

CHAPTER 4

ANALYSIS

1.1. HYPOTHESES TESTING USING ONE WAY ANOVA

(Part of the below Analysis has been presented at the following International Conferences:

- 3rd IIM A International Conference on Advanced Data Analysis, Business Analytics and Intelligence. April 13-14, 2013, IIM Ahmedabad
- 7th IIM A Doctoral Colloquium, Dec 9-10, 2013, IIM Ahmedabad)

Service provider to service provider difference in overall customer satisfaction

Null Hypothesis (H_0): *There is no difference* in overall customer satisfaction level from service provider to service provider.

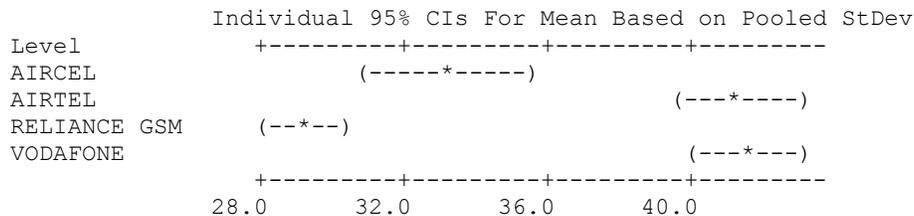
Alternative Hypothesis (H_1): *There is difference* in overall customer satisfaction level from service provider to service provider.

One-way ANOVA: WCS versus Service Providers

Source	DF	SS	MS	F	P
Service Provider	3	18530.8	6176.9	67.49	0.000
Error	554	50704.3	91.5		
Total	557	69235.1			

S = 9.567 R-Sq = 26.77% R-Sq(adj) = 26.37%

Level	N	Mean	StDev
AIRCEL	60	33.243	7.622
AIRTEL	123	41.386	11.573
RELIANCE GSM	251	29.384	7.342
VODAFONE	124	41.617	11.915

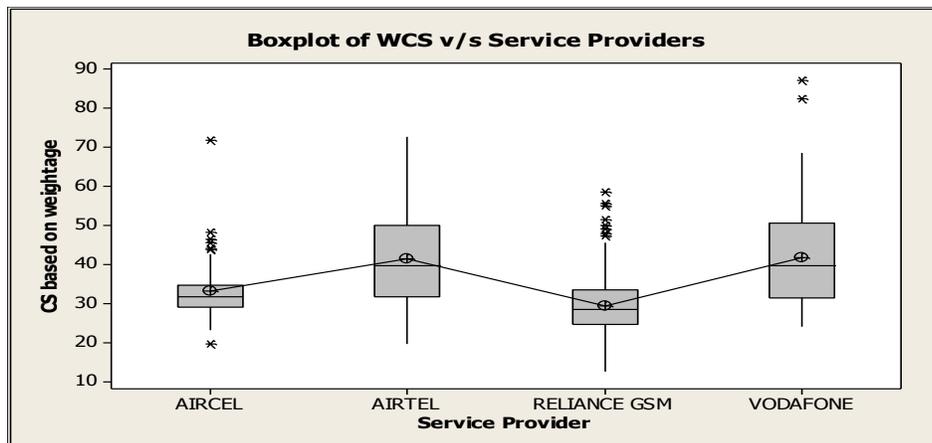


Pooled StDev = 9.567

Conclusions:

From the above ANOVA, it is observed that the P value is 0.000, and less than 0.05. Therefore the Null Hypothesis (H_0)” *There is no difference in overall customer satisfaction level from service provider to service provider*” is rejected, meaning the customer satisfaction levels are different for different service providers

Level	Avg Customer Satisfaction%
Aircel	33.2
Airtel	41.4
Reliance	29.4
Vodafone	41.6



Whether or not the above conclusion is valid within the two Circles was also investigated and the findings are reported via separate ANOVA for two Circles. Based on this investigation following points are noteworthy:

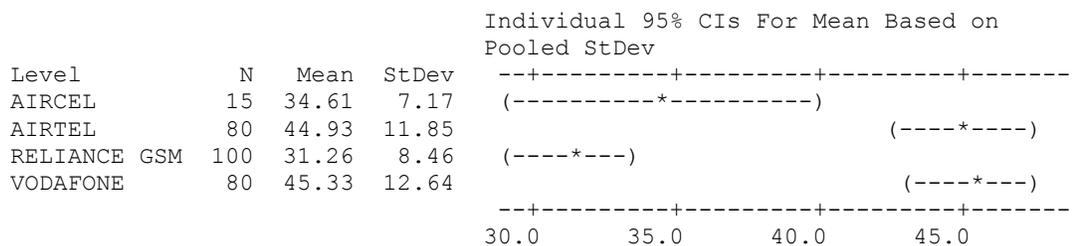
- Average customer satisfaction level for Reliance is lowest in both the Circles.

- For Vodafone and Airtel the average customer satisfaction level is highest in both the circles
- The average customer satisfaction percentage for Aircel lies ahead of the average customer satisfaction percentages for Reliance but behind that of Airtel and Vodafone

One-way ANOVA: WCS percentage_Assam versus Service Provider Assam

Source	DF	SS	MS	F	P
Service Provider Assam	3	12223	4074	35.02	0.000
Error	271	31532	116		
Total	274	43754			

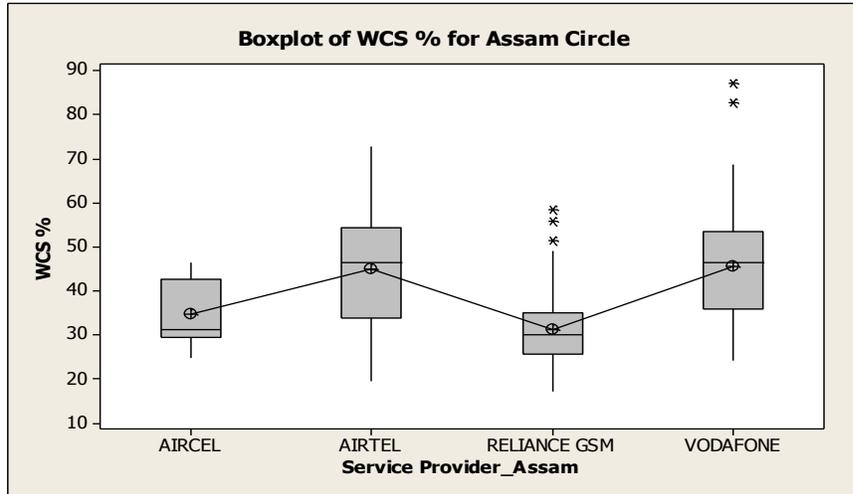
S = 10.79 R-Sq = 27.94% R-Sq(adj) = 27.14%



Pooled StDev = 10.79

Conclusions:

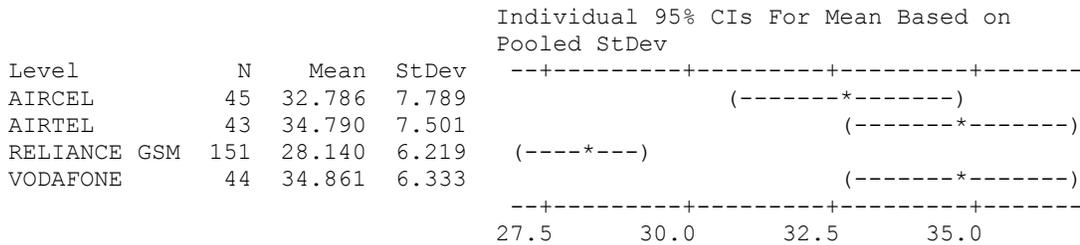
- Average customer satisfaction level for Reliance is lowest in Assam Circle and Aircel is same but behind Airtel and Vodafone
- For Vodafone and Airtel the average customer satisfaction level is highest in Assam Circle



One-way ANOVA: WCS percentage_NE versus Service Provider_NE

Source	DF	SS	MS	F	P
Service Provider_NE	3	2651.5	883.8	19.63	0.000
Error	279	12559.2	45.0		
Total	282	15210.7			

S = 6.709 R-Sq = 17.43% R-Sq(adj) = 16.54%



Pooled StDev = 6.709

Conclusions:

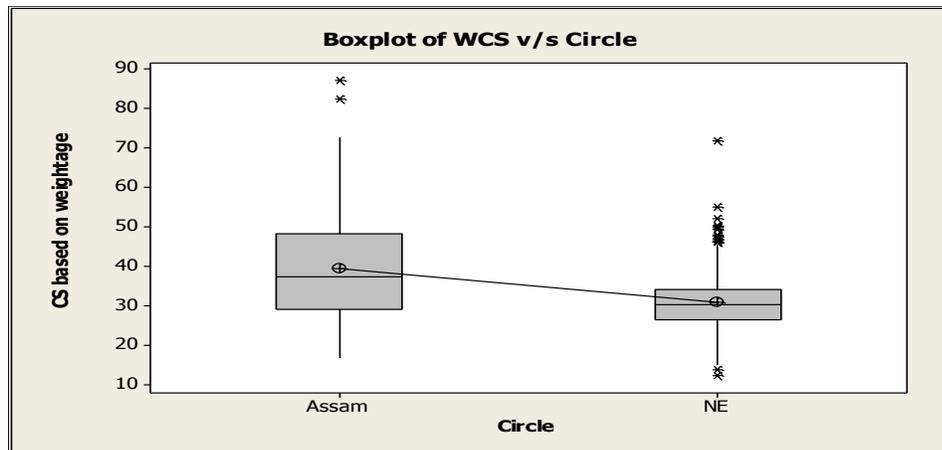
- Average customer satisfaction level for Reliance is lowest in NE Circle

- From the above ANOVA, it is observed that the P value is 0.000, and less than 0.05. Therefore the Null Hypothesis (H_0)” *There is no difference in overall customer satisfaction level from field office to field office*” is rejected, meaning the customer satisfaction levels are different for different field offices

Customer Satisfaction level for Assam and NE (field office to field office)

Assam: 39.5%

NE: 30.9%



Service provider to service provider difference in overall customer satisfaction from centre to centre

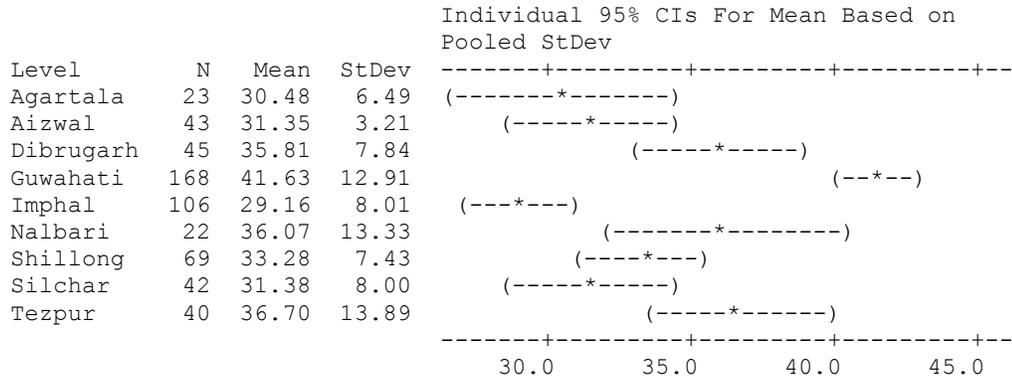
Null Hypothesis (H_0): *There is no difference in overall customer satisfaction level for the service providers from centre to centre.*

Alternative Hypothesis (H_1): *There is difference in overall customer satisfaction level for the service providers from centre to centre.*

One-way ANOVA: WCS v/s Locations

Source	DF	SS	MS	F	P
X2.Centre	8	12955	1619	15.80	0.000
Error	549	56281	103		
Total	557	69235			

S = 10.12 R-Sq = 18.71% R-Sq(adj) = 17.53%



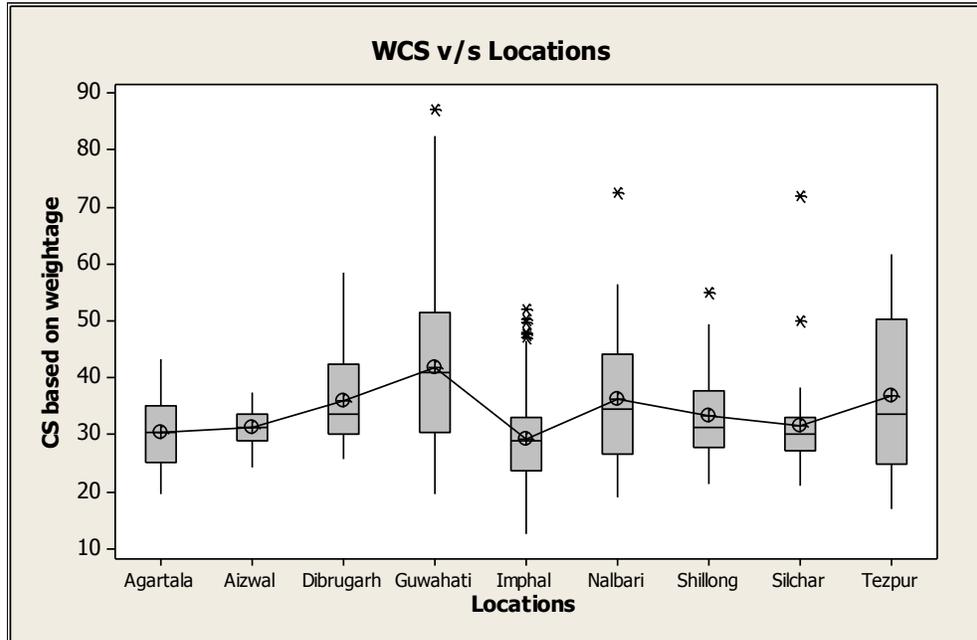
Pooled StDev = 10.12

Conclusion:

- From the above ANOVA, it is observed that the P value is 0.000, and less than 0.05. Therefore the Null Hypothesis (H_0) "There is no difference in overall customer satisfaction level from center to center" is rejected, meaning the customer satisfaction levels are different for different centers

Lower to Higher satisfaction level for centers are:

- **Lower:** Agartala, Imphal and Silchar
- **Middle:** Aizwal and Shillong
- **Higher:** Dibrugarh, Guwahati, Nalbari and Tezpur

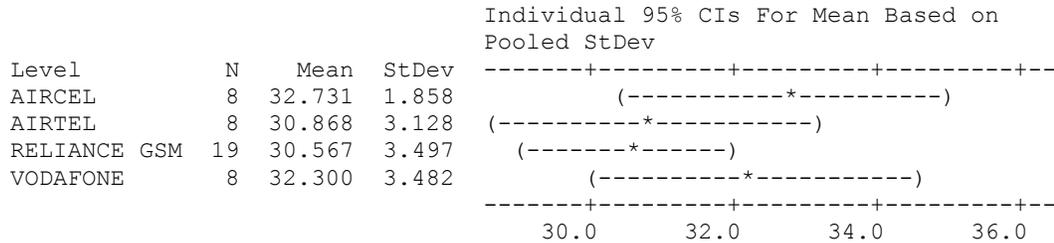


Further verification of CS level across Service Providers in each of the above Centers is also checked through ANOVA and results are listed below:

One-way ANOVA: WCS percentage_Aizwal versus Service Provider_Aizwal

Source	DF	SS	MS	F	P
Service Provider_Aizwal	3	36.0	12.0	1.18	0.331
Error	39	397.7	10.2		
Total	42	433.7			

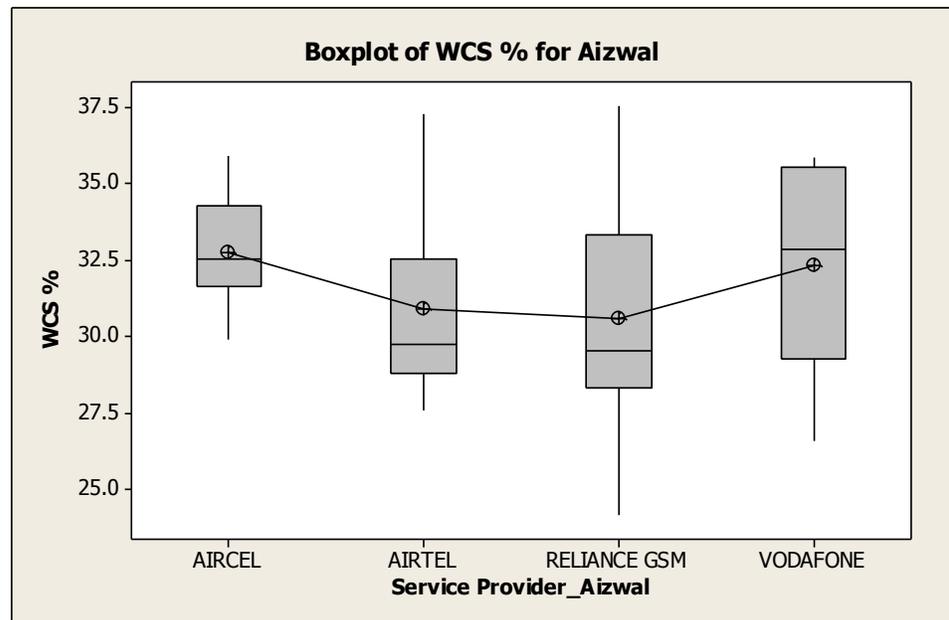
S = 3.193 R-Sq = 8.30% R-Sq(adj) = 1.25%



Pooled StDev = 3.193

Conclusion:

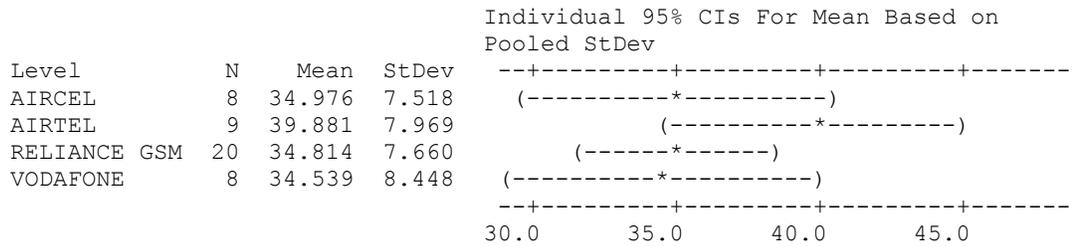
- **Since P value (0.331) is greater than 0.05, hence the CS levels for all the four Operators do not differ significantly from each other and therefore it can be concluded that for all the four operators the CS percentage is same for Aizwal location**



One-way ANOVA: WCS percentage_Dibrugarh versus Service Provider_Dibrugarh

Source	DF	SS	MS	F	P
Service Provider_Dibruga	3	187.5	62.5	1.02	0.395
Error	41	2518.2	61.4		
Total	44	2705.6			

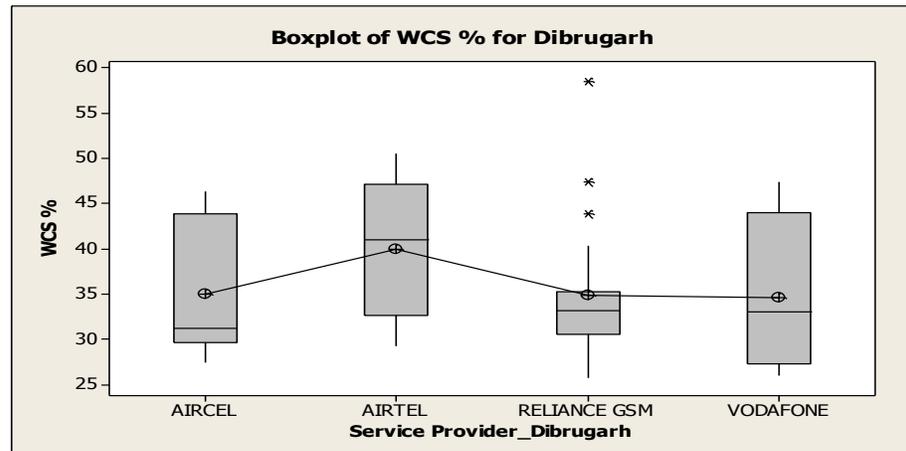
S = 7.837 R-Sq = 6.93% R-Sq(adj) = 0.12%



Pooled StDev = 7.837

Conclusion:

- Since P value (0.395) is greater than 0.05, hence the CS levels for all the four Operators do not differ significantly from each other and therefore it can be concluded that for all the four operators the CS percentage is same for Dibrugarh location



One-way ANOVA: WCS percentage_Imphal versus Service Provider_Imphal

Source	DF	SS	MS	F	P
Service Provider_Imphal	3	3116.6	1038.9	29.33	0.000
Error	102	3612.5	35.4		
Total	105	6729.1			

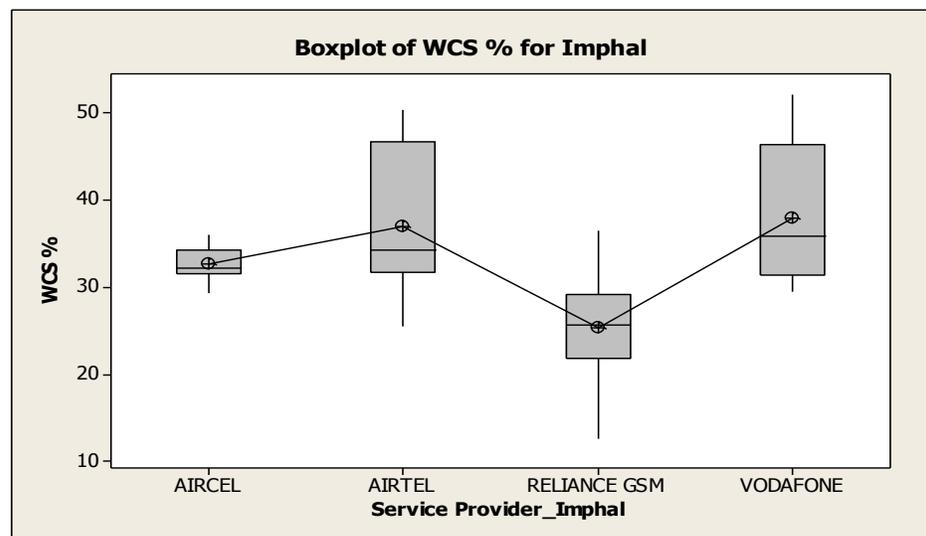
S = 5.951 R-Sq = 46.31% R-Sq(adj) = 44.74%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
AIRCEL	7	32.686	2.127	(-----*-----)
AIRTEL	14	36.965	7.934	(-----*-----)
RELIANCE GSM	70	25.355	5.328	(--*--)
VODAFONE	15	37.966	7.597	(-----*-----)

Pooled StDev = 5.951

Conclusion:

- Since P value (0.000) is less than 0.05, the average CS percentage differs significantly from each other in Imphal amongst the four Operators.
- Reliance is on lower side while other three are on higher side



One-way ANOVA: WCS Percentage_Nalbari versus Service Provider_Nalbari

Source	DF	SS	MS	F	P
Service Provider_Nalbari	2	1676	838	7.75	0.003
Error	19	2056	108		
Total	21	3731			

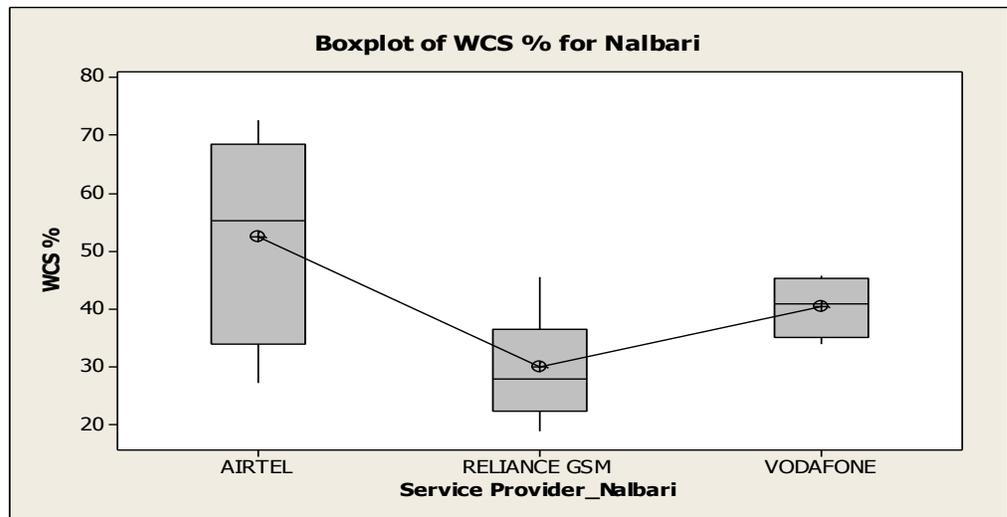
S = 10.40 R-Sq = 44.91% R-Sq(adj) = 39.11%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
AIRTEL	4	52.62	18.86	(-----*-----)
RELIANCE GSM	14	30.08	8.33	(-----*-----)
VODAFONE	4	40.48	5.34	(-----*-----)

Pooled StDev = 10.40

Conclusion:

- Since P value (0.003) is less than 0.05, the average CS % differs significantly from each other in Nalbari amongst the three Operators.
- Reliance is on lower side while other two are on higher side



One-way ANOVA: WCS Percentage_Shillong versus Service Provider_Shillong

Source	DF	SS	MS	F	P
Service Provider_Shillong	3	915.7	305.2	6.98	0.000
Error	65	2843.0	43.7		
Total	68	3758.7			

S = 6.614 R-Sq = 24.36% R-Sq(adj) = 20.87%

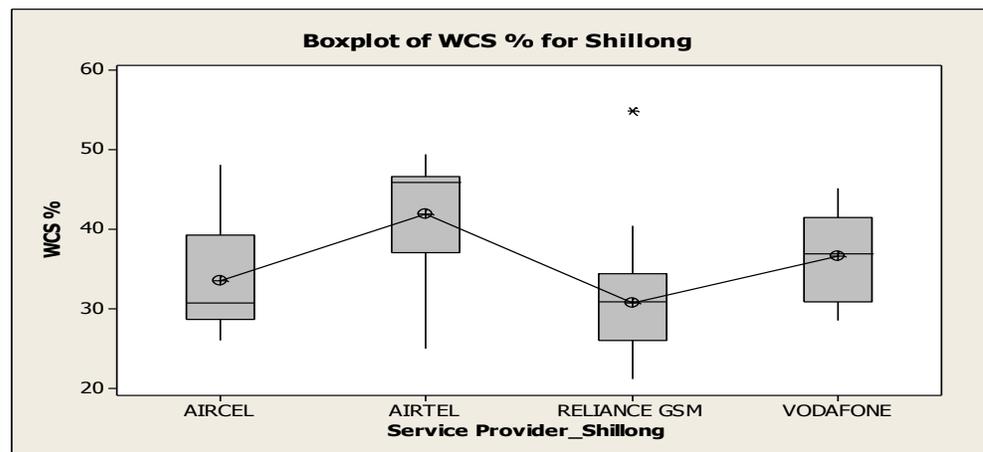
Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
AIRCEL	15	33.572	6.789	(-----*-----)
AIRTEL	8	41.900	8.099	(-----*-----)
RELIANCE GSM	39	30.800	6.363	(-----*-----)
VODAFONE	7	36.660	5.772	(-----*-----)

30.0 35.0 40.0 45.0

Pooled StDev = 6.614

Conclusion:

- Since P value (0.000) is less than 0.05, the average CS percentage differs significantly from each other in Shillong amongst the four Operators.
- Reliance and Aircel are on lower side while other two are on higher side

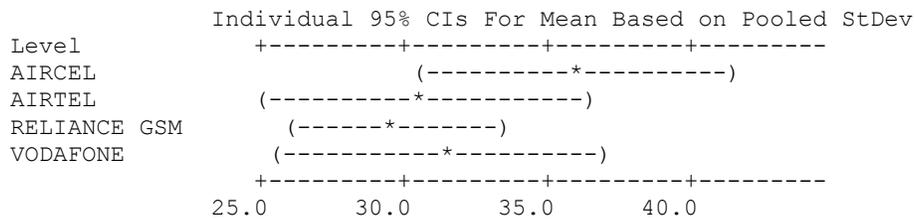


One-way ANOVA: WCS Percentage_Silchar versus Service Provider_Silchar

Source	DF	SS	MS	F	P
Service Provider_Silchar	3	235.3	78.4	1.25	0.306
Error	38	2390.3	62.9		
Total	41	2625.7			

S = 7.931 R-Sq = 8.96% R-Sq(adj) = 1.78%

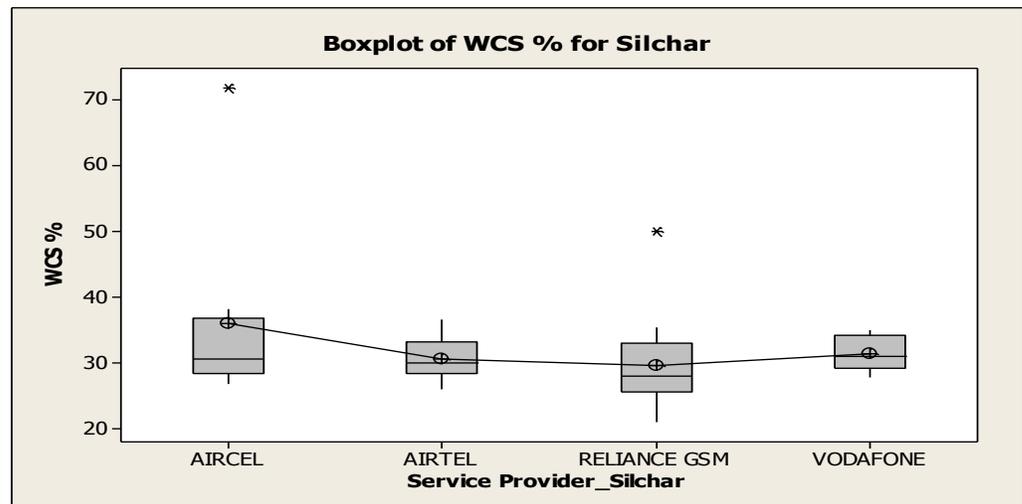
Level	N	Mean	StDev
AIRCEL	8	36.059	14.847
AIRTEL	8	30.689	3.351
RELIANCE GSM	18	29.611	6.515
VODAFONE	8	31.393	2.595



Pooled StDev = 7.931

Conclusion

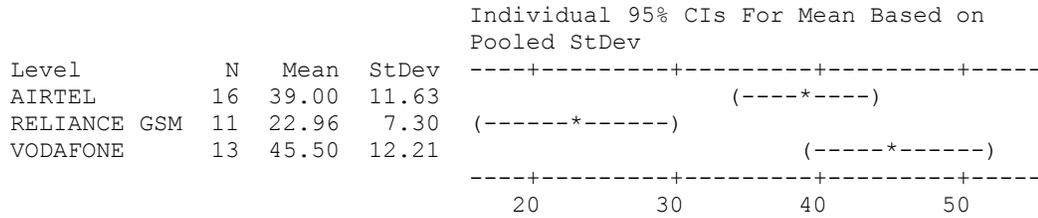
- Since P value (0.306) is greater than 0.05, hence the CS levels for all the four Operators do not differ significantly from each other and therefore it can be concluded that for all the four operators the CS percentage is same for Silchar location



One-way ANOVA: WCS percentage_Tezpur versus Service Provider_Tezpur

Source	DF	SS	MS	F	P
Service Provider_Tezpur	2	3168	1584	13.47	0.000
Error	37	4352	118		
Total	39	7521			

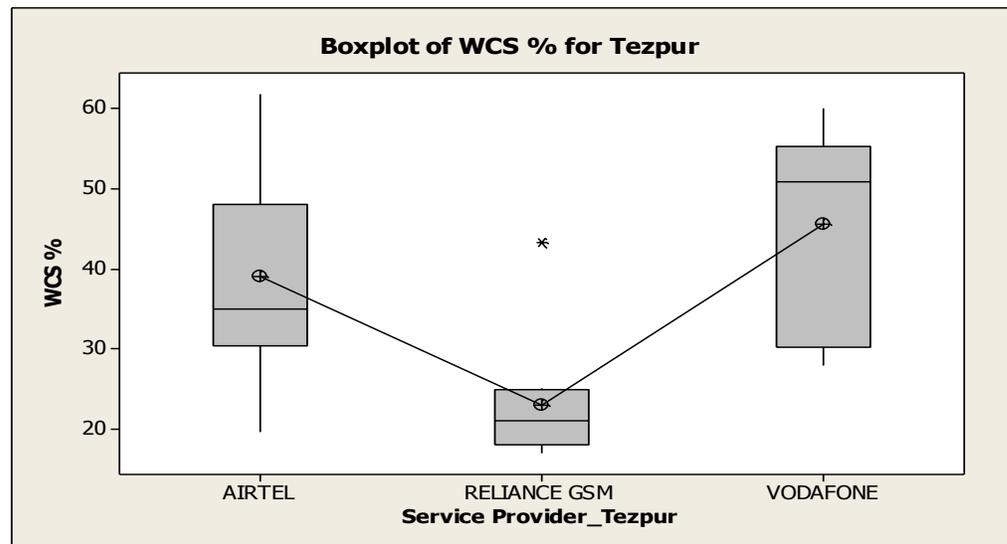
S = 10.85 R-Sq = 42.13% R-Sq(adj) = 39.00%



Pooled StDev = 10.85

Conclusion:

- Since P value (0.000) is less than 0.05, the average CS percentage differs significantly from each other in Tezpur amongst the four Operators.
- Reliance is on lower side while other two are on higher side



Service provider to service provider difference in customer satisfaction with respect to the following 10 Service Parameters, listed below:

- a) Cost
- b) Brand
- c) Customer Loyalty
- d) Network
- e) Billing
- f) Call Center
- g) Store
- h) Tariff Plan
- i) Value Added Service
- j) Advertising and Communication

Null Hypothesis (H_0): *There is no difference* in customer satisfaction level from service provider to Service provider in each of the above segment.

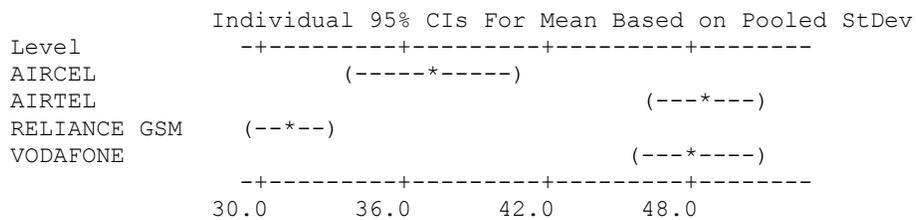
Alternative Hypothesis (H_1): *There is difference* in customer satisfaction level from service provider to Service provider in each of the above segment.

One-way ANOVA: CS on Brand Perception versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	37712	12571	63.85	0.000
Error	553	108868	197		
Total	556	146580			

S = 14.03 R-Sq = 25.73% R-Sq(adj) = 25.32%

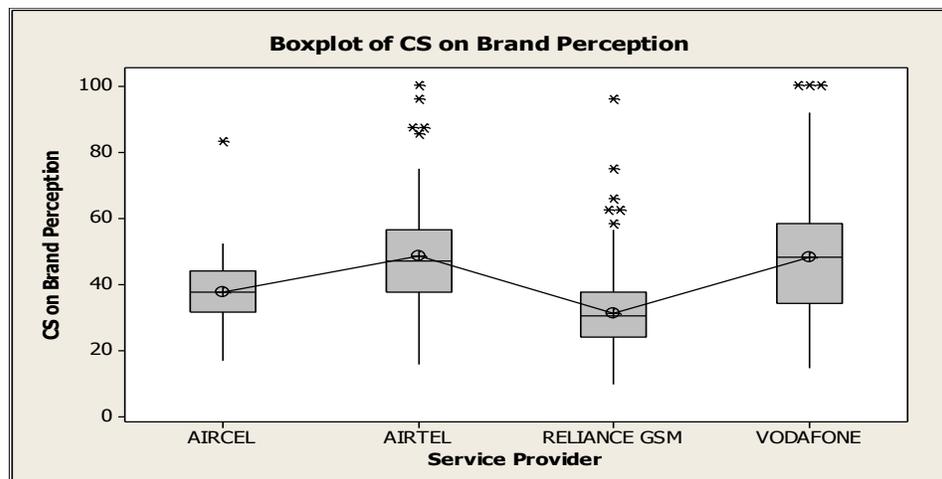
Level	N	Mean	StDev
AIRCEL	60	37.45	10.65
AIRTEL	123	48.55	15.49
RELIANCE GSM	251	31.02	11.59
VODAFONE	123	48.22	17.96



Pooled StDev = 14.03

Conclusion:

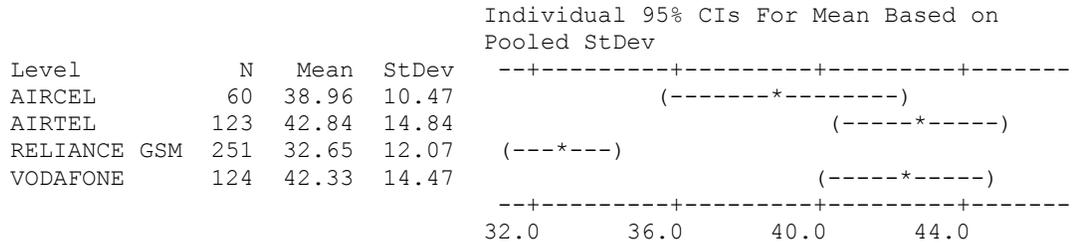
- Since P value (0.000) is less than 0.05, the average CS percentage differs significantly on Brand Perception amongst the four Operators.
- Reliance and Aircel are on lower side and Airtel and Vodafone on higher side



One-way ANOVA: CS on Customer Loyalty versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	12395	4132	23.97	0.000
Error	554	95510	172		
Total	557	107905			

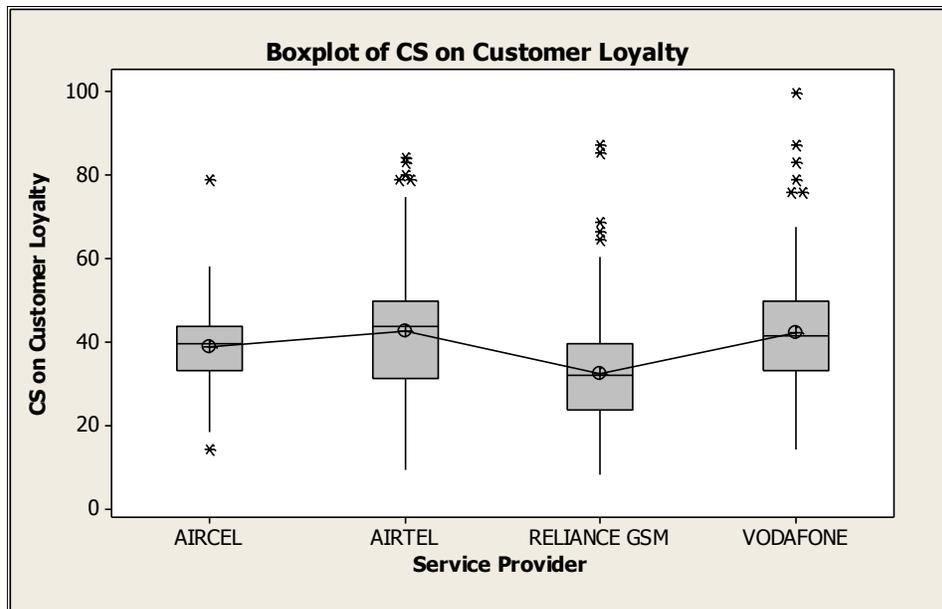
S = 13.13 R-Sq = 11.49% R-Sq(adj) = 11.01%



Pooled StDev = 13.13

Conclusion:

- Since P value (0.000) is less than 0.05, the average CS percentage differs significantly on Customer Loyalty amongst the four Operators.
- Reliance is on lower side, Airtel, Vodafone and Aircel are on higher side



One-way ANOVA: CS on Network Experience versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	73903	24634	73.19	0.000
Error	554	186470	337		
Total	557	260373			

S = 18.35 R-Sq = 28.38% R-Sq(adj) = 28.00%

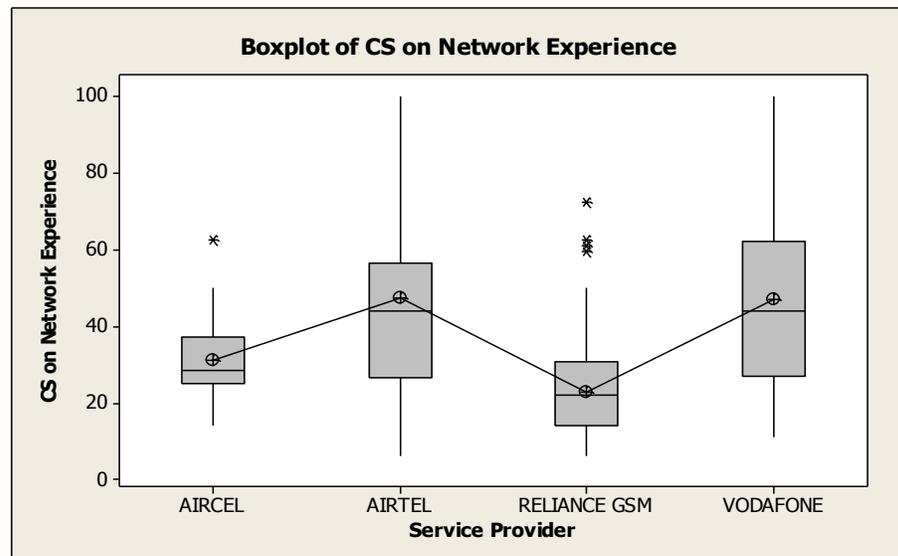
Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
AIRCEL	60	31.20	9.42	(-----*-----)
AIRTEL	123	47.34	24.66	(---*---)
RELIANCE GSM	251	22.90	12.09	(--*--)
VODAFONE	124	46.94	23.93	(---*---)

-----+-----+-----+-----+-----
24.0 32.0 40.0 48.0

Pooled StDev = 18.35

Conclusion:

- Since P value (0.000) is less than 0.05, the average CS percentage differs significantly on Network Perception amongst the four Operators.
- Reliance is on lower side, Airtel and Vodafone on higher side and Aircel is in between the two Service Providers

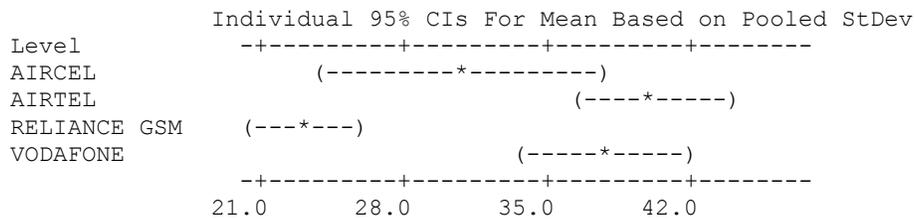


One-way ANOVA: CS on Call Center Experience versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	11856	3952	20.94	0.000
Error	192	36240	189		
Total	195	48095			

S = 13.74 R-Sq = 24.65% R-Sq(adj) = 23.47%

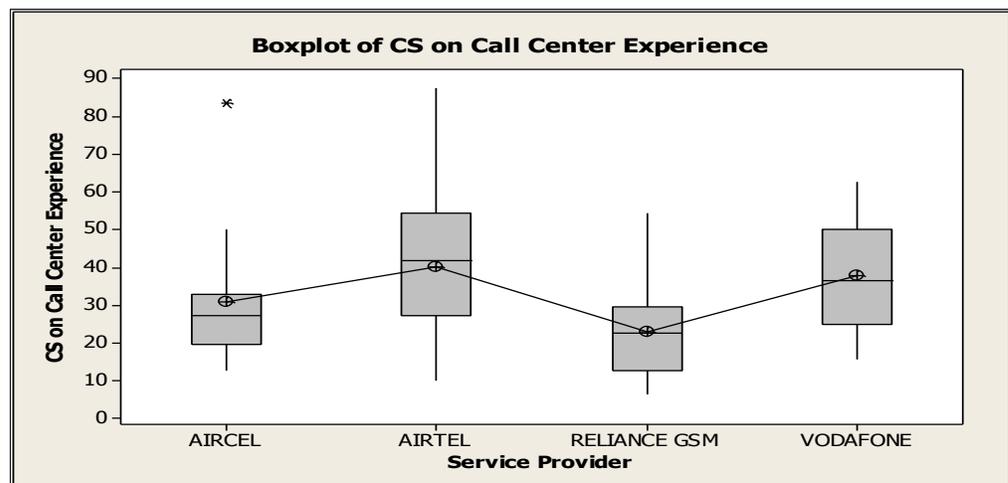
Level	N	Mean	StDev
AIRCEL	16	30.89	17.06
AIRTEL	47	40.11	16.64
RELIANCE GSM	89	22.87	11.71
VODAFONE	44	37.87	12.82



Pooled StDev = 13.74

Conclusion:

- Since P value (0.000) is less than 0.05, the average CS percentage differs significantly on Call Center Experience amongst the four Operators.
- Reliance is on lower side, Airtel and Vodafone on higher side and Aircel is in between the two Service Providers



One-way ANOVA: CS on Store Experience versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	8014	2671	7.69	0.000
Error	122	42397	348		
Total	125	50411			

S = 18.64 R-Sq = 15.90% R-Sq(adj) = 13.83%

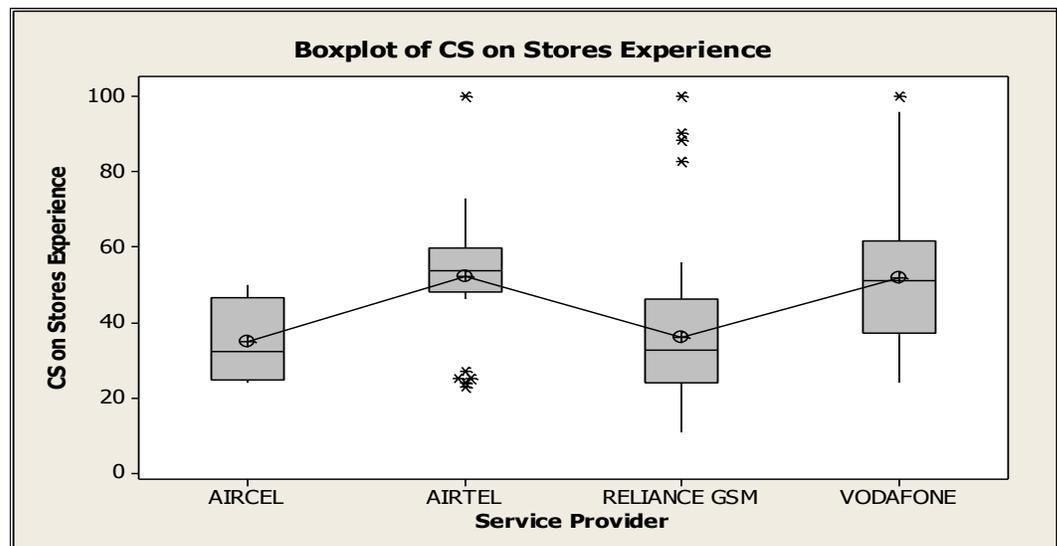
Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
AIRCEL	6	34.78	10.66	(-----*-----)
AIRTEL	25	52.02	17.70	(-----*-----)
RELIANCE GSM	59	36.11	18.73	(-----*-----)
VODAFONE	36	51.87	19.97	(-----*-----)

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20 30 40 50

Pooled StDev = 18.64

Conclusion:

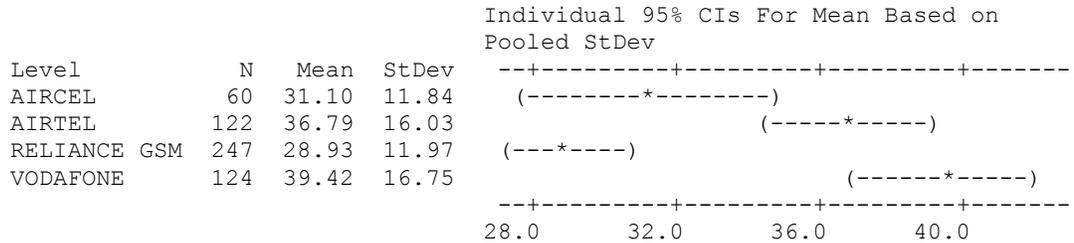
- Since P value (0.000) is less than 0.05, the average CS percentage differs significantly on Store Experience amongst the four Operators.
- Reliance and Aircel are on lower side, Airtel and Vodafone on higher side



One-way ANOVA: CS on Tariff Plan Perception versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	11124	3708	18.65	0.000
Error	549	109152	199		
Total	552	120276			

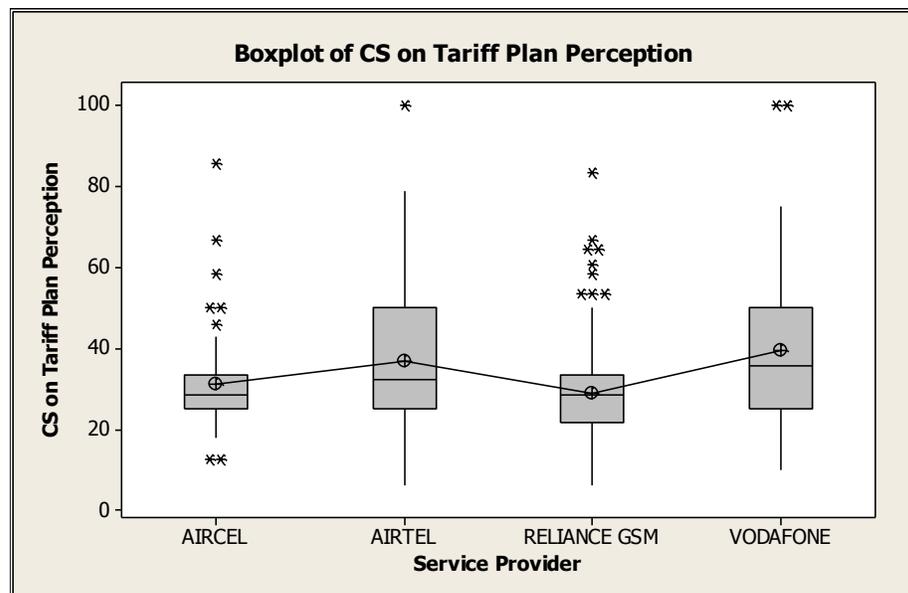
S = 14.10 R-Sq = 9.25% R-Sq(adj) = 8.75%



Pooled StDev = 14.10

Conclusion:

- Since P value (0.000) is less than 0.05, the average CS percentage differs significantly on Tariff Plan Perception amongst the four Operators.
- Reliance and Aircel are on lower side, Airtel and Vodafone on higher side



One-way ANOVA: CS on VAS versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	7725	2575	12.98	0.000
Error	434	86081	198		
Total	437	93806			

S = 14.08 R-Sq = 8.24% R-Sq(adj) = 7.60%

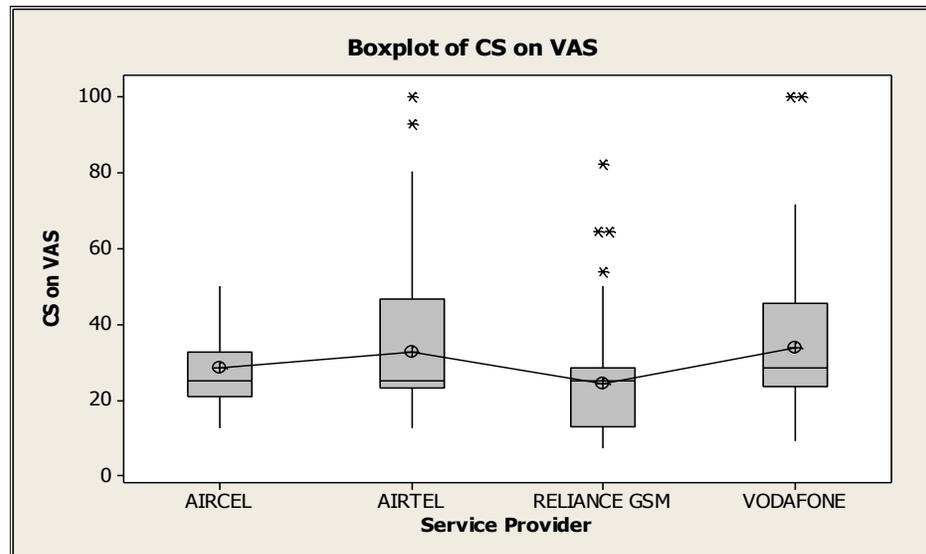
Level	N	Mean	StDev
AIRCEL	50	28.36	10.01
AIRTEL	99	32.45	16.80
RELIANCE GSM	189	24.10	11.82
VODAFONE	100	33.53	16.59

Individual 95% CIs For Mean Based on Pooled StDev

Pooled StDev = 14.08

Conclusion:

- Since P value (0.000) is less than 0.05, the average CS percentage differs significantly on VAS Experience amongst the four Operators.
- Reliance and Aircel are on lower side, Airtel and Vodafone on higher side



One-way ANOVA: CS on Advt. & Communication versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	24265	8088	38.86	0.000
Error	552	114893	208		
Total	555	139159			

S = 14.43 R-Sq = 17.44% R-Sq(adj) = 16.99%

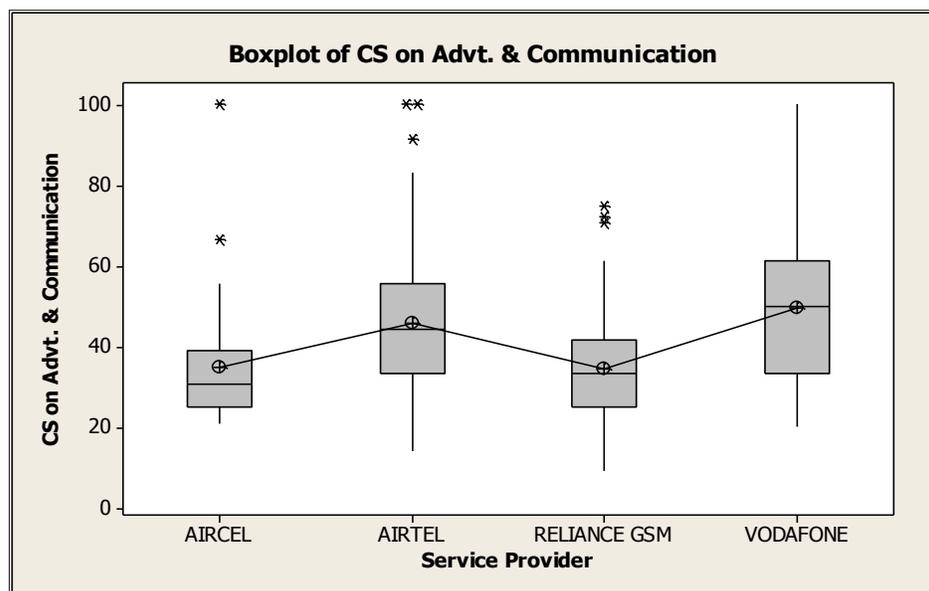
Level	N	Mean	StDev
AIRCEL	59	34.78	13.51
AIRTEL	123	45.60	17.00
RELIANCE GSM	251	34.54	11.10
VODAFONE	123	49.62	17.71

Individual 95% CIs For Mean Based on Pooled StDev

Pooled StDev = 14.43

Conclusion:

- Since P value (0.000) is less than 0.05, the average CS percentage differs significantly on Advertising and Communication Experience amongst the four Operators.
- Reliance and Aircel are on lower side, Airtel and Vodafone on higher side



From the above ANOVA, we see that P value is either 0.000 or <0.05 for each of the above segments make Customer Satisfaction different from Service Provider to Service Provider on these parameters.

Hence, the Null Hypothesis (H_0): *There is no difference* in overall customer satisfaction level for the service providers from the above sub segments, is rejected and concluded that there is significant difference in overall customer satisfaction for the service providers for the above segments.

1.2. TEST OF HYPOTHESES AND CONCLUSIONS BASED ON CHI SQUARE TEST

The questionnaire was designed to capture verbal responses of respondents to the 94 questions. Accordingly 558 respondents multiplied by 94 questions per respondent is equal to 52452 verbal responses, including some blank ones (where customer did not respond) were obtained.

However there were 5 different types of verbal responses covering 94 questions.

These 52452 responses which of 22 different types were standardized to only 5 types to facilitate analysis.

The survey responses were based on verbal responses listed below

Verbal Responses to 95 questions, broadly classified into five different types of questions, asked to the respondents as part of the Data Collection activity				
Category 1 questions to which the answers are one of the five options given below	Category 2 questions to which the answers are one of the five options given below	Category 3 Questions to which the answers are one of the five options given below	Category 4 questions to which the answers are one of the five options given below	Category 5 questions to which the answers are one of the five options given below
Strongly Agree	Excellent	Extremely Likely	Very Low	Yes
Agree	Very Good	Very Likely	Low	-
Neither Agree Nor Disagree	Good	Somewhat Likely	Moderate	-
Disagree	Fair	Not Very Likely	High	-
Strongly Disagree	Poor	Not At All Likely	Very High	No

Verbal Responses to 95 questions, broadly classified into five different types of questions, asked to the respondents as part of the Data Collection activity					Equivalent Phrase Standardising the 5 different types of Responses
Category 1 questions to which the answers are one of the five options given below	Category 2 questions to which the answers are one of the five options given below	Category 3 Questions to which the answers are one of the five options given below	Category 4 questions to which the answers are one of the five options given below	Category 5 questions to which the answers are one of the five options given below	5 -Point Standardised Scale
Strongly Agree	Excellent	Extremely Likely	Very Low	Yes	Most Favourable
Agree	Very Good	Very Likely	Low	-	Favourable
Neither Agree Nor Disagree	Good	Somewhat Likely	Moderate	-	Non Committal
Disagree	Fair	Not Very Likely	High	-	Unfavourable
Strongly Disagree	Poor	Not At All Likely	Very High	No	Most Unfavourable

The need for standardising arises because all 95 questions are not having the same response options in terms of number as well as content/description

For example: We cannot add frequency of strongly agree and excellent, apples and oranges cannot be clubbed together, unless two phrases are reduced to the same common unit.

However, because Strongly Agree and Excellent both the phrases indicate highest level of satisfaction given the structuring of the question, we can safely standardise the two different phrases as “Most favourable” and same applies to other Responses and their corresponding standardised phrase.

Having standardised the nomenclature it is possible now to combine all the responses to arrive at overall customer satisfaction, which was not possible in the absence of a standardised nomenclature.

The most appropriate analysis to analyse the verbal data is Frequency Chi Square Test.

Now after the needed standardised was done, Chi Sq Test was performed in respect of each of the 4 Research Hypotheses the results of which are given below:

Hypothesis: There does exist service provider to service provider difference in overall customer satisfaction.

Based on Frequency χ^2 Test performed on the standardised responses, it is established that there is differential customer satisfaction level from Service Provider to Service Provider establishing the validity of the above Hypothesis

Service Provider		Most Unfavourable	Unfavourable	Non Committal	Favourable	Most Favourable
AIRCEL	Observed Frequency	47	400	2332	1258	106
	Expected Frequency	138	510	1844	1384	267
	Chi Square Value	60.3	23.6	129.2	11.5	97.1
AIRTEL	Observed Frequency	172	545	3236	3983	954
	Expected Frequency	297	1094	3957	2970	573
	Chi Square Value	52.5	275.4	131.3	345.8	253.5
RELIANCE	Observed Frequency	1030	3385	8954	4099	477
	Expected Frequency	599	2208	7987	5994	1156
	Chi Square Value	309.5	627.3	117.1	599.3	399.2
VODAFONE	Observed Frequency	88	596	3296	4033	1043
	Expected Frequency	302	1114	4031	3025	584
	Chi Square Value	152	241.1	133.9	335.8	361.6

Pearson Chi-Square = 4657.138, DF = 12, P-Value = 0.000

Likelihood Ratio Chi-Square = 4762.686, DF = 12, P-Value = 0.000

The cell highlighted in green represents performance better than expected and red vice versa

Hypothesis: There does exist location to location difference in overall customer satisfaction.

Based on Frequency χ^2 Test performed on the standardised responses, it is established that there is differential customer satisfaction level from location to location establishing the validity of the above Hypothesis

Locations		Most Unfavourable	Unfavourable	Non Committal	Favourable	Most Favourable
Agartala	Observed Frequency	39	236	996	309	32
	Expected Frequency	53.8	198.3	717.5	538.5	103.9
	Chi Square Value	4.09	7.15	108.14	97.79	49.74
Aizwal	Observed Frequency	12	328	1763	882	21
	Expected Frequency	100.4	369.9	1337.9	1004.1	193.7
	Chi Square Value	77.82	4.74	135.08	14.85	154
Dibrugarh	Observed Frequency	93	252	1412	1415	106
	Expected Frequency	109.5	403.3	1458.9	1095	211.3
	Chi Square Value	2.48	56.79	1.51	93.52	52.44
Guwahati	Observed Frequency	237	1089	4007	5180	1551
	Expected Frequency	402.9	1484.4	5369.3	4029.9	777.5
	Chi Square Value	68.31	105.33	345.66	328.25	769.62
Imphal	Observed Frequency	628	1384	3598	1777	195
	Expected Frequency	253.2	932.9	3374.5	2532.7	488.6
	Chi Square Value	554.73	218.09	14.8	225.48	176.44
Nalbari	Observed Frequency	83	207	633	484	166
	Expected Frequency	52.5	193.6	700.1	525.4	101.4
	Chi Square Value	17.67	0.93	6.43	3.27	41.2
Shillong	Observed Frequency	48	600	2506	1523	184
	Expected Frequency	162.3	598.1	2163.5	1623.8	313.3
	Chi Square Value	80.53	0.01	54.22	6.25	53.34
Silchar	Observed Frequency	60	364	1787	619	92
	Expected Frequency	97.6	359.5	1300.5	976.1	188.3
	Chi Square Value	14.48	0.06	181.99	130.62	49.26
Tezpur	Observed Frequency	137	466	1116	1184	233
	Expected Frequency	104.7	385.9	1395.7	1047.6	202.1
	Chi Square Value	9.94	16.64	56.07	17.77	4.72

Pearson Chi-Square = 4412.286, DF = 32, P-Value = 0.000

Likelihood Ratio Chi-Square = 4370.500, DF = 32, P-Value = 0.000

The cell highlighted in green represents performance better than expected and red vice versa

Hypothesis: There does exist Circle to Circle difference in overall customer satisfaction.

Based on Frequency χ^2 Test performed on the standardised responses, it is established that there is differential customer satisfaction level from Circle to Circle establishing the validity of the above Hypothesis

Circle	Observed/Expected/Chi	Most Unfavourable	Unfavourable	Non Committal	Favourable	Most Favourable
Assam	Observed Frequency	550	2014	7168	8263	2056
	Expected Frequency	670	2467	8924	6698	1292
	Chi Square Value	21.4	83.2	345.6	365.7	451.5
NE	Observed Frequency	787	2912	10650	5110	524
	Expected Frequency	667	2459	8894	6675	1288
	Chi Square Value	21.4	83.5	346.8	367	453

Pearson Chi-Square = 2539.154, DF = 4, P-Value = 0.000

Likelihood Ratio Chi-Square = 2614.569, DF = 4, P-Value = 0.000

The cell highlighted in green represents performance better than expected and red vice versa

Hypothesis: There does exist Service provider to service provider difference in customer satisfaction with respect to each of the 10 Service Parameters:

- a) Cost
- b) Brand
- c) Customer Loyalty
- d) Network
- e) Billing
- f) Call Center
- g) Store
- h) Tariff Plan
- i) Value Added Service
- j) Advertising and Communication

Based on Frequency χ^2 Test performed on the standardised responses, it is established that there is differential customer satisfaction level from Service Provider to Service Provider for each of 10 Service Parameters establishing the validity of the above Hypotheses

The cell highlighted in green represents performance better than expected and red vice versa

Cost		Most Unfavourable	Unfavourable	Non Committal	Favourable	Most Favourable
AIRCEL	Observed Frequency	0	27	184	62	5
	Expected Frequency	2.44	36.79	159.04	73.69	6.04
	Chi Square Value	2.439	2.606	3.918	1.854	0.18
AIRTEL	Observed Frequency	4	59	275	234	21
	Expected Frequency	5.2	78.48	339.24	157.18	12.89
	Chi Square Value	0.278	4.835	12.166	37.541	5.1
RELIANCE	Observed Frequency	19	215	730	189	4
	Expected Frequency	10.15	153.12	661.9	306.68	25.15
	Chi Square Value	7.719	25.008	7.007	45.156	17.788
VODAFONE	Observed Frequency	0	46	311	210	27
	Expected Frequency	5.21	78.61	339.82	157.45	12.91
	Chi Square Value	5.211	13.528	2.444	17.54	15.368

Pearson Chi-Square = 227.684, DF = 12, P-Value = 0.000

Likelihood Ratio Chi-Square = 240.558, DF = 12, P-Value = 0.000

Brand		Most Unfavourable	Unfavourable	Non Committal	Favourable	Most Favourable
AIRCEL	Observed Frequency	0	39	343	312	20
	Expected Frequency	10.8	75.5	276.8	298	52.8
	Chi Square Value	10.82	17.66	15.82	0.66	20.39
AIRTEL	Observed Frequency	3	50	405	817	200
	Expected Frequency	22.4	156	571.9	615.7	109.1
	Chi Square Value	16.75	72.04	48.68	65.84	75.73
RELIANCE	Observed Frequency	96	535	1432	884	59
	Expected Frequency	45.6	318	1165.4	1254.7	222.3
	Chi Square Value	55.87	148.14	60.98	109.53	120
VODAFONE	Observed Frequency	2	81	404	769	214
	Expected Frequency	22.3	155.5	569.9	613.6	108.7
	Chi Square Value	18.46	35.69	48.3	39.37	101.91

Pearson Chi-Square = 1082.644, DF = 12, P-Value = 0.000

Likelihood Ratio Chi-Square = 1142.539, DF = 12, P-Value = 0.000

Customer Loyalty		Most Unfavourable	Unfavourable	Non Committal	Favourable	Most Favourable
AIRCEL	Observed Frequency	10	47	102	179	16
	Expected Frequency	17.4	55.2	104.6	155.3	21.6
	Chi Square Value	3.12	1.209	0.064	3.625	1.46
AIRTEL	Observed Frequency	42	74	181	353	78
	Expected Frequency	35.7	113.4	215.1	319.3	44.5
	Chi Square Value	1.112	13.717	5.397	3.552	25.303
RELIANCE	Observed Frequency	68	315	528	553	38
	Expected Frequency	73.7	234.1	443.7	658.8	91.7
	Chi Square Value	0.434	27.985	16.003	16.997	31.471
VODAFONE	Observed Frequency	43	82	171	373	71
	Expected Frequency	36.3	115.3	218.6	324.6	45.2
	Chi Square Value	1.242	9.627	10.371	7.222	14.737

Pearson Chi-Square = 194.648, DF = 12, P-Value = 0.000

Likelihood Ratio Chi-Square = 198.291, DF = 12, P-Value = 0.000

Network		Most Unfavourable	Unfavourable	Non Committal	Favourable	Most Favourable
AIRCEL	Observed Frequency	0	49	299	139	2
	Expected Frequency	34.9	82.7	197.6	131	42.8
	Chi Square Value	34.89	13.72	52.02	0.49	38.91
AIRTEL	Observed Frequency	18	64	367	384	197
	Expected Frequency	73.5	174.2	416.2	275.9	90.2
	Chi Square Value	41.9	69.67	5.82	42.33	126.48
RELIANCE	Observed Frequency	304	571	864	303	14
	Expected Frequency	146.7	347.6	830.8	550.8	180
	Chi Square Value	168.67	143.53	1.32	111.47	153.13
VODAFONE	Observed Frequency	8	98	339	413	192
	Expected Frequency	74.9	177.5	424.3	281.3	91.9
	Chi Square Value	59.77	35.63	17.15	61.68	108.88

Pearson Chi-Square = 1287.467, DF = 12, P-Value = 0.000

Likelihood Ratio Chi-Square = 1430.288, DF = 12, P-Value = 0.000

Billing		Most Unfavourable	Unfavourable	Non Committal	Favourable	Most Favourable
AIRCEL	Observed Frequency	18	82	468	202	20
	Expected Frequency	28.7	78.4	376.3	259.7	47
	Chi Square Value	3.96	0.16	22.37	12.82	15.48
AIRTEL	Observed Frequency	35	78	587	756	153
	Expected Frequency	58.4	159.7	766.3	528.9	95.7
	Chi Square Value	9.35	41.81	41.96	97.46	34.38
RELIANCE	Observed Frequency	206	493	1807	708	107
	Expected Frequency	120.5	329.7	1581.7	1091.8	197.4
	Chi Square Value	60.76	80.94	32.09	134.89	41.42
VODAFONE	Observed Frequency	7	75	631	745	156
	Expected Frequency	58.5	160.2	768.7	530.6	96
	Chi Square Value	45.38	45.32	24.67	86.64	37.58

Pearson Chi-Square = 869.451, DF = 12, P-Value = 0.000

Likelihood Ratio Chi-Square = 901.781, DF = 12, P-Value = 0.000

Call Center		Most Unfavourable	Unfavourable	Non Committal	Favourable	Most Favourable
AIRCEL	Observed Frequency	9	29	102	43	8
	Expected Frequency	19.4	28.2	80.49	56.98	5.92
	Chi Square Value	5.579	0.023	5.745	3.43	0.731
AIRTEL	Observed Frequency	22	41	191	264	36
	Expected Frequency	56.28	81.8	233.48	165.27	17.17
	Chi Square Value	20.882	20.35	7.728	58.98	20.647
RELIANCE	Observed Frequency	205	233	448	166	5
	Expected Frequency	107.38	156.07	445.46	315.33	32.76
	Chi Square Value	88.738	37.92	0.014	70.715	23.524
VODAFONE	Observed Frequency	0	40	238	220	23
	Expected Frequency	52.93	76.93	219.57	155.43	16.15
	Chi Square Value	52.93	17.726	1.547	26.829	2.907

Pearson Chi-Square = 466.945, DF = 12, P-Value = 0.000

Likelihood Ratio Chi-Square = 522.957, DF = 12, P-Value = 0.000

Store Experience		Most Unfavourable	Unfavourable	Non Committal	Favourable	Most Favourable
AIRCEL	Observed Frequency	0	5	39	33	0
	Expected Frequency	1.14	5.48	26.49	35.31	8.58
	Chi Square Value	1.144	0.042	5.905	0.151	8.577
AIRTEL	Observed Frequency	0	3	69	193	50
	Expected Frequency	4.68	22.42	108.38	144.44	35.09
	Chi Square Value	4.678	16.818	14.308	16.326	6.339
RELIANCE	Observed Frequency	24	97	336	257	50
	Expected Frequency	11.35	54.37	262.86	350.32	85.1
	Chi Square Value	14.111	33.428	20.35	24.861	14.477
VODAFONE	Observed Frequency	0	10	112	258	80
	Expected Frequency	6.83	32.74	158.27	210.93	51.24
	Chi Square Value	6.832	15.79	13.526	10.505	16.146

Pearson Chi-Square = 244.311, DF = 12, P-Value = 0.000

Likelihood Ratio Chi-Square = 272.587, DF = 12, P-Value = 0.000

Tariff Plan		Most Unfavourable	Unfavourable	Non Committal	Favourable	Most Favourable
AIRCEL	Observed Frequency	0	33	276	88	8
	Expected Frequency	6.22	47.57	213.96	124.27	12.98
	Chi Square Value	6.219	4.463	17.992	10.587	1.913
AIRTEL	Observed Frequency	24	51	396	333	36
	Expected Frequency	12.9	98.66	443.76	257.75	26.93
	Chi Square Value	9.554	23.026	5.14	21.971	3.056
RELIANCE	Observed Frequency	27	304	915	351	25
	Expected Frequency	24.91	190.52	856.88	497.7	52
	Chi Square Value	0.176	67.6	3.942	43.24	14.018
VODAFONE	Observed Frequency	6	48	374	367	50
	Expected Frequency	12.98	99.25	446.4	259.28	27.09
	Chi Square Value	3.75	26.465	11.743	44.751	19.377

Pearson Chi-Square = 338.982, DF = 12, P-Value = 0.000

Likelihood Ratio Chi-Square = 343.500, DF = 12, P-Value = 0.000

Value Added Service		Most Unfavourable	Unfavourable	Non Committal	Favourable	Most Favourable
AIRCEL	Observed Frequency	6	65	185	80	1
	Expected Frequency	11.11	72.03	169.32	76.71	7.83
	Chi Square Value	2.349	0.686	1.452	0.141	5.962
AIRTEL	Observed Frequency	15	86	333	190	26
	Expected Frequency	21.43	138.93	326.58	147.95	15.11
	Chi Square Value	1.927	20.166	0.126	11.95	7.847
RELIANCE	Observed Frequency	57	369	603	167	14
	Expected Frequency	39.89	258.63	607.94	275.42	28.13
	Chi Square Value	7.344	47.104	0.04	42.68	7.097
VODAFONE	Observed Frequency	17	96	327	219	26
	Expected Frequency	22.58	146.41	344.16	155.92	15.92
	Chi Square Value	1.379	17.358	0.856	25.521	6.374

Pearson Chi-Square = 208.360, DF = 12, P-Value = 0.000

Likelihood Ratio Chi-Square = 214.348, DF = 12, P-Value = 0.000

Advertising & Communication		Most Unfavourable	Unfavourable	Non Committal	Favourable	Most Favourable
AIRCEL	Observed Frequency	6	65	185	80	1
	Expected Frequency	11.11	72.03	169.32	76.71	7.83
	Chi Square Value	2.349	0.686	1.452	0.141	5.962
AIRTEL	Observed Frequency	15	86	333	190	26
	Expected Frequency	21.43	138.93	326.58	147.95	15.11
	Chi Square Value	1.927	20.166	0.126	11.95	7.847
RELIANCE	Observed Frequency	57	369	603	167	14
	Expected Frequency	39.89	258.63	607.94	275.42	28.13
	Chi Square Value	7.344	47.104	0.04	42.68	7.097
VODAFONE	Observed Frequency	17	96	327	219	26
	Expected Frequency	22.58	146.41	344.16	155.92	15.92
	Chi Square Value	1.379	17.358	0.856	25.521	6.374

Pearson Chi-Square = 208.360, DF = 12, P-Value = 0.000

Likelihood Ratio Chi-Square = 214.348, DF = 12, P-Value = 0.000

1.2. MACRO ANALYSIS- ANALYSIS OF CUSTOMER SATISFACTION ON 10 BROAD PARAMETERS

(Part of the below Analysis has been presented at the following International Conferences:

- 3rd IIM A International Conference on Advanced Data Analysis, Business Analytics and Intelligence. April 13-14, 2013, IIM Ahmedabad
- 7th IIM A Doctoral Colloquium, Dec 9-10, 2013, IIM Ahmedabad)

One-way ANOVA: CS on Cost Perception versus Circles

Source	DF	SS	MS	F	P
Circles	1	5815	5815	37.31	0.000
Error	556	86660	156		
Total	557	92476			

S = 12.48 R-Sq = 6.29% R-Sq(adj) = 6.12%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
Assam	275	34.56	14.37	(-----*-----)
NE	283	28.10	10.33	(-----*-----)

-----+-----+-----+-----+-----
 27.5 30.0 32.5 35.0

Pooled StDev = 12.48

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Cost Perception differs significantly from one Circle to another.
- CS on Cost Perception is more in Assam when compared with NE

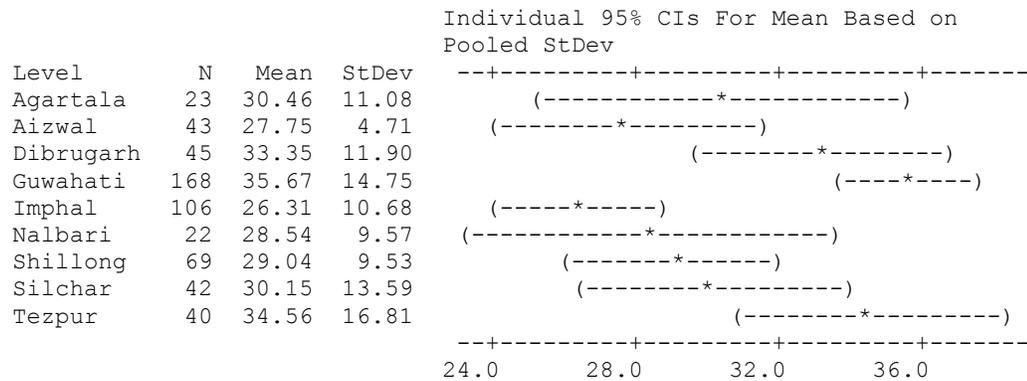
➤ Recommendation

- Operators in NE needs to focus more on improving the Cost Perception amongst customers

One-way ANOVA: CS on Cost Perception versus Locations

Source	DF	SS	MS	F	P
Locations	8	7596	950	6.14	0.000
Error	549	84880	155		
Total	557	92476			

S = 12.43 R-Sq = 8.21% R-Sq(adj) = 6.88%



Pooled StDev = 12.43

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Cost Perception differs significantly from one location to another.
- CS on Cost Perception is very low for Nalbari, Aizwal and Shillong

➤ Recommendation

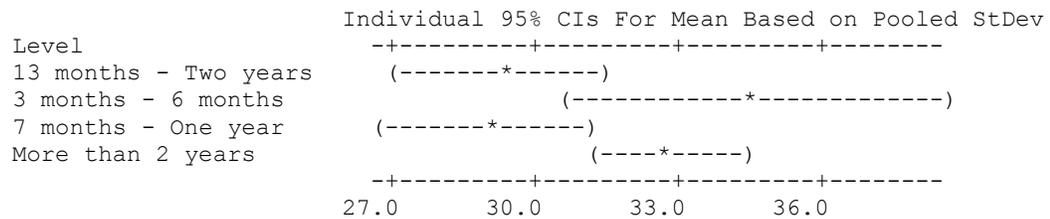
- Operators need to focus more on areas like Nalbari, Aizwal and Shillong for improving the Cost Perception amongst customers

One-way ANOVA: CS on Cost Perception versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	2236	745	4.58	0.004
Error	554	90240	163		
Total	557	92476			

S = 12.76 R-Sq = 2.42% R-Sq(adj) = 1.89%

Level	N	Mean	StDev
13 months - Two years	128	29.34	10.88
3 months - 6 months	39	34.62	13.91
7 months - One year	126	28.96	9.69
More than 2 years	265	32.84	14.58



Pooled StDev = 12.76

➤ Interpretation

- Since P value (0.004) is less than 0.05, the average CS on Cost Perception differs significantly from one Age on network to another.
- CS on Cost Perception is low customers with Age on network between 7 months to 2 years

➤ Recommendation

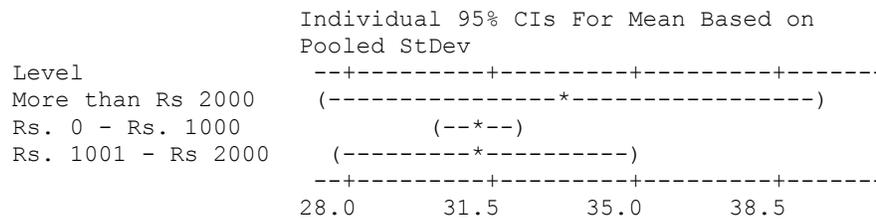
- Operators need to focus on improving the Cost Perception amongst customers of 7 months to 2 years Age on network.

One-way ANOVA: CS on Cost Perception versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	75	37	0.22	0.799
Error	555	92401	166		
Total	557	92476			

S = 12.90 R-Sq = 0.08% R-Sq(adj) = 0.00%

Level	N	Mean	StDev
More than Rs 2000	17	33.35	16.98
Rs. 0 - Rs. 1000	496	31.21	12.08
Rs. 1001 - Rs 2000	45	31.28	18.77



Pooled StDev = 12.90

➤ Interpretation

- Since P value (0.799) is greater than 0.05, hence, the average CS on Cost Perception does not differ significantly from one set of Average bill amount to another.

Variable Analysed: CS on Cost Perception							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Statistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0	Assam & NE		NE	-	Assam
2	Location	0	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Agartala, Aizwal, Imphal, Silchar & Shillong.	Dibrugarh and Nalbari	Guwahati & Tezpur
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone		Reliance	Aircel	Airtel & Vodafone
4	Age on Network	0.004	3-6, 7-12, 12-24, >24 months	Yes	7-12, 12-24	-	3-6 and >24 months
5	Avg Bill Amount	0.799	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: CS on Brand Perception versus Circles

Source	DF	SS	MS	F	P
Circles	1	16610	16610	70.93	0.000
Error	555	129970	234		
Total	556	146580			

S = 15.30 R-Sq = 11.33% R-Sq(adj) = 11.17%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
Assam	275	44.91	17.94	+-----+-----+-----+----- (---*---)
NE	282	33.99	12.20	(---*---) +-----+-----+-----+-----

32.0 36.0 40.0 44.0

Pooled StDev = 15.30

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Brand Perception differs significantly from one Circle to another.
- CS on Brand Perception is more in Assam when compared with NE

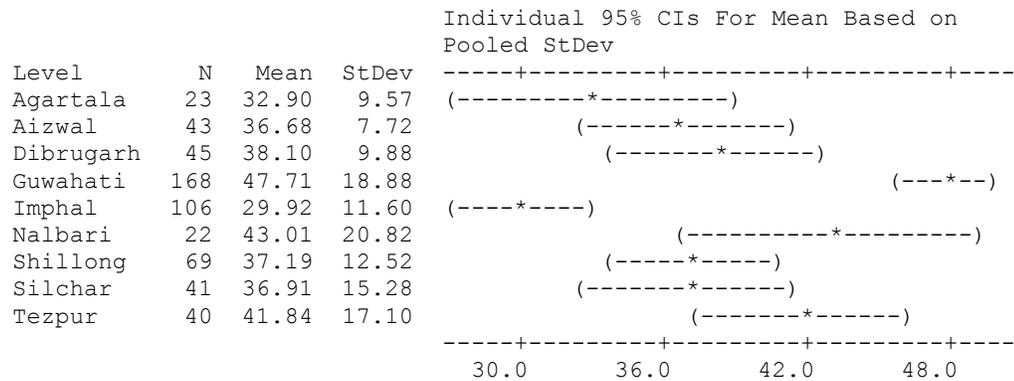
➤ Recommendation

- Operators in NE needs to focus more on improving the Brand Perception amongst customers

One-way ANOVA: CS on Brand Perception versus Locations

Source	DF	SS	MS	F	P
Locations	8	23623	2953	13.16	0.000
Error	548	122957	224		
Total	556	146580			

S = 14.98 R-Sq = 16.12% R-Sq(adj) = 14.89%



Pooled StDev = 14.98

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Brand Perception differs significantly from one location to another.
- CS on Brand Perception is very low for Agartala and Imphal

➤ Recommendation

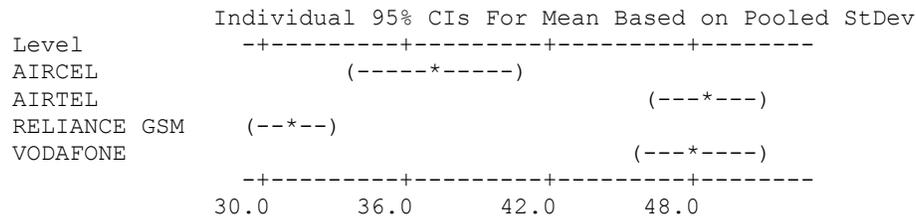
- Operators need to focus more on areas like Agartala and Imphal for improving the Brand Perception amongst customers

One-way ANOVA: CS on Brand Perception versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	37712	12571	63.85	0.000
Error	553	108868	197		
Total	556	146580			

S = 14.03 R-Sq = 25.73% R-Sq(adj) = 25.32%

Level	N	Mean	StDev
AIRCEL	60	37.45	10.65
AIRTEL	123	48.55	15.49
RELIANCE GSM	251	31.02	11.59
VODAFONE	123	48.22	17.96



Pooled StDev = 14.03

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Brand Perception differs significantly from one Service Provider to another.
- CS on Cost Perception is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

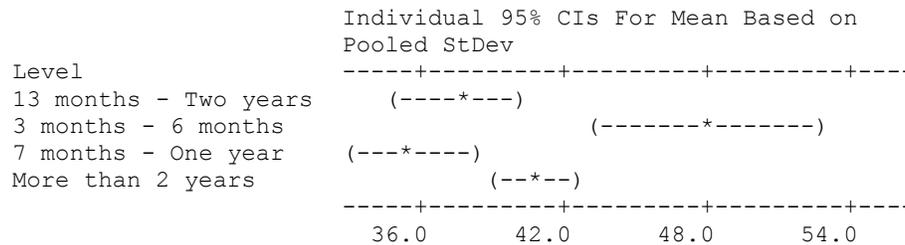
- Aircel and Reliance need to focus on improving the Brand Perception amongst customers

One-way ANOVA: CS on Brand Perception versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	5507	1836	7.20	0.000
Error	553	141073	255		
Total	556	146580			

S = 15.97 R-Sq = 3.76% R-Sq(adj) = 3.23%

Level	N	Mean	StDev
13 months - Two years	128	37.68	15.24
3 months - 6 months	39	48.05	20.76
7 months - One year	126	35.66	13.24
More than 2 years	264	40.70	16.69



Pooled StDev = 15.97

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Brand Perception differs significantly from one Age on network to another.
- CS on Brand Perception is low for customers with Age on network between 7 months to 2 years

➤ Recommendation

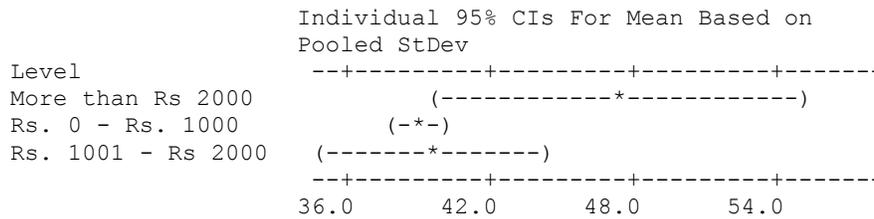
- Operators need to focus on improving the Brand Perception amongst customers of 7 months to 2 years of Age on network

One-way ANOVA: CS on Brand Perception versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	1192	596	2.27	0.104
Error	554	145388	262		
Total	556	146580			

S = 16.20 R-Sq = 0.81% R-Sq(adj) = 0.45%

Level	N	Mean	StDev
More than Rs 2000	17	47.55	17.08
Rs. 0 - Rs. 1000	495	39.06	15.64
Rs. 1001 - Rs 2000	45	39.78	21.27



Pooled StDev = 16.20

➤ Interpretation

- Since P value (0.104) is greater than 0.05, hence, the average CS on Brand Perception does not differ significantly from one set of Average bill amount to another

Variable Analysed: CS on Brand Perception							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Statistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0	Assam & NE	Yes	NE	-	Assam
2	Location	0	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Imphal	Agartala, Aizwal, Dibrugarh, Nalbari, Shillong, Silchar, Tezpur	Guwahati
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance	Aircel	Airtel & Vodafone
4	Age on Network	0	3-6, 7-12, 12-24, >24 months	Yes	7-12 and 13-24	>24	41704
5	Avg Bill Amount	0.104	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: CS on Customer Loyalty versus Circles

Source	DF	SS	MS	F	P
Circles	1	4680	4680	25.21	0.000
Error	556	103226	186		
Total	557	107905			

S = 13.63 R-Sq = 4.34% R-Sq(adj) = 4.16%

Level	N	Mean	StDev
Assam	275	40.66	15.40
NE	283	34.87	11.64

Individual 95% CIs For Mean Based on Pooled StDev

```

-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
Assam  275  40.66  15.40  (-----*-----)
NE      283  34.87  11.64  (-----*-----)
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
                    35.0      37.5      40.0      42.5

```

Pooled StDev = 13.63

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Customer Loyalty differs significantly from one Circle to another.
- CS on Customer Loyalty is more in Assam when compared with NE

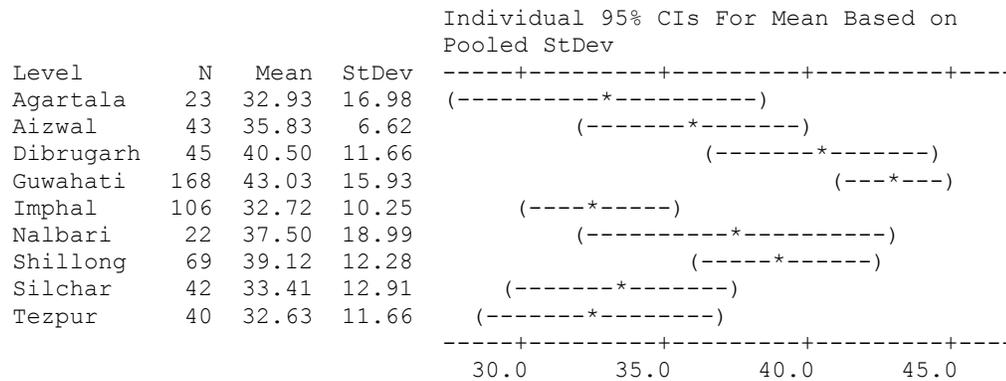
➤ Recommendation

- Operators in NE needs to focus more on improving the Customer Loyalty amongst customers

One-way ANOVA: CS on Customer Loyalty versus Locations

Source	DF	SS	MS	F	P
Locations	8	10375	1297	7.30	0.000
Error	549	97531	178		
Total	557	107905			

S = 13.33 R-Sq = 9.61% R-Sq(adj) = 8.30%



Pooled StDev = 13.33

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Customer Loyalty differs significantly from one location to another.
- CS on Customer Loyalty is very low for Agartala, Imphal and Tezpur

➤ Recommendation

- Operators need to focus more on areas like Agartala, Imphal and Tezpur for improving the Customer Loyalty amongst customers

One-way ANOVA: CS on Customer Loyalty versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	12395	4132	23.97	0.000
Error	554	95510	172		
Total	557	107905			

S = 13.13 R-Sq = 11.49% R-Sq(adj) = 11.01%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
AIRCEL	60	38.96	10.47	(-----*-----)
AIRTEL	123	42.84	14.84	(-----*-----)
RELIANCE GSM	251	32.65	12.07	(---*---)
VODAFONE	124	42.33	14.47	(-----*-----)

---+-----+-----+-----+-----
32.0 36.0 40.0 44.0

Pooled StDev = 13.13

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Customer Loyalty differs significantly from one Service Provider to another.
- CS on Customer Loyalty is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

- Aircel and Reliance need to focus on improving the Customer Loyalty amongst customers

One-way ANOVA: CS on Customer Loyalty versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	1897	632	3.30	0.020
Error	554	106009	191		
Total	557	107905			

S = 13.83 R-Sq = 1.76% R-Sq(adj) = 1.23%

Level	N	Mean	StDev
13 months - Two years	128	36.02	11.99
3 months - 6 months	39	41.48	14.02
7 months - One year	126	35.64	12.70
More than 2 years	265	38.99	15.09

Individual 95% CIs For Mean Based on Pooled StDev

Level	CI
13 months - Two years	(-----*-----)
3 months - 6 months	(-----*-----)
7 months - One year	(-----*-----)
More than 2 years	(---*---)

-----+-----+-----+-----+-----
 35.0 38.5 42.0 45.5

Pooled StDev = 13.83

➤ Interpretation

- Since P value (0.004) is less than 0.05, the average CS on Customer Loyalty differs significantly from one Age on network to another.
- CS on Customer Loyalty is low for customers with Age on network between 7 months to 2 years

➤ Recommendation

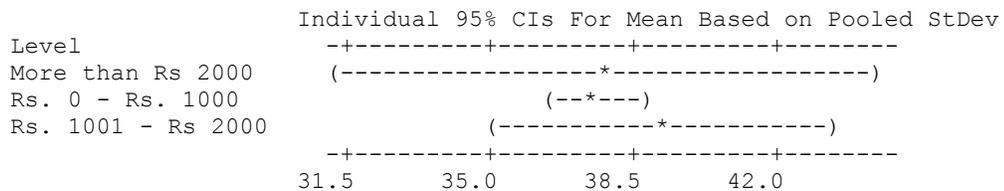
- Operators need to focus on improving the Customer Loyalty amongst customers of 7 months to 2 years of Age on network.

One-way ANOVA: CS on Customer Loyalty versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	100	50	0.26	0.774
Error	555	107806	194		
Total	557	107905			

S = 13.94 R-Sq = 0.09% R-Sq(adj) = 0.00%

Level	N	Mean	StDev
More than Rs 2000	17	37.68	15.34
Rs. 0 - Rs. 1000	496	37.60	13.38
Rs. 1001 - Rs 2000	45	39.15	18.74



Pooled StDev = 13.94

➤ Interpretation

- Since P value (0.774) is greater than 0.05, hence, the average CS on Customer Loyalty does not differ significantly from one set of Average bill amount to another

Variable Analysed: CS on Customer Loyalty							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Statistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0	Assam & NE	Yes	NE	-	Assam
2	Location	0	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes		Agartala, Aizwal, Imphal, Nalbari, Shillong, Silchar, Tezpur	Dibrugarh and Guwahati
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance	Aircel	Airtel & Vodafone
4	Age on Network	0.02	3-6, 7-12, 12-24, >24 months	Yes	7-12 and 13-24	>24	41704
5	Avg Bill Amount	0.774	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: CS on Network Experience versus Circles

Source	DF	SS	MS	F	P
Circles	1	38240	38240	95.71	0.000
Error	556	222133	400		
Total	557	260373			

S = 19.99 R-Sq = 14.69% R-Sq(adj) = 14.53%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
Assam	275	42.92	25.77	+-----+-----+-----+----- (---*---)
NE	283	26.36	11.94	+-----+-----+-----+----- (---*---)

24.0 30.0 36.0 42.0

Pooled StDev = 19.99

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Network Experience differs significantly from one Circle to another.
- CS on Network Experience is more in Assam when compared with NE

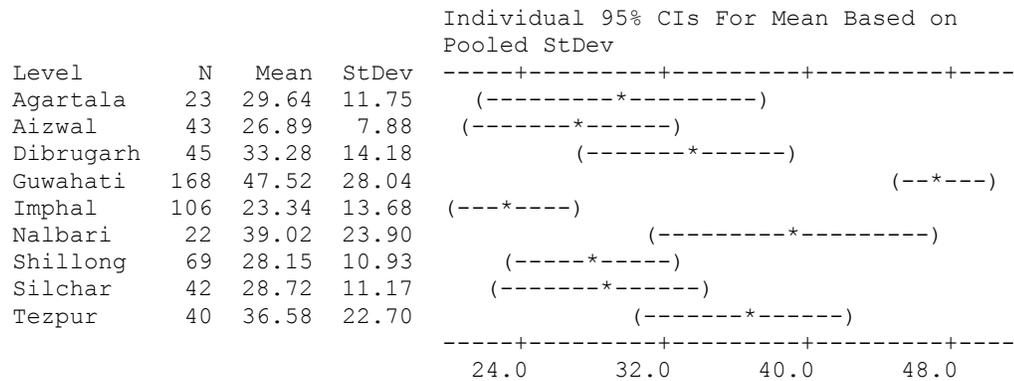
➤ Recommendation

- Operators in NE needs to focus more on improving the Network Experience amongst customers

One-way ANOVA: CS on Network Experience versus Locations

Source	DF	SS	MS	F	P
Locations	8	49599	6200	16.15	0.000
Error	549	210774	384		
Total	557	260373			

S = 19.59 R-Sq = 19.05% R-Sq(adj) = 17.87%



Pooled StDev = 19.59

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Network Experience differs significantly from one location to another.
- CS on Network Experience is very low for Agartala, Aizwal, Silchar and Shillong

➤ Recommendation

- Operators need to focus more on areas like Agartala, Aizwal, Silchar and Shillong for improving the Network Experience amongst customers

One-way ANOVA: CS on Network Experience versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	73903	24634	73.19	0.000
Error	554	186470	337		
Total	557	260373			

S = 18.35 R-Sq = 28.38% R-Sq(adj) = 28.00%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
AIRCEL	60	31.20	9.42	(-----*-----)
AIRTEL	123	47.34	24.66	(---*---)
RELIANCE GSM	251	22.90	12.09	(---*---)
VODAFONE	124	46.94	23.93	(---*---)

-----+-----+-----+-----+-----
24.0 32.0 40.0 48.0

Pooled StDev = 18.35

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Network Experience differs significantly from one Service Provider to another.
- CS on Network Experience is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

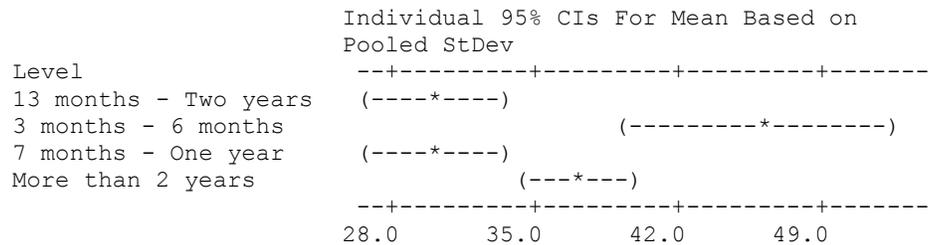
- Aircel and Reliance need to focus on improving the Network Experience amongst customers

One-way ANOVA: CS on Network Experience versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	11687	3896	8.68	0.000
Error	554	248686	449		
Total	557	260373			

S = 21.19 R-Sq = 4.49% R-Sq(adj) = 3.97%

Level	N	Mean	StDev
13 months - Two years	128	30.20	17.59
3 months - 6 months	39	45.88	25.57
7 months - One year	126	30.03	16.37
More than 2 years	265	37.08	23.92



Pooled StDev = 21.19

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Network Experience differs significantly from one Age on network to another.
- CS on Network Experience is low customers with Age on network between 7 months to 2 years

➤ Recommendation

- Operators need to focus on improving the Network Experience amongst customers of 7 months to 2 years of Age on network

One-way ANOVA: CS on Network Experience versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	354	177	0.38	0.685
Error	555	260019	469		
Total	557	260373			

S = 21.64 R-Sq = 0.14% R-Sq(adj) = 0.00%

Individual 95% CIs For Mean Based on Pooled StDev				
Level	N	Mean	StDev	
More than Rs 2000	17	38.59	25.39	(-----*-----)
Rs. 0 - Rs. 1000	496	34.50	21.20	(--*--)
Rs. 1001 - Rs 2000	45	33.25	24.85	(-----*-----)
				-----+-----+-----+-----+-----
				30.0 36.0 42.0 48.0

Pooled StDev = 21.64

➤ Interpretation

- Since P value (0.685) is greater than 0.05, hence, the average CS on Network Experience does not differ significantly from one set of Average bill amount to another

Variable Analysed: CS on Network Experience							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Statistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0	Assam & NE	Yes	NE	-	Assam
2	Location	0	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Aizwal, Agartala, Imphal, Shillong, Silchar	Dibrugarh, Nalbari, Tezpur	Guwahati
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance	Aircel	Airtel & Vodafone
4	Age on Network	0	3-6, 7-12, 12-24, >24 months	Yes	7-12 and 13-24	>24	41704
5	Avg Bill Amount	0.685	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: CS on Billing Experience versus Circles

Source	DF	SS	MS	F	P
Circles	1	18668	18668	89.00	0.000
Error	556	116616	210		
Total	557	135283			

S = 14.48 R-Sq = 13.80% R-Sq(adj) = 13.64%

Individual 95% CIs For Mean Based on Pooled StDev

Level	N	Mean	StDev	CI Lower	CI Upper
Assam	275	41.79	17.91	23.88	59.70
NE	283	30.22	10.10	19.12	41.32

32.0 36.0 40.0 44.0

Pooled StDev = 14.48

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Billing Experience differs significantly from one Circle to another.
- CS on Billing Experience is more in Assam when compared with NE

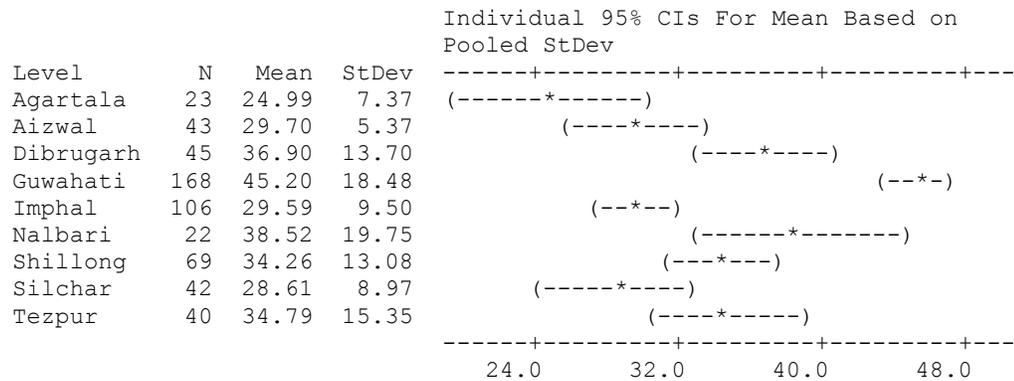
➤ Recommendation

- Operators in NE needs to focus more on improving the Billing Experience amongst customers

One-way ANOVA: CS on Billing Experience versus Locations

Source	DF	SS	MS	F	P
Locations	8	25812	3227	16.18	0.000
Error	549	109471	199		
Total	557	135283			

S = 14.12 R-Sq = 19.08% R-Sq(adj) = 17.90%



Pooled StDev = 14.12

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Billing Experience differs significantly from one location to another.
- CS on Billing Experience is very low for Agartala, Aizwal, Imphal and Silchar

➤ Recommendation

- Operators need to focus more on areas like Agartala, Aizwal, Imphal and Silchar for improving the Billing Experience amongst customers

One-way ANOVA: CS on Billing Experience versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	22832	7611	37.49	0.000
Error	554	112452	203		
Total	557	135283			

S = 14.25 R-Sq = 16.88% R-Sq(adj) = 16.43%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
AIRCEL	60	31.71	12.10	(-----*-----)
AIRTEL	123	42.98	17.74	(-----*-----)
RELIANCE GSM	251	29.90	10.61	(---*---)
VODAFONE	124	43.18	17.41	(-----*-----)

-----+-----+-----+-----+-----
30.0 35.0 40.0 45.0

Pooled StDev = 14.25

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Billing Experience differs significantly from one Service Provider to another.
- CS on Billing Experience is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

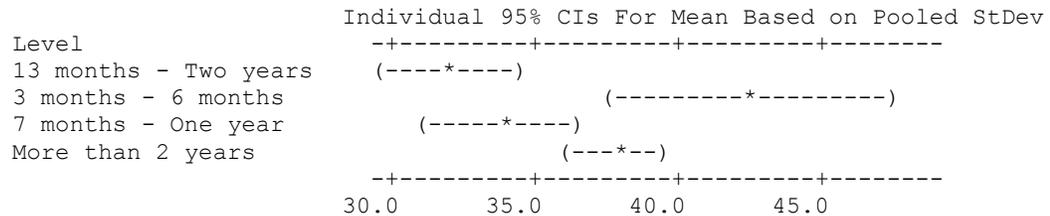
- Aircel and Reliance need to focus on improving the Billing Experience amongst customers

One-way ANOVA: CS on Billing Experience versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	5305	1768	7.54	0.000
Error	554	129979	235		
Total	557	135283			

S = 15.32 R-Sq = 3.92% R-Sq(adj) = 3.40%

Level	N	Mean	StDev
13 months - Two years	128	31.94	12.35
3 months - 6 months	39	42.53	15.86
7 months - One year	126	33.82	13.23
More than 2 years	265	37.88	17.32



Pooled StDev = 15.32

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Billing Experience differs significantly from one Age on network to another.
- CS on Billing Experience is low customers with Age on network between 7 months to 2 years

➤ Recommendation

- Operators need to focus on improving the Billing Experience amongst customers of 7 months to 2 years of Age on network

One-way ANOVA: CS on Billing Experience versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	143	72	0.29	0.745
Error	555	135140	243		
Total	557	135283			

S = 15.60 R-Sq = 0.11% R-Sq(adj) = 0.00%

Individual 95% CIs For Mean Based on Pooled StDev

Level	N	Mean	StDev
More than Rs 2000	17	37.39	11.39
Rs. 0 - Rs. 1000	496	35.75	15.25
Rs. 1001 - Rs 2000	45	37.35	20.15

32.0 36.0 40.0 44.0

Pooled StDev = 15.60

➤ Interpretation

- Since P value (0.745) is greater than 0.05, hence, the average CS on Billing Experience does not differ significantly from one set of Average bill amount to another

Variable Analysed: CS on Billing Experience							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements statistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0	Assam & NE	Yes	NE	-	Assam
2	Location	0	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Agartala, Aizwal	Dibrugarh, Imphal, Nalbari, Shillong, Silchar, Tezpur	Guwahati
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance, Aircel	-	Airtel & Vodafone
4	Age on Network	0	3-6, 7-12, 12-24, >24 months	Yes	7-12 and 13-24	>24	41704
5	Avg Bill Amount	0.745	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: CS on Call Center Experience versus Circles

Source	DF	SS	MS	F	P
Circles	1	3794	3794	16.62	0.000
Error	194	44301	228		
Total	195	48095			

S = 15.11 R-Sq = 7.89% R-Sq(adj) = 7.41%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
Assam	109	34.96	16.07	(-----*-----)
NE	87	26.10	13.81	(-----*-----)

24.0 28.0 32.0 36.0

Pooled StDev = 15.11

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Call Center Experience differs significantly from one Circle to another.
- CS on Call Center Experience is more in Assam when compared with NE

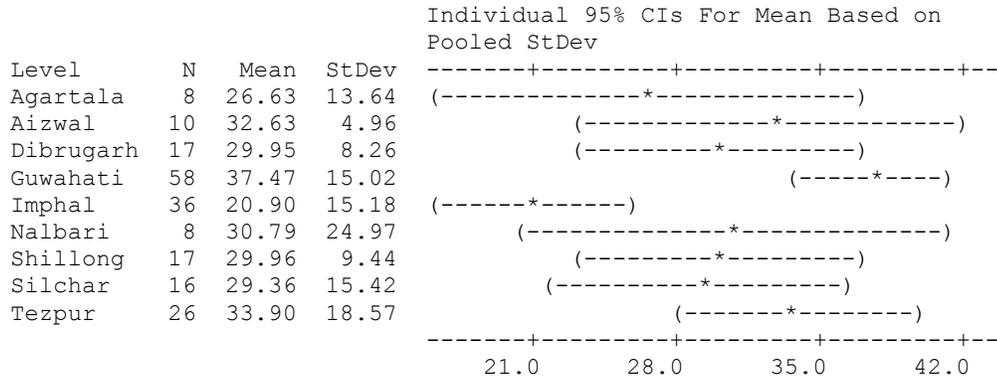
➤ Recommendation

- Operators in NE needs to focus more on improving the Call Center Experience amongst customers

One-way ANOVA: CS on Call Center Experience versus Locations

Source	DF	SS	MS	F	P
Locations	8	6581	823	3.71	0.000
Error	187	41514	222		
Total	195	48095			

S = 14.90 R-Sq = 13.68% R-Sq(adj) = 9.99%



Pooled StDev = 14.90

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Call Center Experience differs significantly from one location to another.
- CS on Call Center Experience is very low for Agartala and Imphal

➤ Recommendation

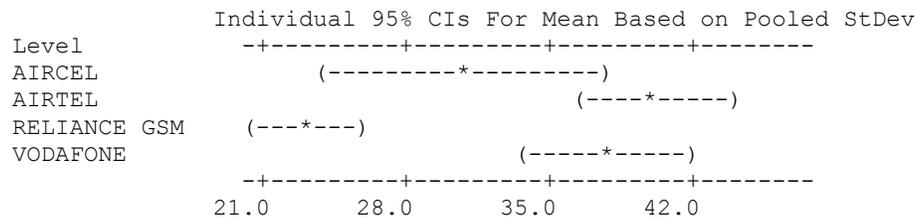
- Operators need to focus more on areas like Agartala and Imphal for improving the Call Center Experience amongst customers

One-way ANOVA: CS on Call Center Experience versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	11856	3952	20.94	0.000
Error	192	36240	189		
Total	195	48095			

S = 13.74 R-Sq = 24.65% R-Sq(adj) = 23.47%

Level	N	Mean	StDev
AIRCEL	16	30.89	17.06
AIRTEL	47	40.11	16.64
RELIANCE GSM	89	22.87	11.71
VODAFONE	44	37.87	12.82



Pooled StDev = 13.74

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Call Center Experience differs significantly from one Service Provider to another.
- CS on Call Center Experience is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

- Aircel and Reliance need to focus on improving the Call Center Experience amongst customers

One-way ANOVA: CS on Call Center Experience versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	2564	855	3.60	0.014
Error	192	45531	237		
Total	195	48095			

S = 15.40 R-Sq = 5.33% R-Sq(adj) = 3.85%

Level	N	Mean	StDev
13 months - Two years	40	26.37	11.84
3 months - 6 months	20	39.20	14.52
7 months - One year	43	28.81	17.90
More than 2 years	93	32.30	15.67

Individual 95% CIs For Mean Based on Pooled StDev

Level	CI
13 months - Two years	(-----*-----)
3 months - 6 months	(-----*-----)
7 months - One year	(-----*-----)
More than 2 years	(-----*-----)

28.0 35.0 42.0 49.0

Pooled StDev = 15.40

➤ Interpretation

- Since P value (0.014) is less than 0.05, the average CS on Call Center Experience differs significantly from one Age on network to another.
- CS on Call Center Experience is low customers with Age on network between 7 months to 2 years

➤ Recommendation

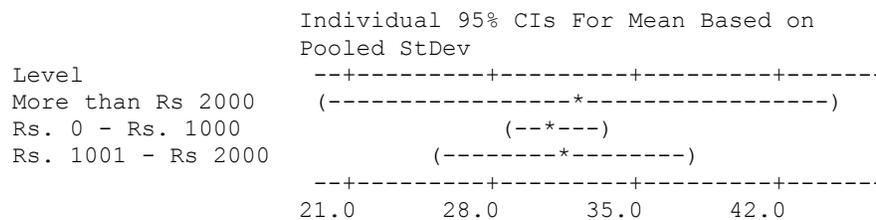
- Operators need to focus on improving the Call Center Experience amongst customers of 7 months to 2 years of Age on network

One-way ANOVA: CS on Call Center Experience versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	13	7	0.03	0.974
Error	193	48082	249		
Total	195	48095			

S = 15.78 R-Sq = 0.03% R-Sq(adj) = 0.00%

Level	N	Mean	StDev
More than Rs 2000	6	32.04	6.49
Rs. 0 - Rs. 1000	166	30.92	15.74
Rs. 1001 - Rs 2000	24	31.49	17.44



Pooled StDev = 15.78

➤ Interpretation

- Since P value (0.974) is greater than 0.05, hence, the average CS on Call Center Experience does not differ significantly from one set of Average bill amount to another

Variable Analysed: CS on Call Center Experience							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Statistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0	Assam & NE	Yes	NE	-	Assam
2	Location	0	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Agartala, Imphal	Dibrugarh, Imphal, Nalbari, Shillong, Silchar, Tezpur	Guwahati
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance	Aircel	Airtel & Vodafone
4	Age on Network	0.014	3-6, 7-12, 12-24, >24 months	Yes	7-12 and 13-24	>24	41704
5	Avg Bill Amount	0.974	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: CS on Stores Experience versus Circles

Source	DF	SS	MS	F	P
Circles	1	6830	6830	19.43	0.000
Error	124	43581	351		
Total	125	50411			

S = 18.75 R-Sq = 13.55% R-Sq(adj) = 12.85%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
Assam	89	48.45	20.76	(-----*-----)
NE	37	32.29	12.53	(-----*-----)

28.0 35.0 42.0 49.0

Pooled StDev = 18.75

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Store Experience differs significantly from one Circle to another.
- CS on Store Experience is more in Assam when compared with NE

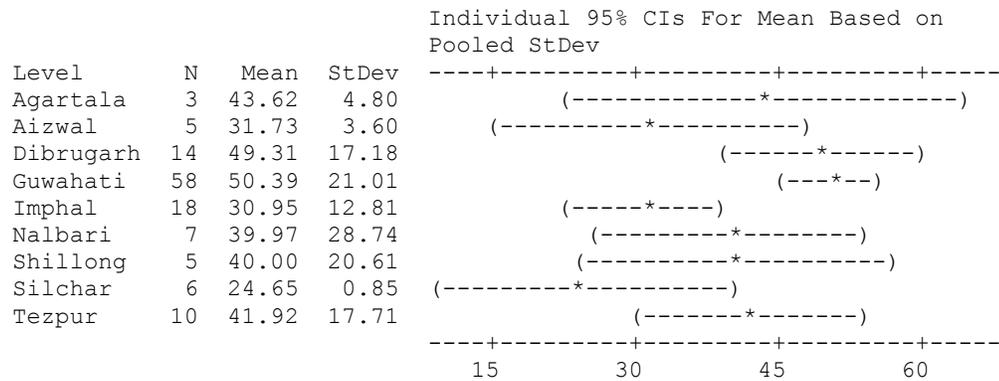
➤ Recommendation

- Operators in NE needs to focus more on improving the Store Experience amongst customers

One-way ANOVA: CS on Stores Experience versus Locations

Source	DF	SS	MS	F	P
Locations	8	9053	1132	3.20	0.003
Error	117	41358	353		
Total	125	50411			

S = 18.80 R-Sq = 17.96% R-Sq(adj) = 12.35%



Pooled StDev = 18.80

➤ Interpretation

- Since P value (0.003) is less than 0.05, the average CS on Store Experience differs significantly from one location to another.
- CS on Store Experience is very low for Aizwal, Imphal and Silchar

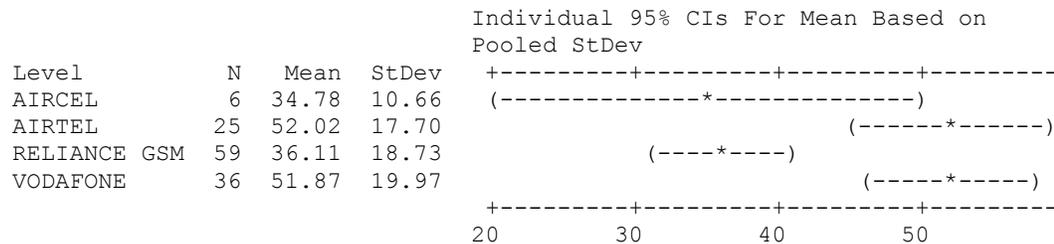
➤ Recommendation

- Operators need to focus more on areas like Aizwal, Imphal and Silchar for improving the Store Experience amongst customers

One way ANOVA: CS on Stores Experience versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	8014	2671	7.69	0.000
Error	122	42397	348		
Total	125	50411			

S = 18.64 R-Sq = 15.90% R-Sq(adj) = 13.83%



Pooled StDev = 18.64

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Store Experience differs significantly from one Service Provider to another.
- CS on Store Experience is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

- Aircel and Reliance need to focus on improving the Store Experience amongst customers

One-way ANOVA: CS on Stores Experience versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	1534	511	1.28	0.286
Error	122	48877	401		
Total	125	50411			

S = 20.02 R-Sq = 3.04% R-Sq(adj) = 0.66%

Level	N	Mean	StDev
13 months - Two years	26	39.14	19.22
3 months - 6 months	11	50.81	14.96
7 months - One year	27	40.87	22.30
More than 2 years	62	45.59	20.03

Individual 95% CIs For Mean Based on Pooled StDev

Level	CI
13 months - Two years	(-----*-----)
3 months - 6 months	(-----*-----)
7 months - One year	(-----*-----)
More than 2 years	(-----*-----)

32.0 40.0 48.0 56.0

Pooled StDev = 20.02

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Store Experience differs significantly from one Age on network to another.
- CS on Store Experience is low customers with Age on network between 7 months to 2 years

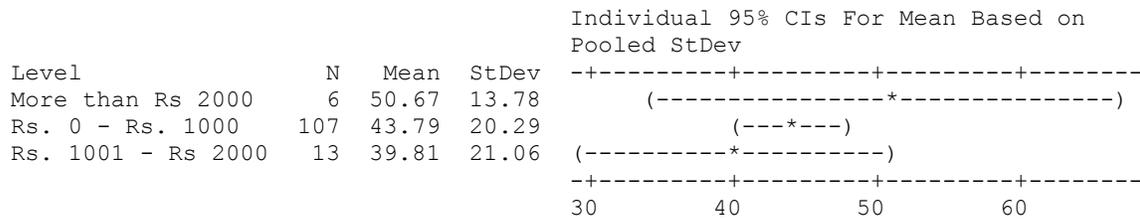
➤ Recommendation

- Operators need to focus on improving the Store Experience amongst customers of 7 months to 2 years of Age on network

One-way ANOVA: CS on Stores Experience versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	489	245	0.60	0.549
Error	123	49922	406		
Total	125	50411			

S = 20.15 R-Sq = 0.97% R-Sq(adj) = 0.00%



Pooled StDev = 20.15

➤ Interpretation

- Since P value (0.549) is greater than 0.05, hence, the average CS on Store Experience does not differ significantly from one set of Average bill amount to another

Variable Analysed: CS on Store Experience							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Statistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0	Assam & NE	Yes	NE	-	Assam
2	Location	0.003	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Silchar	Agartala, Aizwal, Imphal, Nalbari, Shillong, Tezpur	Guwahati, Dibrugarh
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes		Aircel, Airtel	Reliance & Vodafone
4	Age on Network	0.286	3-6, 7-12, 12-24, >24 months	NO	Same for all the stratification elements within various age on network		
5	Avg Bill Amount	0.549	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: CS on Tariff Plan Perception versus Circles

Source	DF	SS	MS	F	P
Circles	1	3919	3919	18.56	0.000
Error	551	116357	211		
Total	552	120276			

S = 14.53 R-Sq = 3.26% R-Sq(adj) = 3.08%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
Assam	271	35.97	17.05	(-----*-----)
NE	282	30.64	11.60	(-----*-----)

-----+-----+-----+-----+-----
30.0 32.5 35.0 37.5

Pooled StDev = 14.53

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Tariff Plan Perception differs significantly from one Circle to another.
- CS on Tariff Plan Perception is more in Assam when compared with NE

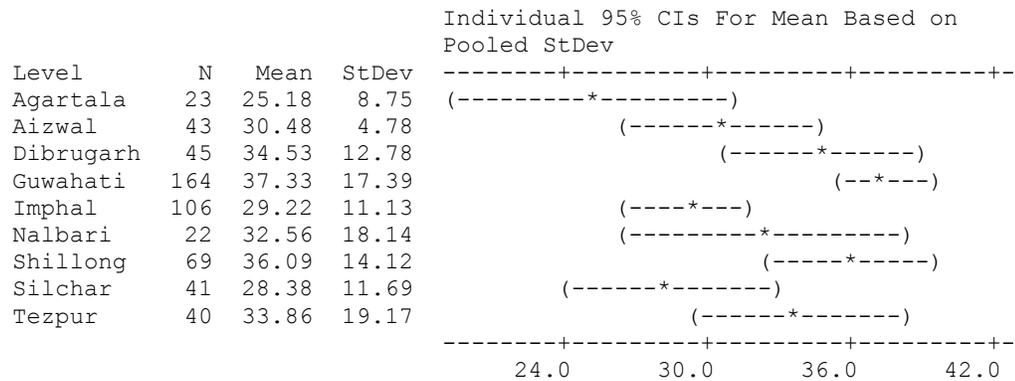
➤ Recommendation

- Operators in NE needs to focus more on improving the Tariff Plan Perception amongst customers

One-way ANOVA: CS on Tariff Plan Perception versus Locations

Source	DF	SS	MS	F	P
Locations	8	7908	988	4.79	0.000
Error	544	112368	207		
Total	552	120276			

S = 14.37 R-Sq = 6.57% R-Sq(adj) = 5.20%



Pooled StDev = 14.37

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Tariff Plan Perception differs significantly from one location to another.
- CS on Tariff Plan Perception is very low for Agartala, Imphal and Silchar

➤ Recommendation

- Operators need to focus more on areas like Agartala, Imphal and Silchar for improving the Tariff Plan Perception amongst customers

One-way ANOVA: CS on Tariff Plan Perception versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	11124	3708	18.65	0.000
Error	549	109152	199		
Total	552	120276			

S = 14.10 R-Sq = 9.25% R-Sq(adj) = 8.75%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
AIRCEL	60	31.10	11.84	(-----*-----)
AIRTEL	122	36.79	16.03	(-----*-----)
RELIANCE GSM	247	28.93	11.97	(---*---)
VODAFONE	124	39.42	16.75	(-----*-----)

28.0 32.0 36.0 40.0

Pooled StDev = 14.10

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Tariff Plan Perception differs significantly from one Service Provider to another.
- CS on Tariff Plan Perception is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

- Aircel and Reliance need to focus on improving the Tariff Plan Perception amongst customers

One-way ANOVA: CS on Tariff Plan Perception versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	2677	892	4.17	0.006
Error	549	117599	214		
Total	552	120276			

S = 14.64 R-Sq = 2.23% R-Sq(adj) = 1.69%

Level	N	Mean	StDev
13 months - Two years	128	30.45	13.07
3 months - 6 months	39	39.36	15.12
7 months - One year	123	32.56	12.56
More than 2 years	263	34.03	16.11

Individual 95% CIs For Mean Based on Pooled StDev

Level	CI
13 months - Two years	(---*---)
3 months - 6 months	(-----*-----)
7 months - One year	(---*---)
More than 2 years	(--*---)

30.0 35.0 40.0 45.0

Pooled StDev = 14.64

➤ Interpretation

- Since P value (0.006) is less than 0.05, the average CS on Tariff Plan Perception differs significantly from one Age on network to another.
- CS on Tariff Plan Perception is low customers with Age on network between 7 months to 2 years

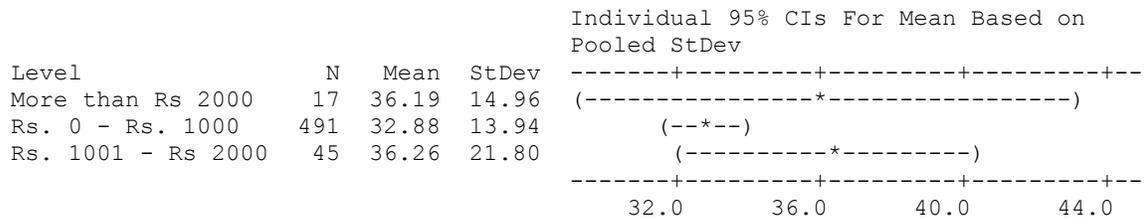
➤ Recommendation

- Operators need to focus on improving the Tariff Plan Perception amongst customers of 7 months to 2 years of Age on network

One-way ANOVA: CS on Tariff Plan Perception versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	622	311	1.43	0.240
Error	550	119654	218		
Total	552	120276			

S = 14.75 R-Sq = 0.52% R-Sq(adj) = 0.16%



Pooled StDev = 14.75

➤ Interpretation

- Since P value (0.240) is greater than 0.05, hence, the average CS on Tariff Plan Perception does not differ significantly from one set of Average bill amount to another

Variable Analysed: CS on Tariff Plan Perception							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Statistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0	Assam & NE	Yes	NE	-	Assam
2	Location	0	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Agartala	Aizwal, Dibrugarh, Imphal, Nalbari, Silchar, Tezpur	Guwahati, Shillong
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance	Aircel	Airtel & Vodafone
4	Age on Network	0.006	3-6, 7-12, 12-24, >24 months	Yes	7-12 and 13-24	>24	41704
5	Avg Bill Amount	0.24	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: CS on VAS versus Circles

Source	DF	SS	MS	F	P
Circles	1	5490	5490	27.10	0.000
Error	436	88316	203		
Total	437	93806			

S = 14.23 R-Sq = 5.85% R-Sq(adj) = 5.64%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
Assam	188	32.71	18.00	(-----*-----)
NE	250	25.56	10.55	(-----*-----)

24.0 27.0 30.0 33.0

Pooled StDev = 14.23

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on VAS differs significantly from one Circle to another.
- CS on VAS is more in Assam when compared with NE

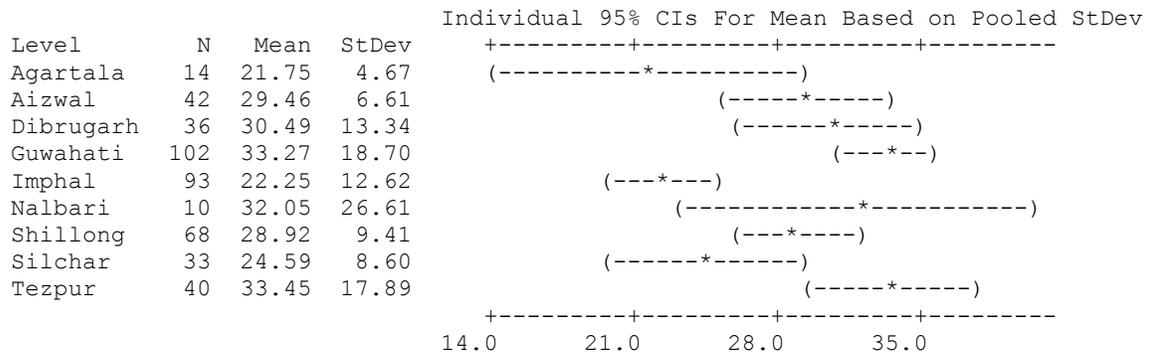
➤ Recommendation

- Operators in NE needs to focus more on improving the VAS amongst customers

One-way ANOVA: CS on VAS versus Locations

Source	DF	SS	MS	F	P
Locations	8	8384	1048	5.26	0.000
Error	429	85422	199		
Total	437	93806			

S = 14.11 R-Sq = 8.94% R-Sq(adj) = 7.24%



Pooled StDev = 14.11

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on VAS differs significantly from one location to another.
- CS on VAS is very low for Shillong, Silchar and Agartala

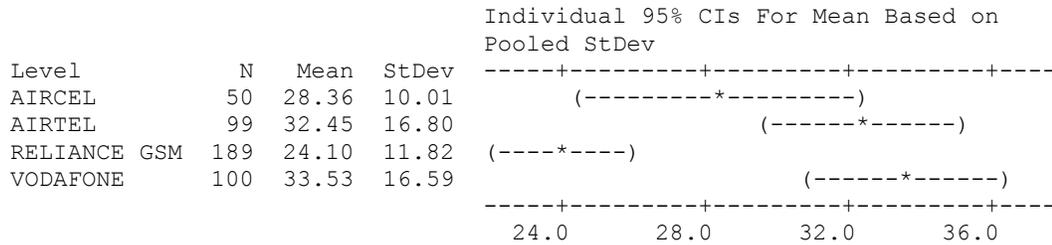
➤ Recommendation

- Operators need to focus more on areas like Shillong, Silchar and Agartala for improving the VAS amongst customers

One-way ANOVA: CS on VAS versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	7725	2575	12.98	0.000
Error	434	86081	198		
Total	437	93806			

S = 14.08 R-Sq = 8.24% R-Sq(adj) = 7.60%



Pooled StDev = 14.08

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on VAS differs significantly from one Service Provider to another.
- CS on VAS is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

- Aircel and Reliance need to focus on improving the VAS amongst customers

One-way ANOVA: CS on VAS versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	1675	558	2.63	0.050
Error	434	92131	212		
Total	437	93806			

S = 14.57 R-Sq = 1.79% R-Sq(adj) = 1.11%

Level	N	Mean	StDev
13 months - Two years	97	26.99	12.02
3 months - 6 months	35	34.55	15.50
7 months - One year	102	27.39	13.23
More than 2 years	204	29.01	16.07

Individual 95% CIs For Mean Based on Pooled StDev

Level	CI
13 months - Two years	(-----*-----)
3 months - 6 months	(-----*-----)
7 months - One year	(-----*-----)
More than 2 years	(-----*-----)

24.0 28.0 32.0 36.0

Pooled StDev = 14.57

➤ Interpretation

- Since P value is 0.05, the average CS on VAS does not differ significantly from one Age on network to another.

One-way ANOVA: CS on VAS versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	722	361	1.69	0.186
Error	435	93084	214		
Total	437	93806			

S = 14.63 R-Sq = 0.77% R-Sq(adj) = 0.31%

Individual 95% CIs For Mean Based on Pooled StDev

Level	N	Mean	StDev
More than Rs 2000	14	30.10	16.59
Rs. 0 - Rs. 1000	388	28.19	13.71
Rs. 1001 - Rs 2000	36	32.77	21.90

24.0 28.0 32.0 36.0

Pooled StDev = 14.63

➤ Interpretation

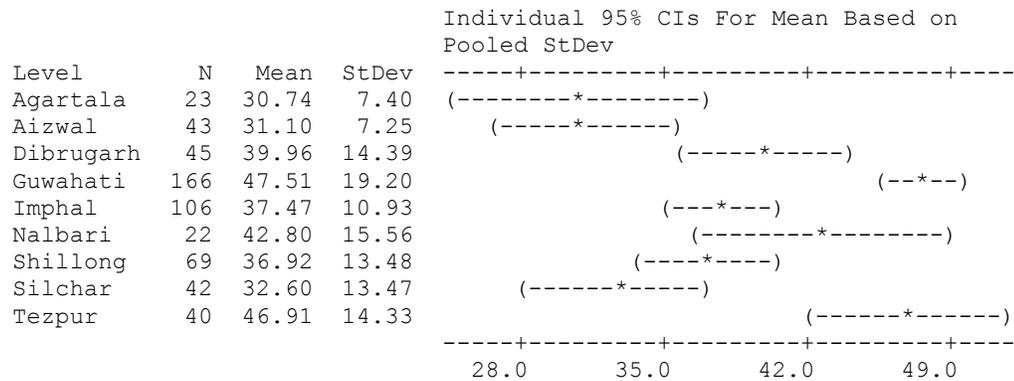
- Since P value (0.186) is greater than 0.05, hence, the average CS on VAS does not differ significantly from one set of Average bill amount to another

Variable Analysed: CS on VAS							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements statistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0	Assam & NE	Yes	NE	-	Assam
2	Location	0	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Agartala	Aizwal, Dibrugarh, Imphal, Shillong, Silchar,	Guwahati, Tezpur, Nalbari
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance	Aircel	Airtel & Vodafone
4	Age on Network	0.05	3-6, 7-12, 12-24, >24 months	Yes	7-12 and 13-24	>24	41704
5	Avg Bill Amount	0.186	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: CS on Advt. & Communication versus Locations

Source	DF	SS	MS	F	P
Locations	8	20397	2550	11.74	0.000
Error	547	118761	217		
Total	555	139159			

S = 14.73 R-Sq = 14.66% R-Sq(adj) = 13.41%



Pooled StDev = 14.73

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Advertising and Communication differs significantly from one location to another.
- CS on Advertising and Communication is very low for Agartala and Aizwal

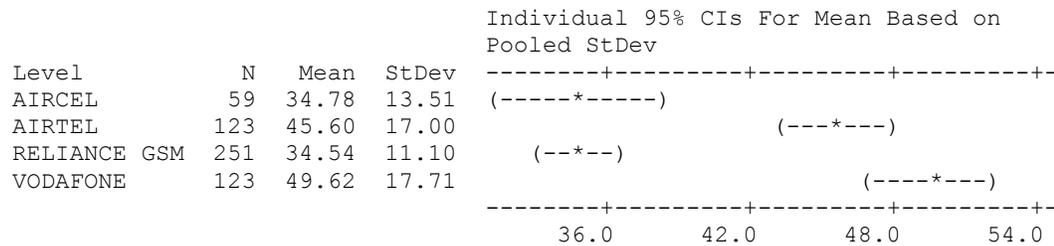
➤ Recommendation

- Operators need to focus more on areas like Agartala and Aizwal for improving the Advertising and Communication amongst customers

One-way ANOVA: CS on Advt. & Communication versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	24265	8088	38.86	0.000
Error	552	114893	208		
Total	555	139159			

S = 14.43 R-Sq = 17.44% R-Sq(adj) = 16.99%



Pooled StDev = 14.43

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Advertising and Communication differs significantly from one Service Provider to another.
- CS on Advertising and Communication is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

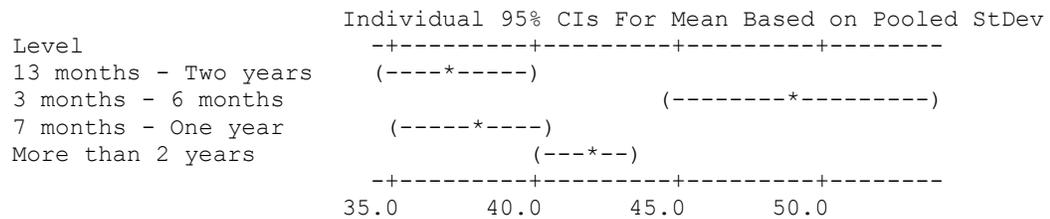
- Aircel and Reliance need to focus on improving the Advertising and Communication amongst customers

One-way ANOVA: CS on Advt. & Communication versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	5657	1886	7.80	0.000
Error	552	133501	242		
Total	555	139159			

S = 15.55 R-Sq = 4.07% R-Sq(adj) = 3.54%

Level	N	Mean	StDev
13 months - Two years	128	37.22	13.08
3 months - 6 months	39	49.17	18.22
7 months - One year	125	37.78	14.13
More than 2 years	264	41.79	16.82



Pooled StDev = 15.55

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Advertising and Communication differs significantly from one Age on network to another.
- CS on Advertising and Communication is low customers with Age on network between 7 months to 2 years

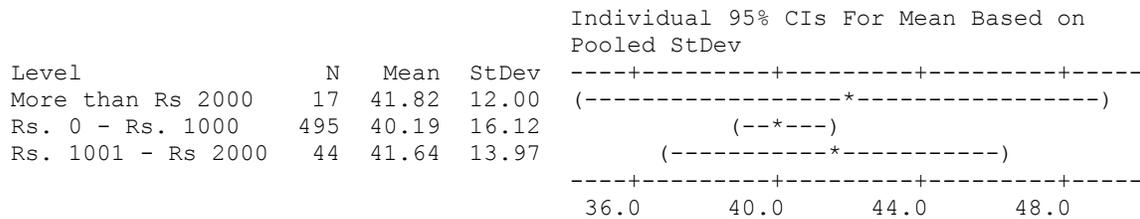
➤ Recommendation

- Operators need to focus on improving the Advertising and Communication amongst customers of 7 months to 2 years of Age on network

One-way ANOVA: CS on Advt. & Communication versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	123	61	0.24	0.784
Error	553	139036	251		
Total	555	139159			

S = 15.86 R-Sq = 0.09% R-Sq(adj) = 0.00%



Pooled StDev = 15.86

➤ Interpretation

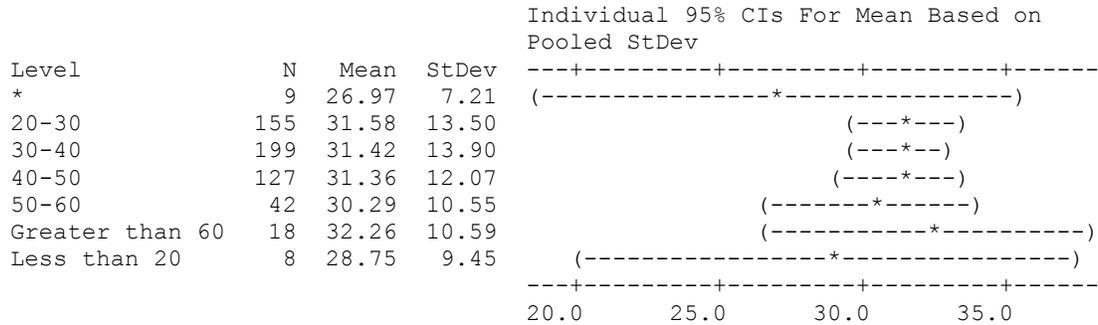
- Since P value (0.784) is greater than 0.05, hence, the average CS on Advertising and Communication does not differ significantly from one set of Average bill amount to another

Variable Analysed: CS on Advt. And Communication							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Statistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0	Assam & NE	Yes	NE	-	Assam
2	Location	0	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Agartala, Aizwal	Dibrugarh, Imphal, Shillong, Silchar,	Guwahati, Tezpur, Nalbari
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance, Aircel	-	Airtel & Vodafone
4	Age on Network	0	3-6, 7-12, 12-24, >24 months	Yes	7-12 and 13-24	>24	41704
5	Avg Bill Amount	0.784	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: CS on Cost Perception versus Age Group

Source	DF	SS	MS	F	P
Age Group_2	6	295	49	0.29	0.940
Error	551	92180	167		
Total	557	92476			

S = 12.93 R-Sq = 0.32% R-Sq(adj) = 0.00%



Pooled StDev = 12.93

➤ **Interpretation**

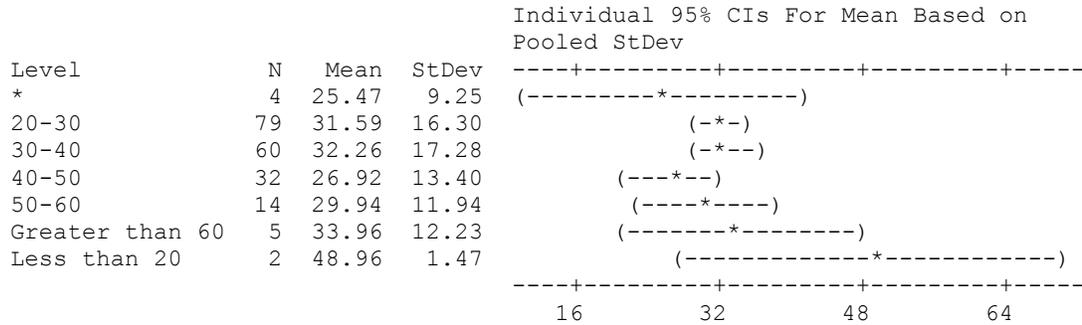
- Since P value (0.940) is greater than 0.05, hence, the average CS on Cost Perception does not differ significantly from one Age group to another

Variable Analysed: CS on Cost Perception							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Statistically significant?	Low WCS	Moderate WCS	High WCS
1	Age Group	0.940	<20, 20-30, 30-40, 40-50, 50-60 and >60	No	Same for all the stratification elements (<20, 20-30, 30-40, 40-50, 50-60 and >60)		

One-way ANOVA: CS on Call Center Experience versus Age Group_2

Source	DF	SS	MS	F	P
Age Group_2	6	1481	247	1.00	0.426
Error	189	46614	247		
Total	195	48095			

S = 15.70 R-Sq = 3.08% R-Sq(adj) = 0.00%



Pooled StDev = 15.70

➤ **Interpretation**

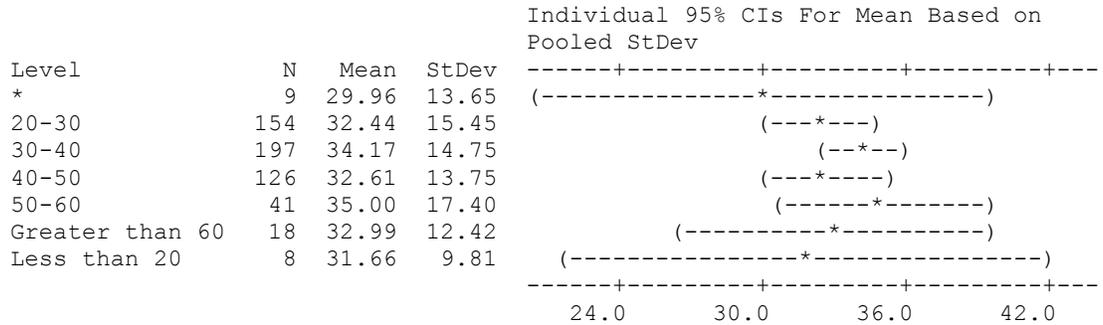
- Since P value (0.426) is greater than 0.05, hence, the average CS on Call Center experience does not differ significantly from one Age group to another

Variable Analysed: CS on Call Center Experience							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Statistically significant?	Low WCS	Moderate WCS	High WCS
1	Age Group	0.426	<20, 20-30, 30-40, 40-50, 50-60 and >60	No	Same for all the stratification elements (<20, 20-30, 30-40, 40-50, 50-60 and >60)		

One-way ANOVA: CS on Tariff Plan Perception versus Age Group_2

Source	DF	SS	MS	F	P
Age Group_2	6	566	94	0.43	0.859
Error	546	119710	219		
Total	552	120276			

S = 14.81 R-Sq = 0.47% R-Sq(adj) = 0.00%



Pooled StDev = 14.81

➤ **Interpretation**

- Since P value (0.859) is greater than 0.05, hence, the average CS on Tariff Plan Perception does not differ significantly from one Age group to another

Variable Analysed: Tariff Plan Perception							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Statistically significant?	Low WCS	Moderate WCS	High WCS
1	Age Group	0.859	<20, 20-30, 30-40, 40-50, 50-60 and >60	No	Same for all the stratification elements (<20, 20-30, 30-40, 40-50, 50-60 and >60)		

It is seen that in case of Age group the P value is >0.05 and hence, for none of the 10 broad parameters the perception across various age groups does not differ significantly.

One-way ANOVA: WCS %_Assam versus Service Provider_Assam

Source	DF	SS	MS	F	P
Service Provider_Assam	3	12223	4074	35.02	0.000
Error	271	31532	116		
Total	274	43754			

S = 10.79 R-Sq = 27.94% R-Sq(adj) = 27.14%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
AIRCEL	15	34.61	7.17	(-----*-----)
AIRTEL	80	44.93	11.85	(-----*-----)
RELIANCE GSM	100	31.26	8.46	(-----*-----)
VODAFONE	80	45.33	12.64	(-----*-----)

30.0 35.0 40.0 45.0

Pooled StDev = 10.79

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average WCS of Assam differs significantly from one Service Provider to another.
- WCS of Assam is more for Vodafone and Airtel and low for Aircel and Reliance

➤ Recommendation

- Aircel and Reliance needs to focus more on improving the WCS level amongst customers

Variable Analysed: CS on Assam							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Statistically significant?	Low WCS	Moderate WCS	High WCS
1	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance, Aircel	-	Airtel & Vodafone

One-way ANOVA: WCS %_NE versus Service Provider_NE

Source	DF	SS	MS	F	P
Service Provider_NE	3	2651.5	883.8	19.63	0.000
Error	279	12559.2	45.0		
Total	282	15210.7			

S = 6.709 R-Sq = 17.43% R-Sq(adj) = 16.54%

Individual 95% CIs For Mean Based on Pooled StDev

Level	N	Mean	StDev	CI
AIRCEL	45	32.786	7.789	(-----*-----)
AIRTEL	43	34.790	7.501	(-----*-----)
RELIANCE GSM	151	28.140	6.219	(----*----)
VODAFONE	44	34.861	6.333	(-----*-----)

27.5 30.0 32.5 35.0

Pooled StDev = 6.709

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average WCS of NE differs significantly from one Service Provider to another.
- WCS of NE is extremely low for Reliance

➤ Recommendation

- Reliance in NE needs to focus more on improving the WCS level amongst customers

Variable Analysed: CS on NE							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Statistically significant?	Low WCS	Moderate WCS	High WCS
1	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance	-	Aircel, Airtel & Vodafone

1.3. MICRO ANALYSIS: THE ANOVA GIVEN HERE ARE FOR SELECT QUESTIONS AND COMPARED WITH VARIABLES: CIRCLE, LOCATIONS, SERVICE PROVIDER, AGE ON NETWORK, AVG BILL

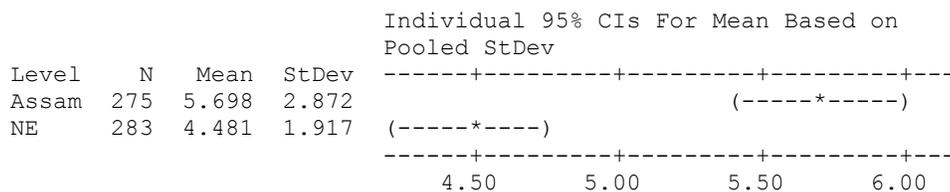
(Part of the below Analysis has been presented at the following International Conferences:

- 3rd IIM A International Conference on Advanced Data Analysis, Business Analytics and Intelligence. April 13-14, 2013, IIM Ahmedabad
- 7th IIM A Doctoral Colloquium, Dec 9-10, 2013, IIM Ahmedabad)

One-way ANOVA: Value for Money versus Circle

Source	DF	SS	MS	F	P
Circle	1	206.78	206.78	34.88	0.000
Error	556	3296.59	5.93		
Total	557	3503.37			

S = 2.435 R-Sq = 5.90% R-Sq(adj) = 5.73%



Pooled StDev = 2.435

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on value for money differs significantly from one Circle to another.
- CS on value for money is more in Assam when compared with NE

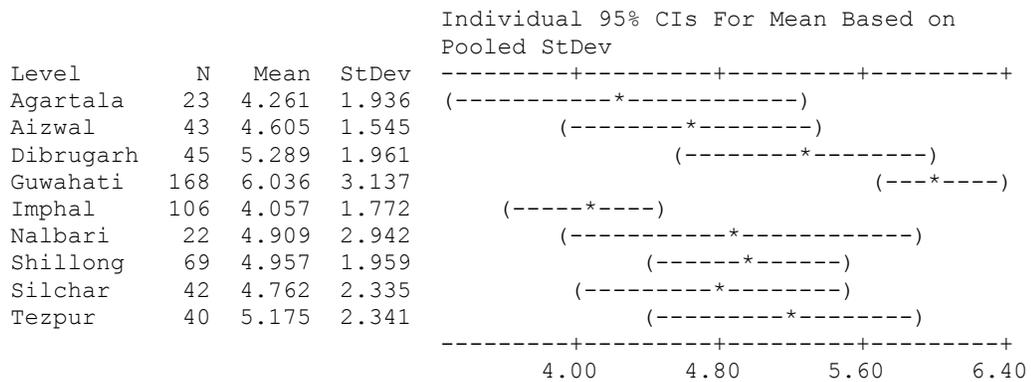
➤ Recommendation

- Operators in NE needs to focus more on improving the value for money perception amongst customers

One-way ANOVA: Value for Money versus Locations

Source	DF	SS	MS	F	P
Locations	8	297.88	37.24	6.38	0.000
Error	549	3205.49	5.84		
Total	557	3503.37			

S = 2.416 R-Sq = 8.50% R-Sq(adj) = 7.17%



Pooled StDev = 2.416

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on value for money perception differs significantly from one location to another.
- CS on value for money is very low for Agartala, Aizwal and Imphal

➤ Recommendation

- Operators need to focus more on areas like Agartala, Aizwal and Imphal for improving the Value for money perception amongst customers

One-way ANOVA: Value for Money versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	395.44	131.81	23.50	0.000
Error	554	3107.93	5.61		
Total	557	3503.37			

S = 2.369 R-Sq = 11.29% R-Sq(adj) = 10.81%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
AIRCEL	60	4.933	1.930	(-----*-----)
AIRTEL	123	6.098	2.768	(-----*-----)
RELIANCE GSM	251	4.219	1.991	(---*---)
VODAFONE	124	5.887	2.797	(-----*-----)

-----+-----+-----+-----+-----
 4.20 4.90 5.60 6.30

Pooled StDev = 2.369

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on value for money perception differs significantly from one Service Provider to another.
- CS on value for money perception is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

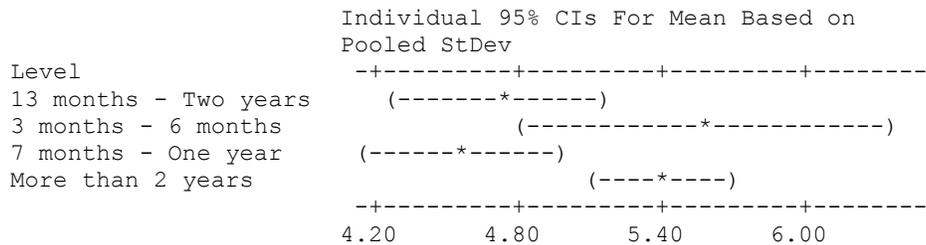
- Aircel and Reliance need to focus on improving the value for money perception amongst customers

One-way ANOVA: Value for Money versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	92.25	30.75	4.99	0.002
Error	554	3411.12	6.16		
Total	557	3503.37			

S = 2.481 R-Sq = 2.63% R-Sq(adj) = 2.11%

Level	N	Mean	StDev
13 months - Two years	128	4.719	2.111
3 months - 6 months	39	5.590	2.721
7 months - One year	126	4.563	2.080
More than 2 years	265	5.426	2.768



Pooled StDev = 2.481

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on value for money differs significantly from one Age on network to another.
- CS on value for money is low customers with Age on network between 7 months to 2 years

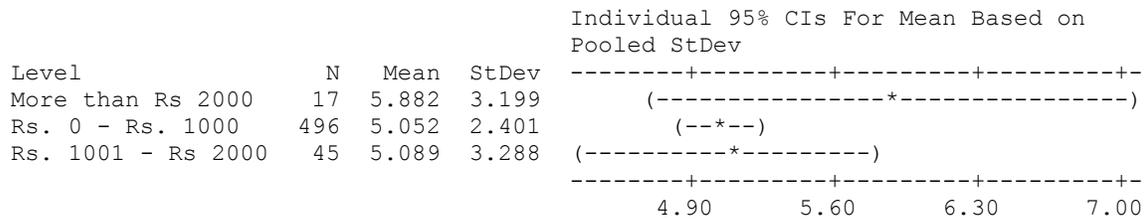
➤ Recommendation

- Operators need to focus on improving the value for money amongst customers of 7 months to 2 years of Age on network

One-way ANOVA: Value for Money versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	11.32	5.66	0.90	0.407
Error	555	3492.05	6.29		
Total	557	3503.37			

S = 2.508 R-Sq = 0.32% R-Sq(adj) = 0.00%



Pooled StDev = 2.508

➤ Interpretation

- Since P value (0.407) is greater than 0.05, hence, the average CS on value for money perception does not differ significantly from one set of Average bill amount to another

Summary for Variable Analysed: CS for Value for Money

Variable Analysed: CS for Value for Money							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Staistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0	Assam & NE	Yes	NE	-	Assam
2	Location	0	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Agartala, Aizwal, Imphal, Nalbari, Silchar & Shillong.	Dibrugarh and Tezpur	Guwahati
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance	Aircel	Airtel & Vodafone
4	Age on Network	0.002	3-6, 7-12, 12-24, >24 months	Yes	7-12, 12-24,	>24 months	3- 6 months
5	Avg Bill Amount	0.407	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: Is responsive to customer needs versus Circle

Source	DF	SS	MS	F	P
Circle	1	176.5	176.5	16.87	0.000
Error	553	5786.9	10.5		
Total	554	5963.4			

S = 3.235 R-Sq = 2.96% R-Sq(adj) = 2.78%

Level	N	Mean	StDev
Assam	274	6.285	3.673
NE	281	5.157	2.741

Individual 95% CIs For Mean Based on Pooled StDev

5.00 5.50 6.00 6.50

Pooled StDev = 3.235

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “is responsive to customer needs” perception differs significantly from one Circle to another.
- CS on “is responsive to customer needs” perception is more in Assam when compared with NE

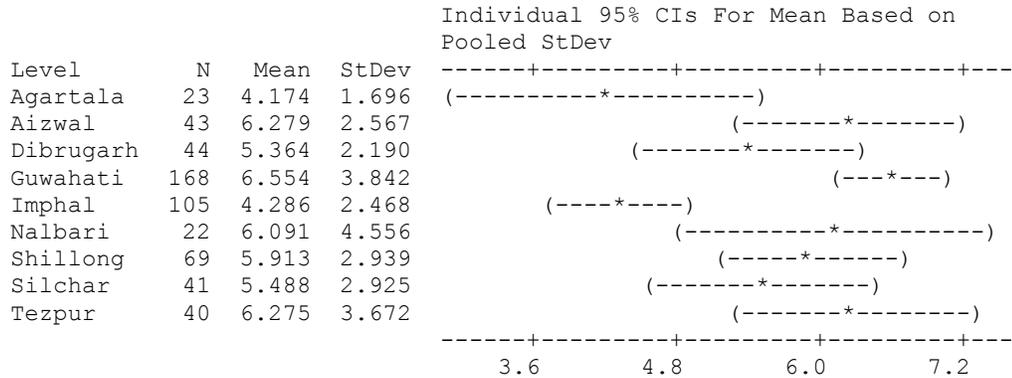
➤ Recommendation

- Operators in NE needs to focus more on improving the above perception amongst customers

One-way ANOVA: Is responsive to customer needs versus Locations

Source	DF	SS	MS	F	P
Locations	8	426.8	53.4	5.26	0.000
Error	546	5536.6	10.1		
Total	554	5963.4			

S = 3.184 R-Sq = 7.16% R-Sq(adj) = 5.80%



Pooled StDev = 3.184

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “is responsive to customer needs” perception differs significantly from one location to another.
- CS on “is responsive to customer needs” is very low for Agartala and Imphal

➤ Recommendation

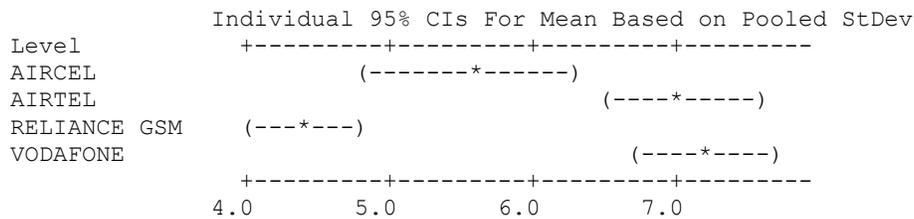
- Operators need to focus more on areas like Agartala and Imphal for improving the above perception amongst customers

One-way ANOVA: Is responsive to customer needs versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	923.19	307.73	33.64	0.000
Error	551	5040.26	9.15		
Total	554	5963.45			

S = 3.024 R-Sq = 15.48% R-Sq(adj) = 15.02%

Level	N	Mean	StDev
AIRCEL	59	5.559	2.168
AIRTEL	123	7.024	3.468
RELIANCE GSM	251	4.386	2.573
VODAFONE	122	7.197	3.687



Pooled StDev = 3.024

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “is responsive to customer needs” perception differs significantly from one Service Provider to another.
- CS on value for “is responsive to customer needs” is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

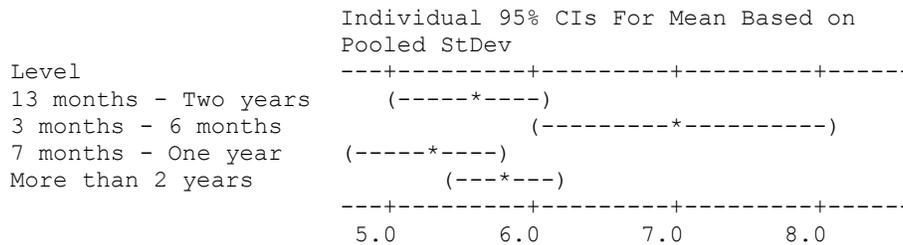
- Aircel and Reliance need to focus on improving the above perception amongst customers

One-way ANOVA: Is responsive to customer needs versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	97.5	32.5	3.05	0.028
Error	551	5865.9	10.6		
Total	554	5963.4			

S = 3.263 R-Sq = 1.64% R-Sq(adj) = 1.10%

Level	N	Mean	StDev
13 months - Two years	126	5.571	3.061
3 months - 6 months	39	7.026	4.075
7 months - One year	126	5.262	2.980
More than 2 years	264	5.803	3.351



Pooled StDev = 3.263

➤ Interpretation

- Since P value (0.028) is less than 0.05, the average CS on “is responsive to customer needs” differs significantly from one Age on network to another.
- CS on “is responsive to customer needs” is low customers with Age on network between 7 months to 2 years

➤ Recommendation

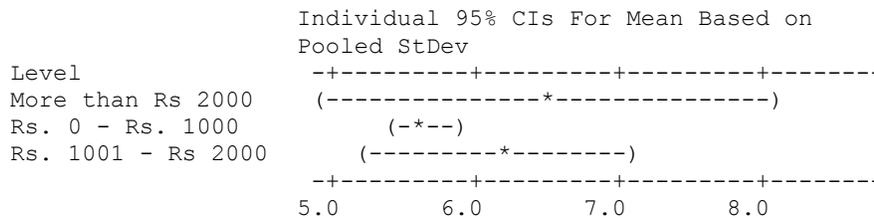
- Operators need to focus on improving the above amongst customers of 7 months to 2 years of Age on network

One-way ANOVA: Is responsive to customer needs versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	21.9	10.9	1.02	0.363
Error	552	5941.6	10.8		
Total	554	5963.4			

S = 3.281 R-Sq = 0.37% R-Sq(adj) = 0.01%

Level	N	Mean	StDev
More than Rs 2000	16	6.500	3.225
Rs. 0 - Rs. 1000	494	5.646	3.135
Rs. 1001 - Rs 2000	45	6.178	4.624



Pooled StDev = 3.281

➤ Interpretation

- Since P value (0.363) is greater than 0.05, hence, the average CS on “is responsive to customer needs” perception does not differs significantly from one set of Average bill amount to another

Variable Analyzed: Is Responsive to Customer Needs							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Staistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0	Assam & NE	Yes	NE	-	Assam
2	Location	0	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Agartala, Imphal	Silchar, Shillong, Dibrugarh	Aizwal, Guwahati, Nalbari, Tezpur
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance	Aircel	Airtel & Vodafone
4	Age on Network	0.028	3-6, 7-12, 12-24, >24 months	Yes	7-12, 12-24,	>24 months	3- 6 months
5	Avg Bill Amount	0.363	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: Cares for its customers versus Circle

Source	DF	SS	MS	F	P
Circle	1	111.28	111.28	13.36	0.000
Error	551	4588.97	8.33		
Total	552	4700.25			

S = 2.886 R-Sq = 2.37% R-Sq(adj) = 2.19%

Level	N	Mean	StDev
Assam	274	5.664	3.076
NE	279	4.767	2.686

Individual 95% CIs For Mean Based on Pooled StDev

-----+-----+-----+-----+
 (-----*-----)
 -----+-----+-----+-----+
 4.80 5.20 5.60 6.00

Pooled StDev = 2.886

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “cares for its customers” perception differs significantly from one Circle to another.
- CS on “cares for its customers” perception is more in Assam when compared with NE

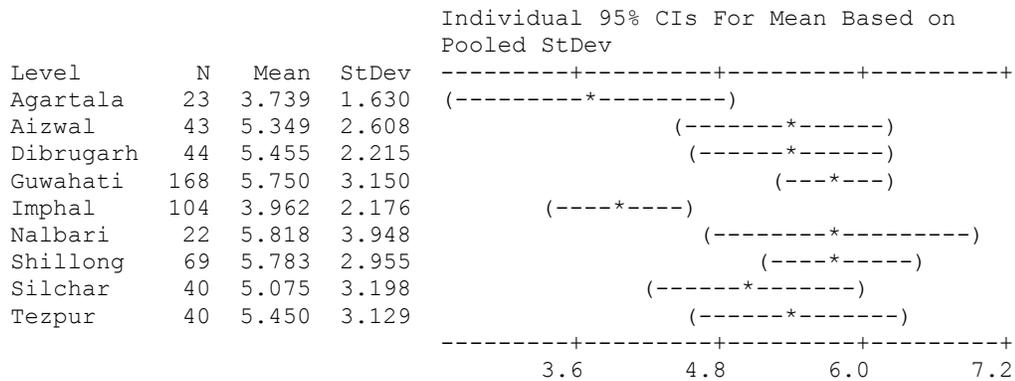
➤ Recommendation

- Operators in NE needs to focus more on improving the above perception amongst customers

One-way ANOVA: Cares for its customers versus Locations

Source	DF	SS	MS	F	P
Locations	8	298.10	37.26	4.60	0.000
Error	544	4402.14	8.09		
Total	552	4700.25			

S = 2.845 R-Sq = 6.34% R-Sq(adj) = 4.96%



Pooled StDev = 2.845

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “cares for its customers” perception differs significantly from one location to another.
- CS on “cares for its customers” perception is very low for Agartala and Imphal

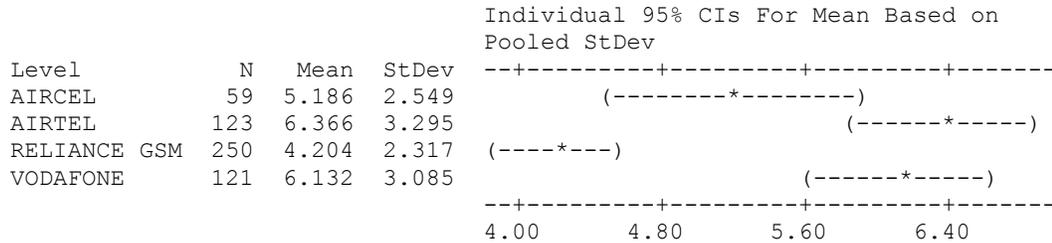
➤ Recommendation

- Operators need to focus more on areas like Agartala and Imphal for improving the above perception amongst customers

One-way ANOVA: Cares for its customers versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	520.28	173.43	22.78	0.000
Error	549	4179.97	7.61		
Total	552	4700.25			

S = 2.759 R-Sq = 11.07% R-Sq(adj) = 10.58%



Pooled StDev = 2.759

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “cares for its customers” perception differs significantly from one Service Provider to another.
- CS on “cares for its customers” perception is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

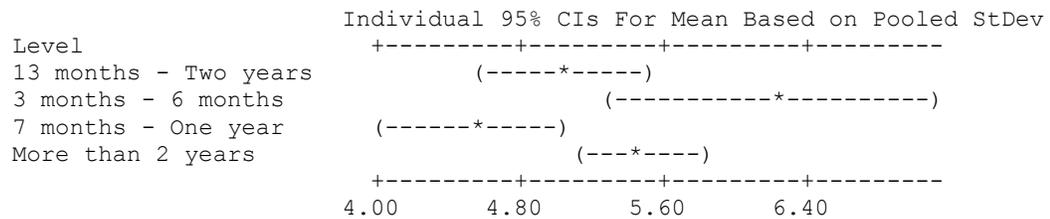
- Aircel and Reliance need to focus on improving the above perception amongst customers

One-way ANOVA: Cares for its customers versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	117.39	39.13	4.69	0.003
Error	549	4582.86	8.35		
Total	552	4700.25			

S = 2.889 R-Sq = 2.50% R-Sq(adj) = 1.96%

Level	N	Mean	StDev
13 months - Two years	126	5.032	2.695
3 months - 6 months	39	6.205	3.636
7 months - One year	124	4.532	2.471
More than 2 years	264	5.470	3.035



Pooled StDev = 2.889

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “cares for its customers” perception differs significantly from one Age on network to another.
- CS on “cares for its customers” perception is low customers with Age on network between 7 months to 2 years

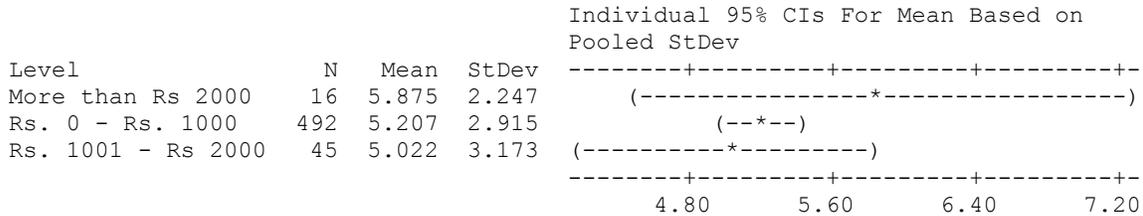
➤ Recommendation

- Operators need to focus on improving the above perception amongst customers of 7 months to 2 years of Age on network

One-way ANOVA: Cares for its customers versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	8.66	4.33	0.51	0.602
Error	550	4691.58	8.53		
Total	552	4700.25			

S = 2.921 R-Sq = 0.18% R-Sq(adj) = 0.00%



Pooled StDev = 2.921

➤ Interpretation

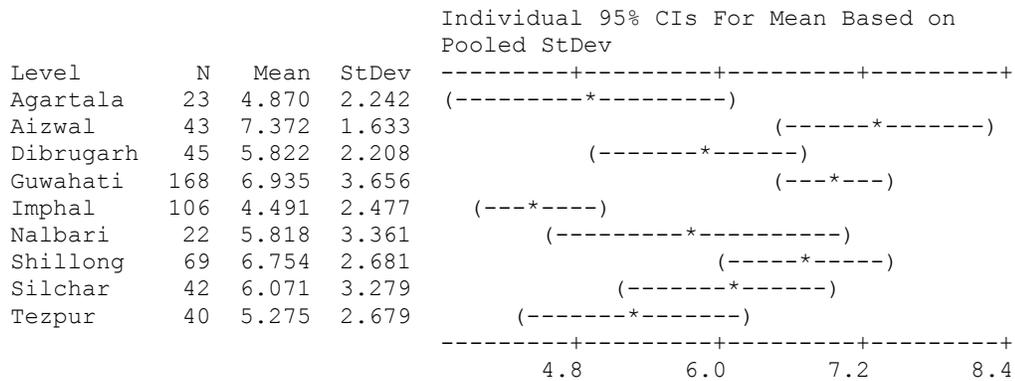
- Since P value (0.602) is greater than 0.05, hence, the average CS on “cares for its customers” perception does not differs significantly from one set of Average bill amount to another

Variable Analysed: cares for its Customers							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Staistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0	Assam & NE	Yes	NE	-	Assam
2	Location	0	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Agartala	Aizwal, Dibrugarh, Imphal, Silchar, Tezpur	Nalbari, Shillong, Guwahati
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance	Aircel	Airtel & Vodafone
4	Age on Network	0.003	3-6, 7-12, 12-24, >24 months	Yes	12-Jul	12-24 and >24 months	3- 6 months
5	Avg Bill Amount	0.602	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: How likely are you to recommend versus Locations

Source	DF	SS	MS	F	P
Locations	8	557.68	69.71	8.04	0.000
Error	549	4760.85	8.67		
Total	557	5318.53			

S = 2.945 R-Sq = 10.49% R-Sq(adj) = 9.18%



Pooled StDev = 2.945

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “how likely are you to recommend” perception differs significantly from one location to another.
- CS on “how likely are you to recommend” perception is very low for Agartala and Imphal

➤ Recommendation

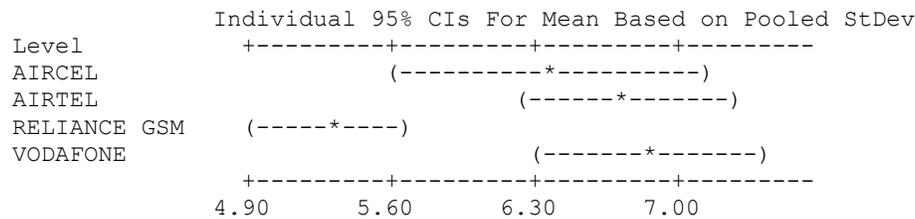
- Operators need to focus more on areas like Agartala and Imphal for improving the above perception amongst customers

One-way ANOVA: How likely are you to recommend versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	287.66	95.89	10.56	0.000
Error	554	5030.87	9.08		
Total	557	5318.53			

S = 3.013 R-Sq = 5.41% R-Sq(adj) = 4.90%

Level	N	Mean	StDev
AIRCEL	60	6.367	2.642
AIRTEL	123	6.740	3.430
RELIANCE GSM	251	5.299	2.775
VODAFONE	124	6.863	3.199



Pooled StDev = 3.013

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “how likely are you to recommend” perception differs significantly from one Service Provider to another.
- CS on “how likely are you to recommend” perception is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

- Aircel and Reliance need to focus on improving the above perception amongst customers

One-way ANOVA: How likely are you to recommend versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	41.47	13.82	1.45	0.227
Error	554	5277.06	9.53		
Total	557	5318.53			

S = 3.086 R-Sq = 0.78% R-Sq(adj) = 0.24%

Level	N	Mean	StDev
13 months - Two years	128	5.766	2.646
3 months - 6 months	39	6.872	3.002
7 months - One year	126	5.952	3.075
More than 2 years	265	6.174	3.294

Individual 95% CIs For Mean Based on Pooled StDev

Level	CI
13 months - Two years	(-----*-----)
3 months - 6 months	(-----*-----)
7 months - One year	(-----*-----)
More than 2 years	(-----*-----)

5.60 6.30 7.00 7.70

Pooled StDev = 3.086

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “how likely are you to recommend” perception differs significantly from one Age on network to another.
- CS on “how likely are you to recommend” perception is low customers with Age on network between 7 months to 2 years

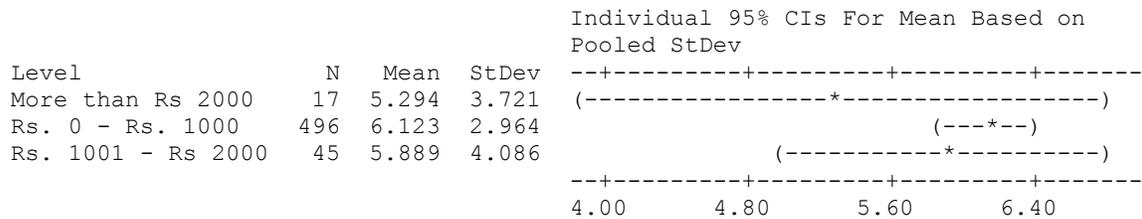
➤ Recommendation

- Operators need to focus on improving the above perception amongst customers of 7 months to 2 years of Age on network

One-way ANOVA: How likely are you to recommend versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	13.06	6.53	0.68	0.506
Error	555	5305.47	9.56		
Total	557	5318.53			

S = 3.092 R-Sq = 0.25% R-Sq(adj) = 0.00%



Pooled StDev = 3.092

➤ Interpretation

- Since P value (0.506) is greater than 0.05, hence, the average CS on “how likely are you to recommend” perception does not differs significantly from one set of Average bill amount to another

Variable Analysed: How likely are you to recommend							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Staistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0.01	Assam & NE	Yes	NE	-	Assam
2	Location	0	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Agartala, Imphal	Dibrugarh, Guwahati, Nalbari, Shillong, Silchar, Tezpur	Aizwal
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance	Aircel	Airtel & Vodafone
4	Age on Network	0.227	3-6, 7-12, 12-24, >24 months	NO	Same for all the stratification elements		
5	Avg Bill Amount	0.506	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: How likely are you to continue versus Circle

Source	DF	SS	MS	F	P
Circle	1	70.1	70.1	5.10	0.024
Error	554	7616.2	13.7		
Total	555	7686.3			

S = 3.708 R-Sq = 0.91% R-Sq(adj) = 0.73%

Individual 95% CIs For Mean Based on Pooled StDev

Level	N	Mean	StDev
Assam	273	7.897	3.922
NE	283	7.187	3.489

6.80 7.20 7.60 8.00

Pooled StDev = 3.708

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “how likely is you to continue” perception differs significantly from one Circle to another.
- CS on “how likely are you to continue” perception is more in Assam when compared with NE

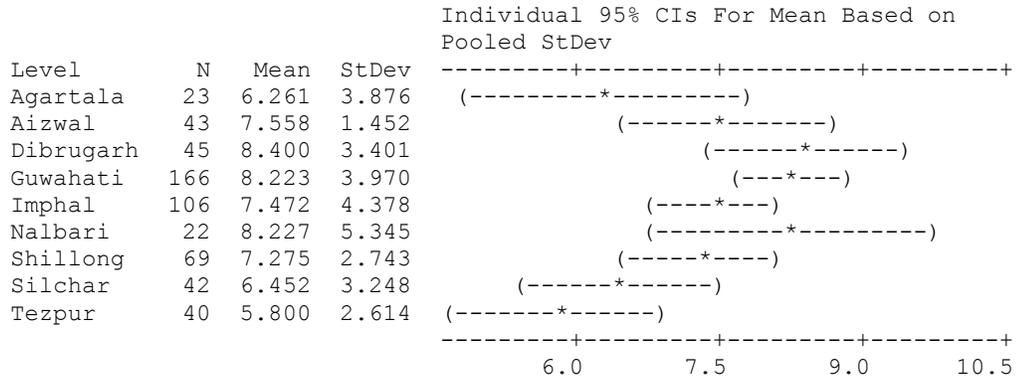
➤ Recommendation

- Operators in NE needs to focus more on improving the above perception amongst customers

One-way ANOVA: How likely are you to continue versus Locations

Source	DF	SS	MS	F	P
Locations	8	334.8	41.9	3.11	0.002
Error	547	7351.4	13.4		
Total	555	7686.3			

S = 3.666 R-Sq = 4.36% R-Sq(adj) = 2.96%



Pooled StDev = 3.666

➤ Interpretation

- Since P value (0.002) is less than 0.05, the average CS on “how likely are you to continue” perception differs significantly from one location to another.
- CS on “how likely are you to continue” perception is very low for Agartala, Silchar and Tezpur

➤ Recommendation

- Operators need to focus more on areas like Agartala, Silchar and Tezpur for improving the above perception amongst customers

One-way ANOVA: How likely are you to continue versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	464.4	154.8	11.83	0.000
Error	552	7221.9	13.1		
Total	555	7686.3			

S = 3.617 R-Sq = 6.04% R-Sq(adj) = 5.53%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
AIRCEL	60	7.833	3.320	(-----*-----)
AIRTEL	122	8.385	4.058	(-----*-----)
RELIANCE GSM	250	6.548	3.353	(-----*-----)
VODAFONE	124	8.548	3.803	(-----*-----)

-----+-----+-----+-----+-----
6.40 7.20 8.00 8.80

Pooled StDev = 3.617

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “how likely are you to continue” perception differs significantly from one Service Provider to another.
- CS on “how likely are you to continue” perception is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

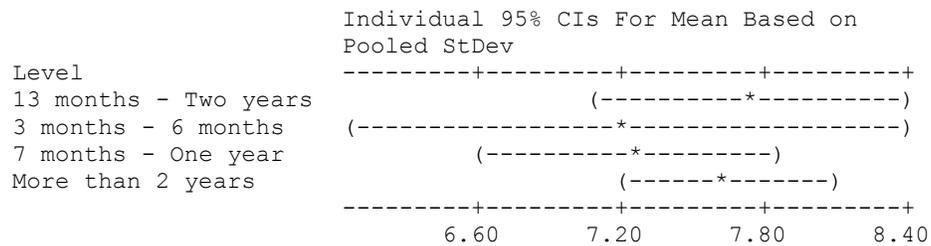
- Aircel and Reliance need to focus on improving the above perception amongst customers

One-way ANOVA: How likely are you to continue versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	24.1	8.0	0.58	0.629
Error	552	7662.2	13.9		
Total	555	7686.3			

S = 3.726 R-Sq = 0.31% R-Sq(adj) = 0.00%

Level	N	Mean	StDev
13 months - Two years	128	7.750	3.966
3 months - 6 months	39	7.205	3.373
7 months - One year	126	7.230	3.306
More than 2 years	263	7.627	3.841



Pooled StDev = 3.726

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “how likely is you to continue” perception differs significantly from one Age on network to another.
- CS on “how likely are you to continue” perception is low customers with Age on network between 3 months to 1 year

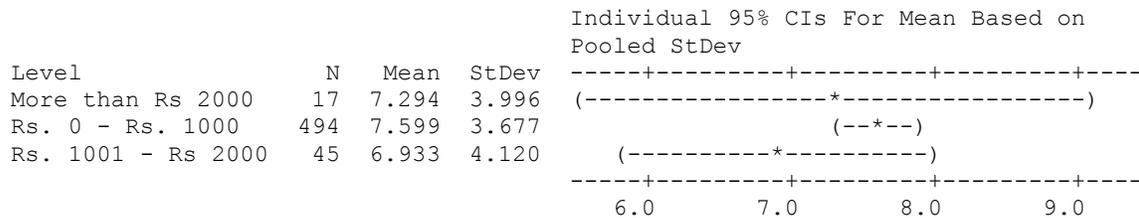
➤ Recommendation

- Operators need to focus on improving the above perception amongst customers of 3 months to 1 year of Age on network

One-way ANOVA: How likely are you to continue versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	19.3	9.7	0.70	0.499
Error	553	7667.0	13.9		
Total	555	7686.3			

S = 3.723 R-Sq = 0.25% R-Sq(adj) = 0.00%



Pooled StDev = 3.723

➤ Interpretation

- Since P value (0.499) is greater than 0.05, hence, the average CS on “how likely are you to continue” perception does not differ significantly from one set of Average bill amount to another

Variable Analysed: How likely are you to continue							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Staistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0.024	Assam & NE	Yes	NE	-	Assam
2	Location	0.002	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Agartala, Tezpur	Aizwal, Imphal, Shillong, Silchar,	Dibrugarh, Guwahati, Nalbari
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance	Aircel	Airtel & Vodafone
4	Age on Network	0.629	3-6, 7-12, 12-24, >24 months	NO	Same for all the stratification elements		
5	Avg Bill Amount	0.499	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: Overall quality of the network versus Circle

Source	DF	SS	MS	F	P
Circle	1	924.6	924.6	70.29	0.000
Error	554	7286.8	13.2		
Total	555	8211.4			

S = 3.627 R-Sq = 11.26% R-Sq(adj) = 11.10%

Individual 95% CIs For Mean Based on Pooled StDev

Level	N	Mean	StDev	CI Lower	CI Upper
Assam	275	6.625	4.562	5.500	7.750
NE	281	4.046	2.379	3.200	4.900

4.0 5.0 6.0 7.0

Pooled StDev = 3.627

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “overall quality of the network” perception differs significantly from one Circle to another.
- CS on “overall quality of the network” perception is more in Assam when compared with NE

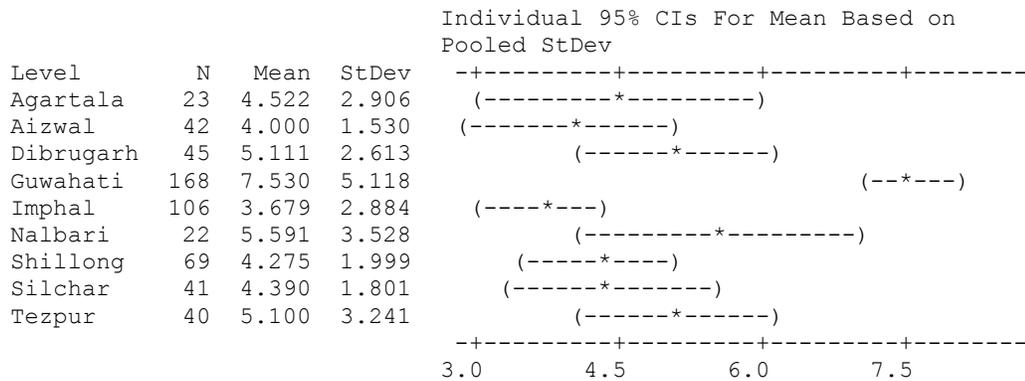
➤ Recommendation

- Operators in NE needs to focus more on improving the above perception amongst customers

One-way ANOVA: Overall quality of the network versus Locations

Source	DF	SS	MS	F	P
Locations	8	1309.8	163.7	12.98	0.000
Error	547	6901.6	12.6		
Total	555	8211.4			

S = 3.552 R-Sq = 15.95% R-Sq(adj) = 14.72%



Pooled StDev = 3.552

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “overall quality of the network” perception differs significantly from one location to another.
- CS on “overall quality of the network” perception is very low for Agartala and Imphal

➤ Recommendation

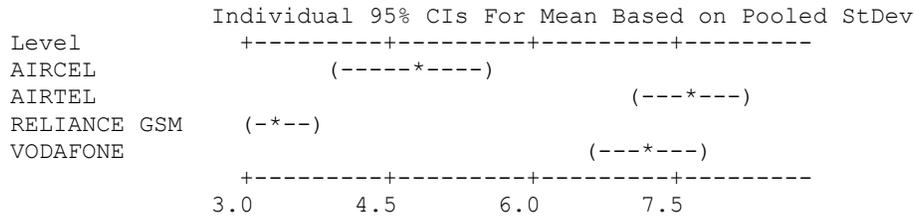
- Operators need to focus more on areas like Agartala and Imphal for improving the above perception amongst customers

One-way ANOVA: Overall quality of the network versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	2088.1	696.0	62.75	0.000
Error	552	6123.3	11.1		
Total	555	8211.4			

S = 3.331 R-Sq = 25.43% R-Sq(adj) = 25.02%

Level	N	Mean	StDev
AIRCEL	60	4.767	1.881
AIRTEL	123	7.650	4.602
RELIANCE GSM	249	3.361	1.928
VODAFONE	124	7.218	4.426



Pooled StDev = 3.331

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “overall quality of the network” perception differs significantly from one Service Provider to another.
- CS on “overall quality of the network” perception is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

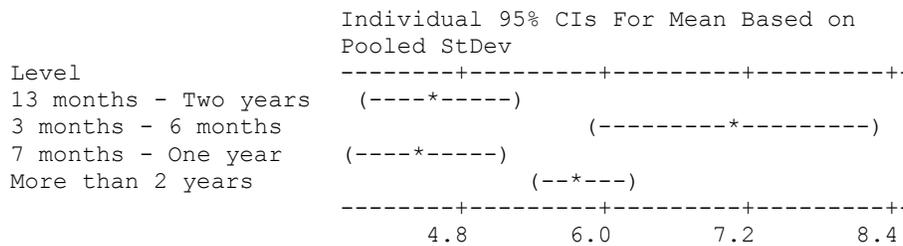
- Aircel and Reliance need to focus on improving the above perception amongst customers

One-way ANOVA: Overall quality of the network versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	330.4	110.1	7.71	0.000
Error	552	7881.0	14.3		
Total	555	8211.4			

S = 3.779 R-Sq = 4.02% R-Sq(adj) = 3.50%

Level	N	Mean	StDev
13 months - Two years	128	4.602	3.151
3 months - 6 months	39	7.051	4.058
7 months - One year	125	4.496	3.112
More than 2 years	264	5.807	4.269



Pooled StDev = 3.779

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “overall quality of the network” perception differs significantly from one Age on network to another.
- CS on “overall quality of the network” perception is low customers with Age on network between 7 months to 2 years

➤ Recommendation

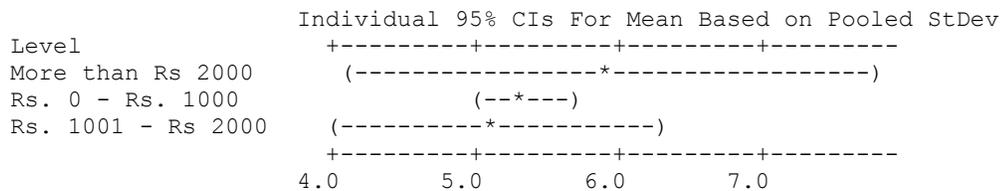
- Operators need to focus on improving the above perception amongst customers of 7 months to 2 years of Age on network

One-way ANOVA: Overall quality of the network versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	8.1	4.1	0.27	0.760
Error	553	8203.2	14.8		
Total	555	8211.4			

S = 3.852 R-Sq = 0.10% R-Sq(adj) = 0.00%

Level	N	Mean	StDev
More than Rs 2000	17	5.941	4.575
Rs. 0 - Rs. 1000	494	5.318	3.752
Rs. 1001 - Rs 2000	45	5.133	4.595



Pooled StDev = 3.852

➤ Interpretation

- Since P value (0.760) is greater than 0.05, hence, the average CS on “overall quality of the network” perception does not differs significantly from one set of Average bill amount to another

Variable Analysed: Overall Quality of Network							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Staistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0	Assam & NE	Yes	NE	-	Assam
2	Location	0	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Aizwal, Imphal, Agartala, Shillong, Silchar	Dibrugarh, Nalbari, Tezpur	Guwahati
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance	Aircel	Airtel & Vodafone
4	Age on Network	0	3-6, 7-12, 12-24, >24 months	NO	7-12 and 13 to 24	>24 months	3- 6 months
5	Avg Bill Amount	0.76	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: Overall billing experience versus Circle

Source	DF	SS	MS	F	P
Circle	1	449.84	449.84	59.42	0.000
Error	556	4209.15	7.57		
Total	557	4658.98			

S = 2.751 R-Sq = 9.66% R-Sq(adj) = 9.49%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
Assam	275	5.905	3.458	-----+-----+-----+-----+----- (---*---)
NE	283	4.110	1.820	-----+-----+-----+-----+----- (---*---)

4.20 4.90 5.60 6.30

Pooled StDev = 2.751

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “overall billing experience” perception differs significantly from one Circle to another.
- CS on “overall billing experience” perception is more in Assam when compared with NE

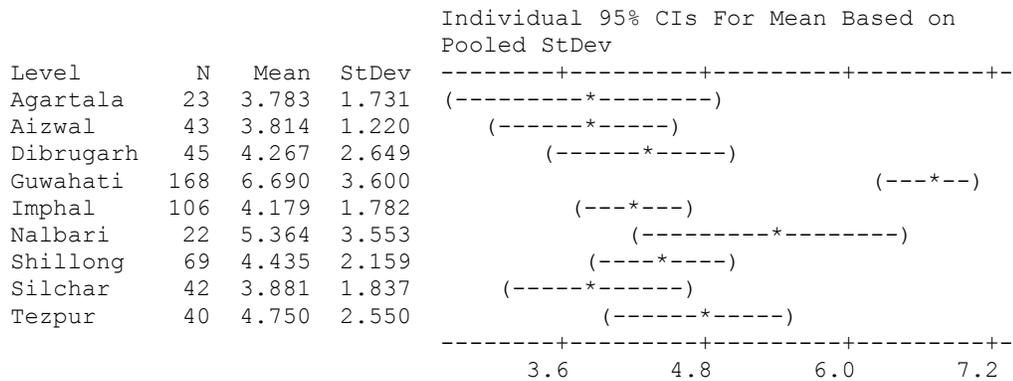
➤ Recommendation

- Operators in NE needs to focus more on improving the above perception amongst customers

One-way ANOVA: Overall billing experience versus Locations

Source	DF	SS	MS	F	P
Locations	8	750.31	93.79	13.17	0.000
Error	549	3908.68	7.12		
Total	557	4658.98			

S = 2.668 R-Sq = 16.10% R-Sq(adj) = 14.88%



➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “overall billing experience” perception differs significantly from one location to another.
- CS on “overall billing experience” perception is very low for Agartala, Aizwal and Silchar

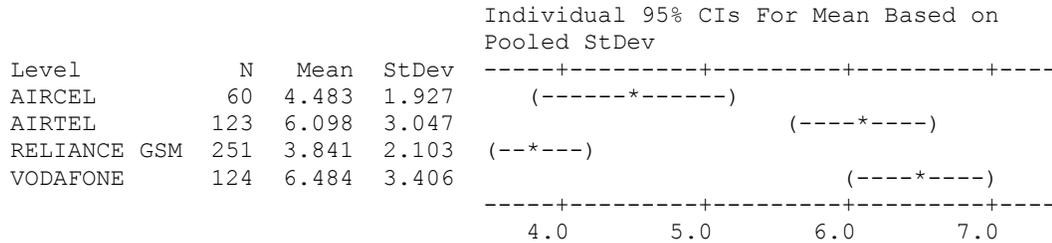
➤ Recommendation

- Operators need to focus more on areas like Agartala, Aizwal and Silchar for improving the above perception amongst customers

One-way ANOVA: Overall billing experience versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	774.58	258.19	36.82	0.000
Error	554	3884.41	7.01		
Total	557	4658.98			

S = 2.648 R-Sq = 16.63% R-Sq(adj) = 16.17%



Pooled StDev = 2.648

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “overall billing experience” perception differs significantly from one Service Provider to another.
- CS on “overall billing experience” perception is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

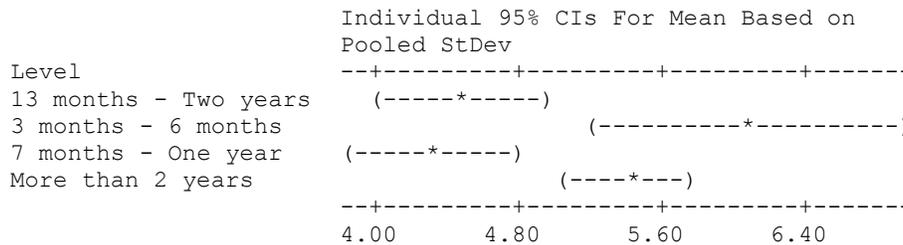
- Aircel and Reliance need to focus on improving the above perception amongst customers

One-way ANOVA: Overall billing experience versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	184.87	61.62	7.63	0.000
Error	554	4474.11	8.08		
Total	557	4658.98			

S = 2.842 R-Sq = 3.97% R-Sq(adj) = 3.45%

Level	N	Mean	StDev
13 months - Two years	128	4.469	2.453
3 months - 6 months	39	6.077	2.905
7 months - One year	126	4.317	2.405
More than 2 years	265	5.411	3.178



Pooled StDev = 2.842

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “overall billing experience” perception differs significantly from one Age on network to another.
- CS on “overall billing experience” perception is low customers with Age on network between 7 months to 2 years

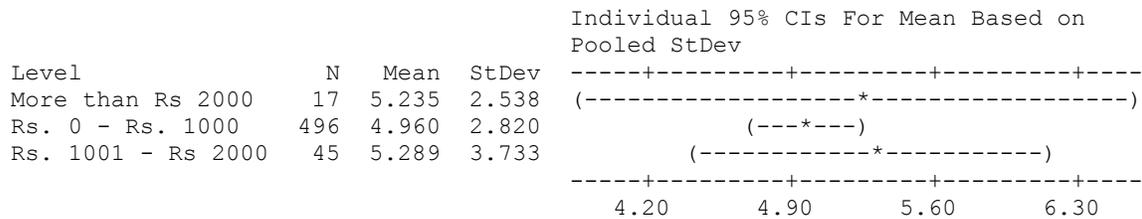
➤ Recommendation

- Operators need to focus on improving the above perception amongst customers of 7 months to 2 years of Age on network

One-way ANOVA: Overall billing experience versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	5.49	2.74	0.33	0.721
Error	555	4653.50	8.38		
Total	557	4658.98			

S = 2.896 R-Sq = 0.12% R-Sq(adj) = 0.00%



Pooled StDev = 2.896

➤ Interpretation

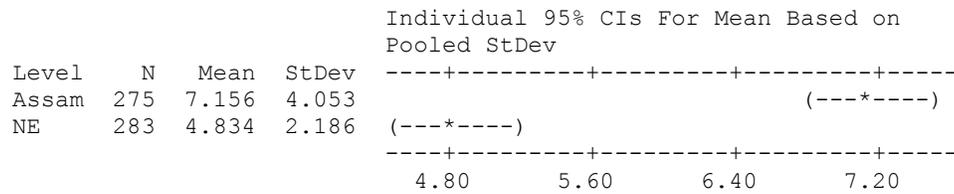
- Since P value (0.721) is greater than 0.05, hence, the average CS on “overall billing experience” perception does not differ significantly from one set of Average bill amount to another

Variable Analysed: Overall Billing Experience							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements statistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0	Assam & NE	Yes	NE	-	Assam
2	Location	0	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Agartala, Aizwal and Silchar	Dibrugarh, Imphal, Nalbari, Shillong, Silchar, Tezpur	Guwahati
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance	Aircel	Airtel & Vodafone
4	Age on Network	0	3-6, 7-12, 12-24, >24 months	NO	7-12 and 13 to 24	>24 months	3- 6 months
5	Avg Bill Amount	0.721	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: Accessibility of the payment location versus Circle

Source	DF	SS	MS	F	P
Circle	1	752.3	752.3	71.53	0.000
Error	556	5847.5	10.5		
Total	557	6599.7			

S = 3.243 R-Sq = 11.40% R-Sq(adj) = 11.24%



Pooled StDev = 3.243

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Accessibility of the payment location” differs significantly from one Circle to another.
- CS on “Accessibility of the payment location” is more in Assam when compared with NE

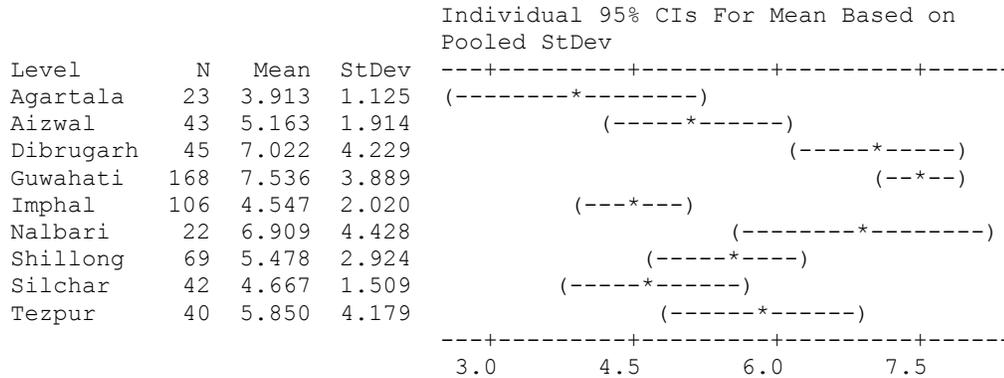
➤ Recommendation

- Operators in NE needs to focus more on improving the above perception amongst customers

One-way ANOVA: Accessibility of the payment locations versus Locations

Source	DF	SS	MS	F	P
Locations	8	909.6	113.7	10.97	0.000
Error	549	5690.2	10.4		
Total	557	6599.7			

S = 3.219 R-Sq = 13.78% R-Sq(adj) = 12.53%



Pooled StDev = 3.219

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Accessibility of the payment location” perception differs significantly from one location to another.
- CS on “Accessibility of the payment location” is very low for Agartala, Silchar and Imphal

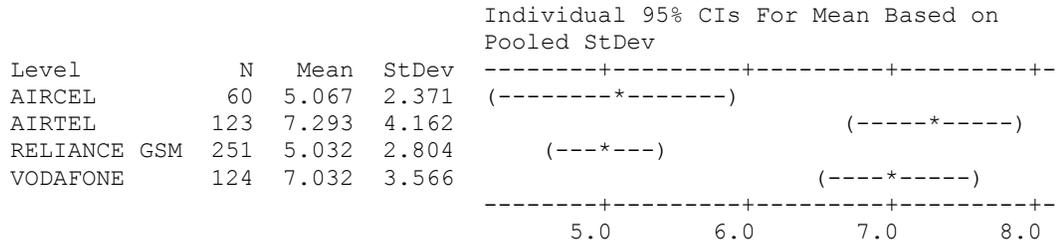
➤ Recommendation

- Operators need to focus more on areas like Agartala, Silchar and Imphal for improving the above perception amongst customers

One-way ANOVA: Accessibility of the payment locations versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	624.9	208.3	19.32	0.000
Error	554	5974.8	10.8		
Total	557	6599.7			

S = 3.284 R-Sq = 9.47% R-Sq(adj) = 8.98%



Pooled StDev = 3.284

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Accessibility of the payment location” differs significantly from one Service Provider to another.
- CS on “Accessibility of the payment location” is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

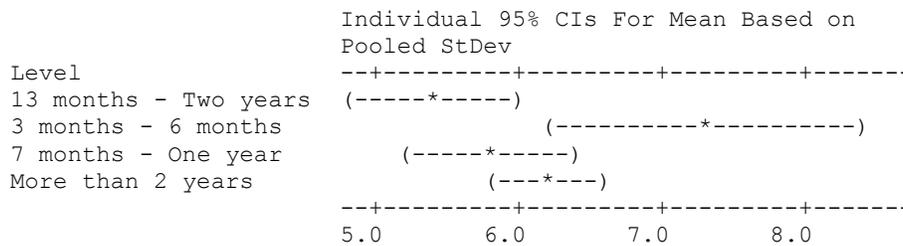
- Aircel and Reliance need to focus on improving the above perception amongst customers

One-way ANOVA: Accessibility of the payment locations versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	129.0	43.0	3.68	0.012
Error	554	6470.8	11.7		
Total	557	6599.7			

S = 3.418 R-Sq = 1.95% R-Sq(adj) = 1.42%

Level	N	Mean	StDev
13 months - Two years	128	5.359	2.847
3 months - 6 months	39	7.282	3.879
7 months - One year	126	5.802	3.172
More than 2 years	265	6.170	3.699



Pooled StDev = 3.418

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Accessibility of the payment location” differs significantly from one Age on network to another.
- CS on “Accessibility of the payment location” is low customers with Age on network between 7 months to 2 years

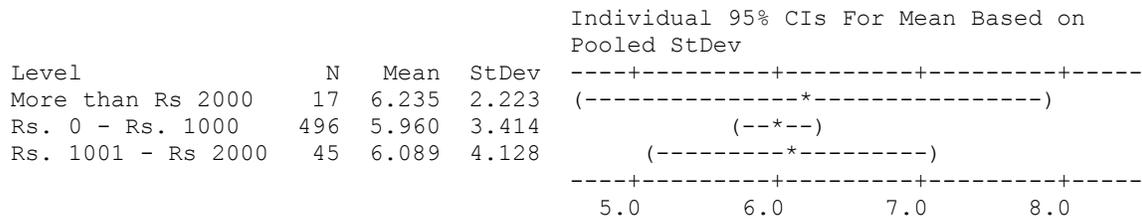
➤ Recommendation

- Operators need to focus on improving the above amongst customers of 7 months to 2 years of Age on network

One-way ANOVA: Accessibility of the payment locations versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	1.8	0.9	0.08	0.925
Error	555	6597.9	11.9		
Total	557	6599.7			

S = 3.448 R-Sq = 0.03% R-Sq(adj) = 0.00%



Pooled StDev = 3.448

➤ Interpretation

- Since P value (0.925) is greater than 0.05, hence, the average CS on “Accessibility of the payment location” does not differs significantly from one set of Average bill amount to another

Variable Analysed: Accessibility of Payment Locations							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Staistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0	Assam & NE	Yes	NE	-	Assam
2	Location	0	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Agartala	Aizwal, Imphal, Shillong, Silchar, Tezpur	Guwahati, Dibrugarh and Nalbari
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance and Aircel		Airtel & Vodafone
4	Age on Network	0.012	3-6, 7-12, 12-24, >24 months	Yes	7-12 and 13 to 24	>24 months	3- 6 months
5	Avg Bill Amount	0.925	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: Attractive tariff plans to suit versus Circle

Source	DF	SS	MS	F	P
Circle	1	75.8	75.8	6.58	0.011
Error	550	6335.3	11.5		
Total	551	6411.1			

S = 3.394 R-Sq = 1.18% R-Sq(adj) = 1.00%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
Assam	270	5.919	3.763	+-----+-----+-----+-----+ (-----*-----)
NE	282	5.177	2.999	(-----*-----) +-----+-----+-----+-----+

4.80 5.20 5.60 6.00

Pooled StDev = 3.394

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Attractive tariff plans” differs significantly from one Circle to another.
- CS on “Attractive tariff plans” is more in Assam when compared with NE

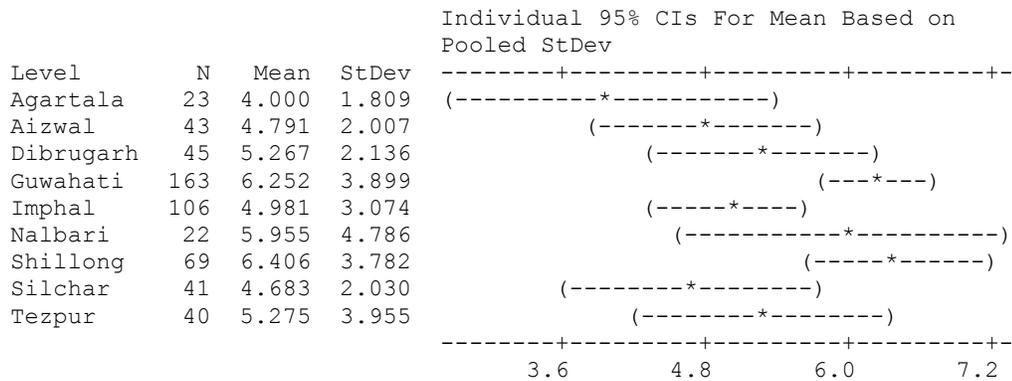
➤ Recommendation

- Operators in NE needs to focus more on improving the above perception amongst customers

One-way ANOVA: Attractive tariff plans to suit versus Locations

Source	DF	SS	MS	F	P
Locations	8	286.1	35.8	3.17	0.002
Error	543	6125.0	11.3		
Total	551	6411.1			

S = 3.359 R-Sq = 4.46% R-Sq(adj) = 3.06%



Pooled StDev = 3.359

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Attractive tariff plans” perception differs significantly from one location to another.
- CS on “Attractive tariff plans” is very low for Agartala, Aizwal, Silchar and Imphal

➤ Recommendation

- Operators need to focus more on areas like Agartala, Aizwal, Silchar and Imphal for improving the above perception amongst customers

One-way ANOVA: Attractive tariff plans to suit versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	52.1	17.4	1.50	0.214
Error	548	6359.0	11.6		
Total	551	6411.1			

S = 3.406 R-Sq = 0.81% R-Sq(adj) = 0.27%

Level	N	Mean	StDev
13 months - Two years	127	5.157	2.787
3 months - 6 months	39	6.410	3.274
7 months - One year	123	5.439	3.349
More than 2 years	263	5.643	3.709

Individual 95% CIs For Mean Based on Pooled StDev

Level	CI
13 months - Two years	(-----*-----)
3 months - 6 months	(-----*-----)
7 months - One year	(-----*-----)
More than 2 years	(-----*-----)

4.80 5.60 6.40 7.20

Pooled StDev = 3.406

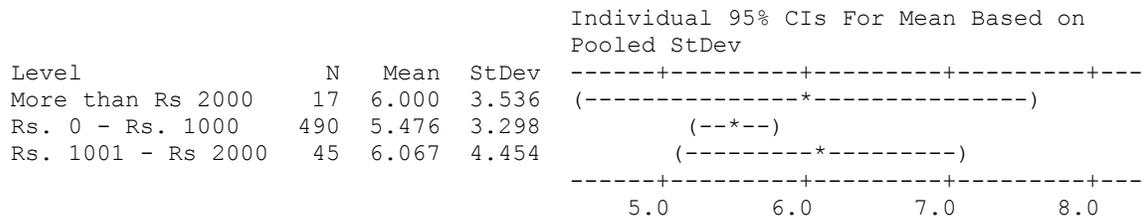
➤ Interpretation

- Since P value (0.214) is greater than 0.05, hence, the average CS on “Attractive tariff plans” perception does not differs significantly from one set of Age on Network to another

One-way ANOVA: Attractive tariff plans to suit versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	18.1	9.1	0.78	0.460
Error	549	6393.0	11.6		
Total	551	6411.1			

S = 3.412 R-Sq = 0.28% R-Sq(adj) = 0.00%



Pooled StDev = 3.412

➤ Interpretation

- Since P value (0.460) is greater than 0.05, hence, the average CS on “Attractive tariff plans” perception does not differs significantly from one set of Average bill amount to another

Variable Analysed: Attractive Tariff Plans							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Staistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0.011	Assam & NE	Yes	NE	-	Assam
2	Location	0.002	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Agartala, Silchar	Aizwal, Dibrugarh, Imphal, Tezpur	Guwahati, Shillong and Nalbari
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance and Aircel		Airtel & Vodafone
4	Age on Network	0.214	3-6, 7-12, 12-24, >24 months	NO	Same for all the stratification elements		
5	Avg Bill Amount	0.46	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: Overall quality of their VAS versus Circle

Source	DF	SS	MS	F	P
Circle	1	148.70	148.70	29.53	0.000
Error	432	2175.15	5.04		
Total	433	2323.85			

S = 2.244 R-Sq = 6.40% R-Sq(adj) = 6.18%

Individual 95% CIs For Mean Based on Pooled StDev

Level	N	Mean	StDev
Assam	187	5.016	2.814
NE	247	3.834	1.690

4.00 4.50 5.00 5.50

Pooled StDev = 2.244

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Overall quality of the VAS” differs significantly from one Circle to another.
- CS on “Overall quality of the VAS” is more in Assam when compared with NE

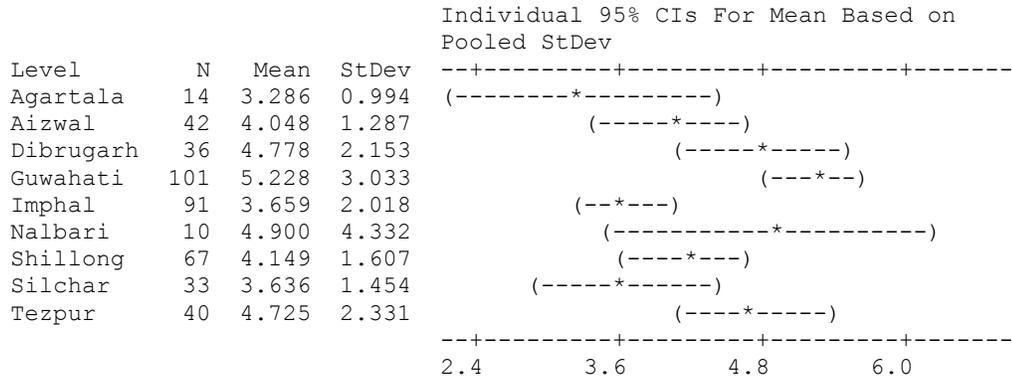
➤ Recommendation

- Operators in NE need to focus more on improving the above perception amongst customers

One-way ANOVA: Overall quality of their VAS versus Locations

Source	DF	SS	MS	F	P
Locations	8	175.64	21.96	4.34	0.000
Error	425	2148.20	5.05		
Total	433	2323.85			

S = 2.248 R-Sq = 7.56% R-Sq(adj) = 5.82%



Pooled StDev = 2.248

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Overall quality of the VAS” perception differs significantly from one location to another.
- CS on “Overall quality of the VAS” is very low for Agartala, Silchar and Imphal

➤ Recommendation

- Operators need to focus more on areas like Agartala, Silchar and Imphal for improving the above perception amongst customers

One-way ANOVA: Overall quality of their VAS versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	172.97	57.66	11.53	0.000
Error	430	2150.88	5.00		
Total	433	2323.85			

S = 2.237 R-Sq = 7.44% R-Sq(adj) = 6.80%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
AIRCEL	50	4.360	1.882	(-----*-----)
AIRTEL	98	4.980	2.636	(-----*-----)
RELIANCE GSM	187	3.652	1.826	(-----*-----)
VODAFONE	99	5.010	2.640	(-----*-----)

-----+-----+-----+-----+-----
3.60 4.20 4.80 5.40

Pooled StDev = 2.237

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Overall quality of the VAS” differs significantly from one Service Provider to another.
- CS on “Overall quality of the VAS” is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

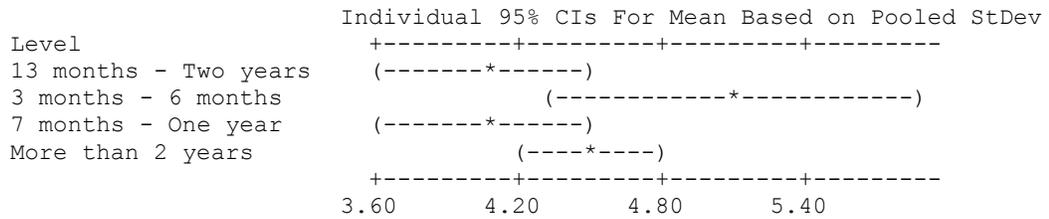
- Aircel and Reliance need to focus on improving the above perception amongst customers

One-way ANOVA: Overall quality of their VAS versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	39.59	13.20	2.48	0.060
Error	430	2284.25	5.31		
Total	433	2323.85			

S = 2.305 R-Sq = 1.70% R-Sq(adj) = 1.02%

Level	N	Mean	StDev
13 months - Two years	97	4.062	1.836
3 months - 6 months	35	5.086	2.241
7 months - One year	101	4.059	2.063
More than 2 years	201	4.493	2.612



Pooled StDev = 2.305

➤ **Interpretation**

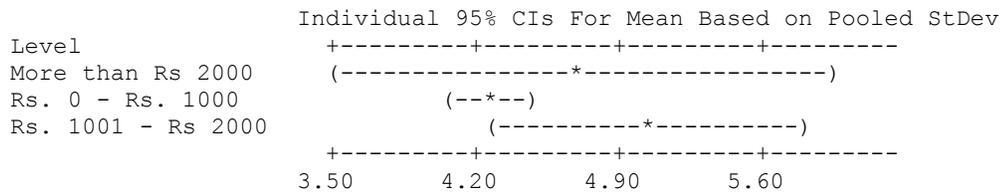
- Since P value (0.060) is greater than 0.05, hence, the average CS on “Overall quality of the VAS” does not differ significantly from one set of Age on network amount to another

One-way ANOVA: Overall quality of their VAS versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	20.57	10.29	1.92	0.147
Error	431	2303.27	5.34		
Total	433	2323.85			

S = 2.312 R-Sq = 0.89% R-Sq(adj) = 0.43%

Level	N	Mean	StDev
More than Rs 2000	14	4.714	2.301
Rs. 0 - Rs. 1000	385	4.268	2.189
Rs. 1001 - Rs 2000	35	5.029	3.408



Pooled StDev = 2.312

➤ Interpretation

- Since P value (0.147) is greater than 0.05, hence, the average CS on “Overall quality of the VAS” does not differ significantly from one set of Average bill amount to another

Variable Analysed: Overall Quality of VAS							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Statistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0	Assam & NE	Yes	NE	-	Assam
2	Location	0	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Agartala	Aizwal, Dibrugarh, Imphal, Nalbari, Shillong, Silchar, Tezpur	Guwahati
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance	Aircel	Airtel & Vodafone
4	Age on Network	0.06	3-6, 7-12, 12-24, >24 months	NO	Same for all the stratification elements		
5	Avg Bill Amount	0.147	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: Activation of VAS as per request versus Circle

Source	DF	SS	MS	F	P
Circle	1	73.90	73.90	9.32	0.002
Error	387	3068.31	7.93		
Total	388	3142.21			

S = 2.816 R-Sq = 2.35% R-Sq(adj) = 2.10%

Level	N	Mean	StDev
Assam	176	5.176	3.174
NE	213	4.300	2.481

Individual 95% CIs For Mean Based on Pooled StDev

4.00 4.50 5.00 5.50

Pooled StDev = 2.816

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Activation of VAS as per request” differs significantly from one Circle to another.
- CS on “Activation of VAS as per request” is more in Assam when compared with NE

➤ Recommendation

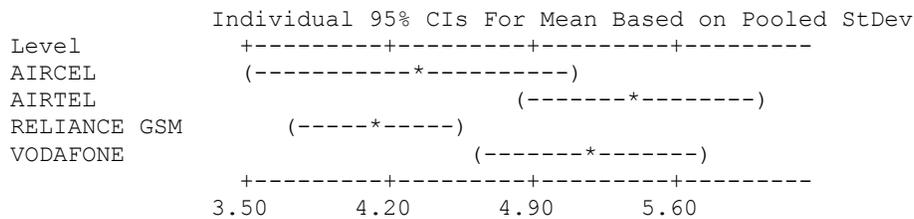
- Operators in NE needs to focus more on improving the above perception amongst customers

One-way ANOVA: Activation of VAS as per request versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	122.36	40.79	5.20	0.002
Error	385	3019.84	7.84		
Total	388	3142.21			

S = 2.801 R-Sq = 3.89% R-Sq(adj) = 3.15%

Level	N	Mean	StDev
AIRCEL	48	4.312	2.223
AIRTEL	89	5.404	3.193
RELIANCE GSM	156	4.128	2.542
VODAFONE	96	5.156	3.058



Pooled StDev = 2.801

➤ Interpretation

- Since P value (0.002) is less than 0.05, the average CS on “Activation of VAS as per request” perception differs significantly from one Service Provider to another.
- CS on “Activation of VAS as per request” perception is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

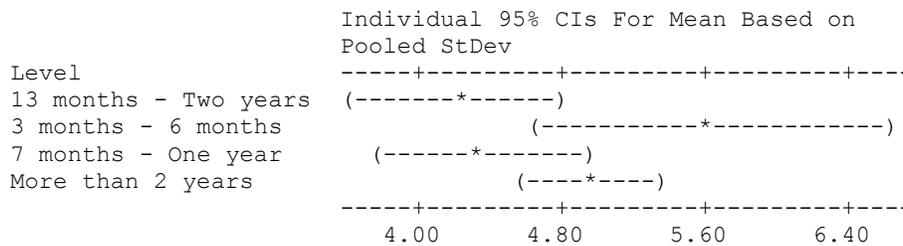
- Aircel and Reliance need to focus on improving the above perception amongst customers

One-way ANOVA: Activation of VAS as per request versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	73.64	24.55	3.08	0.027
Error	385	3068.56	7.97		
Total	388	3142.21			

S = 2.823 R-Sq = 2.34% R-Sq(adj) = 1.58%

Level	N	Mean	StDev
13 months - Two years	90	4.200	2.132
3 months - 6 months	32	5.625	3.066
7 months - One year	92	4.348	2.735
More than 2 years	175	4.966	3.118



Pooled StDev = 2.823

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Activation of VAS as per request” differs significantly from one Age on network to another.
- CS on “Activation of VAS as per request” is low customers with Age on network between 7 months to 2 years

➤ Recommendation

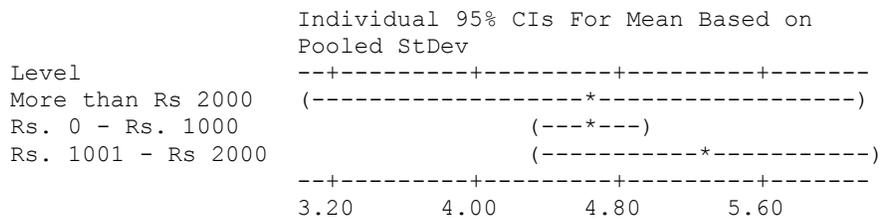
- Operators need to focus on improving the above amongst customers of 7 months to 2 years of Age on network

One-way ANOVA: Activation of VAS as per request versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	11.98	5.99	0.74	0.479
Error	386	3130.23	8.11		
Total	388	3142.21			

S = 2.848 R-Sq = 0.38% R-Sq(adj) = 0.00%

Level	N	Mean	StDev
More than Rs 2000	13	4.615	2.501
Rs. 0 - Rs. 1000	343	4.644	2.791
Rs. 1001 - Rs 2000	33	5.273	3.494



Pooled StDev = 2.848

➤ Interpretation

- Since P value (0.479) is greater than 0.05, hence, the average CS on “Activation of VAS as per request” does not differ significantly from one set of Average bill amount to another

Variable Analysed: Activation of VAS as per request							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Statistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0.002	Assam & NE	Yes	NE	-	Assam
2	Location	0.138	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	NO	Same for all locations		
3	Service Providers	0.002	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance and Aircel	-	Airtel & Vodafone
4	Age on Network	0.027	3-6, 7-12, 12-24, >24 months	Yes	7-12 and 13 to 24	>24 months	3- 6 months
5	Avg Bill Amount	0.479	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: Frequency of communication sent versus Circle

Source	DF	SS	MS	F	P
Circle	1	402.18	402.18	48.73	0.000
Error	539	4448.95	8.25		
Total	540	4851.13			

S = 2.873 R-Sq = 8.29% R-Sq(adj) = 8.12%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
Assam	265	6.094	3.374	(-----*-----)
NE	276	4.370	2.292	(---*---)

4.20 4.90 5.60 6.30

Pooled StDev = 2.873

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Frequency of communication” differs significantly from one Circle to another.
- CS on “Frequency of communication” is more in Assam when compared with NE

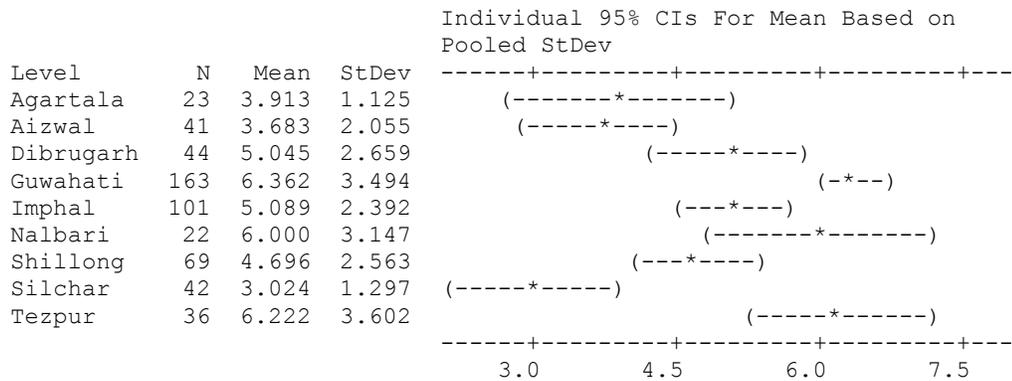
➤ Recommendation

- Operators in NE needs to focus more on improving the above perception amongst customers

One-way ANOVA: Frequency of communication sent versus Locations

Source	DF	SS	MS	F	P
Locations	8	622.87	77.86	9.80	0.000
Error	532	4228.26	7.95		
Total	540	4851.13			

S = 2.819 R-Sq = 12.84% R-Sq(adj) = 11.53%



Pooled StDev = 2.819

➤ Interpretation

➤ Since P value (0.000) is less than 0.05, the average CS on “Frequency of communication” perception differs significantly from one location to another.

➤ CS on “Frequency of communication” is very low for Agartala, Aizwal and Silchar

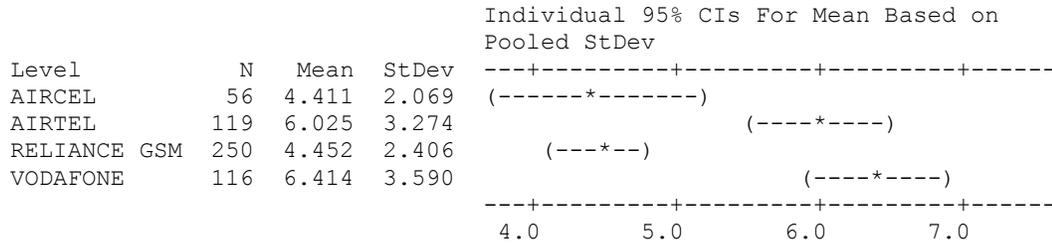
➤ Recommendation

- Operators need to focus more on areas like Agartala, Aizwal and Silchar for improving the above perception amongst customers

One-way ANOVA: Frequency of communication sent versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	426.59	142.20	17.26	0.000
Error	537	4424.54	8.24		
Total	540	4851.13			

S = 2.870 R-Sq = 8.79% R-Sq(adj) = 8.28%



Pooled StDev = 2.870

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Frequency of communication” differs significantly from one Service Provider to another.
- CS on “Frequency of communication” is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

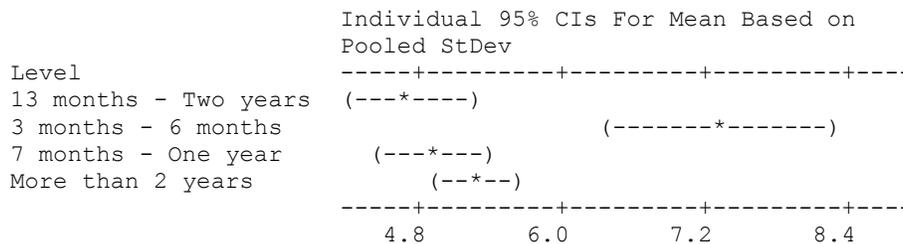
- Aircel and Reliance need to focus on improving the above perception amongst customers

One-way ANOVA: Frequency of communication sent versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	202.05	67.35	7.78	0.000
Error	537	4649.08	8.66		
Total	540	4851.13			

S = 2.942 R-Sq = 4.17% R-Sq(adj) = 3.63%

Level	N	Mean	StDev
13 months - Two years	124	4.734	2.538
3 months - 6 months	37	7.297	3.748
7 months - One year	123	4.911	2.793
More than 2 years	257	5.292	3.061



Pooled StDev = 2.942

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Frequency of communication” differs significantly from one Age on network to another.
- CS on “Frequency of communication” is low customers with Age on network between 7 months to 2 years

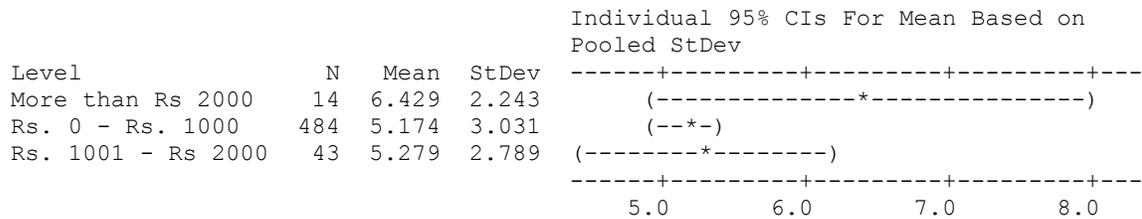
➤ Recommendation

- Operators need to focus on improving the above amongst customers of 7 months to 2 years of Age on network

One-way ANOVA: Frequency of communication sent versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	21.63	10.81	1.20	0.301
Error	538	4829.50	8.98		
Total	540	4851.13			

S = 2.996 R-Sq = 0.45% R-Sq(adj) = 0.08%



Pooled StDev = 2.996

➤ Interpretation

- Since P value (0.301) is greater than 0.05, hence, the average CS on “Frequency of communication” does not differ significantly from one set of Average bill amount to another

Variable Analysed: Frequency of Communication							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Statistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0	Assam & NE	Yes	NE	-	Assam
2	Location	0	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Silchar	Agartala, Aizwal, Dibrugarh, Imphal, Shillong,	Nalbari, Guwahati and Tezpur
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance and Aircel	-	Airtel & Vodafone
4	Age on Network	0	3-6, 7-12, 12-24, >24 months	Yes	7-12 and 13 to 24	>24 months	3- 6 months
5	Avg Bill Amount	0.301	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: Accuracy of the bill amount versus Circle

Source	DF	SS	MS	F	P
Circle	1	374.3	374.3	35.86	0.000
Error	545	5688.4	10.4		
Total	546	6062.7			

S = 3.231 R-Sq = 6.17% R-Sq(adj) = 6.00%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
Assam	264	6.235	3.799	+-----+-----+-----+-----+ (-----*-----)
NE	283	4.580	2.591	+-----+-----+-----+-----+ (-----*-----)

4.20 4.90 5.60 6.30

Pooled StDev = 3.231

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Accuracy of the bill amount” differs significantly from one Circle to another.
- CS on “Accuracy of the bill amount” is more in Assam when compared with NE

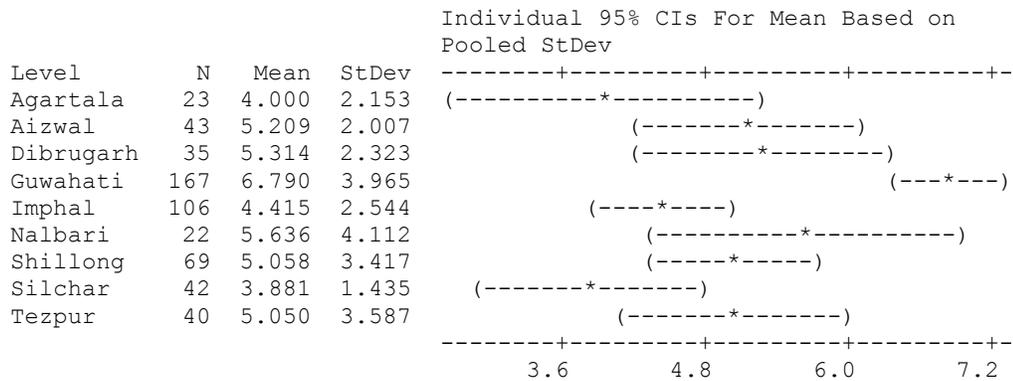
➤ Recommendation

- Operators in NE needs to focus more on improving the above perception amongst customers

One-way ANOVA: Accuracy of the bill amount versus Locations

Source	DF	SS	MS	F	P
Locations	8	583.4	72.9	7.16	0.000
Error	538	5479.2	10.2		
Total	546	6062.7			

S = 3.191 R-Sq = 9.62% R-Sq(adj) = 8.28%



Pooled StDev = 3.191

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Accuracy of the bill amount” perception differs significantly from one location to another.
- CS on “Accuracy of the bill amount” is very low for Agartala, Silchar and Imphal

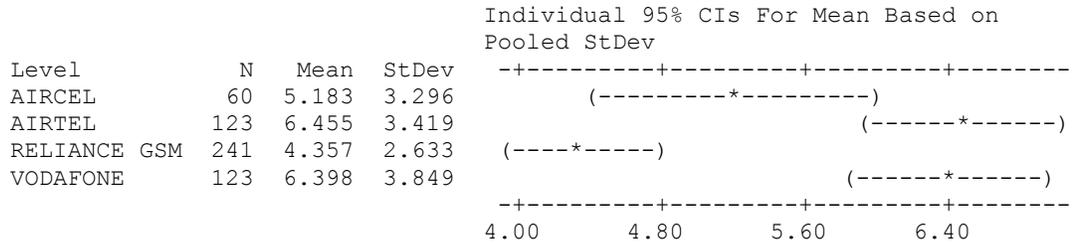
➤ Recommendation

- Operators need to focus more on areas like Agartala, Silchar and Imphal for improving the above perception amongst customers

One-way ANOVA: Accuracy of the bill amount versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	524.4	174.8	17.14	0.000
Error	543	5538.3	10.2		
Total	546	6062.7			

S = 3.194 R-Sq = 8.65% R-Sq(adj) = 8.14%



Pooled StDev = 3.194

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Accuracy of the bill amount” differs significantly from one Service Provider to another.
- CS on “Accuracy of the bill amount” is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

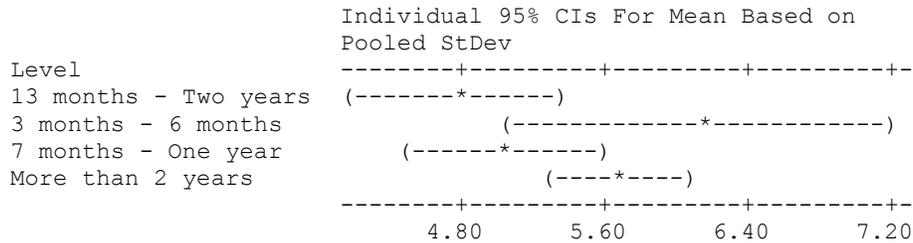
- Aircel and Reliance need to focus on improving the above perception amongst customers

One-way ANOVA: Accuracy of the bill amount versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	111.5	37.2	3.39	0.018
Error	543	5951.1	11.0		
Total	546	6062.7			

S = 3.311 R-Sq = 1.84% R-Sq(adj) = 1.30%

Level	N	Mean	StDev
13 months - Two years	126	4.778	2.920
3 months - 6 months	37	6.135	3.417
7 months - One year	121	5.033	3.117
More than 2 years	263	5.719	3.549



Pooled StDev = 3.311

➤ Interpretation

- Since P value (0.018) is less than 0.05, the average CS on “Accuracy of the bill amount” differs significantly from one Age on network to another.
- CS on “Accuracy of the bill amount” is low customers with Age on network between 7 months to 2 years

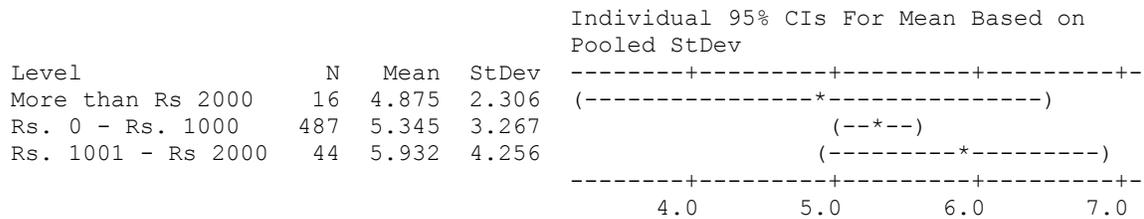
➤ Recommendation

- Operators need to focus on improving the above amongst customers of 7 months to 2 years of Age on network

One-way ANOVA: Accuracy of the bill amount versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	18.1	9.0	0.81	0.444
Error	544	6044.6	11.1		
Total	546	6062.7			

S = 3.333 R-Sq = 0.30% R-Sq(adj) = 0.00%



Pooled StDev = 3.333

➤ Interpretation

- Since P value (0.444) is greater than 0.05, hence, the average CS on “Accuracy of the bill amount” perception does not differs significantly from one set of Average bill amount to another

Variable Analysed: Accuracy of Bill Amount							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Staistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0	Assam & NE	Yes	NE	-	Assam
2	Location	0	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Agartala	Aizwal, Dibrugarh, Imphal, Nalbari, Shillong, Silchar, Tezpur	Guwahati
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance	Aircel	Airtel & Vodafone
4	Age on Network	0.018	3-6, 7-12, 12-24, >24 months	Yes	13 to 24	>24 months and '7 to 12	3- 6 months
5	Avg Bill Amount	0.444	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: Overall experience of dealing with customer care versus Circle

Source	DF	SS	MS	F	P
Circle	1	94.64	94.64	13.87	0.000
Error	193	1317.34	6.83		
Total	194	1411.98			

S = 2.613 R-Sq = 6.70% R-Sq(adj) = 6.22%

Level	N	Mean	StDev
Assam	109	5.275	2.621
NE	86	3.872	2.602

Individual 95% CIs For Mean Based on Pooled StDev

3.50 4.20 4.90 5.60

Pooled StDev = 2.613

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Overall experience of dealing with customer care” differs significantly from one Circle to another.
- CS on “Overall experience of dealing with customer care” is more in Assam when compared with NE

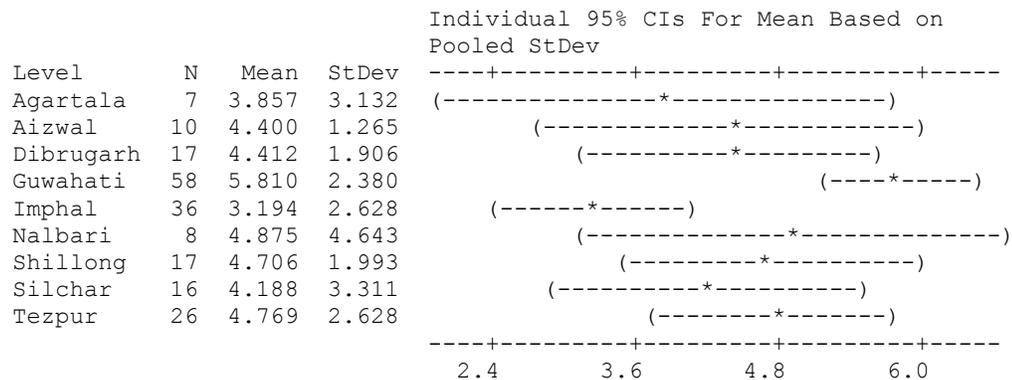
➤ Recommendation

- Operators in NE needs to focus more on improving the above perception amongst customers

One-way ANOVA: Overall experience of dealing with customer care versus Locations

Source	DF	SS	MS	F	P
Locations	8	164.59	20.57	3.07	0.003
Error	186	1247.38	6.71		
Total	194	1411.98			

S = 2.590 R-Sq = 11.66% R-Sq(adj) = 7.86%



Pooled StDev = 2.590

➤ Interpretation

- Since P value (0.003) is less than 0.05, the average CS on “Overall experience of dealing with customer care” differs significantly from one location to another.
- CS on “Overall experience of dealing with customer care” is very low for Agartala and Imphal

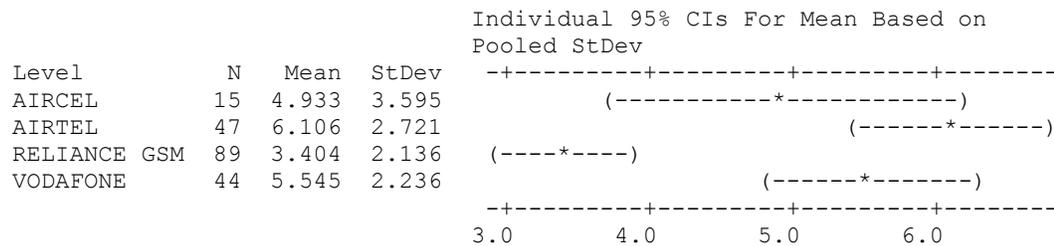
➤ Recommendation

- Operators need to focus more on areas like Agartala and Imphal for improving the above perception amongst customers

One-way ANOVA: Overall experience of dealing with customer care versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	274.23	91.41	15.35	0.000
Error	191	1137.75	5.96		
Total	194	1411.98			

S = 2.441 R-Sq = 19.42% R-Sq(adj) = 18.16%



➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Overall experience of dealing with customer care” differs significantly from one Service Provider to another.
- CS on “Overall experience of dealing with customer care” is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

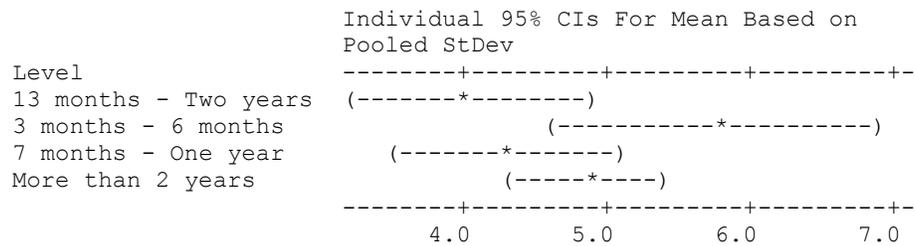
- Aircel and Reliance need to focus on improving the above perception amongst customers

One-way ANOVA: Overall experience of dealing with customer care versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	49.02	16.34	2.29	0.080
Error	191	1362.96	7.14		
Total	194	1411.98			

S = 2.671 R-Sq = 3.47% R-Sq(adj) = 1.96%

Level	N	Mean	StDev
13 months - Two years	40	4.025	2.006
3 months - 6 months	20	5.750	2.673
7 months - One year	43	4.302	2.988
More than 2 years	92	4.859	2.764



Pooled StDev = 2.671

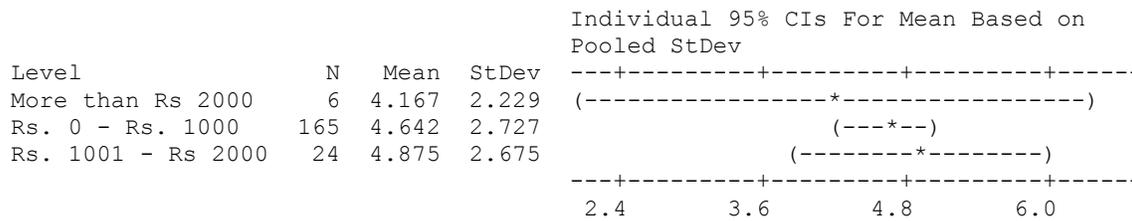
➤ Interpretation

- Since P value (0.080) is greater than 0.05, hence, the average CS on “Overall experience of dealing with customer care” does not differ significantly from one set of Age on network to another

One-way ANOVA: Overall experience of dealing with customer care versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	2.62	1.31	0.18	0.837
Error	192	1409.36	7.34		
Total	194	1411.98			

S = 2.709 R-Sq = 0.19% R-Sq(adj) = 0.00%



Pooled StDev = 2.709

➤ Interpretation

- Since P value (0.837) is greater than 0.05, hence, the average CS on “Overall experience of dealing with customer care” does not differ significantly from one set of Average bill amount to another

Variable Analysed: Overall Experience of Dealing with Customer care							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements statistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0	Assam & NE	Yes	NE	-	Assam
2	Location	0.003	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Agartala, Imphal	Aizwal, Dibrugarh, Nalbari, Shillong, Silchar, Tezpur	Guwahati
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance	Aircel	Airtel & Vodafone
4	Age on Network	0.08	3-6, 7-12, 12-24, >24 months	No	Same for all the stratification elements		
5	Avg Bill Amount	0.837	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: Time taken to resolve query at Customer care versus Circle

Source	DF	SS	MS	F	P
Circle	1	111.63	111.63	14.31	0.000
Error	194	1513.72	7.80		
Total	195	1625.35			

S = 2.793 R-Sq = 6.87% R-Sq(adj) = 6.39%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
Assam	109	5.266	3.017	(-----*-----)
NE	87	3.747	2.484	(-----*-----)

-----+-----+-----+-----+-----
 3.50 4.20 4.90 5.60

Pooled StDev = 2.793

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Time taken to resolve query at Customer care” differs significantly from one Circle to another.
- CS on “Time taken to resolve query at Customer care” is more in Assam when compared with NE

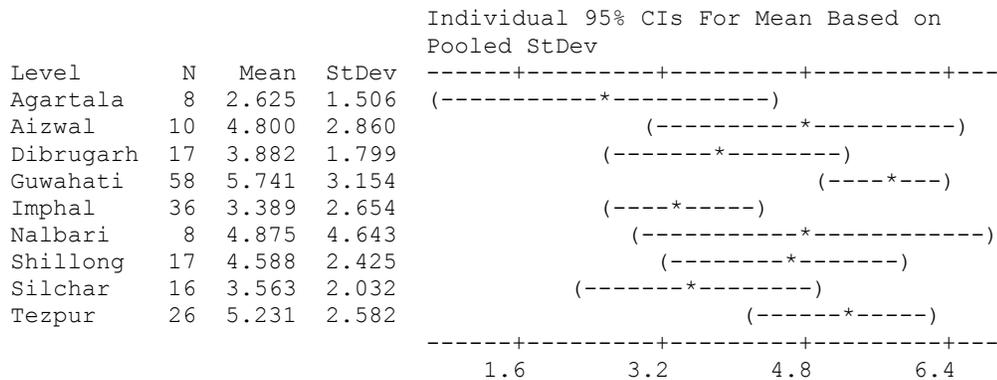
➤ Recommendation

- Operators in NE needs to focus more on improving the above perception amongst customers

One-way ANOVA: Time taken to resolve query at customer care versus Locations

Source	DF	SS	MS	F	P
Locations	8	196.89	24.61	3.22	0.002
Error	187	1428.46	7.64		
Total	195	1625.35			

S = 2.764 R-Sq = 12.11% R-Sq(adj) = 8.35%



Pooled StDev = 2.764

➤ Interpretation

- Since P value (0.002) is less than 0.05, the average CS on “Time taken to resolve query at Customer care” differs significantly from one location to another.
- CS on “Time taken to resolve query at Customer care” is very low for Agartala, Dibrugarh and Silchar

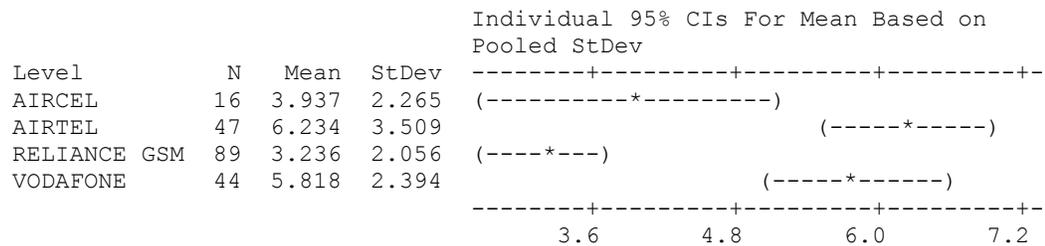
➤ Recommendation

- Operators need to focus more on areas like Agartala, Dibrugarh and Silchar for improving the above perception amongst customers

One-way ANOVA: Time taken to resolve query at customer care versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	363.39	121.13	18.43	0.000
Error	192	1261.95	6.57		
Total	195	1625.35			

S = 2.564 R-Sq = 22.36% R-Sq(adj) = 21.14%



Pooled StDev = 2.564

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Time taken to resolve query at Customer care” differs significantly from one Service Provider to another.
- CS on “Time taken to resolve query at Customer care” is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

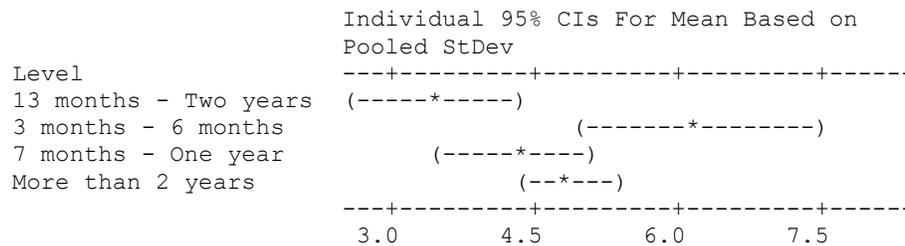
- Aircel and Reliance need to focus on improving the above perception amongst customers

One-way ANOVA: Time taken to resolve query at customer care versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	111.92	37.31	4.73	0.003
Error	192	1513.43	7.88		
Total	195	1625.35			

S = 2.808 R-Sq = 6.89% R-Sq(adj) = 5.43%

Level	N	Mean	StDev
13 months - Two years	40	3.475	2.063
3 months - 6 months	20	6.200	2.331
7 months - One year	43	4.302	3.263
More than 2 years	93	4.860	2.944



Pooled StDev = 2.808

➤ Interpretation

- Since P value (0.003) is less than 0.05, the average CS on “Time taken to resolve query at Customer care” differs significantly from one Age on network to another.
- CS on “Time taken to resolve query at Customer care” is low customers with Age on network between 7 months to 2 years

➤ Recommendation

- Operators need to focus on improving the above amongst customers of 7 months to 2 years of Age on network

One-way ANOVA: Time taken to resolve query at customer care versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	7.27	3.64	0.43	0.649
Error	193	1618.07	8.38		
Total	195	1625.35			

S = 2.895 R-Sq = 0.45% R-Sq(adj) = 0.00%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
More than Rs 2000	6	5.667	2.658	(-----*-----)
Rs. 0 - Rs. 1000	166	4.548	2.935	(---*---)
Rs. 1001 - Rs 2000	24	4.625	2.651	(-----*-----)

3.6 4.8 6.0 7.2

Pooled StDev = 2.895

➤ Interpretation

- Since P value (0.649) is greater than 0.05, hence, the average CS on “Time taken to resolve query at Customer care” perception does not differ significantly from one set of Average bill amount to another

Variable Analysed: Time taken to resolve query at Customer care							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Staistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0	Assam & NE	Yes	NE	-	Assam
2	Location	0.002	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	Yes	Agartala	Aizwal, Dibrugarh, Imphal, Nalbari, Shillong, Silchar,	Guwahati, Tezpur
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance and Aircel	-	Airtel & Vodafone
4	Age on Network	0.003	3-6, 7-12, 12-24, >24 months	Yes	13 to 24	>24 months and '7 to 12	3- 6 months
5	Avg Bill Amount	0.837	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: Time taken to attend to you at Store versus Circle

Source	DF	SS	MS	F	P
Circle	1	187.4	187.4	12.91	0.000
Error	124	1799.4	14.5		
Total	125	1986.8			

S = 3.809 R-Sq = 9.43% R-Sq(adj) = 8.70%

Individual 95% CIs For Mean Based on Pooled StDev

Level	N	Mean	StDev	-----+-----+-----+-----+-----
Assam	89	8.056	4.146	(-----*-----)
NE	37	5.378	2.822	-----+-----+-----+-----+-----

4.8 6.0 7.2 8.4

Pooled StDev = 3.809

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Time taken to attend to you at Store” differs significantly from one Circle to another.
- CS on “Time taken to attend to you at Store” is more in Assam when compared with NE

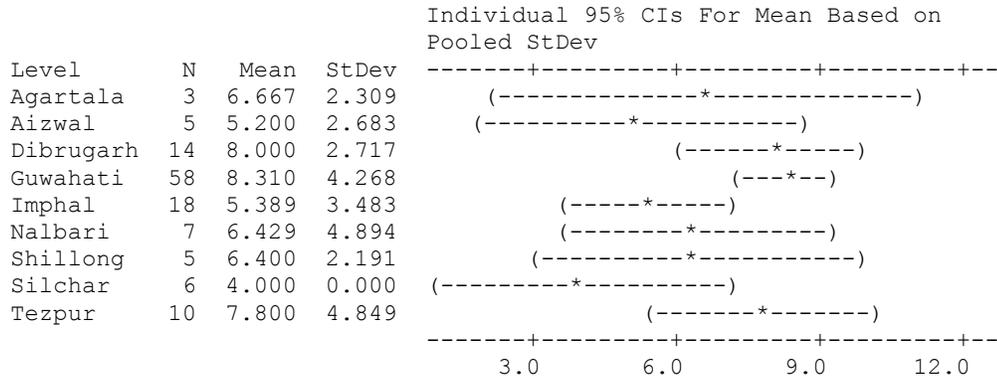
➤ Recommendation

- Operators in NE needs to focus more on improving the above perception amongst customers

One-way ANOVA: Time taken to attend to you at Store versus Locations

Source	DF	SS	MS	F	P
Locations	8	232.2	29.0	1.93	0.061
Error	117	1754.7	15.0		
Total	125	1986.8			

S = 3.873 R-Sq = 11.68% R-Sq(adj) = 5.65%



Pooled StDev = 3.873

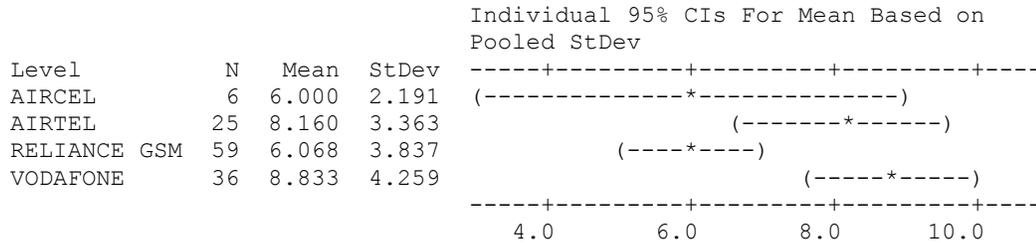
➤ Interpretation

- Since P value (0.061) is greater than 0.05, hence, the average CS on “Time taken to attend to you at Store” perception does not differ significantly from one location to another

One-way ANOVA: Time taken to attend to you at Store versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	202.7	67.6	4.62	0.004
Error	122	1784.1	14.6		
Total	125	1986.8			

S = 3.824 R-Sq = 10.20% R-Sq(adj) = 8.00%



Pooled StDev = 3.824

➤ Interpretation

- Since P value (0.004) is less than 0.05, the average CS on “Time taken to attend to you at Store” differs significantly from one Service Provider to another.
- CS on “Time taken to attend to you at Store” is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

- Aircel and Reliance need to focus on improving the above perception amongst customers

One-way ANOVA: Time taken to attend to you at Store versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	17.6	5.9	0.36	0.780
Error	122	1969.2	16.1		
Total	125	1986.8			

S = 4.018 R-Sq = 0.89% R-Sq(adj) = 0.00%

Level	N	Mean	StDev
13 months - Two years	26	6.885	4.023
3 months - 6 months	11	8.182	3.157
7 months - One year	27	6.926	4.497
More than 2 years	62	7.419	3.924

Individual 95% CIs For Mean Based on Pooled StDev

Level	Lower CI	Upper CI
13 months - Two years	6.0	7.8
3 months - 6 months	7.0	9.3
7 months - One year	6.0	7.8
More than 2 years	6.0	7.8

6.0 7.5 9.0 10.5

Pooled StDev = 4.018

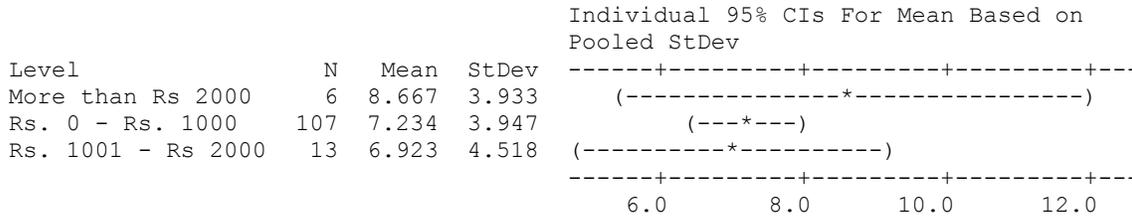
➤ Interpretation

- Since P value (0.780) is greater than 0.05, hence, the average CS on “Time taken to attend to you at Store” perception does not differs significantly from one Age on network to another

One-way ANOVA: Time taken to attend to you at Store versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	13.4	6.7	0.42	0.659
Error	123	1973.4	16.0		
Total	125	1986.8			

S = 4.005 R-Sq = 0.67% R-Sq(adj) = 0.00%



Pooled StDev = 4.005

➤ **Interpretation**

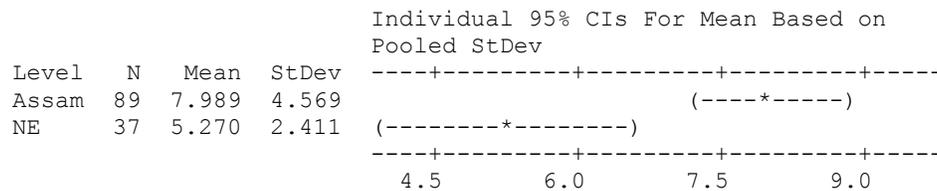
- Since P value (0.659) is greater than 0.05, hence, the average CS on “Time taken to attend to you at Store” perception does not differs significantly from one set of Average bill amount to another

Variable Analysed: Time taken to attend to you at Store							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Staistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0	Assam & NE	Yes	NE	-	Assam
2	Location	0.061	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	No	Same for all the stratification elements		
3	Service Providers	0.004	Aircel, Airtel, Reliance & Vodafone	Yes	Aircel	Reliance	Airtel & Vodafone
4	Age on Network	0.78	3-6, 7-12, 12-24, >24 months	No	Same for all the stratification elements		
5	Avg Bill Amount	0.659	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: Completeness and accuracy of information provided at Store in versus Circle

Source	DF	SS	MS	F	P
Circle	1	193.1	193.1	11.70	0.001
Error	124	2046.3	16.5		
Total	125	2239.4			

S = 4.062 R-Sq = 8.62% R-Sq(adj) = 7.89%



Pooled StDev = 4.062

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Completeness and accuracy of information provided at Store” differs significantly from one Circle to another.
- CS on “Completeness and accuracy of information provided at Store” is more in Assam when compared with NE

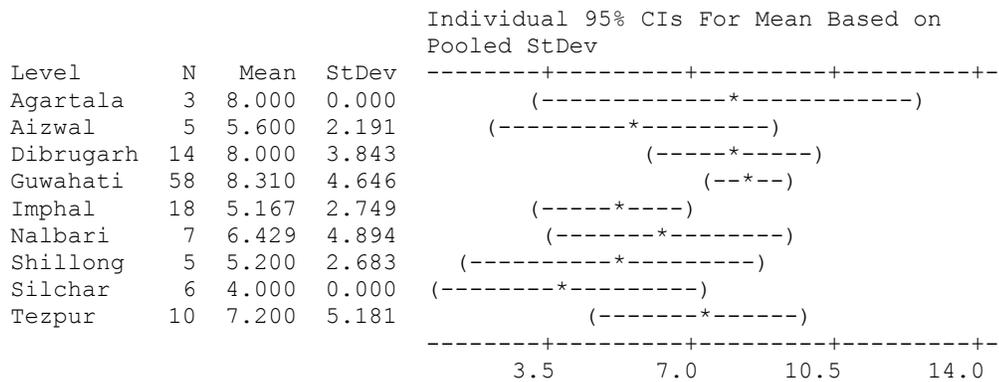
➤ Recommendation

- Operators in NE needs to focus more on improving the above perception amongst customers

One-way ANOVA: Completeness and accuracy of information provided at Store versus Locations

Source	DF	SS	MS	F	P
Locations	8	255.2	31.9	1.88	0.069
Error	117	1984.2	17.0		
Total	125	2239.4			

S = 4.118 R-Sq = 11.40% R-Sq(adj) = 5.34%



Pooled StDev = 4.118

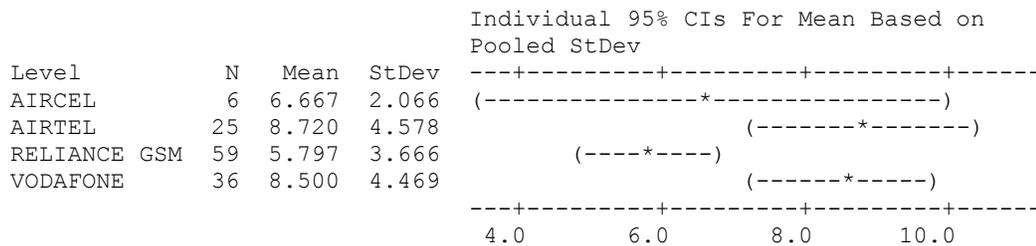
➤ Interpretation

- Since P value (0.069) is greater than 0.05, hence, the average CS on “Completeness and accuracy of information provided at Store” does not differs significantly from one location to another

One-way ANOVA: Completeness and accuracy of information provided at Store versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	236.5	78.8	4.80	0.003
Error	122	2002.9	16.4		
Total	125	2239.4			

S = 4.052 R-Sq = 10.56% R-Sq(adj) = 8.36%



Pooled StDev = 4.052

➤ Interpretation

- Since P value (0.003) is less than 0.05, the average CS on “Completeness and accuracy of information provided at Store” perception differs significantly from one Service Provider to another.
- CS on “Completeness and accuracy of information provided at Store” is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

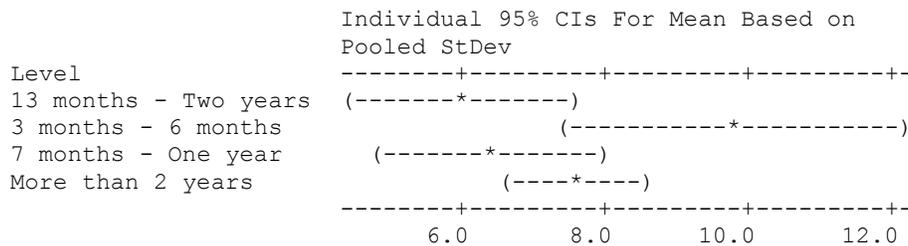
- Aircel and Reliance need to focus on improving the above perception amongst customers

One-way ANOVA: Completeness and accuracy of information provided at Store versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	146.1	48.7	2.84	0.041
Error	122	2093.3	17.2		
Total	125	2239.4			

S = 4.142 R-Sq = 6.52% R-Sq(adj) = 4.23%

Level	N	Mean	StDev
13 months - Two years	26	5.962	3.206
3 months - 6 months	11	9.818	4.143
7 months - One year	27	6.333	4.160
More than 2 years	62	7.613	4.462



Pooled StDev = 4.142

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on “Completeness and accuracy of information provided at Store” differs significantly from one Age on network to another.
- CS on “Completeness and accuracy of information provided at Store” is low customers with Age on network between 7 months to 2 years

➤ Recommendation

- Operators need to focus on improving the above amongst customers of 7 months to 2 years of Age on network

One-way ANOVA: Completeness and accuracy of information provided at Store versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	23.4	11.7	0.65	0.524
Error	123	2216.0	18.0		
Total	125	2239.4			

S = 4.245 R-Sq = 1.05% R-Sq(adj) = 0.00%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
More than Rs 2000	6	8.000	4.382	(-----*-----)
Rs. 0 - Rs. 1000	107	7.290	4.300	(---*---)
Rs. 1001 - Rs 2000	13	6.000	3.651	(-----*-----)

4.0 6.0 8.0 10.0

Pooled StDev = 4.245

➤ Interpretation

- Since P value (0.524) is greater than 0.05, hence, the average CS on “Completeness and accuracy of information provided at Store” perception does not differs significantly from one set of Average bill amount to another

Variable Analysed: Completeness and accuracy of Information provided at Store							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Staistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0.001	Assam & NE	Yes	NE	-	Assam
2	Location	0.069	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	No	Same for all the stratification elements		
3	Service Providers	0.003	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance	Aircel	Airtel & Vodafone
4	Age on Network	0.041	3-6, 7-12, 12-24, >24 months	Yes	13 to 24	>24 months and '7 to 12	3- 6 months
5	Avg Bill Amount	0.524	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		

One-way ANOVA: Time taken to resolve query/problem at Store versus Service Provider

Source	DF	SS	MS	F	P
Service Provider	3	218.4	72.8	6.69	0.000
Error	121	1316.4	10.9		
Total	124	1534.8			

S = 3.298 R-Sq = 14.23% R-Sq(adj) = 12.10%

Level	N	Mean	StDev	Individual 95% CIs For Mean Based on Pooled StDev
AIRCEL	6	5.000	2.449	(-----*-----)
AIRTEL	25	7.280	3.311	(-----*-----)
RELIANCE GSM	59	4.661	3.021	(-----*-----)
VODAFONE	35	7.371	3.812	(-----*-----)

-----+-----+-----+-----+-----
3.2 4.8 6.4 8.0

Pooled StDev = 3.298

➤ Interpretation

- Since P value (0.000) is less than 0.05, the average CS on Time taken to resolve query/problem at Store” differs significantly from one Service Provider to another.
- CS on Time taken to resolve query/problem at Store” is low for Aircel and Reliance and high for Vodafone and Airtel

➤ Recommendation

- Aircel and Reliance need to focus on improving the above perception amongst customers

One-way ANOVA: Time taken to resolve query/problem at Store versus Age on Network

Source	DF	SS	MS	F	P
Age on Network	3	7.5	2.5	0.20	0.897
Error	121	1527.3	12.6		
Total	124	1534.8			

S = 3.553 R-Sq = 0.49% R-Sq(adj) = 0.00%

Level	N	Mean	StDev
13 months - Two years	26	5.885	3.819
3 months - 6 months	11	6.364	2.335
7 months - One year	27	5.556	3.846
More than 2 years	61	6.098	3.472

Individual 95% CIs For Mean Based on Pooled StDev

Level	CI
13 months - Two years	(-----*-----)
3 months - 6 months	(-----*-----)
7 months - One year	(-----*-----)
More than 2 years	(-----*-----)

4.8 6.0 7.2 8.4

Pooled StDev = 3.553

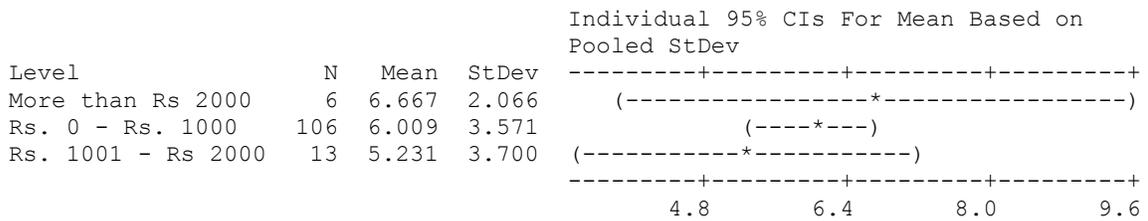
➤ Interpretation

- Since P value (0.897) is greater than 0.05, hence, the average CS on “Time taken to resolve query/problem at Store” perception does not differ significantly from one set of Age on network to another

One-way ANOVA: Time taken to resolve query/problem at Store versus Average bill amount

Source	DF	SS	MS	F	P
Average bill amount	2	10.2	5.1	0.41	0.667
Error	122	1524.6	12.5		
Total	124	1534.8			

S = 3.535 R-Sq = 0.66% R-Sq(adj) = 0.00%



Pooled StDev = 3.535

➤ **Interpretation**

- Since P value (0.667) is greater than 0.05, hence, the average CS on Time taken to resolve query/problem at Store” perception does not differs significantly from one set of Average bill amount to another

Variable Analysed: Time taken to resolve query/problem at store							
Sr No	Stratification Factor	P value	Stratification Element	Are averages for the elements Staistically significant?	Low WCS	Moderate WCS	High WCS
1	Circle	0.002	Assam & NE	Yes	NE	-	Assam
2	Location	0.167	Agartala, Aizwal, Dibrugarh, Guwahati, Imphal, Nalbari, Shillong, Silchar, Tezpur	No	Same for all the stratification elements		
3	Service Providers	0	Aircel, Airtel, Reliance & Vodafone	Yes	Reliance	Aircel	Airtel & Vodafone
4	Age on Network	0.897	3-6, 7-12, 12-24, >24 months	No	Same for all the stratification elements		
5	Avg Bill Amount	0.667	0-1000, 1000-2000, >2000 rupees	No	Same for all the stratification elements (0-1000, 1000-2000, >2000 rupees)		