

CHAPTER 4

SPECIFICATION AND ESTIMATION OF SERVICE QUALITY GAP MODEL IN NON-FUEL OFFERINGS IN PETRO RETAIL OUTLETS

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CHAPTER 4

SPECIFICATION AND ESTIMATION OF SERVICE QUALITY GAP MODEL IN NON-FUEL OFFERINGS IN PETRO RETAIL OUTLETS

4.1 RESEARCH FRAMEWORK

Today people expect high quality services. As a result they prefer private sector to public sector. Since present study focuses only on public sector, therefore it is required to study carefully the service quality framework of three companies – IOC, HPC & BPC. Each organization has different marketing strategy to satisfy customers. But still there is a gap of expectations and perceived value of the customers. With this in mind, the purpose of this research is four fold.

First, to identify the relevant service quality dimensions to evaluate service quality (Refer Chapter 3). Second to assess customer perception and expectation related to the quality provided by petro retail outlets. Third, to investigate, how closely customer expectations and perceptions match. Fourth, to compare the service quality of the NOC i.e. IOC, HPC & BPC separately. Empirical research is used to determine the customer's perceptions and expectations of service quality of petro retail outlets of the three NOC situated in 13 different cities of India. In this study, adapted SERVQUAL instrument was used to measure the service quality. The SERVQUAL questionnaire included expectation and perception section, each consisting of 22 statements. In addition the questionnaire contained two extra sections relating to demographics & vehicle ownership of respondents and non-fuel offerings at petro retail outlets. A total of 756 satisfactorily completed questionnaires were

collected. The data was then carefully entered into SPSS 16.0 and data analysis was undertaken on the 756 respondents. Paired sample t test were performed on the individual items, to discover whether or not significant gaps emerged between the customer's expectations and perceptions.

A review of literature mentioned earlier that in service quality model there are five factors impacting service quality. Since none of the studies have been carried out in the non-fuel offerings for petro retail outlet sector in India, so the five dimension concept does not fit in the petro retail outlet sector. The adapted SERVQUAL instrument loaded onto three factors which included all five of the original SERVQUAL dimensions. Factor 1 is the composite of three SERVQUAL dimensions - reliability, tangibility and assurance. On the basis of petro retail outlets, this factor has been named as "Reliable & Appealing Facilities". Factor 2 is the composite of two SERVQUAL dimensions - responsiveness and empathy. According to the 9 correlated statements – this factor may be named as "Human Aspect". Factor 3 contains only one statement and is having a high loading value named as "Dependability" (Table 4.1)

4.2 MODEL OF SERVICE QUALITY FOR NON-FUEL OFFERINGS AT PETRO RETAIL OUTLETS

$$\text{Service Quality Gap } SQ = (PF_i - EF_i) \dots \dots \dots (4.1)$$

EF = Expectation Score

PF= Perception Score

i = Number of factors (i = 1,2,3)

$$PF_i = \sum F_i \dots \dots \dots (4.2)$$

$$EF_i = \sum F_i \dots \dots \dots (4.3)$$

$HF_i =$ Factors (If $i = 1$; RAF = “Reliable & Appealing Facilities”

$i = 2$; HA = “Human Aspect”

$i = 3$; D = “Dependability”)

Factor 1

$$RAF = \sum TS_i + RLS_i + AS_i \quad i = 1, 2 \dots 12$$

$TS_i =$ Tangibility Statement

$RLS_i =$ Reliability Statement

$AS_i =$ Assurance Statement

Factor 2

$$HA = \sum RPS_i + ES_i \quad i = 1, 2 \dots 9$$

$RPS_i =$ Responsiveness Statement

$ES_i =$ Empathy Statement

Factor 3

$$D = \sum DS_i \quad i = 1$$

$DS_i =$ Dependability Statement

Table 4.1: Summary of Service Quality Dimensions

Factor	Statement No.	Attributes
Factor 1: Reliable & Appealing Facilities	S1	For Non-Fuel Offerings the companies should have up-to-date equipment.
	S2	For Non-Fuel Offerings the physical facilities should be visually appealing.
	S3	For Non-Fuel Offerings the employees should be well dressed and appear neat.
	S4	For Non-Fuel Offerings the appearance of the physical facilities of these companies should be in keeping with the type of the Offerings provided.
	S5	For Non-Fuel Offerings when these companies promise to do something by a certain time, they should do so.
	S6	For Non-Fuel Offerings when customers have problems, the companies should be sympathetic and reassuring.
	S8	For Non-Fuel Offerings they should provide their Offerings at the time they promise to do so.
	S9	For Non-Fuel Offerings they should keep their records accurately.
	S14	For Non-Fuel Offerings customers should be able to trust employees of the companies.
	S15	For Non-Fuel Offerings customers should be able to feel safe in their transactions with the companies employees.
	S16	For Non-Fuel Offerings their employees should be polite.
	S17	For Non-Fuel Offerings their employees should get adequate support from the companies to do their jobs well.
	S10	For Non-Fuel Offerings they shouldn't be expected to tell customers exactly when Offerings will be performed.
	S11	For Non-Fuel Offerings it is not realistic for customers to expect prompt service from employees of the companies.
S12	For Non-Fuel Offerings their employees don't always have to be willing to help customers.	
Factor 2: Human Aspect	S13	For Non-Fuel Offerings it is okay if they are too busy to respond to customer request promptly.
	S18	For Non-Fuel Offerings the companies should not be expected to give customers individual attention.
	S19	For Non-Fuel Offerings employees of the companies cannot be expected to give customers personal attention.
	S20	For Non-Fuel Offerings it is unrealistic to expect employees to know what the needs of their customers are.
	S21	For Non-Fuel Offerings it is unrealistic to expect the companies to have their customer's best interests at heart.
	S22	For Non-Fuel Offerings they shouldn't be expected to have operating hours convenient to all their customers.
	S7	For Non-Fuel Offerings the companies should be dependable.
Factor 3: Dependability		

4.3 EMPIRICAL RESULT ANALYSIS

4.3.1 Service Quality Model for Non-Fuel Offerings for Petro Retail Outlets

The differences between perceptions and expectations in the form of SERVQUAL gaps are very useful for measuring the level of service quality. Parsuraman et al.(1985). Proposed that with minor modification, the SERVQUAL scale can be adapted to any service organization. They also state that knowing the service quality gaps can help managers pinpoint where gaps exist and to target these for improvement. Also where the largest negative gaps exist the managers can prioritize these for performance improvement. In case, the service quality gaps turn out to be positive for some aspects of the service, they can review whether they may be “oversupplying” this particular feature of the service. Accordingly, the resources could be redeployed to the areas which are underperforming.

4.3.1.1 Factor 1 - “Reliable and Appealing Facilities”

This study applies on adapted SERVQUAL instrument to measure the service quality of IOC, HPC & BPC. The mean score of the sample are illustrated in Table 4.2. For each factor the mean Expectation (E) and Perception (P) values along with service quality values from the formula are presented as $Q = P - E$ (Parsuraman et al., 1985). The eight columns provide the summary of the result for non-fuel offerings in petro retail outlets. The expected mean score of “Reliable & Appealing Facilities” is 5.122. The high expectation value of 5.122 could be explained by the fact that non-fuel offerings are provided by facilities which include convenience stores, food outlets, ATM’s, car washing, vehicle servicing, and others. It now becomes apparent that customers have high expectations of the facilities that provide the non-fuel offerings. The perception mean score is 4.8496. There is a gap of -0.2727 which is statistically significant at level of 5% because the t value is greater than 2. The t score is 5.303 with Standard Error of 0.0514. **Hence Hypothesis 2 is supported, indicating that there is statistically significant difference of the customer’s perceived value in comparison to the expected value.**

Table 4.2: Service Quality Model of Non-Fuel Offerings

	EF Mean	Standard Deviation	PF Mean	Standard Deviation	Gap	t value	p value	Standard Error
Factor 1: Reliable & Appealing Facilities	5.1224	1.53	4.8496	0.79	-0.27271	5.303*	0.000	0.05142
Factor 2: Human Aspect	2.9365	1.17	3.7353	0.99	0.79879	-18.779*	0.000	0.04253
Factor 3: Dependability	3.7791	1.94	4.2315	1.57	0.45238	-6.393*	0.000	0.07075

* Significant at 5%

** Significant at 1%

4.3.1.2 Factor 2 - “Human Aspect”

The expected mean score of “Human Aspect” is 2.9365 and perception mean score is 3.7353, with a positive gap + 0.7987. “Human Aspect” incorporates all negatively worded statements for the expectations (Table 4.1), hence a low score (disagreement with statement) is on expected lines. Similar is the case for the perception score. Gap positive value of +0.7987 is actually a negative gap. This clearly demonstrates that customers expect higher service quality from employees, but they perceive the actual service quality to be lower. This gap is statistically significant at 5 % level with Standard Error of 0.0425. **Hence Hypothesis 3 is supported, indicating that there is statistically significant difference of service quality in “Human Aspect”.**

4.3.1.3 Factor 3 - “Dependability”

The mean expectation score of “Dependability” is 3.7791 and the mean perception score is 4.2315, indicating that there is a positive gap of 0.45238 which is statistically significant at 5 % level of significance with Standard Error equal to 0.0707. **Hence Hypothesis 4 is supported, which shows that there is a difference between expectation and perception, but this difference is positive in comparison to other factors.**

A comparison among the factors indicates that the expectation scores for Factor 1 “Reliable and Appealing Facilities” (5.1224) and Factor 2 i.e. “Human Aspect” (2.9365 – being for negative statements) are high. At the same time the corresponding perception scores 4.8496 & 3.7353 (for negative statements) are lower. These results indicate that on both these factors, the service quality of non-fuel offerings is not as desired by the customers. The gap (+0.79879) is especially more for Factor 2 “Human Aspect”. This necessitates that the management must identify the areas of improvement related to the prompt service, personal attention and willingness to help the customers. These results indicate that the management of these retail outlets must focus on Customer Relationship Management practices to deliver high quality of non-fuel offerings.

“Dependability” is one of the factors which has a high perceived value than the expected value, indicating that customers have more confidence on “Dependability”. From this one can conclude that non-fuel offerings are always dependable at petro retail outlets.

4.3.2 Service Quality Model for Non-Fuel Offerings for Petro Retail Outlets on basis of Attributes in Factors

4.3.2.1 Factor 1- “Reliable and Appealing Facilities”

As can be seen from Table 4.3, the expected mean score were high ranging from 4.79 to 5.38. **Factor 1 “Reliable and Appealing Facilities’ is a composite of tangibility, reliability & assurance.** Within tangibility, the highest expectation score was for statement S3 i.e. “For Non-Fuel Services the employees should be well dressed and appear neat” (5.27) followed by statement S2 (5.06) “For Non-Fuel Offerings the physical facilities should be visually appealing” and the least one the statement S1 (4.88) “For Non-Fuel Offerings the companies should have up-to-date equipment”

It clearly shows that customer has high expectation on “employee dress”, “neat & clean physical evidence” and low expected in “up-to-date equipment”. The reliability expectation scores are much higher in comparison to tangibility and assurance. The expected score of reliability varies from 5.23 to 5.33. For any service sector, customers have high expectation from the company that they should keep their promises, sympathetic and reassuring towards customers. This is evident in petro retail outlets also.

The next parameter of “Reliable & Appealing Facilities” is assurance. Values range from 4.79 to 5.38. One interesting finding is that expected score for “For Non-Fuel Offerings their employees should be polite” is the highest (5.38) among all the statements. At the same time in comparison to all the statements expected mean score of “For Non-Fuel Offerings their employees should get adequate support from the companies to do their jobs well” is the lowest (4.79). **From the above analysis it is clear that customer is focused on reliability, followed by assurance and tangibility in “Reliable and Appealing Facilities” factor.**

Table 4.3: Service Quality Model for Non-Fuel Offerings for Petro Retail Outlets on basis of Attributes in factors

Factor	Statement No.	Attributes	E Mean	Standard Deviation	P Mean	Standard Deviation	Gap	Gap Rank	t value	p value	Standard Error
Factor I: Reliable & Appealing Facilities	Tangibility	S1 For Non-Fuel Offerings the companies should have up-to-date equipment.	4.88	1.895	4.44	1.487	-0.44	3	6.145*	0.000	0.072
		S2 For Non-Fuel Offerings the physical facilities should be visually appealing.	5.06	1.785	4.76	1.290	-0.30	5	4.493*	0.000	0.067
		S3 For Non-Fuel Offerings the employees should be well dressed and appear neat.	5.27	1.980	5.14	1.428	-0.13	9	1.890	0.058	0.071
		S4 For Non-Fuel Offerings the appearance of the physical facilities of these companies should be in keeping with the type of the Offerings provided.	5.00	1.806	4.74	1.298	-0.26	6	3.478*	0.001	0.075
	Reliability	S5 For Non-Fuel Offerings when these companies promise to do something by a certain time, they should do so.	5.23	1.981	4.49	1.431	-0.74	1	8.454*	0.000	0.088
		S6 For Non-Fuel Offerings when customers have problems, the companies should be sympathetic and reassuring.	5.33	1.984	5.00	1.483	-0.33	4	4.308*	0.000	0.077
		S8 For Non-Fuel Offerings they should provide their Offerings at the time they promise to do so.	5.23	1.931	4.62	1.362	-0.62	2	7.346*	0.000	0.084
	Assurance	S9 For Non-Fuel Offerings they should keep their records accurately.	5.30	1.874	5.13	1.340	-0.17	7	2.393*	0.017	0.072
		S14 For Non-Fuel Offerings customers should be able to trust employees of the companies.	4.91	1.782	4.92	1.368	0.01	11	-0.090	0.928	0.073
		S15 For Non-Fuel Offerings customers should be able to feel safe in their transactions with the companies employees.	5.08	1.920	4.92	1.383	-0.16	8	2.122*	0.034	0.077
		S16 For Non-Fuel Offerings their employees should be polite.	5.38	1.970	5.26	1.415	-0.13	10	1.698	0.090	0.075
		S17 For Non-Fuel Offerings their employees should get adequate support from the companies to do their jobs well.	4.79	1.937	4.80	1.442	0.01	12	-0.146	0.883	0.081

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Factor	Statement No.	Attributes	E Mean	Standard Deviation	P Mean	Standard Deviation	Gap	Gap Rank	t value	p value	Standard Error
Factor 2: Human Aspect	Responsiveness	S10	3.00	1.688	3.85	1.548	0.85	2	-11.517*	0.000	0.074
		S11	2.78	1.714	3.62	1.562	0.84	3	-11.402*	0.000	0.074
		S12	2.71	1.587	3.46	1.525	0.75	7	-11.069*	0.000	0.068
		S13	3.30	1.781	3.84	1.498	0.54	9	-7.474*	0.000	0.072
		S18	3.00	1.666	3.70	1.502	0.69	8	-9.508*	0.000	0.073
	Empathy	S19	2.99	1.691	3.75	1.388	0.76	6	-10.725*	0.000	0.071
		S20	2.81	1.592	3.62	1.494	0.81	5	-11.463*	0.000	0.070
		S21	3.01	1.662	3.84	1.464	0.83	4	-11.789*	0.000	0.070
		S22	2.83	1.792	3.95	1.632	1.12	1	-13.874*	0.000	0.081

Factor	Statement No.	Attributes	E Mean	Standard Deviation	P Mean	Standard Deviation	Gap	Gap Rank	t value	p value	Standard Error
Factor 3: Dependability	S7	For Non-Fuel Offerings the companies should be dependable	3.78	1.940	4.23	1.574	0.45	-	-6.393*	0.000	0.071

The mean score of perception for “Reliable & Appealing Facilities” is ranging from 4.44 to 5.26, indicating that customer has moderate perception values. Among all the statements in perception, customer is satisfied with statement S16 i.e. “For Non-Fuel Offerings their employees should be polite”, followed by S3 “For Non-Fuel Offerings the employees should be well dressed and appear neat” which is followed by S9 “For Non-Fuel Offerings they should keep their records accurately” .The least perception score by which customer is not satisfied is S1 “For Non-Fuel Offerings the companies should have up-to-date equipment” (4.44) followed by “For Non-Fuel Offerings when these companies promise to do something by a certain time, they should do so” (4.49). Thus, according to the customer the companies have outdated equipment yet the employees are polite to them.

As already mentioned “Reliable & Appealing Facilities” is the composite of tangibility, reliability & assurance. In the tangible section the most perceived value is for statement S3 “For Non-Fuel Offerings the employees should be well dressed and appear neat” (5.14) and the least perceived value is for statement S1 “For Non-Fuel Offerings the companies should have up-to-date equipment” (4.44).

In reliability section most perceived value is for statement S9 “For Non-Fuel Offerings they should keep their records accurately” (5.13) and least is for statement S5 “For Non-Fuel Offerings when these companies promise to do something by a certain time, they should do so” (4.49).

In assurance section most perceived value is for statement S16 “For Non-Fuel Offerings their employees should be polite” (5.26) and the least one is for statement S17 “For Non-Fuel Offerings their employees should get adequate support from the companies to do their jobs well” from the company (4.80).

From the above analysis it is evident that reliability has high perceived value, followed by tangibility than assurance. At the petro retail outlet the employees are reassuring, but they are not getting adequate support from company and at the same time the equipment is not up to date and hence value of perception for this factor is low.

Gap scores were calculated for each item and quality dimensions. The gap score for each item is computed by difference (P – E). While analyzing “Reliable and Appealing Facilities” which constitutes 12 statements, we have found that for 10 statements there is a negative gap of service quality and in only 2 statements customer have high perception value than expected. Statement S14 “For Non-Fuel Offerings customers should be able to trust employees of the companies” have positive gap but not statistically significant (t value – 0.090). The highest gap is found in statement S5 “For Non-Fuel Offerings when these companies promise to do something by a certain time, they should do so” (-0.74) which is statistically significant at 5 % level of significance. The ranking of service quality gaps is depicted in Table 4.3.

It now becomes evident that out of the 5 largest gaps in “Reliable and Appealing Facilities” three largest gaps are due to the service attributes related to reliability.

4.3.2.2 Factor 2- “Human Aspect”

As is evident from Table 4.3 the expected mean score values range from 2.71 to a maximum of 3.30. In general these values are low. This trend is on expected lines as all the attributes (statements) are negatively worded and hence they should exhibit lower values. The model exhibits correct structure as all the negatively worded statements have clustered into one factor. The lowest value was found for statement S12 (2.71) “For Non-Fuel Offerings their employees don’t always have to be willing to help customers” followed by S11 (2.78) “For Non-Fuel Offerings not realistic for customers to expect

prompt service from employees of the companies”. This makes it apparent that customers want helpful employees who will provide prompt services. This finding is in agreement with the earlier finding (Hira, 2005) that most customers nowadays are “time short” and want “quick services and seek convenience” at the petro retail outlets.

The responsiveness expectation scores vary from 2.71 to 3.30, indicating that customers expect a high level of responsiveness of the employees at the petro retail outlet. In the empathy part of Factor 2 the values range from 2.81 for statement S20 “For Non-Fuel Offerings it is unrealistic to expect employees to know what the needs of their customers are” to 3.01 for statement S21 “For Non-Fuel Offerings it is unrealistic to expect the companies to have their customer’s best interests at heart”. This implies that on the one hand customers desire that employees understand their needs properly and also keep their interests in mind.

While analyzing the perception value the value range from 3.46 to 3.95. The negative wording of the statements have resulted in lower values being exhibited by the perception scores. The most perceived value according to the customer statement S12 “For Non-Fuel Offerings their employees don’t always have to be willing to help customers” and followed by statement S11 “For Non-Fuel Offerings it is not realistic for customers to expect prompt service from employees of the companies” and statement S20. “For Non-Fuel Offerings it is unrealistic to expect employees to know what the needs of their customers are”. Among all the nine statements the perceived value of statement S 22 “For Non-Fuel Offerings they shouldn’t be expected to have operating hours convenient to all their customers” is very low. Followed by statement S21 “For Non-Fuel Offerings it is unrealistic to expect the companies to have their customer’s best interests at heart.” (3.84). Similarly, statement S13 “For Non-Fuel Offerings it is okay if they are too busy to respond to customer request promptly”

While comparing service quality gaps it is observed that all the statements in Factor 2 are negative (statements are negatively worded). The maximum gap is for statement S22 “For Non-Fuel Offerings they shouldn’t be expected to have operating hours convenient to all their customers”. The minimum gap is for statement S13 “For Non-Fuel Offerings it is okay if they are too busy to respond to customer request promptly.” It shows that customers are happy with the employees of all the three petro retail outlets, but they are unhappy with the operating hours (while collecting data it was observed that customers return early morning and late evenings).

Factor 2: “Human Aspect” includes responsiveness and empathy. In responsiveness all the statements have positive values which are negative gaps and are statistically significant at 5% level of significance because all the t values are greater than 2. It means that there is significant difference of responsiveness in service quality for non-fuel offerings in petro retail outlets. All the gaps for the empathy statements have positive values which shows negative gaps. All the gaps are statistically significant at 5% level of significance. This means that there is significant differences of empathy values in service quality for non-fuel offerings for petro retail outlets.

4.3.2.3 Factor 3- “Dependability”

Factor 3 of service quality model of non-fuel offerings of petro retail outlets is “Dependability”. This factor constitutes only one statement i.e. statement S7 “For Non-Fuel Offerings the companies should be dependable” The expectation score of this statement is 3.78. While the perception score is 4.23. It means customers are delighted on this factor for non-fuel offerings in petro retail outlets. There is a gap of 0.45 mean score which is statistically significant at 5% level of significance, indicating that there is significant positive difference of dependability factor.

4.3.3 Comparison of Service Quality Gaps of IOC, HPC & BPC

Service quality model of IOC, HPC & BPC is explained in Table 4.4.

4.3.3.1 Service Quality Gaps in Factor 1 - “Reliable & Appealing Facilities”

A comparison of data in Table 4.4 shows that the expected mean of “Reliable & Appealing Facilities” for IOC is 4.8644 which is much lower in comparison to HPC (5.0688) and BPC (5.7352). It indicates that the customers have high expectation on BPC on the mean factor of “Reliable & Appealing Facilities”. The reason for this is that BPC promotes its non-fuel offerings aggressively and has hence created very high expectations in customers. Since IOC is the oldest and largest petro retailing company customers have less expectations of its “Reliable & Appealing Facilities”. But expectation score for HPC is highly satisfactory (5.0688), because it is growing at the same time it is not as aggressive as BPC. A comparison of the perceived value of “Reliable & Appealing Facilities” however, shows that HPC has high perceived value (5.0104) followed by BPC (4.8539) then IOC (4.7050). The perceived difference between BPC and HPC on perceived value is very low. IOC has less perceived value in comparison to its competitors.

A study of the service quality model of non-fuel offerings for IOC (Table 4.5) reveals that for Factor 1 three statement’s mean expectations – S6 “For Non-Fuel Offerings when customers have problems, the companies should be sympathetic and reassuring”, S9 “For Non-Fuel Offerings they should keep their records accurately” & S16 “For Non-Fuel Offerings their employees should be polite”, have expectations more than 5 and the other 9 statements have mean expectations less than 5. Two of these highest mean expectation statements S6 & S9 are associated with reliability. It is also observed that the values of mean expectations of other reliability statements namely, S5 (4.99) & S8 (4.85) are also high. The statements associated with assurance (S14, S15, S16 & S17) have mean expectations lower than

Table 4.4 Overall Service Quality Model

	IOC				HPC				BPC			
	Ex Mean	P Mean	Gap	t	Ex Mean	P Mean	Gap	t	Ex Mean	P Mean	Gap	t
Factor 1: Reliable & Appealing Facilities	4.8644	4.7050	-0.15931	2.085** (0.038)	5.0688	5.0104	-0.05840	0.061 (0.548)	5.7352	4.8539	-0.88133	13.494* (0.000)
Factor 2: Human Aspect	2.9853	3.7413	0.75605	11.352* (0.000)	2.6987	3.6916	0.99288	-13.965* (0.000)	3.2616	3.8010	0.53938	-6.538* (0.000)
Factor 3: Dependability	3.6845	4.0631	0.37855	3.285** (0.001)	3.8932	4.5018	0.60854	-5.395* (0.000)	3.7658	4.0886	0.32278	-2.241** (0.026)

* Significant at 5%

** Significant at 1%

Table 4.5 - Service Quality Model Non-Fuel Offerings for IOC

Factor	Statement No.	Attributes	E Mean	Standard Deviation	P Mean	Standard Deviation	Gap	Gap Rank	t value	p value	Standard Error		
Factor 1: Reliable & Appealing Facilities	Tangibility	S1	For Non-Fuel Offerings the companies should have up-to-date equipment.	4.70	2.002	4.17	-0.530	2	4.953*	0.000	0.107		
		S2	For Non-Fuel Offerings the physical facilities should be visually appealing.	4.77	1.857	4.59	-0.183	6	1.686	0.093	0.109		
		S3	For Non-Fuel Offerings the employees should be well dressed and appear neat.	4.81	2.172	5.04	0.230	12	-1.962	0.051	0.117		
	Reliability	S4	For Non-Fuel Offerings the appearance of the physical facilities of these companies should be in keeping with the type of the Offerings provided.	4.82	1.834	4.49	-0.331	4	2.753**	0.006	0.120		
		S5	For Non-Fuel Offerings when these companies promise to do something by a certain time, they should do so.	4.99	2.073	4.36	-0.628	1	4.614*	0.000	0.136		
		S6	For Non-Fuel Offerings when customers have problems, the companies should be sympathetic and reassuring.	5.10	2.009	4.91	-0.196	5	1.594	0.112	0.123		
		S8	For Non-Fuel Offerings they should provide their Offerings at the time they promise to do so.	4.85	2.065	4.43	-0.413	3	3.080**	0.002	0.134		
	Assurance	S9	For Non-Fuel Offerings they should keep their records accurately.	5.12	1.921	5.12	0.000	9	0.000	1.000	0.117		
		S14	For Non-Fuel Offerings customers should be able to trust employees of the companies.	4.71	1.884	4.82	0.117	11	-0.996	0.320	0.117		
		S15	For Non-Fuel Offerings customers should be able to feel safe in their transactions with the companies employees.	4.88	1.970	4.81	-0.066	7	0.552	0.581	0.120		
		S16	For Non-Fuel Offerings their employees should be polite.	5.11	2.089	5.09	-0.025	8	0.207	0.836	0.122		
		S17	For Non-Fuel Offerings their employees should get adequate support from the companies to do their jobs well.	4.52	1.941	4.63	0.114	10	-0.862	0.390	0.132		
		Factor 2: Human Aspect	Responsiveness	S10	For Non-Fuel Offerings they shouldn't be expected to tell customers exactly when Offerings will be performed.	3.18	1.735	3.91	0.117	6	-6.09*	0.000	0.119
				S11	For Non-Fuel Offerings it is not realistic for customers to expect prompt service from employees of the companies.	2.89	1.760	3.68	-0.066	9	-6.525*	0.000	0.120
	S12			For Non-Fuel Offerings their employees don't always have to be willing to help customers.	2.68	1.594	3.46	-0.025	8	-6.937*	0.000	0.113	
	S13			For Non-Fuel Offerings it is okay if they are too busy to respond to customer request promptly.	3.33	1.837	3.88	0.114	7	-4.747*	0.000	0.116	
	S18			For Non-Fuel Offerings the companies should not be expected to give customers individual attention.	3.08	1.734	3.59	0.514	5	-4.248*	0.000	0.121	
Empathy	S19		For Non-Fuel Offerings employees of the companies cannot be expected to give customers personal attention.	3.14	1.798	3.73	0.593	4	-4.874*	0.000	0.122		
	S20		For Non-Fuel Offerings it is unrealistic to expect employees to know what the needs of their customers are.	2.67	1.511	3.62	0.946	2	-8.554*	0.000	0.111		
	S21		For Non-Fuel Offerings it is unrealistic to expect the companies to have their customer's best interests at heart.	2.97	1.579	3.77	0.801	3	-7.229*	0.000	0.111		
	S22		For Non-Fuel Offerings they shouldn't be expected to have operating hours convenient to all their customers.	2.93	1.847	4.04	1.107	1	-8.333*	0.000	0.133		
	Factor 3: Dependability		S7	For Non-Fuel Offerings the companies should be dependable	3.68	1.905	4.06	0.379	-	-3.284**	0.001	0.115	

* Significant at 5%
** Significant at 1%

reliability (S5, S6, S8 & S9) but higher than tangibility (S1, S2, S3 & S4). **From this analysis, it can be inferred that for IOC for Factor 1 the expectations are high due to high expectations for reliability followed by assurance and then tangibility.** As regards the mean perceptions for IOC for Factor 1 it is observed that only three statements S3 (5.04) “For Non-Fuel Offerings the employees should be well dressed and appear neat”, S9 (5.12) “For Non-Fuel Offerings they should keep their records accurately” & S16 (5.09) “For Non-Fuel Offerings their employees should be polite” have values higher than 5. **On the other statements, the performance of IOC is not up to the mark. It becomes imperative therefore that management must focus and improve these areas.** While comparing the service quality gap it is found that gaps for three statements – S3, S14 & S17 are positive but these are not statistically significant. The largest gaps are found for statement S5 (-0.628) “For Non-Fuel Offerings when these companies promise to do something by a certain time, they should do so” & statement S8 (-0.413) “For Non-Fuel Offerings they should provide their Offerings at the time they promise to do so” These are reliability statements. **Hence reliability is an area which needs improvement.** Statistically significant gaps are also found in Statement S1 (-0.530) “For Non-Fuel Offerings the companies should have up-to-date equipment.” & Statement S4 (-0.331) “For Non-Fuel Offerings the appearance of the physical facilities of these companies should be in keeping with the type of the Offerings provided.” **As for the overall gap for Factor 1 for IOC (Table 4.4) it is (-0.15931), which is statistically significant at 1% level of significance. Hence Hypothesis 5 is supported. This means that there is significant difference in service quality of “Reliable & Appealing Facilities” for IOC for non-fuel offerings in Petro Retail outlets.**

A study of the service quality model of non-fuel offerings for HPC (Table 4.6) reveals that for Factor 1 out of 12 statements only 4 statements (S1, S4, S14 & S15) have mean expectation value less than 5. Out of the rest 7 statements (S2, S3, S5, S6, S8, S9 & S16) which have mean expectation

Table 4.6 - Service Quality Model Non-Fuel Offerings for HPC

Factor	Statement No.	Attributes	E Mean	Standard Deviation	P Mean	Standard Deviation	Gap	Gap Rank	t value	p value	Standard Error	
Factor 1: Reliable & Appealing Facilities	Tangibility	S1	4.89	1.798	4.73	1.191	-0.157	6	1.401	0.162	0.112	
		S2	5.05	1.843	4.87	1.149	-0.178	4	1.612	0.108	0.110	
		S3	5.31	1.964	5.15	1.278	-0.164	5	1.361	0.175	0.120	
	Reliability	S4	4.91	1.953	5.00	1.110	0.089	9	-0.673	0.501	0.132	
		S5	5.14	2.061	4.74	1.384	-0.399	1	2.614**	0.009	0.151	
		S6	5.30	2.112	5.09	1.260	-0.206	3	1.514	0.131	0.136	
		S8	5.30	1.883	4.96	1.218	-0.342	2	2.632**	0.009	0.130	
	Assurance	S9	5.12	1.962	5.11	1.222	-0.007	7	0.059	0.953	0.120	
		S14	4.76	1.849	4.99	1.309	0.231	11	-1.826	0.069	0.127	
		S15	4.91	2.004	5.05	1.263	0.135	10	-1.031	0.303	0.131	
		S16	5.29	2.030	5.33	1.268	0.036	8	-0.282	0.778	0.126	
		S17	4.85	2.033	5.11	1.166	0.260	12	-1.986	0.048	0.131	
	Factor 2: Human Aspect	Responsiveness	S10	2.65	1.530	3.69	1.538	1.036	4	-9.043*	0.000	0.115
			S11	2.52	1.579	3.60	1.642	1.085	2	-9.325*	0.000	0.116
			S12	2.61	1.453	3.54	1.526	0.936	8	-9.032*	0.000	0.104
			S13	2.96	1.632	3.74	1.505	0.776	9	-7.234*	0.000	0.107
			S18	2.75	1.568	3.72	1.442	0.968	5	-8.626*	0.000	0.112
S19			2.67	1.554	3.73	1.444	1.057	3	-10.409*	0.000	0.102	
S20			2.68	1.491	3.63	1.502	0.943	6	-8.595*	0.000	0.110	
Empathy		S21	2.89	1.678	3.83	1.459	0.943	7	-8.402*	0.000	0.112	
		S22	2.54	1.677	3.74	1.566	1.192	1	-10.139*	0.000	0.118	
		S7	3.89	2.034	4.50	1.491	0.609	-	-5.395*	0.000	0.113	
Factor 3: Dependability	S7	3.89	2.034	4.50	1.491	0.609	-	-5.395*	0.000	0.113		

* Significant at 5%

** Significant at 1%

value more than 5, four (S5, S6, S8 & S9) are associated to reliability, two (S2 & S3) to tangibility and one (S16) to assurance. **These values, hence indicate that for HPC for Factor 1 “Reliable & Appealing Facilities”, customers have high expectations on reliability for HPC, followed by tangibility & assurance.** When interpreting the mean perception values it is observed that HPC has fared very well. Indeed out of the 12 statements of Factor 1 it has mean perception score more than 5 on seven statements (S3, S4, S6, S9, S15, S16 & S17), the strongest area being assurance (S16, S17 & S15) followed by reliability (S9 & S6) and then tangibility (S3 & S4). When observing the service quality gap values it is seen that there are 5 statements (S4, S14, S 15, S 16 & S 17) that have positive gaps. However these gaps are not significant as all the t values are less than 2. The largest gaps are found with S5 (-0.399) “For Non-Fuel Offerings when these companies promise to do something by a certain time, they should do so” and S8 (-0.342) –”For Non-Fuel Offerings they should provide their Offerings at the time they promise to do so”. Indeed it is only these two gaps that are significant at 1% level of significance. **The overall service quality gap for Factor 1 for HPC (Table 4.4) is -0.05840 which is not significant as the value of t is less than 2. Hence Hypothesis 6 is not supported.**

From the service quality model of non-fuel offerings for BPC (Table 4.7) for Factor 1 – Reliable & Appealing Facilities” it is observed that values of all the 12 statements for mean expectation are above 5. This is indeed a very high level of expectation of customers for BPC. Also it is observed that for three statements S3 (6.13) “For Non-Fuel Offerings the employees should be well dressed and appear neat”, S 16 (6.09) “For Non-Fuel Offerings their employees should be polite.” & S9 (6.01) “For Non-Fuel Offerings they should keep their records accurately” the values are above 6. Again a study of the values of mean expectations for all the statements reveals that it is the statements associated with reliability (S5, S6, S8 & S9) followed by statements associated with assurance (S14, S15, S16 & S17), and tangibility

Table 4.7 - Service Quality Model Non-Fuel Offerings for BPC

Factor	Statement No.	Attributes	E Mean	Standard Deviation	P Mean	Standard Deviation	Gap	Gap Rank	t value	p value	Standard Error	
Factor 1: Reliable & Appealing Facilities	Tangibility	S1	For Non-Fuel Offerings the companies should have up-to-date equipment.	5.23	1.802	4.46	-0.766	7	4.374*	0.000	0.175	
		S2	For Non-Fuel Offerings the physical facilities should be visually appealing.	5.65	1.340	4.90	-0.753	8	6.172*	0.000	0.122	
		S3	For Non-Fuel Offerings the employees should be well dressed and appear neat.	6.13	1.144	5.31	-0.816	5	8.204*	0.000	0.100	
		S4	For Non-Fuel Offerings the appearance of the physical facilities of these companies should be in keeping with the types of the Offerings provided.	5.55	1.314	4.80	-0.747	9	6.399*	0.000	0.117	
	Reliability	S5	For Non-Fuel Offerings when these companies promise to do something by a certain time, they should do so.	5.87	1.449	4.29	-1.582	1	10.153*	0.000	0.156	
		S6	For Non-Fuel Offerings when customers have problems, the companies should be sympathetic and reassuring.	5.84	1.580	5.01	-0.829	4	6.785*	0.000	0.122	
		S8	For Non-Fuel Offerings they should provide their Offerings at the time they promise to do so.	5.89	1.508	4.39	-1.506	2	8.881*	0.000	0.170	
	Assurance	S9	For Non-Fuel Offerings they should keep their records accurately.	6.01	1.403	5.19	-0.816	6	6.368*	0.000	0.128	
		S14	For Non-Fuel Offerings customers should be able to trust employees of the companies.	5.58	1.207	4.96	-0.614	12	5.359*	0.000	0.115	
		S15	For Non-Fuel Offerings customers should be able to feel safe in their transactions with the companies employees.	5.79	1.450	4.90	-0.892	3	6.278*	0.000	0.142	
		S16	For Non-Fuel Offerings their employees should be polite.	6.09	1.366	5.47	-0.620	11	4.901*	0.000	0.127	
	S17	For Non-Fuel Offerings their employees should get adequate support from the companies to do their jobs well.	5.20	1.662	4.57	-0.633	10	4.122*	0.000	0.154		
	Factor 2: Human Aspect	Responsiveness	S10	For Non-Fuel Offerings they shouldn't be expected to tell customers exactly when Offerings will be performed.	3.23	1.771	4.00	0.766	2	-4.789*	0.000	0.160
			S11	For Non-Fuel Offerings it is not realistic for customers to expect prompt service from employees of the companies.	3.02	1.800	3.54	0.525	6	-3.473**	0.001	0.151
			S12	For Non-Fuel Offerings their employees don't always have to be willing to help customers.	2.96	1.773	3.32	0.361	7	-2.603**	0.010	0.139
			S13	For Non-Fuel Offerings it is okay if they are too busy to respond to customer request promptly.	3.82	1.801	3.92	0.095	9	-0.578	0.564	0.164
			S18	For Non-Fuel Offerings the companies should not be expected to give customers individual attention.	3.30	1.642	3.87	0.563	4	-3.814**	0.000	0.148
S19			For Non-Fuel Offerings employees of the companies cannot be expected to give customers personal attention.	3.25	1.627	3.81	0.563	5	-3.865*	0.000	0.146	
Empathy		S20	For Non-Fuel Offerings it is unrealistic to expect employees to know what the needs of their customers are.	3.31	1.820	3.59	0.278	8	-1.806	0.073	0.154	
		S21	For Non-Fuel Offerings it is unrealistic to expect the companies to have their customer's best interests at heart.	3.32	1.764	4.00	0.677	3	-4.404*	0.000	0.154	
		S22	For Non-Fuel Offerings they shouldn't be expected to have operating hours convenient to all their customers.	3.13	1.817	4.16	1.025	1	-5.4689*	0.000	0.187	
		S23	For Non-Fuel Offerings the companies should be dependable.	3.77	1.834	4.09	0.323	-	-2.241**	0.026	0.144	
		S7	For Non-Fuel Offerings the companies should be dependable.	3.77	1.834	4.09	0.323	-	-2.241**	0.026	0.144	

* Significant at 5%

** Significant at 1%

(S1, S2, S3 & S4) in which the expectations are the highest of the customers. Hence reliability is the area of great concern for BPC. The study of values for perceptions for Factor 1 for BPC shows that only four statements (S3, S6, S9 & S16) have mean perception values higher than 5. On the rest BPC is not performing well. Further, the mean perceptions are lowest for statements S5 (4.29) & S8 (4.39), both associated with reliability. **Thus reliability is a weak area of BPC.**

Observing the service quality gaps it is seen that the service quality gaps are negative for all the statements. These gaps indicate that company is not on a strong footing for service quality. The largest gaps are observed for statements S5 (-1.582) “For Non-Fuel Offerings when these companies promise to do something by a certain time, they should do so” & S8 (-1.506) “For Non-Fuel Offerings they should provide their Offerings at the time they promise to do so”. Even the lowest service quality gap for statement S14 is -0.614, which is more in comparison to the service quality gaps of IOC & HPC. All the gaps are significant at 5% level of significance. Service quality gaps are larger in the statements associated with reliability.

The overall service quality gap (Table 4.4) is -0.8813 which is more than the values for IOC & HPC. This gap is significant at 5% level of significance as the t value is more than 2. Hence Hypothesis 7 is supported.

4.3.3.2 Service Quality Gaps in Factor 2 - “Human Aspect”

All the attributes (statements) in the Factor 2 are negatively worded, hence lower values are expected. On comparing the values of the three NOCs (Table 4.4) it is observed that the mean values for expectations are highest for HPC (2.6987) followed by IOC (2.9853) and BPC (3.2616). When the perceptions are compared it is found that HPC (3.6916) has highest perception, followed by IOC (3.7413) and BPC (3.8010).

A study of the statements (attributes) of Factor 2 for IOC (Table 4.5) shows that out of 9 statements 5 statements (S11, S12, S20, S21 & S22) have mean expected value lower than 3 and the rest 4 statements (S10, S13, S18 & S19) higher than 3. Also of the 5 statements with lower than 3 expected mean value it is statements (S20, S21 & S22) which are increasing the expectations of the customers. These three statements are associated with empathy for Factor II. A study of the mean perception values of IOC for Factor 2 shows that the highest perception is for statement S12 (3.46) “For Non-Fuel Offerings their employees don’t always have to be willing to help customers”, indicating that customers find the employees of IOC to be helpful. The mean perception score for S22 (4.04) “For Non-Fuel Offerings they shouldn’t be expected to have operating hours convenient to all their customers” is the lowest. The next lowest mean perception score is for statement S10 (3.91) “For Non-Fuel Offerings they shouldn’t be expected to tell customers exactly when Offerings will be performed”. As regards service quality gaps, it is important to mention that as all the statements for Factor 2 are negatively worded the service quality gaps which are shown negative in Table 4.5 are actually positive gaps. As regards the service quality gaps, the gaps are negative for all statements excepting statements S11 & S12. Highest service quality gap is for statement S22 (-1.107) “For Non-Fuel Offerings they shouldn’t be expected to have operating hours convenient to all their customers”. All the service quality gaps are significant at 5% level of significance. **Further, from Table 4.4 it is evident that the overall service quality gap is -0.75605. This is significant at 5% level of significance. Hence Hypothesis 8 is supported. This shows that there is significant difference in the service quality of IOC for the Factor 2 “Human Aspect”.**

A study of the service quality model of HPC (Table 4.6) shows that for Factor 2 “Human Aspect” the mean expectations are below 3 for all the 9 statements indicating that customers have high expectations on this factor for HPC. Within the statements the highest mean expectation is of statement S11

(2.52) “For Non-Fuel Offerings it is not realistic for customers to expect prompt service from employees of the companies” implying that the customers expect the employees to provide prompt service to them. The next highest expectation that the customers have is for statement S22 (2.54) “For Non-Fuel Offerings they shouldn’t be expected to have operating hours convenient to all their customers”. As for the perceptions the highest perception is for statement S12 (3.54) “For Non-Fuel Offerings their employees don’t always have to be willing to help customers”. And the lowest perception is for statement S21 (3.83) “For Non-Fuel Offerings it is unrealistic to expect the companies to have their customer’s best interests at heart”. It is also observed that the empathy associated statements (S18, S19, S20, S21 & S22) have lower mean perception values as compared to the responsiveness statements (S10, S11, S12, & S13). In case of Factor 2 for HPC, the service quality gaps are all negative. The highest service quality gap is for statement S22 (1.192) “For Non-Fuel Offerings they shouldn’t be expected to have operating hours convenient to all their customers”. And all the gaps have values above 0.9 (excepting for statement S13). This is indicative of high gap between expectation and perception for Factor 2 for HPC. All the gaps are statistically significant. **Also as per Table 4.4, the gap for all statements is -0.99286 which is significant at 5% level of significance. Hence Hypothesis 9 is supported. This signifies that there is significant difference in service quality for HPC of Factor 2 “Human Aspect”.**

A study of the service quality model of BPC (Table 4.7) shows that for Factor 2 – “Human Aspect” the mean expected values are all above 3 (excepting for statement S12), indicative of lower expectation values as compared to IOC and HPC. The highest mean expectation value is for statement S12 (2.96) “For Non-Fuel Offerings their employees don’t always have to be willing to help customers” and the next highest expectation statement is statement S11 (3.02) “For Non-Fuel Offerings it is not realistic for customers to expect prompt service from employees of the companies”.

This indicates that the customers expect employees of BPC to be willing to help them and provide prompt services. The perception scores for BPC for Factor 2 “Human Aspect” show that the customers are most happy with statement S12 (3.32). This is an excellent position for BPC, as it is able to meet the attribute with highest expectation coupled with highest perception of the customer. The attribute on which the customers perceive to be the worst is statement S22 (4.16) “For Non-Fuel Offerings they shouldn’t be expected to have operating hours convenient to all their customers”. This is followed by statements S10 (4.00) “For Non-Fuel Offerings they shouldn’t be expected to tell customers exactly when Offerings will be performed” & statement S 21 (4.00) “For Non-Fuel Offerings it is unrealistic to expect the companies to have their customer’s best interests at heart”. The service quality gaps are all negative. All the service quality gaps are statistically significant (at different level of significance) excepting for statements S13 and S20. The largest service quality gap is observed for statement S 22 (-1.025). This gap is statistically significant at 5 % level of significance. **Further from Table 4.4 it is observed that the service quality gap for BPC for Factor 2 “Human Aspect” is -0.53938 which is statistically significant at 5% level of significance. Hence Hypothesis 10 is supported indicating that there is significant difference in the service quality of BPC for “Human Aspect”.**

4.3.3.3 Service Quality Gaps in Factor 3 “Dependability”

For this factor there is one statement S7 “For Non-Fuel Offerings the companies should be dependable”. An examination of figures in Table 4.4 we see that the highest mean expectation of HPC (3.8932), is followed by BPC (3.7658), and then IOC (3.6845). The highest perception also follows the same pattern of HPC(4.5018), BPC (4.0886), & IOC (4.0631). All the perception values are higher than expectations for the three NOCs. The values of all the service quality gaps are positive and significant.

For IOC the service quality gap of +0.37855 is significant at 1% level of significance. Hence Hypothesis 11 is supported indicating that there is significant difference in service quality of “Dependability” for IOC.

For HPC the service quality gap is +0.60854 which is significant at 5% level of significance. Hence Hypothesis 12 is supported. This signifies that there is significant difference in service quality of “Dependability” for HPC.

Finally, it is observed that the service quality gap for BPC is +0.32278 which is significant at 1 % level of significance. Hence Hypothesis 13 is supported. This indicates that there is significant difference in service quality of “Dependability” for BPC.

4.4 SUMMARY OF RESULTS

The present chapter deals with the development of service quality models for non-fuel offerings for petro retail outlets, service quality model for non-fuel offering on the basis of attributes and comparison of service quality gaps of IOC, HPC and BPC. Further, 13 hypotheses relevant to these models have been tested. All hypotheses excepting Hypothesis 6 were supported.

The analysis in this chapter revealed specific areas in which petro retail outlets are close to meeting the customer’s expectations and the areas in which petro retail outlets fall short of expectations. In general, expectations exceed perceptions of the delivered service quality, indicating clearly that there is a scope for quality improvement initiatives. This is especially pertinent for Factor 1: “Reliable & Appealing Facilities” and Factor 2: “Human Aspect”.