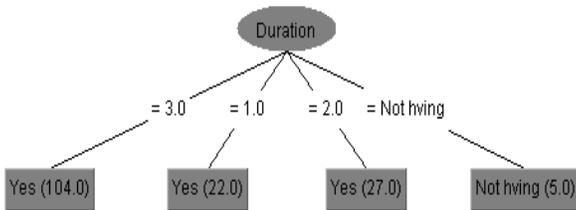
### 3. RESULTS AND DISCUSSION

#### a. Mobile phone Ownership and Age Differences



#### b. Usage duration

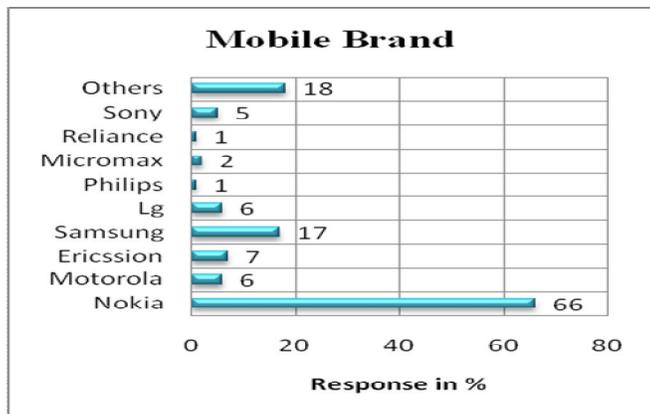
104 Respondents uses mobile phone >2 Years (3.0), 22 are using <=1 Years (1.0), and 27 are uses >1-2 Years (2.0).



#### 3.1 Mobile Phone Usage

Here, I tried to determine which mobile phone brands are popular among college students, why they left their previous MP, what application they use in their mobile phones for the most, why they chosen the particular model and much more.

#### a. Mobile Brands Usage

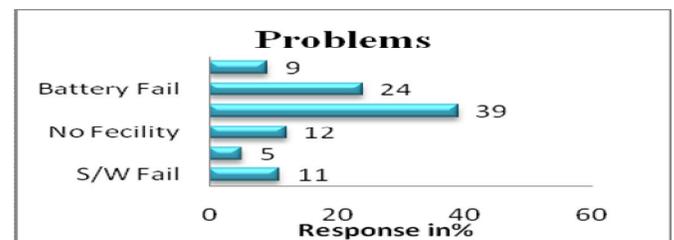


In the past few years, we've seen a lot of new mobile phone brands emerge, which have caused a major change in the current ownership rankings. The top spot however, continues to remain with Nokia, which is owned by 66% of the respondents. The second and third highest owned MP brands are Samsung 17% and Ericsson 7% respectively. In

my literature study I have found that Samsung, which was at a distant sixth position last year, has climbed all the way up to the second spot this year in market, pushing Sony Ericsson down to the third spot. Motorola and LG owned by 6%, Philips and Reliance by 1%, Micromax owned by 2%, Sony by 5% and other mobile are 18%.

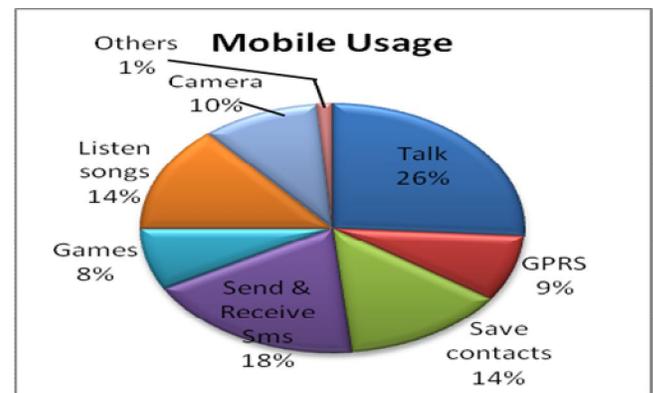
#### b. Reason for leaving their previous MP

So many models of MP's are in use with new look, functionality and lowest price. People are also interested to use different models based on their needs, and also they are leaving the MP for some reasons (S/W Failure, H/W Failure, No more facility, to buy new models, Battery Failure).



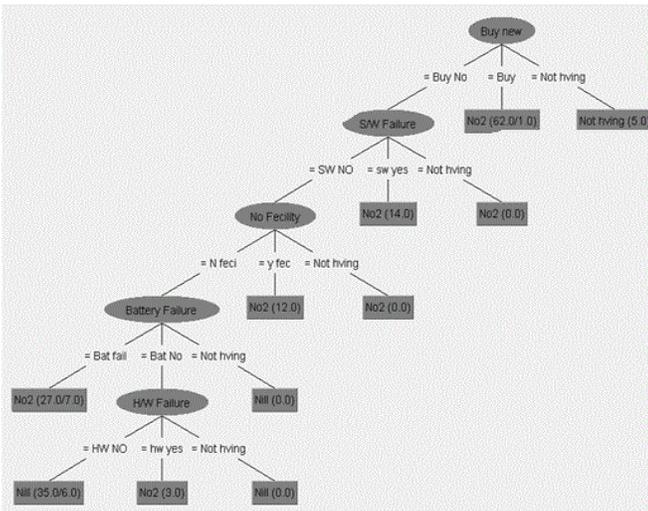
Here I found Most of the people i.e. 39% of them left their previous MP to buy new one, 24% leaving for Battery Failure and 12% of them leaving for not having more facility, 5% are leaving for hardware fail, 11% for software Fail, and 9% for other reasons like (Theft, No Dual sim, lost and not leaved till).

#### c. Mobile Phone Usage



Mobile phones have become so rich that in making phone calls. The basic application people use in their mobile phones is to talk. The study shows biggest usage of mobile phone is making phone calls to talk i.e. 26% and sms usage is 18%. This is followed by listening to songs 14%, save contacts 14%, taking pictures 10%, finally Internet and Email access from the mobile have gone up 9%, Games 8%, the rest of the usage apps can be seen in the graph 1%.

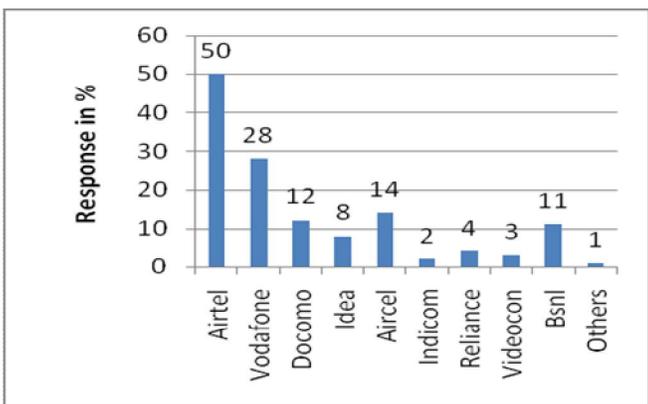
**d. Attributes to choose the MP**



Functionality and Appearance are the two key factors that people consider while purchasing a MP. There are 52% of the users look for functionality in their MP, while 35% consider Appearance and Apart from this some other factors also influences the choice of MP like price 34%, size and weight 25%, Advertisement 5% ect., others come much later.

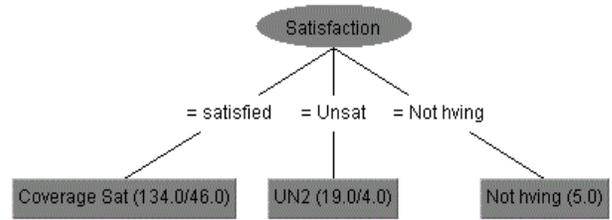
**3.2 Service Provider Usage**

Initially due to high costs, mobile subscriptions were very few and the service was mainly adopted by business executives and professionals. Now a day's lowering of costs, which encouraged price wars among the cellular operators, led to a massive boom in the mobile phone subscription levels.

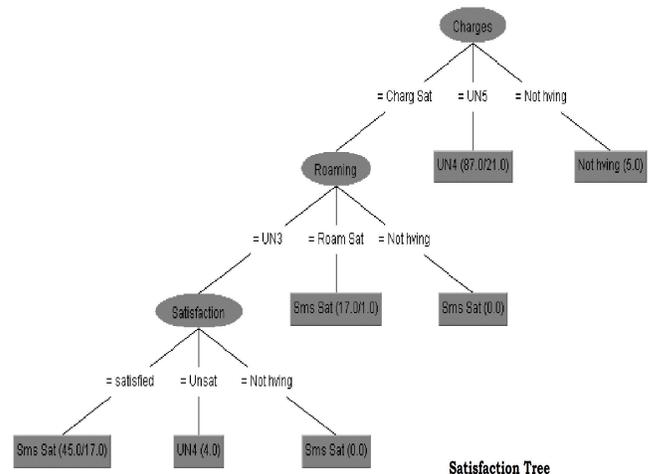


Unlike handsets and mobile apps, the number of mobile service providers is very few and can be counted on fingertips. Amongst them, Airtel seems to have the highest current ownership and others come later that are shown in the chart.

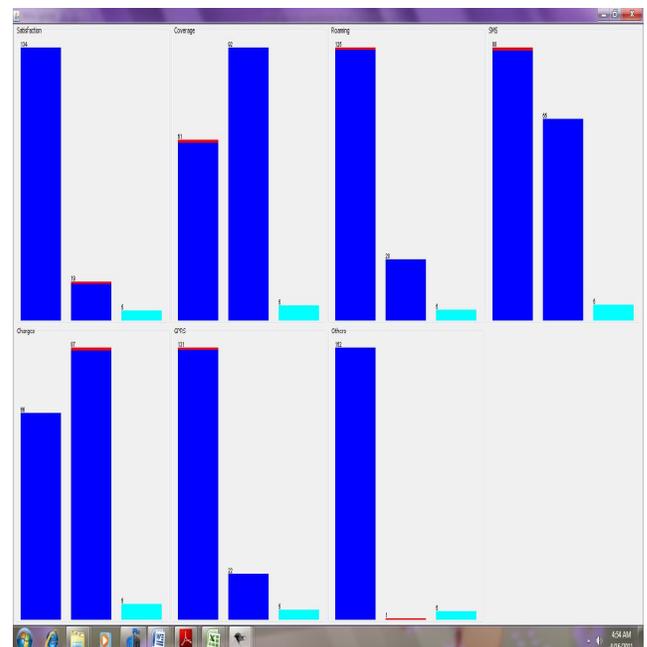
**a. Satisfaction of the service provider**



Based on some attributes (Coverage, Roaming, Sms, Call charges, Gprs) most of the respondents are satisfied with their service provider i.e. 88% and 12% of the respondents were not satisfied.



Satisfaction Tree



**b. Service**

=== Detailed Accuracy By Class ===

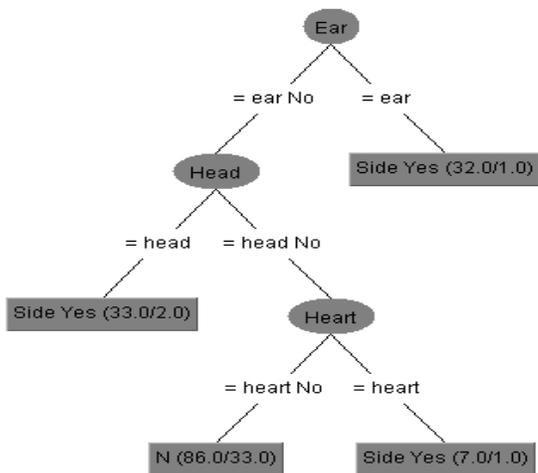
TP Rate	FP Rate	Precision	Recall	F-Measure	ROC Area	Class
1	1	0.926	1	0.962	0.5	pre
0	0	0	0	0	0.5	post
0	0	0	0	0	0.5	Nothing
Weighted Avg. 0.926 0.926 0.857 0.926 0.89 0.5						

=== Confusion Matrix ===

a	b	c	←-classified as
50	0	0	a=pre
1	0	0	b=post
3	0	0	c=Nothing

**92% of the respondents uses prepaid services, Postpaid 4%, 4% are not having the MP.**

**3.3 General opinion of having the MP by the respondents**



Out of 158 respondents 101 thinks having MP may cause problem. The common problems like heart, head related and ear problems.

**4. IMPORTANCE OF STUDY**

This study investigated Mobile phone usage among students and staffs of various colleges and the universities. They are common usage scenarios, Satisfaction of the service provider and the attitude towards mobile phone service providers among university students in SCSVMV University, I believes that this study will contribute valuable learning's about the field of mobile communication. This research may serve as useful input to telecommunication companies, researchers (information science, social communication, etc) and media futurists.

This study may help information architects in designing interfaces to meet the unique needs of the public. The advantage of this study is that, it provides a valuable data which is not present in this field. To the best of my knowledge, no study has done using this data with Data mining technique and also no previous findings on which MP and service provider is mostly used, in what basis people choosing the mobile brand. This study is easy to replicate and scale up, to retrieve similar data from other regions of the world.

**5. CONCLUSION**

Mobile phones are increasingly one of the most popular information sharing devices. They have an extensive and continuing effect on how people communicate among themselves and how people conduct their day to day lives. This study gives an insight into the Mobile phone brand and Service provider usage among students and staffs using Data Mining Technique's J48 Algorithm. The overall survey shows that 97% of the respondents own MP, in that Nokia (66%) is the first MP brand mostly used by the students and staffs, where as in the network service provider Airtel (50%) is mostly used and with the age between 18 to 25 are mostly using the MP. Further research could investigate other underlying factors that exist within the ecosystems of the students that could shape their MP behaviors can also go with prediction Technique in Data Mining.

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