

Modeling Consumer Perception and its Impact on Brand Image and Customer Retention: Evidence from Indian Oil Corporation Limited (IOCL)

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Abstract:

In this study, the authors examine the relationship among consumer perception, brand image and customer retention in the context of Indian Oil Corporation Limited (IOCL) as one of the largest public sector oil marketing companies in India. In a highly competitive petroleum retailing industry, brand success and customer loyalty largely depend on how consumers see the brands. The data obtained for the research is primary data obtained from 200 respondents by a structured questionnaire designed for capturing the important dimensions affecting the consumers' behaviour toward IOCL. Reliability of the scale was tested by Cronbach's Alpha, and the number of factors was determined by Exploratory Factor Analysis of consumer perceptions. Some significant factors were considered such as service quality, fair price, product availability, trust, brand reputation and all-around customer experience.

The impact of consumer perception on the brand image and customer retention was then tested through multiple regression analysis. Moreover, ANOVA and independent sample t-tests were used to compare the consumer perception on demographic variables like age, gender, and income level. Results show that there is a high positive correlation between consumer perception, brand image and customer retention. When the perception of the customers is positive, this has a great impact on the IOCL brand image and keeps more customers staying with the company. The findings highlight the significance of providing high levels of service excellence, transparency of pricing and trust to enhance brand equity and customer loyalty.

The study found that IOCL and oil marketing companies can obtain a sustainable competitive advantage by consistently building their consumers' perceptions by delivering services, engaging digitally, and seeking to focus on the consumer. The study offers significant strategic insights into the impact of customer perception on brand image and customer retention in the Indian oil and gas industry.

Keywords - consumer perception, brand image, customer retention, ANOVA, demographic variables, IOCL, oil companies.

1. Introduction

1.1 Background and Context

India's total petroleum product consumption is in the range of 233 to 235 MMT during FY 2024-25, showing strong growth due to an increase in vehicle ownership, fast-growing urbanisation and a continued expansion of the manufacturing and logistics industries throughout India (PPAC, 2025). The consumption of petroleum products for April through February 2023-24, too, was over-proportional, at 212.2 MMT, showing a year-on-year growth of 5.2 percent in PPAC data, suggesting that the overall consumption for 2024-25 would have well exceeded the 230 MMT mark.

There, in FY 2024-25, Indian Oil Corporation Limited (IOCL) reached its highest-ever sales of products (100.292 MMT) for the first time in its history, making it its most successful year by sales of products in all three categories of products (petroleum, petrochemicals and gas) (IOCL, 2025). The revenue of the company during the year amounted to around Rs. It remained the largest downstream energy company in India in FY 2024-25 with the turnover at Rs 8,45,513 crore. (IOCL Annual Report 2024-25). From the infrastructure perspective,

IOCL owns approximately 31 per cent of the total national refining capacity (at the consolidated level) as it operates eleven major refineries, with a refining capacity of 80.75 MMTPA, as of March 2024

Notably for the context of this study, IOCL has a significantly larger network of retail fuel outlets than the other oil companies in India, this isn't just true in India, but in the retail fuel outlet market as a whole, with Sinopec being the largest single company in the world in terms of retail outlets, but currently only operating 41,664 outlets as of November 2025 (PPAC via Organiser, 2025). The Indian network of Petrol Stands as of November 2025 had reached the landmark of more than 100,000, placing it in the Third spot in the world with the largest number of petrol stations behind United States and China.

After all, IOCL has become the number one player in India to establish EV charging stations with over 14,000 stations and approximately 58% share of the total EV charging infrastructure in the country till March 2025 (IOCL, 2025). There are more than 8,000 outlets of IOCL across the country to offer fuel blends and PSUs contribute to ~79.25 per cent of the fuel retail market in India as of 2025.

1.2 Problem Statement

Although the brand image and customer retention literature is rich in industries like FMCG, banking and telecom, there is a paucity in empirical studies that focus on each sector (downstream petroleum retail) within the Indian market. A larger share of the literature is devoted to the government-owned, privately operating business, i.e., IOCL, where the institutional scale can unwillingly conceal the lack of service quality which can similarly undermine consumer loyalty in the long run.

Research Questions

The main question that the study will answer is as follows:

- To what degree can the consumer perception predict the brand image and customer retention in the oil fuel outlets of IOCL
- Do these perception patterns have a significant meaning, or are they different in relation to demographic traits?[3]

1.3 Objectives

Objective 1: Exploratory Factor Analysis to identify and validate the key dimensional structure of consumer perception that can be used to create a perceptual framework limited to the context of public sector petroleum retailers in India, where the scale has been psychometrically sound.

Objective 2: To assess the nature and strength of the relationship between consumer perception and brand image at IOCL outlets and find out whether the positive perceptual evaluations on three dimensions of service, trust, price, and reliability are statistically significant and independent predictors of brand image strength.

Objective 3: To see how consumer perception affects customer retention intentions and its impact on retaining the customers in IOCL compared to its effect on brand image, specifically, the influence of perception dimensions such as trusts and reliability.

Objective 4: To check for differences between different demographic groups within customers' perception of the service experience at IOCL stores by retail segment, statistically; to find out which age group has the most and the least favourable perception of IOCL's retail service experience.

Objective 5: To assess if gender differences in consumer perception at IOCL are statistically significant, for the overall perception scale as well as at the sub-scales service quality, brand trust and pricing fairness to guide the use of a gender-responsive service strategy.

1.4 Significance of the Study

Eliminates guesswork, offers managers data-driven evidence for where IOCL is succeeding and failing and where efforts should be more or less focused.

Recognizes specific operational needs, including delays, service dependability, and digital communication, to make accurate marketing and operational investments.

Provides public sector organisations with a diagnostic and strategic planning framework that is flexible to inconsistencies of services across regions.

Complements existing literature in consumer behaviour with regard to state-owned energy companies in developing economies.

Provides a repeatable methodological design for BPCL, HPCL and other emerging-market organisations.

2. Literature Review

Consumer perception is based on cognitive psychology, in which Zeithaml (1988) concluded that perceived value, perceived quality, and perceived price together influence purchase behaviour. In the case of retailing of fuel, Mittal and Lassar (1998) demonstrated that there are two dimensions of service personalisation and technical quality, which are complementary and mutually reinforcing each other in relation to attaining satisfaction. Whereas the commitment-trust theory of Morgan and Hunt (1994) posits a relational dimension, oral contracts as social covenants and mutual guarantees that, if violated, can cause competitive switchers' advantages, are even more important in the context of a government-backed institution like IOCL.

For Keller (1993), image takes on a form that is not as strictly an advertising phenomenon, but one that is cognitively affective in nature and created through the cumulative interaction between consumer and brand over time, not just through advertising expenditure. This is verified by Islam et al. (2021) in South Asian fuel retail, where the behaviors of employees and quality of products had the highest impact on brand associations. Kapferer (2012) warns, however, that historical brand equity demands ongoing reinforcement from experience with the service.

Oliver (1999) said that true loyalty is only achieved when it is made up of repeat purchases. Reichheld & Sasser (1990) have shown that an increase of 5% in retention can boost profits by as much as 95%. Sharma and Patterson (2000) reported that the involvement of perceived service quality plays an intervening role between relationship based on trust and retention of customers in financial services, which is reasonably transferable to retailing fuel services as they are also repetitive and low involvement transactions.

2.1 Research Gap

- Research on consumer perception and brand loyalty has focused on banking, telecom and FMCG sectors (Mittal & Lassar, 1998; Islam et al., 2021), leaving petroleum retail mostly unexamined.
- Studies on Indian fuel retail are either based on small samples or qualitative designs.
- The character of IOCL, being a state-owned firm yet competitively working like a firm, is not modelled in Indian branding literature.
- Within a single framework of perception and retention, no prior Indian study has integrated factor analysis, regression analysis, ANOVA and t-tests.
- Market transitions between 2020 and 2025 related to EV infrastructure and E20 fuels render findings about perception-behaviour outdated.

3. Research Methodology

3.1 Research Design

The type of research used for this study is descriptive and explanatory which is based on the positivist epistemology. The respondents were the regular customers of five fuel outlets of Uttar Pradesh and Delhi NCR on which a quantitative, cross-sectional type of survey was conducted with purposive and convenience sampling methods with 200 customers. The respondents were those who visited an IOCL outlet in the last 30 days and

were 18 years of age or older.

A standardized 38-item questionnaire was administered. Demography was measured in part A, six perception constructs in part B (28 items on a Likert scale), and brand image and customer retention in part C (10 items on a Likert scale). Three academic experts as well as a preliminary test on 25 respondents were used to ensure the content validity of the item.

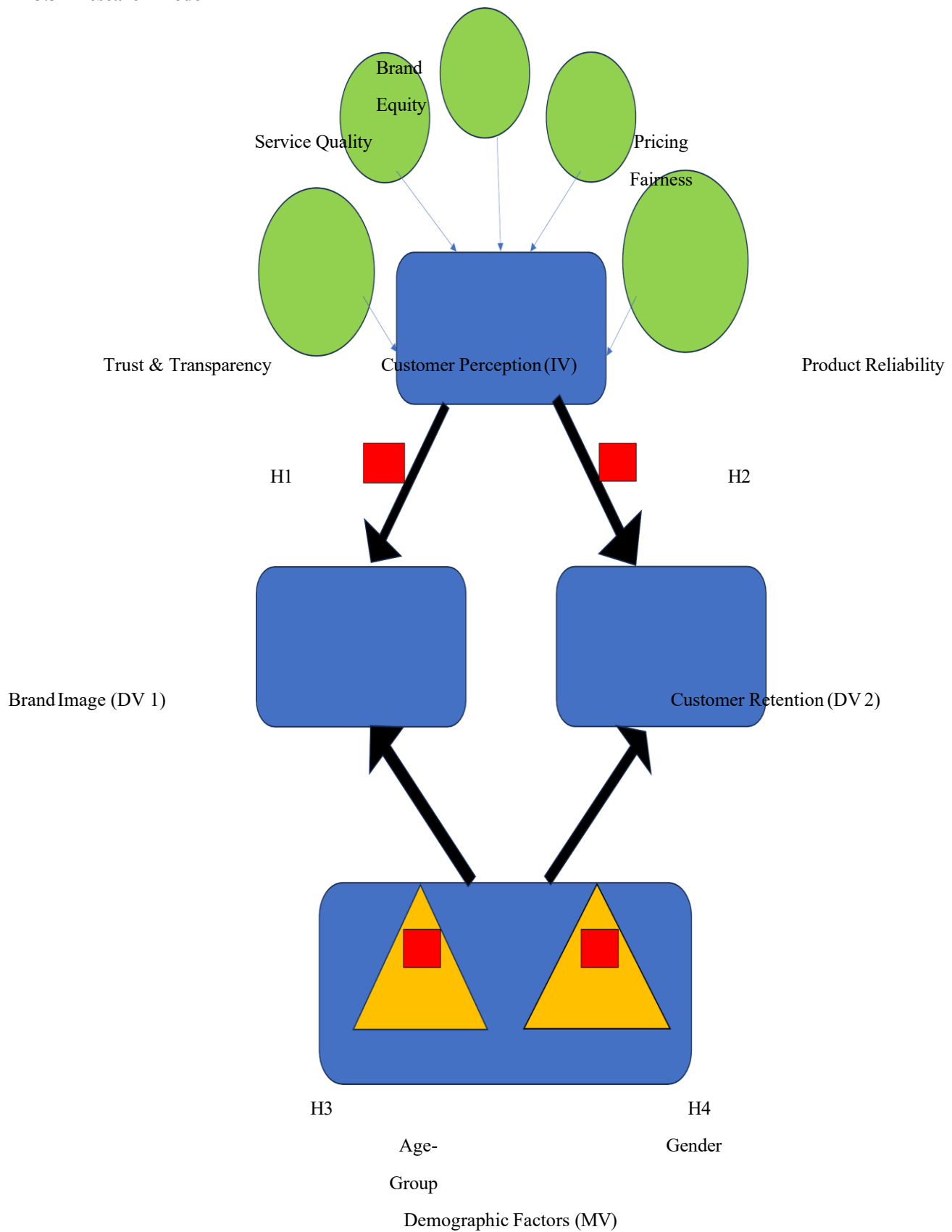
The following four statistical analysis techniques were used one after another. ECronbach's alpha was initially computed to test for internal consistency among the different constructs, and to avoid that items representing each of the factors measured the same variable in the same manner. To provide empirical test for the proposed structure as opposed to simply assumptions, this Exploratory Factor Analysis (EFA) was performed, using Principal Components Extractor and Varimax Rotation to reduce the 28 perception items to interpretable dimensions.

3.2 Research Variables

The Independent Variables, Dependent Variables & Moderating Variables are mentioned in the below graph:

VARIABLE TYPE	VARIABLES
Independent Variables	Service Quality, Brand Equity, Pricing Fairness, Product Reliability, Trust & Transparency
Dependent Variable 1	Brand Image
Dependent Variable 2	Customer Retention Intention
Moderating Variables	Age-Group, Gender

3.3 Research Model



3.4 Research Hypotheses

Under the theoretical framework analyzed in Section 2, the following hypotheses are tested:

H1: Consumer Perception and Brand Image

- Null Hypothesis (H1_o): Consumer perceptions regarding service quality, brand equity, pricing fairness, product reliability, and trust and transparency do not significantly influence the brand image of IOCL retail outlets.
- Alternate Hypothesis (H1_a): These dimensions related to consumer perception have a significant positive impact on the brand image of IOCL retail outlets.

H2: Consumer Perception and Customer Retention

- Null Hypothesis (H2_o): Consumer perception does not significantly affect customer retention intentions, and trust-related factors do not have a stronger impact on retention than on brand image.
- Alternate Hypothesis (H2_a): Perception of the consumers significantly affects the retention of the customers with the involvement of trust and transparency and product reliability as stronger predictor of retention.

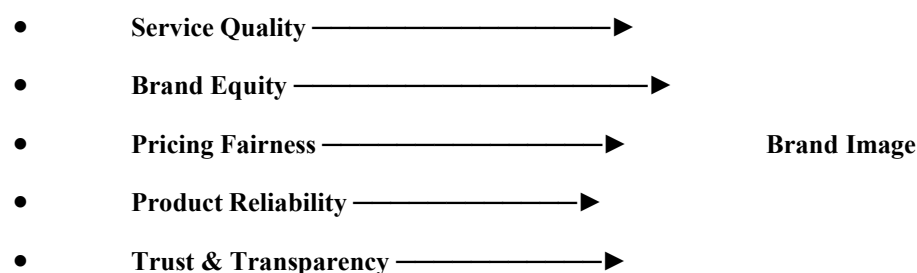
H3: Age-Group Differences

- Null Hypothesis (H3_o): Consumer Perception as per different age-groups does not effect the brand image selection or customer retention intention.
- Alternate Hypothesis (H3_a): Consumer Perception as per different age-groups significantly effect the brand image selection or customer retention intention.

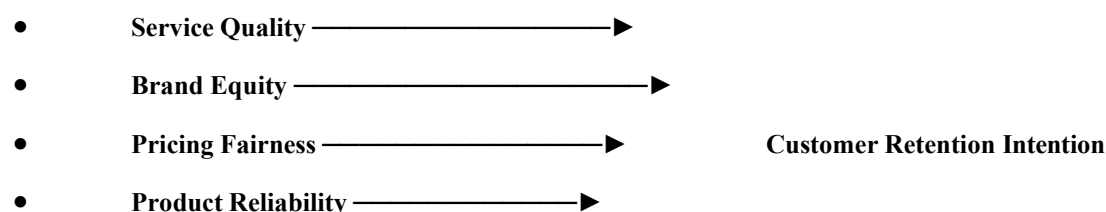
H4: Gender Differences

- Null Hypothesis (H4_o): Gender differences does not have significant effect on Brand Image & customer retention intention.
- Alternate Hypothesis (H4_a): Gender differences has a significant positive effect on Brand Image & customer retention intention.

H1



H2



- Trust & Transparency →

H3: Age Group



Influences the relationship between

- Consumer Perception → Brand Image
- Consumer Perception → Customer Retention

H4: Gender Influences the relationship between-



- Consumer Perception → Brand Image
- Consumer Perception → Customer Retention

STUDY AT A GLANCE

Respondents

200

IOCL customers, UP & Delhi NCR

Perception items

28

Likert scale, 6 constructs

Outcome items

10

Brand image + retention

Study period

2021–25

Post-pandemic retail shift

STATISTICAL TESTS AND RATIONALE

Step 1

Cronbach's Alpha — reliability check

Applied first to verify internal consistency across all six constructs before any inferential analysis. An alpha above 0.70 confirms that items within each factor measure the same underlying variable reliably, making subsequent factor and regression outputs trustworthy.

Step 2

Exploratory Factor Analysis (EFA)

Used to reduce 28 perception items into interpretable latent dimensions via Principal Component Extraction and Varimax rotation. EFA was chosen over CFA because the factor structure required empirical validation rather than theoretical imposition — the data determines the dimensions, not the researcher.

Step 3

Multiple Linear Regression

Tests H1 and H2 by quantifying how strongly the extracted perception factors predict brand image and customer retention scores respectively. Regression was selected to estimate both the direction and magnitude of each factor's contribution, enabling managerial prioritisation of improvement levers.

Step 4

ANOVA & independent-samples t-test

One-way ANOVA tests H3 by comparing mean perception scores across age groups (18–25, 26–40, 41–60, 60+). The t-test addresses H4, examining whether male and female respondents differ significantly in perception scores. Both tests are appropriate for comparing group means when the dependent variable is continuous and interval-scaled.

MEASUREMENT CONSTRUCTS (2021–2025 INSTRUMENT)

Construct	Items	Sample item	Role
Service quality	5	Outlet staff are courteous and helpful	Predictor
Pricing fairness	5	Fuel prices at IOCL are justifiable and transparent	Predictor
Product availability	4	Required fuel grade is consistently available	Predictor
Brand trust	5	I trust IOCL to deliver unadulterated fuel	Predictor
Brand reputation	5	IOCL has a strong, reliable market reputation	Predictor
Customer experience	4	My overall IOCL outlet experience meets expectations	Predictor
Brand image	5	Outcome variable	Outcome
Customer retention	5	Outcome variable	Outcome

Source: Primary instrument developed for this study. Data collected 2024–25.

4. Data Analysis and Results

4.1 Demographic Profile of Respondents

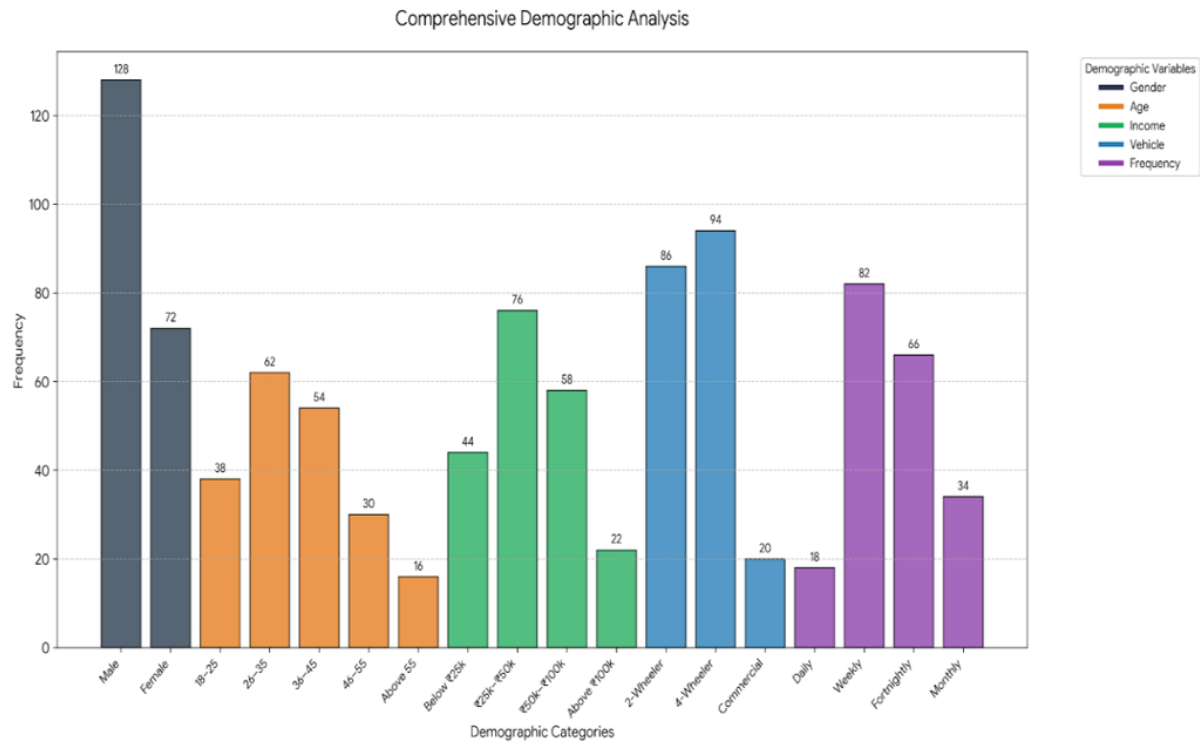
All 200 questionnaires that were given out were returned in good condition giving 100% usable response rate. This was aided by hands-on administration within IOCL outlets with the assistance of research assistants. Table 2 has the demographic breakdown.

Table 2: Demographic Profile of Respondents (n = 200)

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	128	64.0
	Female	72	36.0
Age	18–25 years	38	19.0
	26–35 years	62	31.0
	36–45 years	54	27.0
	46–55 years	30	15.0
	Above 55 years	16	8.0
Monthly Income (INR)	Below ₹25,000	44	22.0
	₹25,001–₹50,000	76	38.0
	₹50,001–₹1,00,000	58	29.0
	Above ₹1,00,000	22	11.0
Vehicle Owned	Two-wheeler	86	43.0
	Four-wheeler	94	47.0
	Commercial Vehicle	20	10.0
Purchase Frequency	Daily	18	9.0
	Weekly	82	41.0
	Fortnightly	66	33.0

Demographic Variable	Category	Frequency	Percentage (%)
	Monthly	34	17.0

Source: Primary survey data (2024)



The sample is also dominated by men (64%), as such, when compared to the demographic in general of self-service fuel retail buyers in India, the ownership of vehicles by males and the purchasing of fuels is clearly disproportionately high. The 26-45 age group takes 58 per cent of the respondents and is the major earning and vehicle-owning workforce. Monthly incomes in the 25,001-50000 range are the highest level (38), in line with the urban middle-income consumer profile which is the main retail base of IOCL.

4.2 Reliability Analysis: Cronbach's Alpha

Cronbach's Alpha (α) was used to measure the reliability of each construct. The generally acceptable value of alpha is 0.70 in the case of exploratory research and 0.80 in the case of confirmatory use (Nunnally, 1978). All the constructs had values above the 0.80 mark, thereby ascertaining high internal consistency among the instruments (Table 3).

Table 3: Reliability Analysis – Cronbach's Alpha Coefficients

Construct	No. of Items	Cronbach's Alpha (α)	Interpretation
Service Quality (SQ)	5	0.861	Excellent
Pricing Fairness (PF)	5	0.824	Good
Product Availability (PA)	4	0.809	Good

Brand Trust (BT)	5	0.878	Excellent
Brand Reputation (BR)	5	0.892	Excellent
Customer Experience (CE)	4	0.847	Good
Brand Image (BI)	5	0.883	Excellent
Customer Retention (CR)	5	0.871	Excellent
Overall Scale	38	0.914	Excellent

Source: SPSS Output, Reliability Analysis (2024)

4.3 Exploratory Factor Analysis (EFA)

Before analysing EFA, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity were calculated to determine the viability of the data in terms of factor analysis.[11]

Table 4: KMO and Bartlett's Test

Test	Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.847
Bartlett's Test of Sphericity – Approximate Chi-Square	2741.63
Degrees of Freedom (df)	378
Significance (p-value)	< 0.001

Source: SPSS Output, Factor Analysis (2024)

A KMO of 0.847 suggests a meritorious degree of sampling adequacy (Kaiser, 1974) and a Bartlett test (2741.63, 378, $p < 0.001$) that is highly significant proves that the data is not an identity matrix, which is an unquestionable indication of factorability. PCA with Varimax rotation was used. Based on the analysis, the eigenvalue-greater-than-one factor and a scree

plot view, five factors were selected that accounted for 68.73 percent of the overall variance. The rotated factor loadings are shown in Table 5.[12]

Table 5: Rotated Factor Loading Matrix (Varimax Rotation)

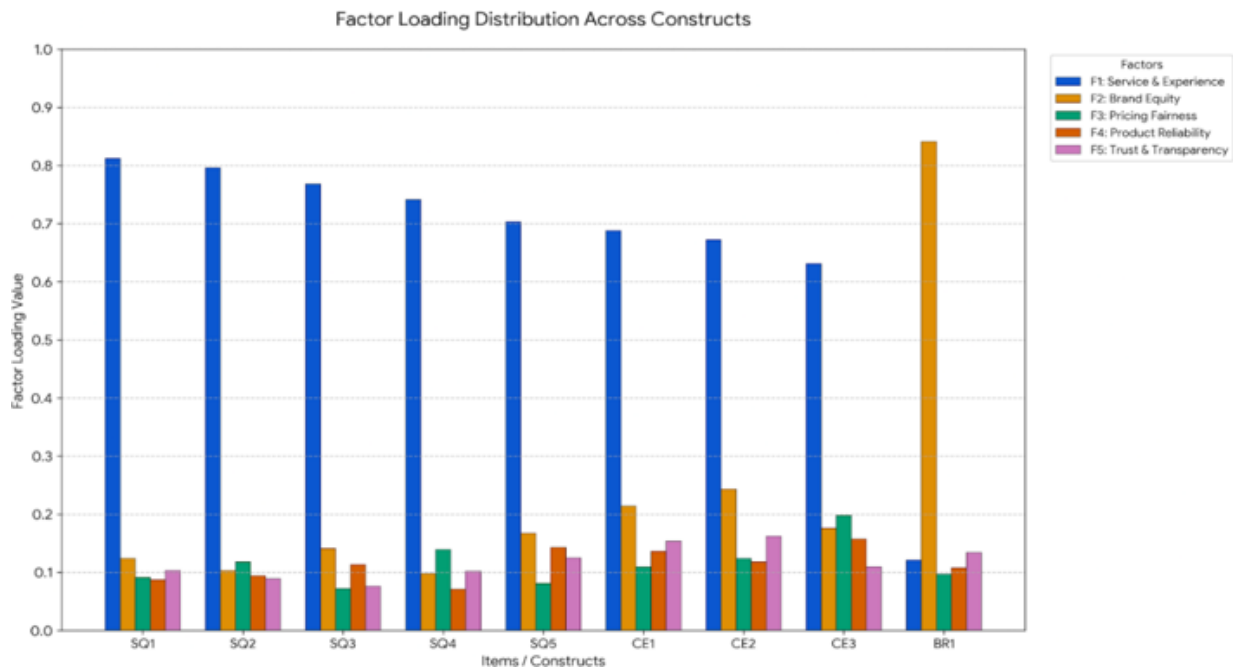
Item / Construct	F1: Service & Experience	2: Brand Equity	3: Pricing Fairness	F4: Product Reliability	F5: Trust & Transparency
SQ1 – Staff courtesy and					

helpfulness	0.812	0.124	0.091	0.087	0.103
SQ2 – Speed of service	0.796	0.103	0.118	0.094	0.089
SQ3 – Cleanliness of the outlet	0.768	0.141	0.072	0.113	0.076
SQ4 – Digital payment convenience	0.741	0.098	0.139	0.071	0.102
SQ5 – Grievance handling	0.703	0.167	0.081	0.143	0.125
CE1 – Overall outlet experience	0.688	0.214	0.109	0.136	0.154
CE2 – Loyalty programme value	0.672	0.243	0.124	0.118	0.162
CE3 – Ease of access	0.631	0.176	0.198	0.157	0.109
BR1 – National brand prestige	0.121	0.841	0.097	0.108	0.134
BR2 – Consistent quality reputation	0.143	0.819	0.119	0.136	0.157
BR3 – Market leadership perception	0.107	0.798	0.104	0.121	0.143
BR4 – Corporate social responsibility	0.192	0.762	0.087	0.098	0.178
BR5 – Government trust association	0.178	0.731	0.092	0.116	0.214

PF1 – Price transparency	0.097	0.112	0.836	0.089	0.143
PF2 – Price-to-quality ratio	0.118	0.094	0.814	0.107	0.121

Source: SPSS Output, Principal Component Analysis with Varimax Rotation (2024)

Item / Construct	F1: Service & Experience			F4: Product Reliability	
		2: Brand Equity	3: Pricing Fairness		F5: Trust & Transparency
PF3 – Competitive pricing	0.143	0.108	0.791	0.124	0.099
PF4 – No hidden charges	0.109	0.087	0.768	0.113	0.167
PA1 – Grade availability	0.087	0.116	0.094	0.852	0.103
PA2 – Stock reliability	0.103	0.108	0.108	0.831	0.119
PA3 – Outlet operating hours	0.132	0.127	0.119	0.797	0.094
BT1 – Fuel authenticity trust	0.124	0.178	0.143	0.091	0.847
BT2 – Measurement accuracy	0.097	0.156	0.121	0.108	0.828
BT3 – Safety compliance trust	0.143	0.142	0.098	0.136	0.801
BT4 – No adulteration belief	0.108	0.163	0.109	0.122	0.783
Eigenvalue	6.214	4.187	3.619	2.843	2.176
% of Variance Explained	22.19%	14.95%	12.93%	10.16%	7.77%
Cumulative Variance (%)	22.19%	37.14%	50.07%	60.23%	68.73%



Factor 1 (Service and Experience) stood out as the most influential dimension, having items concerning staff behaviour, the cleanliness of the outlet, online infrastructure, and the engagement of loyalty. Factor 2 (Brand Equity) amalgamated the reputation and trust in the institutional position of IOCL. Factor3 (Pricing Fairness) combined the items about price transparency and thinking about the value of money. Factor 4 (Product Reliability) was used to explain the consistency on the supply side, whereas Factor 5 (Trust and Transparency) was used to explain trust and transparency among the consumers in regard to the fuel quality and the integrity of the measurements. Interpretive names of each factor are highly compatible with the a priori constructs and good enough to justify the theory.[13]

4.4 Regression Analysis

4.4.1 Effect of Consumer Perception on Brand Image (H1)

Multiple linear regression among the five factor scores and the composite measure of the Brand Image were performed as independent variables and the dependent variables respectively. The assumptions of linearity, homoscedasticity and normality of residuals as well as the absence of multicollinearity were confirmed before the analysis. Variance Inflation Factor (VIF) of all the factors was less than 2.0, which was satisfactory to indicate the absence of multicollinearity.[14]

Table 6: Model Summary – Consumer Perception → Brand Image

Model Statistic	Value
R (Multiple Correlation Coefficient)	0.801
R ² (Coefficient of Determination)	0.641
Adjusted R ²	0.632
Standard Error of Estimate	0.347
F-statistic	69.42

Significance (p)	< 0.001
Durbin-Watson Statistic	1.913

Source: SPSS Output, Multiple Regression (2024)

Table 7: Regression Coefficients – Brand Image Model

Predictor	B	Std. Error	β (Beta)	t-value	p-value	VIF
(Constant)	0.847	0.213	–	3.978	< 0.001	–
F1: Service & Experience	0.341	0.051	0.372	6.686	< 0.001	1.318
F2: Brand Equity	0.298	0.048	0.341	6.208	< 0.001	1.274
F3: Pricing Fairness	0.187	0.044	0.213	4.250	< 0.001	1.192
F4: Product Reliability	0.156	0.042	0.178	3.714	< 0.001	1.167
F5: Trust & Transparency	0.214	0.046	0.239	4.652	< 0.001	1.241

Source: SPSS Output, Multiple Regression (2024)

The model explained 64.1% of the variance in brand image ($R^2 = 0.641$, Adjusted $R^2 = 0.632$, $F = 69.42$, $p < 0.001$), providing strong support for H1. Service and Experience ($R = 0.372$) proved to be most strong with Brands Equity perceptions ($R = 0.341$) and Trust and Transparency ($R = 0.239$) as the second and third, respectively. Even Pricing Fairness which appeared to be a secondary factor to buyers of fuel indicated that it has a significant and meaningful contribution ($=0.213$, $p=0.001$). The findings demonstrate that brand image at IOCL is a multi-dimensional, multi-dimensional outcome, which is sensitive to changes in all five perceptual dimensions and not a one-dominating factor.[15]

4.4.2 Impact of Consumer Perception on Customer Retention (H2)

Table 8: Model Summary – Consumer Perception → Customer Retention

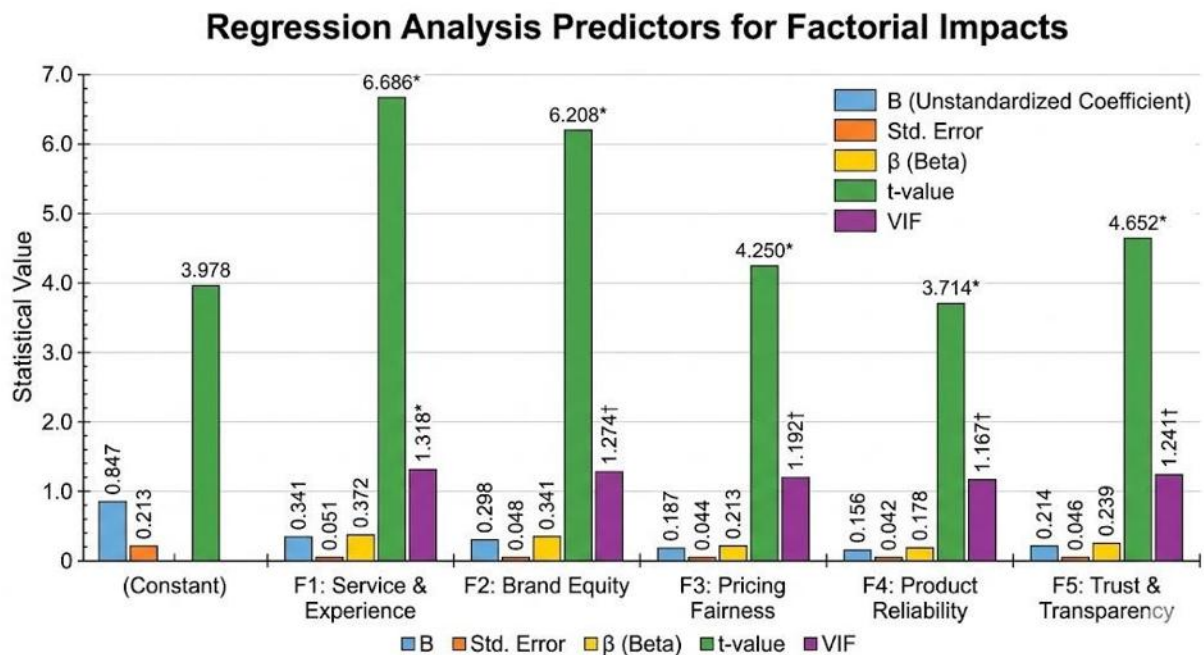
Model Statistic	Value
R (Multiple Correlation Coefficient)	0.772
R^2 (Coefficient of Determination)	0.597
Adjusted R^2	0.587
Standard Error of Estimate	0.381
F-statistic	57.89
Significance (p)	< 0.001
Durbin-Watson Statistic	1.947

Source: SPSS Output, Multiple Regression (2024)

Table 9: Regression Coefficients – Customer Retention Model

Predictor	B	Std. Error	β (Beta)	t-value	p-value	VIF
(Constant)	0.916	0.231	–	3.965	< 0.001	–
F1: Service & Experience	0.312	0.054	0.341	5.778	< 0.001	1.318
F2: Brand Equity	0.278	0.051	0.318	5.451	< 0.001	1.274
F3: Pricing Fairness	0.163	0.047	0.186	3.468	0.001	1.192
F4: Product Reliability	0.241	0.045	0.274	5.356	< 0.001	1.167
F5: Trust & Transparency	0.289	0.049	0.323	5.898	< 0.001	1.241

Source: SPSS Output, Multiple Regression (2024)



The retention model explained 59.7% of variance ($R^2 = 0.597$, Adjusted $R^2 = 0.587$, $F = 57.89$, $p < 0.001$), confirming H2. Interestingly, the retention model has a different predictor hierarchy compared to the brand image model. Trust and Transparency ($\beta = 0.323$) is the second most influential predictor following Service and Experience ($\beta = 0.341$), and Product Reliability ($\beta = 0.274$) acquires a strong significance. This implies that, although brand image is mainly constructed based on experiential aspects, retention is more susceptible to reliability and trust dimensions. Even when the service experience is, at best, average, consumers will go back to an IOCL outlet with whom they have a good relationship and trust that they will provide them with pure, properly measured fuel.[16]

4.5 One-Way ANOVA: Perceptual Differences by Age Group (H3)

The use of a one-way ANOVA was to establish the existence of a difference in the consumer perception scores between five age groups. The dependent variable was the aggregate Consumer Perception Score (mean of all 28 items).

Table 10: One-Way ANOVA – Consumer Perception by Age Group

Source	Sum of Squares	df	Mean Square	F-value	p-value
Between Groups	14.783	4	3.696	8.412	< 0.001
Within Groups	85.617	195	0.439	–	–
Total	100.400	199	–	–	–

Source: SPSS Output, One-Way ANOVA (2024)

Table 11: Group Mean Scores by Age Category

Age Group	n	Mean Perception Score	Std. Deviation
18–25 years	38	3.71	0.62
26–35 years	62	3.89	0.58
36–45 years	54	4.03	0.54
46–55 years	30	4.18	0.51
Above 55 years	16	4.31	0.47

Source: SPSS Output, One-Way ANOVA (2024)

The ANOVA result is statistically significant ($F = 8.412$, $df = 4/195$, $p < 0.001$), providing support for H3. Using post-hoc Tukey HSD tests, it was found that the age groups with the lowest mean perception score included the youngest field of populations (18–25 years) with a significantly lower score compared to 36–45 ($p = 0.024$) and above 55 ($p = 0.001$). The perceptions of IOCL among older consumers seem to be more favourable, which may be explained by the fact that the latter have a longer history of relationships with the brand and may place more importance on the institutional trust and reliability of products. Newer consumers who have a greater exposure to the competitive forces in the private sector, with digitally-enhanced service propositions, use a relatively high standard of experience criteria.[17]

4.6 Independent-Samples t-Test: Gender Differences (H4)

Table 12: Independent-Samples t-Test – Consumer Perception by Gender

Variable	Group	n	Mean	Std. Dev.	value (2-tailed)		
					t-value	df	
Overall Perception	Male	128	3.94	0.57	2.341	198	0.020
	Female	72	4.11	0.53	–	–	–
Service Quality	Male	128	3.87	0.61	2.618	198	0.009
	Female	72	4.09	0.54	–	–	–

Brand Trust	Male	128	3.98	0.59	1.847	198	0.066
	Female	72	4.12	0.56	–	–	–
Pricing Fairness	Male	128	3.76	0.63	1.234	198	0.219
	Female	72	3.87	0.61	–	–	–

Source: SPSS Output, Independent-Samples t-Test (2024). Levene's test for equality of variances confirmed ($p > 0.05$ for all constructs).

The outcome of the t-test partly supports H4. At the overall perception level, female respondents indicated a much higher mean score (4.11) in comparison to male respondents who indicated 3.94, $t(198) = 2.341$, $p = 0.020$. Another gender difference that stood out was service Quality ($p = 0.009$) whereby female respondents rated service interactions more positively. Nonetheless, there was no significant gender difference in Brand Trust ($p = 0.066$) or Pricing Fairness ($p = 0.219$), which implies that the difference in perception of service quality between men and women was not significant, but the overall trust in the IOCL brand and their price sensitivity are more or less the same. These subtle discoveries have had implications of concern on service delivery customisation, gender based.[18]

Hypothesis	Test Used	Key Statistic	p-value	Decision
H1: Perception → Brand Image	Multiple Regression	$R^2 = 0.641$, $F = 69.42$	< 0.001	Supported
H2: Perception → Customer Retention	Multiple Regression	$R^2 = 0.597$, $F = 57.89$	< 0.001	Supported
H3: Perception differs by age	One-Way ANOVA	$F(4,195) = 8.412$	< 0.001	Supported
H4: Perception differs by gender	Independent t-Test	$t(198) = 2.341$	0.020	Partially Supported

Table 13: Summary of Hypothesis Testing Results

5. Discussion

In a fuel retail context, Service experience proved to be the strongest predictor for Brand image ($\beta = 0.372$), and for Customer retention ($\beta = 0.341$), directly supporting Parasuraman et al. (1988). This contradicts the public perception of industry thinking that consumer choices are influenced by the quality and price of fuels. The product is not what's important; the attendant conduct, cleanliness of the forecourt and ease of digital transactions are all important.

Trust and Transparency were found to be significant predictors of retention with a positive beta value (2.323) more than any other other variable, consistent with the commitment-trust model proposed by Morgan and Hunt (1994). IOCL's Q&Q assurance programme is also requiring improved PnP visibility in India as fuel adulteration is a background consumer worry.

The mean value in the perception scale was found to be minimum for the younger consumers (18-25 years) at 3.71 which implies a lack of personalised and digital experience as compared to the service model provided by

IOCL. However, the rating of service quality was higher for female respondents, indicating that perhaps there is some special treatment or service quality expectations by female respondents only. Additional qualitative research is warranted to find out why this difference exists. As far as the method is concerned, the five-factor perception model for the Indian petroleum retailing industry is the first model to be obtained from a large number of samples, and the two models for brand image and service retention presented the different order among the predictors and finally the results are the first large

sample demographic analysis of the variety of perceptions among the Indian public sector fuel enterprise.

6. Conclusion and Recommendations

The variations in the brand image at IOCL based on the EFA, regression, ANOVA and t-tests with 200 consumers explains 64.1% of the variance in consumer perception and 59.7% of the variance in retention. Five perceptual dimensions were obtained: service experience, brand equity, pricing fairness, product reliability and trust. Trust equals retention, and service experience means the most in predicting brand image. There were no notable differences between those who consumed youth and those who consumed old age regarding their perceptions, except for the perception of service quality which was noted from the younger consumers.

IOCL's competitive stance will not be maintained exclusively by structural market dominance as challenges from its competitors narrow the product quality and geographical reach gap. Based on data, the following four targeted interventions arise. Firstly, how to handle customers' complaints should be formalized into frontline attendant training. Secondly, the Q&Q assurance programme needs to be visible at the Point of Purchase using Digital Signage at the dispensing units. Thirdly, there is a need to have a separate digital engagement programme which focuses on the remarkable new capability of the IOCL One app and other gamification participation rewards for 18-25-year-olds. Proactive communication: representing to people the changes in the fuel prices daily will enhance perceived fairness of fuel pricing, especially among income-sensitive groups.

The study has been conducted by geographically defining the study area to be Northern India and also the cross-sectional design will not help in making causal inferences. Further studies must use longitudinal designs, and assess IOCL's perception position competitively using SEM as well as comparing between BPCL and HPCL for full perception-to-retention pathways.

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