



**MOBICOM**

A report by  
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## ***PROBLEM STATEMENT***

Mobicom is concerned that the market environment of rising churn rates and declining ARPU will hit them even harder as churn rate at Mobicom is relatively high. Currently Mobicom have been focussing on retaining their customers on a reactive basis when the subscriber calls in to close the account. But this alone does not seem to be enough and the management team is keen to take more initiatives on this front.

### ***CHURN MARKET SURVEY REPORT***

Mobile operators who lead in loyalty outperform their competition in network and service quality, as well as in customer care, according to the 2014 Acquisition and Retention Study Report from Nokia. While retention drivers vary by market maturity, delivering excellent quality keeps customers happy and loyal.

## *CHURN MARKET SURVEY REPORT*

The study results also show that churn continues to keep operators on their toes with 40% of customers globally planning to switch provider in the next 12 months. Cost and billing plays a key role across markets when deciding to stay with an operator, but is specifically important for emerging markets where 49% of customers consider it to be the most important factor when deciding to stay with an operator with network and service quality following at 25%. When it comes to data usage, the number of subscribers experiencing problems is high. Among the problems they report are slow download speeds (20%), data throttling (17%) and applications that don't work (16%). Another key finding of the 2014 Acquisition and Retention Study Report is that recommendations from family and friends have gained in importance in the decision to switch operators. Subscribers who have switched operators in recent months reported two key information sources in their decision: the Internet and recommendation of family and friends. Another report by Ovum forecasts a falling ARPU, which will continue to decline across all markets.

# OBJECTIVE

- To be able to effectively drive these retention strategies, a few key questions of interest require urgent attention and we have been given the task of showcasing data based insights and recommendations relating to subscriber churn.
- To discuss the results of Industry survey reports that have been just released.
- **To Answer Top Line Questions of Interest to Senior Management :-**
  1. What are the top five factors driving likelihood of churn at Mobicom?
  2. Validation of survey findings. a) Whether “cost and billing” and “network and service quality” are important factors influencing churn behaviour. b) Are data usage connectivity issues turning out to be costly? In other words, is it leading to churn?

# OBJECTIVE

3. Would you recommend rate plan migration as a proactive retention strategy?
4. What would be your recommendation on how to use this churn model for prioritisation of customers for a proactive retention campaigns in the future?
5. What would be the target segments for proactive retention campaigns? Falling ARPU forecast is also a concern and therefore, Mobicom would like to save their high revenue customers besides managing churn. Given a budget constraint of a contact list of 20% of the subscriber pool, which subscribers should be prioritized if “revenue saves” is also a priority besides controlling churn. In other words, controlling churn is the primary objective and revenue saves is the secondary objective.

# CHURN RATE AT MOBICOM

	churn				
	churn	Frequency	Percent	Cumulative Frequency	Cumulative Percent
	0	50438	76.08	50438	76.08
	1	15859	23.92	66297	100.00

# ANALYSIS OF DATA

According to our analysis the churn % in mobicom is 23.92% with 15859 customers churning out.

We choose LOGISTIC REGRESSION MODEL to analyse the data and provide insights into it we choosed it because the target variable is churn which is categorical variable (having only two possible value 1&0) where 1 resresents a churn.

## OUTPUT OF LOGISTIC REGRESSION

Model Information	
Data Set	CHURN.train
Response Variable	churn
Number of Response Levels	2
Model	Binary logit
Optimisation Technique	Fisher's scoring

Number of Observations Read	30369
Number of Observations Used	30369



O/P

### Model Convergence Status

Convergence criterion (GCONV=1e-008) satisfied

### Response Profile

Ordered Value	churn	Total Frequency	
1	1	7331	
2	0	23038	
Probability modeled is churn='1'.			

### Model Fit Statistics

Criterion	Intercept only	Intercept and Covariates
AIC	33571.007	32417.766
SC	33579.329	32709.007
-2 Log L	33569.007	32347.766

Association of Predicted Probabilities and Observed Responses					
Percent Concordant	63.1	Somer's D	0.269		
Percent Discordant	36.2	Gamma	0.271		
Percent Tied	0.7	Tau-a	0.099		
Pairs	168891578	c	0.635		

## CONCORDANCE TABLE

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	64.1	Somer's D	0.287
Percent Discordant	35.3	Gamma	0.289
Percent Tied	0.6	Tau-a	0.105
Pairs	168891578	c	0.644

We have tried not to overfit the model hence we are staying with the concordant value of 63-64% only.

# GLOBAL NULL HYPOTHESIS RESULTS

## Testing Global Null Hypothesis: BETA=0

Test	Chi-Square	DF	Pr > Chi-Square
Likelihood Ratio	1221.2417	34	<.0001
Score	1182.6564	34	<.0001
Wald	1124.5669	34	<.0001

## CONFUSION MATRIX TRAINING DATASET

Table of F_churn by I_churn			
F_churn (From: churn)	I_churn (Into: churn)		Total
Frequency	0	1	
0	22936	123	23059
1	7220	90	7310
Total	30156	213	30369

## CONFUSION MATRIX

Table of F_churn by I_churn			
F_churn (From: churn)	I_churn (Into: churn)		Total
Frequency	0	1	
0	22946	92	23038
1	7259	72	7331
Total	30205	164	30369

# ANSWERS TO SENIOR MANAGEMENT QUESTIONS

## 1. What are the top five factors driving likelihood of churn at Mobicom?

Soln. We came towards multiple positive drivers as well as negative drivers for churn rate.

1.Uniqsubs: This variable has positive correlation with churn, basically it means that a family having a unique subscriber can act as a rival for mobicom since he/she can possibly showcase any feature or plan that is more cost effective than mobicom's.

2.asl\_flag\_y: account spending limit flag activated is a negative driver for churn this means customers for whom account spending limit is not set are likely to churn.

3.Ethnicity/area\_northwest/area\_southflorida: variables such as ethnic\_asian, ethnic\_south\_european etc are positive drivers for churn this may be the case as people with different ethnicity may have to make isd calls and hence they may switch over to other subscriber based on isd rate plans. There may be some service problem going in northwest and southflorida area bcz of which they are showing high churn rate.

# ANSWERS TO SENIOR MANAGEMENT QUESTIONS

4.Models: It is seen from the model that people having more than 1 handset models are more likely to churn.

5.eqpdays/hndset\_new : equipment days is a positive driver whereas hndset\_new is a negative driver both of these variables imply that as the equipment or handset goes old the probability to churn also increases.

6.children\_yes: Households having childrens are also showing positive churn relation.



Q2.VALIDATION OF SURVEY FINDINGS. A) WHETHER “COST AND BILLING” AND “NETWORK AND SERVICE QUALITY” ARE IMPORTANT FACTORS INFLUENCING CHURN BEHAVIOUR. B) ARE DATA USAGE CONNECTIVITY ISSUES TURNING OUT TO BE COSTLY? IN OTHER WORDS, IS IT LEADING TO CHURN?

A) **NO**, COST AND BILLING doesn't account for churn since variables like **adjmou**(Billing adjusted total minutes of use over the life of the customer),**adjrev**(Billing adjusted total revenue over the life of the customer) doesn't appear on the model ,it goes without saying that **YES network and service quality** are important factors since two of the areas are showing greater churn area\_southwest and florida.

B) We **couldn't find any possibility** in our model that can say data usage connectivity issue is turning out to be costly and is in fact leading to the churn,variable **CSA**(communication service area doesn't appear in final model).

### Q3.WOULD YOU RECOMMEND RATE PLAN MIGRATION AS A PROACTIVE RETENTION STRATEGY?

YES , plan migration should must exist we saw households having unqsubscribers(unqsubs), with childrens(children\_yes),with asl\_flag(account spending limit not fixed) , having ethnicity of diffrent origin (ethnic\_asian) etc to be causing the churn so we must provide rate plan migration by cateogarising people into groups and providing them with an optimal plan.

For eg. Mobicom should include a family pack for household which should provide better benifits to a consumer,rather than having diffrent service providers.

Providing with better plans based on mou (minutes of usasge) and data usage can be framed.

#### Q4.WHAT WOULD BE YOUR RECOMMENDATION ON HOW TO USE THIS CHURN MODEL FOR PRIORITISATION OF CUSTOMERS FOR A PROACTIVE RETENTION CAMPAIGNS IN THE FUTURE?

1. unique subscriber in the family causes churn Hence some single family plan must be there.
2. customer age is also an important criteria it is seen customers having age less than 39 years are more likely to churn hence plans should be made by giving more priority to younger age group.
3. no. of models/equipment days : it is seen that customer having older equipment and customers having more than 1 model are churning so some benefits must be provided for having more than one connection or renewing the connection with the new handset.
4. ethnicity: people with different ethnicity must be provided with an option of cheaper international plans as they are likely to make more international calls.
5. customers with greater minutes of usage must be classified and provided with special benefits.
6. last but not the least all areas should be provided with exceptional network coverage since area\_southwest and florida have shown excessive churn.

Q5. WHAT WOULD BE THE TARGET SEGMENTS FOR PROACTIVE RETENTION CAMPAIGNS? FALLING ARPU FORECAST IS ALSO A CONCERN AND THEREFORE, MOBICOM WOULD LIKE TO SAVE THEIR HIGH REVENUE CUSTOMERS BESIDES MANAGING CHURN. GIVEN A BUDGET CONSTRAINT OF A CONTACT LIST OF 20% OF THE SUBSCRIBER POOL, WHICH SUBSCRIBERS SHOULD PRIORITIZED IF "REVENUE SAVES" IS ALSO A PRIORITY BESIDES CONTROLLING CHURN. IN OTHER WORDS, CONTROLLING CHURN IS THE PRIMARY OBJECTIVE AND REVENUE SAVES IS THE SECONDARY OBJECTIVE.

The target segment for proactive retention campaigns should be based on Revenue details

The table on this slide shows the revenue on the basis of percentile

It can be seen clearly from the univariate table the value of Q3 is 67.86 .

Although the budget constraint is 20 % of the subscriber pool we should select Customers generating revenue above Q3 or top 25 percentile.

The exact contact list is obtained by running a simple conditional if statement which selects customers having  $avgrev > 67.86$  .

Refer churn.top\_revenue\_customer dataset for this list.

Quantile	Estimate
100% Max	324.45
99%	170.74
95%	115.87
90%	95.08
75% Q3	67.86
50% Median	49.21
25% Q1	35.13
10%	30.06
5%	20.23
1%	10.69
0% Min	1

## HIGH REVENUE CUSTOMERS

churn				
churn	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	11671	76.99	11671	76.99
1	3489	23.01	15160	100.00

As we can see from the table the churning rate of high revenue customer is around 23%

## LOW REVENUE CUSTOMERS

churn				
churn	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0	34424	75.53	34424	75.53
1	11151	24.47	45575	100.00

# STRATEGIES TO CONQUER CHURN AND SAVE HIGH REVENUE CUSTOMER

## STRATEGY-1

- The mean of **avgmou** (average no. Of monthly minutes of usage) in high revenue customer is found out to be **903.35** which is **almost thrice compared to low revenue customers avgmou 317.41**.
- Therefore we must provide some sort of benefits such as **two times more monthly minutes of usage** as compared to low revenue customers at same tariff.
- The **mean of ovrmou\_mean** (mean overage minute of use) i.e., the customer is charged for extra peak minutes used in a month turns out to be 86.76 as compared to low revenue customers 18, this ratio is **almost 5 times as compared to low revenue customers**.
- Hence we should provide **high revenue customers with 3 times more relaxation** in terms of overage minutes of usage.

## STRATEGY-2

- The **drop\_vce\_mean**(mean of drop called ) was **10.51** for high\_revenue\_customers as compared to **3.91** of low\_revenue\_customers
- Drop\_vce\_mean was also a significant variable in our logistic model.
- Hence mobicom should **adjust bill for these dropped calls in case of high revenue** customers.
- In our model we found pepole on the region of northwest and southflorida to be churning more we should focus on these two regions first.



## STRATEGY-3

- It is seen the average age group of people in high revenue customer is 26 years having equipments of 300 days.
- This age group is seen to have more data usage and hence should must be provided with some bundling data plans and roaming plans.
- For every dropped voice or data calls in this segment mobicom should send a quick reimbursement or billing adjusted notification in order to ensure the loyalty of the customer.