IMPACT OF VOICE CALL PERFORMANCE ON CUSTOMER SATISFACTION IN 3G AND 4G MOBILE PHONE SERVICES

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ABSTRACT:
This study looked at how customer satisfaction with 3G and 4G mobile phone services is affected by the voice call performance. It also looked into the voice call performance values for various 3G and 4G service providers. 518 respondents in Telangana State participated in a questionnaire survey that was used to gather data; 197 of them used 3G, while 321 used 4G services. This study employed the convenience sampling approach and a descriptive research methodology. SPSS version 22.0 was used to perform regression and reliability analysis. The findings showed that voice call performance factors in both 3G and 4G services had an impact on user satisfaction with mobile phone services. Additionally, it was shown that the independent variable (voice call performance) and the dependent variable (customer satisfaction) had a strong positive correlation. Voice call performance affects whether a service provider succeeds or fails in the mobile service sector. While 3G and 4G technology is becoming more and more popular in both established and developing nations, one significant element in developing nations like India is how well 3G and 4G services work during voice calls.

Keywords: voice call performance, customer satisfaction, 3G and 4G mobile phone services.

I. INTRODUCTION:

These days, telecommunication is an integral part of our everyday existence. These days, cell phones are quite important for communicating across places. In addition to making calls, the phone may be used for a variety of other purposes, such as connecting us to the internet, sending text messages, and sending multimedia communications. There are seemingly endless opportunities in the telecommunications sector, and the growing need for mobile phone networks is generating a worldwide market (Hossain et al., 2013). This industry is now very competitive, and businesses must find strategies to draw in and keep customers in these extremely difficult times if they want to survive (Vranakis et al., 2012). Over the past few decades, the telecommunications sector as a whole has grown into a competitive and expanding service business (Graack, 1996). In Asian nations, mobile telecommunications is expanding at a rapid pace (Fink et al., 2003). In India, the situation is not all that different; there is a great deal of room for expansion in the sector. Due to intense rivalry, telecom carriers seek to keep their consumers happy at all costs in order to avoid losing them. They occasionally offer different plans to entice customers, such as lower prices, more data, and SMS pack plans. These are crucial from the perspective of customer satisfaction, but we cannot overlook the other factor, which is voice call performance, which is also crucial to customer satisfaction. A thorough review of the literature on consumer satisfaction in mobile phone services reveals that nearly all of the studies focus on various aspects, including pricing, value-added

services, call rates, network coverage, customer assistance, and customer support. We cannot overlook the reality that voice call performance plays a significant impact in consumer satisfaction, which is why this study gap exists. The service provider can improve customer satisfaction by filling the gap. This study closes the research gap on the significance of voice call performance in the telecom industry's impact on customer satisfaction in Telangana State, India. The 3G and 4G cellular phone services in several Telangana State areas are the subject of this study.This study examines how voice call performance may affect 3G and 4G mobile phone service users' pleasure.

OBJECTIVES OF THE STUDY:
1) - To study the Impact of voice call performance on customer satisfaction in 3G mobile phone services.
2) - To study the Impact of voice call performance on customer satisfaction in 4G mobile phone services.
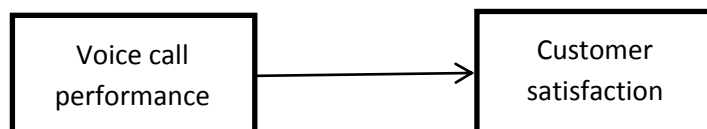3) - Comparative analysis of voice call performance in 3G and 4G mobile phone service providers.

II. CONCEPTUAL FRAMEWORK:
The degree to which a customer is completely sensitive to the product after purchasing it is a measure of their level of pleasure. Another way to gauge customer satisfaction is to see how well the final product matches the client's previous expectations regarding its functionality (Solomon et al., 2012). Customer satisfaction may be linked to their interest, which they want to achieve by buying products and using services. A positive outcome of consumption or patronage is satisfaction, which is an enhanced and enjoyable experience in and of itself (Oliver, 2014). Although they are two different structures, loyalty and satisfaction are tightly related (Bennett & Rundle-Thiele, 2004). Follow-up and maintenance are essential to guaranteeing customer satisfaction. In a normal organization, customer satisfaction may be impacted by every business job (Kotler, 2000). Customers have strong opinions on pricing fairness in the market for prepaid cell phone services. This shows how customers value the pricing plan their service provider offers and how they think it compares well to other service providers' packages. According to Srikanjanarak et al. (2009), consumer perceptions of fair prices from their service provider organization may assist them in creating acceptable price plans that not only satisfy their customers' wants but also ultimately safeguard their long-term connection with the organization.
Pricing need to be in line with the value that operators offer. It is fair to the customer that they are willing to pay, thus operators should have also considered the price approach (Rahman, 2014). Price fairness judgments have a direct and indirect influence on satisfaction decisions (Hermann et al., 2007). Fair prices have an impact on client loyalty and pleasure (Estalami et al., 2007). Even while service effectiveness and cost are important, it's possible that other factors unrelated to the analysis also affected the decisions. Voice call performance analysis compares the price and usefulness of various providers.
Standard methods and processes for evaluating the efficacy of services are included in the basic voice call performance analysis, but it also covers the expenses related to providing such services. Analysis of voice call performance enables the cost-effectiveness of services in relation to certain methods or procedures. The results can help with service facility decision-making (Hulme & Claire, 2006). Voice call performance analysis compares expenses and results (Robinson, 1993). According to Phillips and Thompson (2003), voice call performance analysis shows which of several different ways offers the most value for the money. Voice call performance is regarded as a marketing tool and is acknowledged to have the most influence on consumer behavior, which in turn directly affects customer satisfaction.

Based on the review of literature we propose the following model (Figure 1).

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┌────────────────┐                    ┌────────────────┐
│   Voice call   │──────────────────▶ │    Customer    │
│  performance   │                    │  satisfaction  │
└────────────────┘                    └────────────────┘
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The proposed research framework theorizes that the variable voice call performance impact customer satisfaction in mobile phone services.

HYPOTHESES:
To check the relationship between dependent variable and independent variable, two hypotheses were developed, which are as follows:
H_1: There is a significant relationship between voice call performance and customer satisfaction in 3G services (offered by Airtel, Vodafone Idea and BSNL).
H_2: There is a significant relationship between voice call performance and customer satisfaction in 4G services. (offered by Airtel, Vodafone Idea, BSNL and Jio).

III. RESEARCH METHODOLOGY:
In this investigation, a quantitative methodology was applied. This study employed convenience sampling techniques and a descriptive research methodology. Data was gathered using a standardized survey form. Of the 518 people in the study, 321 used 4G services, and 197 used 3G services. The survey was carried out throughout many districts in Telangana. The questinnaire displayed the opinions of both 3G and 4G customers. A five-point scale, with 1 denoting "strongly disagree" and 5 denoting "strongly agree," was used to measure the research variables. The statistical software SPSS version 22.0 was utilized for data analysis. Three of Srikanjanarak et al. (2009) voice call performance scale items were used. Three items from the Sondoh et al. (2007) scale were used to measure customer satisfaction.

IV. DATA ANALYSIS AND RESULT:
A total of 518 people participated in the survey, with 58.11% of them being men and 41.89% being women. 3G services were used by 38.03 percent of respondents, while 4G services were used by 61.97%.

A)- RELIABILITY ANALYSIS
This study was based on 42 items to measure voice call performance and customer satisfaction in 3G and 4G mobile phone services. Voice call performance and customer satisfaction for 3G services were measured with 18 items (6 items for Airtel, 6 for Vodafone-Idea and 6 for BSNL) respectively. Voice call performance and customer satisfaction for 4G services were measured with 24 items (6 items for Airtel, 6 for Vodafone-Idea, 6 for BSNL and 6 for Reliance Jio) respectively. If any item with a minimum score of Cronbach's alpha 0.70, is an acceptable level for reliability measure (Nunnally, 1994).

B)- REGRESSION ANALYSIS FOR 3G VOICE CALL PERFORMANCE

In this part, the hypotheses regarding the interdependence of factors like voice call performance and customer satisfaction in each service provider example have been examined and presented. The voice call performance of Telangana State's 3G service providers, such as Airtel, Vodafone Idea, and BSNL, has been chosen as the independent variable. Customer satisfaction is considered the dependent variable. Based on this, the theories have been investigated, and the findings are explained as follows:

$H_{1.1}$:   There is significant relationship between voice call performance and customers satisfaction in terms of services provided by Airtel.

The vital statistics obtained by using the SPSS package version 22.0 with respect to the Airtel's 3G services. The following result is obtained after running simple linear regressions for Airtel-3G. The R-square value 0.34 explains the variations to the extent of 34%. The adjusted R square indicates that the independent factors (voice call performance) have a 33% influence on the dependent variable (consumer satisfaction). The ANOVA result confirms the model to be significant at 95% level of confidence. The p-

value shows the VCP-Airtel-3G as 0.000 <0.05 at 95% level of confidence and the one sample t-test value for this variable is 6.60 which is more than the benchmark value of 2.40 indicating the variable to be statistically significant.

It is seen that the voice call performance is the independent variable and the customer satisfaction is the dependent variable. From the data computed above, a regression model emerges as under;

$$Y_{(CS)} = \alpha + \beta (X_1)$$

Where, α is the constant and β is the coefficient of the independent variable voice call performance of Airtel-3G. Now, the model can be expressed as follows:

$$Y_{(CS)} = 0.87 + 0.58 (VCP\_Airtel\_3G)$$

H₁.₂: There is significant relationship between voice call performance and customers satisfaction in terms of service provided by Vodafone-idea.

The R-square value 0.27 explains the variations to the extent of 27%. The adjusted R square indicates that the independent factors (voice call performance) have a 26% influence on the dependent variable (consumer satisfaction). The ANOVA result (p = 0.000 at 95% level of confidence) confirms the model to be significant at 95% level of confidence. The p-value shows the VCP-Vodafone Idea 3G as 0.000 <0.05 at 95% level of confidence and the one sample t-test value for this variable is 4.73 which is more than the benchmark value of 2.40 indicating the variable to be statistically significant.

From the above presentations, it is seen that the voice call performance is the independent variable and the customer satisfaction is the dependent variable. From the data computed above, a regression model emerges as under;

$$Y_{(CS)} = \alpha + \beta (X_1)$$

Where, α is the constant and β is the coefficient of the independent variable voice call performance of vodafone-3G. Now, the model can be expressed as follows:

$$Y_{(CS)} = 1.63 + 0.52 (VCP\text{-}Vodafone\ Idea\text{-}3G)$$

H₁.₃: There is significant relationship between voice call performance and customers satisfaction in terms of service provided by BSNL.

The R-square value 0.17 explains the variations to the extent of 17%. The adjusted R square indicates that the independent factors (voice call performance) have a 15% influence on the dependent variable (consumer satisfaction). The ANOVA result (p = 0.003 at 95% level of confidence) confirms the model to be significant at 95% level of confidence. The p-value shows the VCP-BSNL-3G as 0.003 <0.05 at 95% level of confidence and the one sample t-test value for this variable is 3.08 which is more than the benchmark value of 2.40 indicating the variable to be statistically significant.

It is seen that the voice call performance is the independent variable and the customer satisfaction is the dependent variable. From the data computed above, a regression model emerges as under;

$$Y_{(CS)} = \alpha + \beta (X_1)$$

Where, α is the constant and β is the coefficient of the independent variable voice call performance of vodafone-3G. Now, the model can be expressed as follows

$$Y_{(CS)} = 1.12 + 0.41 (VCP\text{-}BSNL\text{-}3G)$$

Table 1: Comprehensive Table showing the models (Customer satisfaction as dependent variable and Voice Call Performance as independent variables)

Service Providers	Independent variables	α	β	Model
Airtel	Voice Call Performance	0.87	0.58	$Y_{(CS)} = 0.87 + 0.58$ (VCP-Airtel-3G)
Vodafone		1.63	0.52	$Y_{(CS)} = 1.63 + 0.52$ (VCP-Vodafone Idea-

Idea				3G)
BSNL		1.12	0.41	$Y_{(CS)} = 1.12 + 0.41$ (VCP-BSNL-3G)

It is observed from the above table that voice call performance is strong in case of Airtel followed by Vodafone Idea and BSNL as is evidenced from the beta coefficients. Thus, it can be concluded that the parameters such as voice call performance, the performance of Airtel is the best among all signifying that the customers are satisfied with the services of Airtel.

Since the significance value is less than 0.05, We accept our hypothesis that the dependent and independent variables have a meaningful connection. It is evident from the study that there is a significant relationship between the independent variable (voice call performance) and the dependent variable (consumer satisfaction). With a standardized coefficient beta=.58, Airtel's voice call performance is the first among the three service providers. This indicates that Airtel is more successful than Vodafone Idea and BSNL, which have standardized coefficients beta=.52 and.41 for 3G services, respectively.

C)- REGRESSION ANALYSIS FOR 4G VOICE CALL PERFORMANCE

In Telangana state, there are four main companies offering 4G mobile phone services. Airtel, Reliance Jio, Vodafone Idea, and BSNL are among them. Data provided by 321 users of 4G services was subjected to regression analysis based on similar experience factors, such as network connection. The purpose-developed hypotheses have undergone regression analysis. The findings are examined and explained in the sections that follow:

$H_{2.1}$:   There is significant relationship between voice call performance and customers satisfaction in terms of service provided by Airtel.

The following result is obtained after running simple linear regressions for Airtel-4G. The R-square value 0.20 explains the variations to the extent of 20 %. The adjusted R square indicates that the independent factors (voice call performance) have a 19% influence on the dependent variable (customer satisfaction). The ANOVA result confirms the model to be significant at 95% level of confidence. The p-value shows the VCP-Airtel-4G as 0.000 <0.05 at 95% level of confidence and the one sample t-test value for this variable is 4.72 which is more than the benchmark value of 2.40 indicating the variable to be statistically significant.

It is seen that the voice call performance is the independent variable and the customer satisfaction is the dependent variable. From the data computed above, a regression model emerges as under;

$$Y_{(CS)} = \alpha + \beta (X_1)$$

Where, α is the constant and β is the coefficient of the independent variable voice call performance of Reliance Jio- 4G. Now, the model can be expressed as follows

$$Y_{(CS)} = 1.47 + 0.45 \text{ (VCP\_Airtel\_4G)}$$

$H_{2.2}$:   There is significant relationship between voice call performance and customers satisfaction in terms of service provided by Reliance Jio.

The following result is obtained after running simple linear regressions for Reliance Jio-4G. The R-square value 0.20 explains the variations to the extent of 20 %. The adjusted R square indicates that the independent factors (voice call performance) have a 19% influence on the dependent variable (customer satisfaction). The ANOVA result confirms the model to be significant at 95% level of confidence. The p-value shows the VCP- Jio -4G as 0.000 <0.05 at 95% level of confidence and the one sample t-test value for this variable is 4.72 which is more than the benchmark value of 2.40 indicating the variable to be statistically significant.

It is seen that the voice call performance is the independent variable and the customer satisfaction is the dependent variable. From the data computed above, a regression model emerges as under;

$$Y_{(CS)} = \alpha + \beta (X_1)$$

Where, α is the constant and β is the coefficient of the independent variable voice call performance of Reliance Jio- 4G. Now, the model can be expressed as follows

$$Y_{(CS)} = 1.96 + 0.41 \text{ (VCP\_Jio\_4G)}$$

H₂.₃: There is significant relationship between voice call performance and customers satisfaction in terms of service provided by Vodafone Idea.

The following result is obtained after running simple linear regressions for Vodafone Idea-4G. The R-square value 0.20 explains the variations to the extent of 20 %. The adjusted R square indicates that the independent factors (voice call performance) have a 19% influence on the dependent variable (customer satisfaction). The ANOVA result confirms the model to be significant at 95% level of confidence. The p-value shows the VCP- VI-4G as 0.000 <0.05 at 95% level of confidence and the one sample t-test value for this variable is 4.72 which is more than the benchmark value of 2.40 indicating the variable to be statistically significant.

It is seen that the voice call performance is the independent variable and the customer satisfaction is the dependent variable. From the data computed above, a regression model emerges as under;

$$Y_{(CS)} = \alpha + \beta (X_1)$$

Where, α is the constant and β is the coefficient of the independent variable voice call performance of Vodafone Jio- 4G. Now, the model can be expressed as follows

$$Y_{(CS)} = 1.91 + 0.36 \text{ (VCP\_VI\_4G)}$$

H₂.₄: There is significant relationship between voice call performance and customers satisfaction in terms of service provided by BSNL.

The following result is obtained after running simple linear regressions for BSNL-4G. The R-square value 0.09 explains the variations to the extent of 9%. The adjusted R square indicates that the independent factors (voice call performance) have an 8% influence on the dependent variable (customer satisfaction). The ANOVA result confirms the model to be significant at 95% level of confidence. The p-value shows the VCP-BSNL-4G as 0.000 <0.05 at 95% level of confidence and the one sample t-test value for this variable is 2.61 which is more than the benchmark value of 2.40 indicating the variable to be statistically significant.

It is seen that the voice call performance is the independent variable and the customer satisfaction is the dependent variable. From the data computed above, a regression model emerges as under;

$$Y_{(CS)} = \alpha + \beta (X_1)$$

Where, α is the constant and β is the coefficient of the independent variable voice call performance of BSNL- 4G. Now, the model can be expressed as follows

$$Y_{(CS)} = 2.28 + 0.30 \text{ (VCP\_BSNL\_4G)}$$

Table 2: Comprehensive Table Showing the Models

Service Providers	Independent variables	α	β	Model
Airtel	Voice Call Performance	1.47	0.45	$Y_{(CS)} = 1.47 + 0.45$ (VCP-Airtel-4G)
Vodafone Idea		1.91	0.36	$Y_{(CS)} = 1.91 + 0.36$ (VCP-Vodafone Idea-4G)
BSNL		2.28	0.30	$Y_{(CS)} = 2.28 + 0.30$ (VCP-BSNL-4G)
Jio		1.96	0.41	$Y_{(CS)} = 1.96 + 0.41$ (VCP_Jio_4G)

It is observed from the above that as regards voice call performance, the beta coefficient of Airtel is the highest among all which signifies the customers are highly satisfied with the service provided by Aitel. It indicates the level of satisfaction being different for each of the service providers with respect to the independent criteria namely; voice call performance.

The significance value is less than 0.05, We accept our hypothesis that the dependent and independent variables have a meaningful connection. It is evident from the study that there is a significant relationship between the independent variable (voice call performance) and the dependent variable (customer satisfaction). Airtel voice call performance is the primary variable among the four service providers (Airtel, Vodafone Idea, BSNL, and Reliance Jio). Its standardized coefficient beta=.45 indicates that it is more effective than Jio, Vodafone Idea and BSNL, which have standardized coefficients beta=.41,.36, and.30 in 4G services, respectively.

V. CONCLUSION:

This study shows that independent variable (voice call performance) influence customer satisfaction. Today's time the mobile phone has taken an important place in human life. We can say that customer satisfaction depends upon the category of customers. Customers want cost effective services. This study finds a significant and positive relationship between dependent variable (customer satisfaction) and independent variables (voice call performance). It is explained from the results that voice call performance factor impact customer satisfaction. Voice call performance always plays an important role in 3G and 4G mobile phone services. With the result analysis we can say that voice call performance in Airtel (standardized coefficient beta=.58) 3G services is better than Vodafone Idea (standardized coefficient beta=.52) and BSNL (standardized coefficient beta=.41) 3G services. In 3G services, Aitel's voice call performance is the best among three networks (Airtel, Vodafone Idea and BSNL).

In 4G services, Airtel services is the most important (standardized coefficient beta=.45) among Jio (standardized coefficient beta=.41), Vodafone Idea (standardized coefficient beta=.36) and BSNL (standardized coefficient beta=.30). In 4G services, Airtel is the most cost effective network among four networks (Airtel, Vodafone-Idea, BSNL and Jio). Voice call performance is the factor which always attract the customer because customer always think that whatever they are investing that should be return. Service provider should focus on this factor if they want to retain their customers for a long time.

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