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The Effect of Mobile Network among the Kandy Area People and the Future Growth of the Sri Lankan Network

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Abstract:
Mobile networking is the one of the important sources for the each and every individual in the world. Sri Lanka also gets infected by this mobile technology. Base on the one survey Sri Lankan mobile network providers have issued the SIM more than the current population, from that we can identify how far our country also affected by this mobile network. In this research network impacts the Kandy area peoples' life status and the probability of the future growth of the network Company in Kandy area. In order to answer our research question, we have conducted a quantitative survey that was directed towards the Mobile network users in the Kandy district. In this study, we have considered main factors which are influencing the selection of SIM, Existence of long term customers and promoting to other people to evaluate the satisfaction level and future expectation of the customers, proper marketing channel for future promotion and target customers for the future the company's future growth. The findings of our regression and correlation analyses, based on 104 responses we received through the survey, demonstrate that relationship between the variables. The study also provides managerial implications concerning how companies will be affected if they don't consider about the current situation properly. We have suggested the practical recommendations directed towards managers in the Sri Lankan Mobile network.

Keywords: *Mobile, network, future growth, Kandy*

1. Introduction

Mobile network systems such as GSM, UMTS, LTE, WiMAX, Wi-Fi and Bluetooth offer possibilities to keep people linked up while on the movement. In this sphere of technology, From GSM to LTE: An Introduction to Mobile Networks and Mobile Broadband enables readers to probe and understand each technology, and how to use several different schemes for the best outcomes. This report contains not only a technical description of the different wireless systems available today, but also explains the rationale behind the different mechanisms and implementations; not only the 'how' but also the 'why' is focused on. Hence the advantages and also limitations of each technology become apparent. (Sauter & Martin, 2011)

The mobile network is a communication network where the last link is wireless. The network is distributed over land areas called cells, each served by at least one fixed-location transceiver, known as a cell site or base station. This base station provides the cell with the network cover. This base station provides the mobile phone with the network reporting, which CA be utilized for the transmittal of voice, data and others. Harboring cells, to avoid interference and provide guaranteed service quality within each mobile phone.

When joined together these cells provide radio coverage over a wide geographic area. This enables a large number of portable transceivers (e.g., mobile phones, pagers, etc.) to communicate with each other and with fixed transceivers and telephones anywhere in the network, via base stations, even if some of the transceivers are moving through more than one cell during transmission Cellular networks offer a number of desirable features.

- More capability than a single large transmitter, since the same frequency can be applied for multiple links as long as they are in different cubicles.
- Mobile devices use less power than with a single transmitter or satellite since the mobile phone towers are closer
- Larger coverage area than a single terrestrial transmitter, since additional cell towers can be added indefinitely and are not limited by the horizon (Aseri, 2016)

Major telecommunications providers have deployed voice and data cellular networks over most of the inhabited land area of the Earth. This allows mobile telephone sets and mobile computing devices to be associated to the public switched telephone network and public Internet to the public switched telephone network and public Internet. Private cellular networks can be used for research or for large organizations and fleets, such as dispatch for local public safety agencies or a taxicab company. This study aims to answer following questions

1. What is the level of usage of Mobile network among the Kandy area people?
2. What is the purpose for using Mobile network among the Kandy people?
3. What is the level of satisfaction given by the company?

Considering all above information, this research study focused on "The effect of Mobile Network among the Kandy area people and the Future growth of the Sri Lankan network "

Research Objectives are to evaluate the effect of mobile network among the Kandy area, to find out the most significant factor to use

2. Methodology

This study employs qualitative and quantitative research methods to evaluate the effect of mobile network among the Kandy area. Primary data are obtained by distributing questionnaire among Kandy area people. This data play a major role in making this study. Secondary data are obtained by surfing the web and reading the previous study conducted by scholars. Observation and interviewing Kandy area randomly are also being used to collect primary data collection.

The relationship between the dependent and independent variables was as follows,

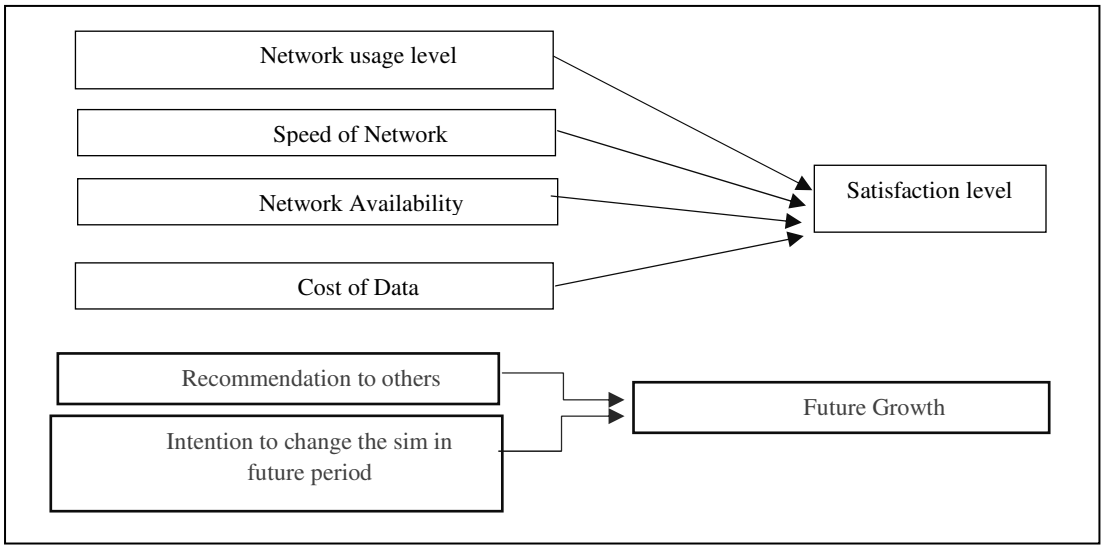

Figure 1: Research Conceptual framework

Based on the literature review of the research study several numbers of dimensions had been identified to measure the independent and dependent variable.

This research study is defining mobile network satisfaction level and future growth as the dependent variable. Satisfaction can be measured through many dimensions and indicators, this research study uses time spent on mobile usage, per month cost of mobile as well as data, type of mobile connection, type of the network, customers' expectation' about the future changers for the purpose of measuring Satisfaction level and future growth.

A structured questionnaire was prepared in English. The resulting questionnaire was comprised twenty six questions, including demographic questions related to Kandy area comprising gender, Educational qualification, Monthly income, type of package using, period of using this connection with the Kandy area people. Further, some sections of questionnaire comprise of question to obtain the reason for the selection of network, effected matter which made them to choose the X mobile network and recommendation among others about the network.

Independent Variable	**Dimensions**
Use age level	Education level
	Income level
	Monthly expenses for mobile
	Reason for choosing some Networks
Dependent Variable	**Dimensions**
Satisfaction level	Time is spent
	Recommendation
	Network of other network SIM usage

Table 1: Measuring Variables

3. Data Analysis, Results and Discussion

The study obtains primary data through questionnaires and interviews wherever applicable and possible. Primary data were collected through the questionnaires from the customers of the X network around the Kandy area. The questionnaires consisted of a set

questions presented to a respondent in his or her response. Under study questionnaires were issued to the customers around the Kandy area.

A. Data Analysis Techniques

Data analysis is carried out with the aid of the Statistical Package for Social Science (SPSS). This analysis included Reliability Testing, Descriptive Statistics, Correlation Analysis, and Multiple Regression.

B. Reliability analysis

Variables	Cronbach's Alpha
Cost of the Data	0.823
Network Coverage	0.819
Speed of the Network	0.836
Customer satisfaction level	0.842
Future changers	0.822
Recommend to friends	0.828

Table 2: Reliability Analysis

Network usage level, the cost for the Data, Network coverage, Speed of the network, Customer satisfaction level, future changes, Recommend to friends indicate the values of more than 0.70 values. Overall Cronbach's Alpha Value of the questionnaire indicates the values of more than 0.70 values. Therefor all of these independent and dependent variables are in the accepted level.

3.1. Descriptive Analysis

Independent Variables	N	Mean	Std. Deviation
	Valid		
Cost of the Data	104	3.15	0.953
Network coverage	104	3.55	1.087
Speed of the Network	104	3.22	0.975
Customer satisfaction level	104	3.15	1.130
Idea to change the network in future	104	2.09	0.698
Recommend to friends	104	3.87	0.86

Table 3: Descriptive Analysis

The mean and standard deviation of each variable were computed. The mean value of all the variables is the range of 3.87 to 2.09. This shows that variables are more towards agreeableness. Meanwhile, the standard deviation being in different value some of the SD is showing as greater than one its mean most of the selected people were agreeing with 5 (strongly agree). However, most of the other variables are in between near to one except Future idea to change the network from mobile network to someone

3.2. Correlation Analysis

		Usage Level	Cost of the Data	Network Coverage	Speed of the Network	Customer satisfaction level	Future Changers	Recommend to friends
Usage level	Pearson Correlation	1.00000	0.08507	-0.02706	-0.04896	0.03803	-0.08130	-0.08436
	Sig.(2-tailed)		0.39056	0.78509	0.62161	0.70152	0.41195	0.39453
	N	104	104	104	104	104	104	104
Cost of the Data	Pearson Correlation	0.08507	1.00000	-0.08217	0.27650	0.01387	-0.02020	0.01367
	Sig.(2-tailed)	0.39056		0.40696	0.00449	0.88887	0.83871	0.89042
	N	104	104	104	104	104	104	104
Network Coverage	Pearson Correlation	-0.02706	-0.08217	1.00000	-0.07882	-0.00608	0.12874	0.43288
	Sig.(2-tailed)	0.78509	0.40696		0.42644	0.95117	0.19276	0.00000
	N	104	104	104	104	104	104	104
Speed of the Network	Pearson Correlation	-0.04896	0.27650	-0.07882	1.00000	0.23317	0.04292	0.16328
	Sig.(2-tailed)	0.62161	0.00449	0.42644		0.01722	0.66531	0.09768
	N	104	104	104	104	104	104	104
Customer satisfaction level	Pearson Correlation	0.03803	0.01387	-0.00608	0.23317	1.00000	-0.02934	0.25139

	Sig.(2-tailed)	0.70152	0.88887	0.95117	0.01722		0.76750	0.01005
	N	104	104	104	104	104	104	104
Future Changers	Pearson Correlation	-0.08130	-0.02020	0.12874	0.04292	-0.02934	1.00000	0.29456
	Sig.(2-tailed)	0.41195	0.83871	0.19276	0.66531	0.76750		0.00240
	N	104	104	104	104	104	104	104
Recommend to friends	Pearson Correlation	-0.08436	0.01367	0.43288	0.16328	0.25139	0.29456	1.00000
	Sig.(2-tailed)	0.39453	0.89042	0.00000	0.09768	0.01005	0.00240	
	N	104	104	104	104	104	104	104

Table 4: Correlation Analysis

According to the table IV Correlation between usage level and the cost of data is .0857. It indicates a positive relationship between these two variables. The p-value is more than 0.05, indicates that the correlation coefficient is not statistically significant. Correlation between usage level and the Network Usage Network coverage -.02706. It indicates a negative relationship between these two variables. The p-value is more than 0.05, indicates that the correlation coefficient is not statistically significant. Correlation between usage level and the speed of the network -0.04896. It indicates a negative relationship between these two variables. The p-value is more than 0.05, indicates that the correlation coefficient is not statistically significant. Correlation between usage level and customer satisfaction level 0.03803. It indicates a positive relationship between these two variables. The p-value is more than 0.05, indicates that the correlation coefficient is not statistically significant. Correlation between usage level and Future changes of the Sim -0.08130. It indicates a negative relationship between these two variables. The p-value is more than 0.05, indicates that the correlation coefficient is not statistically significant. Correlation between usage level and recommend to friends -0.08436. It indicates a negative relationship between these two variables. The p-value is more than 0.05, indicates that the correlation coefficient is not statistically significant. Correlation between Cost of data and the network coverage -0.08217. It indicates a negative relationship between these two variables. The p-value is more than 0.05, indicates that the correlation coefficient is not statistically significant. Correlation between Cost of data and the Speed of the network 0.27650. It indicates a positive relationship between these two variables. The p-value is less than 0.05, indicates that the correlation coefficient is statistically significant. Correlation between Cost of data and the Customer satisfaction level 0.01387. It indicates a positive relationship between these two variables. The p-value is more than 0.05, indicates that the correlation coefficient is not statistically significant. Correlation between Cost of data and the Future changers of the Sim -0.02020. It indicates a negative relationship between these two variables. The p-value is more than 0.05, indicates that the correlation coefficient is not statistically significant. Correlation between Cost of data and the Recommend to friends 0.01367. It indicates a positive relationship between these two variables. The p-value is more than 0.05, indicates that the correlation coefficient is not statistically significant. Correlation between Network coverage and the speed of the network -0.07882. It indicates a negative relationship between these two variables. The p-value is more than 0.05, indicates that the correlation coefficient is not statistically significant. Correlation between Network coverage and the customer satisfaction level -0.00608. It indicates a negative relationship between these two variables. The p-value is more than 0.05, indicates that the correlation coefficient is not statistically significant. Correlation between Network coverage and the future changers 0.12874. It indicates a positive relationship between these two variables. The p-value is more than 0.05, indicates that the correlation coefficient is not statistically significant. Correlation between Network coverage and the recommend to friends 0.43288. It indicates a positive relationship between these two variables. The p-value is less than 0.05, indicates that the correlation coefficient is statistically significant. Correlation between speed of the network and the Customer satisfaction level 0.23317. It indicates a positive relationship between these two variables. The p-value is less than 0.05, indicates that the correlation coefficient is statistically significant. Correlation between speed of the network and the Customer satisfaction level 0.04292. It indicates a positive relationship between these two variables. The p-value is more than 0.05, indicates that the correlation coefficient is not statistically significant. Correlation between speed of the network and the Customer satisfaction level 0.16328. It indicates a positive relationship between these two variables. The p-value is more than 0.05, indicates that the correlation coefficient is not statistically significant. Correlation between Customer satisfaction level and the future changers of the SIM -0.02934. It indicates a negative relationship between these two variables. The p-value is more than 0.05, indicates that the correlation coefficient is not statistically significant. Correlation between The Customer satisfaction level and the recommend to the friends 0.25139. It indicates a positive relationship between these two variables. The p-value is less than 0.05, indicates that the correlation coefficient is statistically significant. Correlation between Future changers of the SIM and the recommend to the friends 0.29456. It indicates a positive relationship between these two variables. The p-value is less than 0.05, indicates that the correlation coefficient is statistically significant.

3.3. Multi Liner Regression

For the Multi Regression Analysis, only significant variables in correlation analysis used. According to the correlation analysis, usage level, Cost of data, Network coverage, Speed of the network, Customer satisfaction level, Future ideas to change the SIM, Recommendation to friends were statistically significant variables.

Model	R	R Square	Adjusted R Square
1	**0.763**[a]	0.627	0.604

Table 5: Model Summary

The R square value of the research is 0.627. This means that 62.7% of the variation of dependent variables can be explained by the six independent variables. However, 37.3% (100%-62.7%) of the variation of the dependent variables is not explained in the research, which means 37.3% variation of dependent variables is explained by the exogenous variables.

3.4. ANOVA test

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	7.604	6	1.967	24.357	0.021
Residual	5.617	41	0.104		
Total	13.221	47			

Table 6: Anova Test

Overall fit with the regression model is satisfactory. Because the P value of ANOVA is 0.021 which value less than 0.05. Therefore, statistical evidence is sufficient to say the model is strong enough to predict satisfaction level as well as future growth could be possible.

3.5. Regression Coefficient

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Cost of the Data	0.086	0.084	0.107	1.027	0.307
Network Coverage	0.014	0.080	0.020	0.172	0.864
Speed of the Network	-0.062	0.085	-0.078	-0.721	0.473
Customer satisfaction level	0.051	0.072	0.075	0.700	0.486
Idea to change the network in future	-0.056	0.116	-0.051	-0.483	0.630
Recommended to friends	-0.076	0.109	-0.085	-0.697	0.488

Table 7: Regression Coefficient

According to table VII, cost of data, network coverage, speed of the network, customer satisfaction level, idea to change the network in the future and recommend to friends are significantly affecting the satisfaction level of the Kandy are people and the probability of the future growth with significant value less than the 0.05.

Unstandardized Coefficient is used to build regression equation for this research. An equation is formed as follows

Y=0.086X1 + 0.014X2 + 0.051X2

Where,

Y=DV = Satisfaction level

X1=IV1= Cost of the Data

X2=IV2= Network coverage

X3=IV3= Customer satisfaction level

The Cost of data, Network coverage, Customer satisfaction level have a positive relationship with the satisfaction level of the Kandy area people and the probability of the future growth, but the Speed of the Network, idea to change the network in the future, Recommend to friends are not significant variables., Therefore those are not included in the regression model.

- H1: The cost of the data directly affecting to the Kandy area peoples

According to the regression result, the standardized coefficient of the cost of data was 0.107 and p=0.307 hence study did not reject H0: Cost of data of the network is not directly affecting to the Kandy area peoples .If cost of data get reduce the level of mobile usage will increase.

- H2: Network coverage would increase the level of the mobile network usage in Kandy area

According to the regression result, the standardized coefficient of the network coverage was 0.020 and p=0.864 hence study did not reject H0: network coverage of the network is directly affecting to the Kandy area peoples.

- H3: Speed of the network would increase the level of the mobile usage in Kandy area

According to the regression result, the standardized coefficient of the network Speed was -0.078 and p=0.473 hence study did not reject H0 and accepted H1: Speed of the Sri Lankan mobile network is directly affecting to the Kandy area peoples

- H4: Customer satisfaction level of current service would affect the future growth of the network

According to the regression result, the standardized coefficient of the customer satisfaction level was 0.075 and p=0.486 hence study did not reject H0 and accepted H1: Customer satisfaction level of current service would affect the future growth of the network. If the satisfaction level increase the future growth of the Sri Lankan Network would be favorable and vice versa.

- H5: Idea to change the network in future would affect the future growth of the network

According to the regression result, the standardized coefficient Idea to change the network in the future was -0.051 and p=0.630 hence study did not reject H0 and accepted H1: Idea to change the network in future would affect the future growth of the network. If the Idea to change the network in future decrease the future growth of the company would be favorable and vice versa.

- H6: Recommend to friends and colleagues would affect the future growth of the network

According to the regression result, the standardized coefficient Recommend to friends and colleagues was -0.085and p=0.488hence study did not reject H0 and accepted H1: Recommend to friends and colleagues would affect the future growth of the network.

4. Conclusion

This study consists of 130 and while considering the sample from each area 7 survey, however, in the some areas, we face difficulty finding the right people for fulfill our survey; therefore we obtain only around 5 surveys from those areas. Further, the response given by the gender by approximately same (Male and Female). Most of the Kandy area people using smart phones rather than normal phones therefore they have considered Data excess as same as like talk time and SMS also they wish to use 3G and 4G network (85.6%) rather than other 2G and CDMA. for these matters they should consider how they can develop 3G and 4G further effective process. According to the Survey most of the people are using Supper lite (Sec) scheme 30.8% second largest scheme is the one for one plan (22.1%) Further any network 1.50 plan 19.2%, ultra 99 scheme 18.3%, Super light (min) 8.7%, another one is any network free scheme 1%. Most of the respondents use the X mobile network for 3 years, 44.2%, 26.9% of customers have been using more than three years, 20.2% customers have been using for two years and only 8.7% customers have been using the X mobile network lower than one. From this usability question we can understand how far new people entering into the family. The base on this sample, lower than one year customers are very much lower compared to others, this is indicated new customer attraction activities are pretty much lower, therefore they should consider about future new customers' attractive activities. In our other question in the survey regarding the reason for choosing network are tariff, brand name, network coverage, network speed and customer service for all these matters most of the customers have been rated as average except network coverage and customer service. Mobile network coverage has been rated by the sample customers strongly agree. However the customer service has been rated by sample customers as strongly disagree. It's direct opposite to network coverage. For the future growth wants to consider on tariff, brand name, network coverage and network speed, but they should consider on customer service more than other thing otherwise it will give the negative impact to the company. Total expenses per month for the mobile network base on the sample selection between 1001 to 2000 is 37.5%, this is the most of the peoples spending for the mobile network base on the sample selection. It means Kandy areas most of the people spending Rs 1001 to 2000 for their mobile usage. From the survey we have consider the future preference (Call rates, Data rate, Value added service, validity, SIM cost, Coverage, Roaming chargers) for the new connection to evaluate what type of scheme we should introduce among to the Kandy are people. Based on the response given by the selected people two things equally preferred Call rate and data rates at 23.1% while other things are approximately preferred by equal. Therefore Sri Lankan Mobile networks should consider calling and data rates before launching new schemes in the Kandy area for perpetual growth. In this questionnaire we have considered about the average data usage of the each individual per day in this analysis. In this analysis most of the people selected the data package between 300 to 600 MBs (41.3%) and other packages are approximately selected same level. Therefore Mobile Networks should consider introducing new packages which is covering 300 to 600 MB data to maximize its future growth as well as people's effectiveness of data use. Another main independent variable to the future growth of the network is how people getting information about the companies new offers and promotion. For this question people have been answered approximately same (26.9% & 25%) for the two channels which are SMS and Internet (POP window adds) rather than other marketing channels such as TV (16.3%), Magazine (14.4%), and word of the mouth (17.3%). Therefore, to get a quick response to the promotion from the customers should consider more about the SMS and Internet than other marketing channels. As a final question in the survey, we have asked from our sample customer how would you recommend our company to your colleagues or friends. For this question most of the customers (More than 75 people) selected the 4^{th} and 5^{th} (5^{th} is extremely like to). Base on this statement most of the Kandy area people got satisfied by the network because of that they wish to recommend to his or her friends or colleagues. Also, only one person selected the 1^{st} (Not at all like) so it is not a big issue for the overall conclusion. Independent variables of this research study are network usage level, speed of network, network availability, cost of data recommendation to others and Intention to change the Sim in future period. To ensure the satisfaction level of the customer and probability of future growth. Dimensions are used which are User time spent on mobile usage, per month cost of mobile as well as data, type of mobile connection and type of the network are used to evaluate the Kandy area peoples satisfaction as well as the future growth probability. While considering each dimension of dependent variables, most of the respondents are favorable above 3 (mean=>3) except idea to change the SIM in future it should be lower because if idea of changing SIM is high the Mean would be high. Therefore, this Mean indicates favorable to the company. Correlation and regression analysis reveals there is a significant as well as insignificant relationship between each independent Variable.

5. Recommendations

In this research study I try to study whether the network provider increases the satisfaction level of the Kandy area people as well as the probability of the future growth of the mobile network. Base on the customer feedback through the survey it's easy to understand how far network satisfied the level of Kandy area people, though such as the cost for the data, coverage level and network speed. Those things are showing the level of satisfaction of different kind of people with different kind of income level also the future idea of the changes of the SIM gives the map how peoples' movement will be affect the mobile network. Also, we have considered about the future growth of the company through the expectation of the existing company as well as obtaining new customers. This dependent variable also indicates positively to the company's future growth from survey questionnaires such as marketing channels, recommend to the friends and colleagues and future offers what's expected for the mobile network. However, there is a one big issue to the Mobile network base on this research, we have identified that is customer care service. Base on the survey (indicate the lowest level of customer satisfaction) as well as some social network discussion, friends discussion and some other experience (Personal) we have noticed this issue. Therefore Sri Lankan should consider about this issue to satisfy its user's maximum and for the future growth otherwise it will impact both dependent variables.

6. Suggestions for Future Research

This study had provided only a small portion of idea regarding in the mobile network in Kandy area. Hence, it would be beneficial for future research to consider the following suggestions:

Based on the findings from the quantitative study, give practical recommendations for how mobile network can increase their consumers' intention to purchase. The study already discussed what those factors are important for mobile network providers in general. The three factors that were found to mostly affect consumers' intention to purchase were perceived Cost of the call and data charges, network coverage and speed and the promotion activities. Although the network provider has to develop their effectiveness for the future growth, such as promotion activities (reducing the chargers, different kind of packages), implement the speed of the network with proper coverage etc. Therefore, future research they can focus on the level of effectiveness, increase by the network and how long they have achieved growth of the network.

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