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CSR as a Strategic Tool for Brand Development: A Study of Bharat Petroleum Corporation Limited

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Abstract: Corporate Social Responsibility (CSR) has gained prominence as a strategic tool for fostering inclusive development while enhancing corporate brand value. The present study examines the impact of CSR initiatives undertaken by Bharat Petroleum Corporation Limited (BPCL) on brand perception in selected districts of Jharkhand. A descriptive and analytical research design with a mixed-method approach was adopted. Primary data were collected from 455 respondents, including BPCL customers, community stakeholders, and direct beneficiaries, using a structured 5-point Likert scale questionnaire. Stratified random sampling ensured representation across key socio-demographic groups. Data analysis was carried out using SPSS (v27) and AMOS, employing reliability analysis, KMO and Bartlett's tests, exploratory and confirmatory factor analysis, correlation, regression, and structural equation modelling. The results demonstrate high reliability and validity of CSR constructs and reveal that CSR initiatives related to environmental protection, healthcare and sanitation, education, rural development, disaster relief, employee volunteering, cultural heritage preservation, and societal welfare significantly influence customer trust, perceived value, and overall brand building. The study concludes that well-structured, community-oriented CSR initiatives not only contribute to socio-economic development in Jharkhand but also strengthen corporate reputation and promote long-term brand loyalty.

Keywords: Corporate Social Responsibility, Brand Building, Customer Trust, Jharkhand

1. Introduction

Corporate Social Responsibility (CSR) has emerged as a vital component of modern business strategy, reflecting the responsibility of corporations toward society, the environment, and stakeholders beyond profit generation. In the contemporary corporate landscape, CSR is no longer limited to philanthropy; rather, it has evolved into a strategic tool that integrates social welfare with long-term business sustainability and brand development.

- **Concept of CSR:** CSR refers to the ethical obligation of businesses to contribute to economic development while improving the quality of life of employees, local communities, and society at large. It emphasizes accountability, transparency, and sustainable practices.
- **CSR in the Indian Context:** In India, CSR gained institutional importance with the enactment of the Companies Act, 2013, which mandated eligible companies to allocate a portion of their profits toward socially beneficial activities. This legislation positioned India as a global pioneer in mandatory CSR implementation.
- **CSR and Public Sector Enterprises:** Public sector undertakings (PSUs) play a crucial role in national development due to their scale, outreach, and public accountability. Their CSR initiatives often align with national priorities such as education, healthcare, environmental protection, and inclusive growth.
- **CSR and Brand Building:** Effective CSR initiatives enhance corporate reputation, build public trust, and strengthen brand equity. By addressing real community needs, companies can create emotional connections with stakeholders, leading to long-term brand loyalty.
- **Regional Relevance – Jharkhand:** Jharkhand, being rich in natural resources yet socio-economically underdeveloped, presents a significant scope for impactful CSR interventions. Issues related to education, health, livelihood, and infrastructure demand sustained corporate involvement.
- **Role of Bharat Petroleum Corporation Limited (BPCL):** BPCL has undertaken various CSR initiatives in Jharkhand focusing on community development, environmental sustainability, education, healthcare, and livelihood generation, thereby contributing to both social welfare and brand visibility.
- **Purpose of the Study:** This study examines the effectiveness of CSR initiatives of BPCL in Jharkhand and evaluates how these initiatives contribute to brand building, stakeholder trust, and sustainable development.

2. Related Reviews and Findings

Author(s) & Year	Context / Sector	Methodology	Key Focus	Findings
Dandotiya et al. (2025)	Steel industry, India	Case study	CSR during COVID-19	CSR initiatives by Tata Steel effectively supported healthcare, vaccination, and stakeholder welfare during crisis, reinforcing corporate role in societal resilience.
Hu et al. (2025)	Consumer behavior	Experimental studies	CSR type & communication	CSR activities significantly influenced consumer perceptions and moral elevation, with culture and scepticism moderating outcomes.
Ramadhan & Hermawan (2024)	Mining sector, Indonesia	Qualitative case study	Environmental CSR	Community-based CSR improved waste management awareness and participation, though sustainability challenges remained.
Akporiaye (2023)	Oil-producing countries	Cross-national analysis	CSR & production	CSR did not strongly increase oil production; rather, higher production levels prompted greater CSR engagement.
Ahn et al. (2020)	Hospitality sector	PLS-SEM	CSR & brand loyalty	Environmental and social CSR positively influenced cognitive, affective, and conative brand loyalty.
Lu et al. (2020)	Luxury goods	Survey & SEM	CSR & branding	CSR initiatives significantly enhanced brand image and customer loyalty, strengthening competitive positioning.
Pratihari et al. (2018)	Banking sector, India	Survey & SEM	CSR, branding, loyalty	CSR improved brand loyalty indirectly through corporate branding, confirming branding as a key mediator.
Kim et al. (2018)	CSR communication	Experimental design	Transparency & trust	High transparency strengthened consumer trust even when CSR cause–company fit was weak.
Księżak (2016)	General CSR	Narrative review	CSR benefits & limits	CSR created social and business value but required strategic planning to avoid symbolic implementation.
Arora (2016)	Corporate & education sector	Perception analysis	CSR authenticity	CSR was increasingly linked to branding, raising concerns over genuine social commitment.
Jaysawal et al. (2015)	Indian corporate sector	Conceptual review	CSR & sustainability	CSR enhanced reputation and sustainability when aligned with organisational strategy.
Goyal et al. (2015)	Rural India	Secondary & field study	CSR & rural development	CSR positively contributed to rural socio-economic development while benefiting corporate performance.
Mallik et al. (2015)	FMCG multinationals	Panel data analysis	CSR & brand value	Strategically aligned CSR improved brand value and long-term corporate performance.

3. Research Methodology

The present study adopts a descriptive and analytical research design to examine the impact of Corporate Social Responsibility (CSR) initiatives of Bharat Petroleum Corporation Limited (BPCL) on brand perception in Jharkhand. A mixed-method approach was employed, combining quantitative and qualitative techniques to ensure comprehensive analysis. Primary data were collected through a structured questionnaire using a 5-point Likert scale, administered to 455 respondents across seven selected districts of Jharkhand. Respondents included BPCL retail customers, local community stakeholders, and direct beneficiaries of CSR programs. A stratified random sampling method was used to ensure representation across gender, age, caste, education, and income groups. Secondary data were sourced from academic journals, CSR reports, government publications, and BPCL documents. For data analysis, SPSS (v27) and AMOS were used. Reliability of scales was tested using Cronbach's alpha (all values ≥ 0.69). KMO and Bartlett's tests confirmed sampling adequacy and suitability for factor analysis. Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were applied to identify and validate CSR dimensions. Further, correlation, multiple regression, and Structural Equation Modelling (SEM) were used to assess relationships between CSR initiatives, customer trust, perceived value, and brand building. Ethical considerations such as informed consent, anonymity, and confidentiality were strictly followed. Overall, the methodology ensures statistical rigor and reliable assessment of CSR effectiveness in brand building.

4. Data Analysis and Result

Chapter 4 analyses the empirical data to assess the impact of BPCL's CSR initiatives on brand perception in selected areas of Jharkhand. Based on the methodology outlined in Chapter 3, it begins with data screening to ensure reliability and accuracy. The chapter presents descriptive statistics on respondent demographics, CSR awareness, and initial attitudes. Reliability and validity of the instruments are examined using Cronbach's alpha, KMO, and Bartlett's tests, followed by factor analysis. Correlation, regression, and structural equation modelling are used to evaluate relationships between CSR activities and brand-building outcomes. The findings provide a robust empirical base for discussion and recommendations in subsequent chapters.

4.1 Reliability Measure of Response

Construct/Scale	No. of Items	Cronbach's Alpha-Values
Environmental Protection	7	0.859
Healthcare, Hygiene & Sanitation	9	0.732
Employee Volunteering Program	5	0.699
Disaster Relief	5	0.772
Promotion of Education	7	0.823
Rural Development & Environment Sustainability	10	0.826
Sport & Related Endeavours	6	0.845
Preservation of Cultural Heritage	8	0.841
Societal Aspect Variables	13	0.823

4.2 KMO and Bartlett's Test of Response

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.906
Bartlett's Test (BT Test) of Sphericity	Approx. Values Chi-Square	3640.445
	df	153
	Sig.	.000

4.3 Exploratory Analysis of Each factor

4.3.1 Demographic Exploration of Respondents

Chapter 4 presents a concise analysis of primary survey data (n = 455) to assess the impact of CSR initiatives of Bharat Petroleum Corporation Limited (BPCL) on brand perception in Jharkhand. Descriptive statistics show a well-balanced sample across gender, age, marital status, caste, education, and income groups, ensuring inclusivity and representativeness. The data indicate that a large proportion of respondents belong to economically vulnerable sections, highlighting the relevance of CSR interventions. Reliability and validity tests confirm the robustness of measurement scales. Overall, the findings demonstrate that BPCL's CSR activities reach diverse social groups and significantly influence trust, satisfaction, and brand perception, providing a strong empirical base for further discussion and conclusions.

4.4 Construct of Components

4.4.1 Extraction of Components from EP

Table 1: Extraction of Components from EP

	ENVIRONMENTAL PROTECTION
1.	Eco-Restoration Commitment
2.	Commitment to energy efficiency
3.	Proactive Pollution Control
4.	Sustainable production practices
5.	Encourages clean energy transition
6.	Ensures strong safety compliance.
7.	Supports community environmental initiatives.

Environmental Protection as a CSR dimension encompasses seven key components. First, expanding vegetation through plantation drives enhances green cover and mitigates pollution locally. Second, energy conservation initiatives minimize ecological footprints by optimizing resource use. Third, stringent pollution control measures target emissions, effluent treatment, and noise management. Fourth, adoption of eco-friendly production processes and sustainable packaging reduces environmental hazards. Fifth, investment in renewable energy sources drives long-term sustainability. Sixth, rigorous safety protocols protect workers and communities during operations and waste disposal. Finally, community-based agrarian and social programs foster environmental stewardship, ensuring robust environmental sustainability. These components collectively reflect a comprehensive approach.

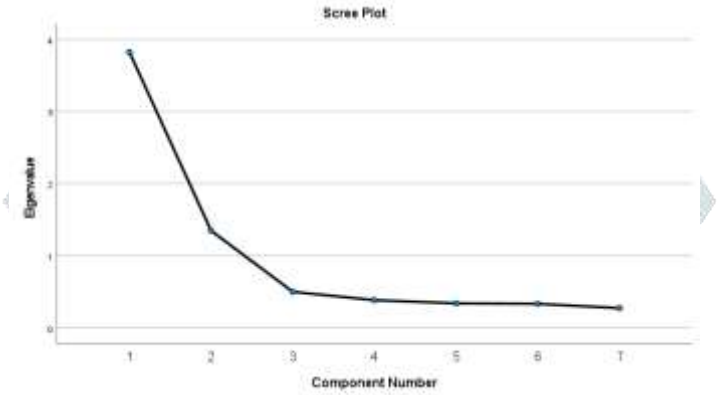
4.4.2 Apply Factor Analysis

Table 2: Factor Analysis

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.845
Bartlett's Test of Sphericity	Approx. Chi-Square	1575.971
	df	21
	Sig.	.000

The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy is 0.845, indicating "meritorious" suitability for factor analysis (Kaiser, 1974). This value suggests that the partial correlations among variables are sufficiently small relative to the total correlations, ensuring reliable factor extraction. Bartlett's Test of Sphericity is highly significant ($\chi^2(21) = 1575.971$, $p < 0.001$), confirming that the correlation matrix is not an identity matrix and that substantial inter-item correlations exist. Together, these diagnostics demonstrate that the dataset meets the statistical prerequisites for exploratory factor analysis, justifying the extraction of underlying latent factors to represent the structure of the measured construct.

Fig.1: eigenvalues for seven extracted components



Source: Created in SPSS -27 (Based on primary data Source)

The scree plot displays eigenvalues for seven extracted components, with the first component at approximately 3.8 and the second around 1.35. Thereafter, eigenvalues sharply drop to below unity, with components three through seven ranging from about 0.5 down to 0.3. The distinct "elbow" between the second and third factors indicates that only the first two components account for substantial variance. According to the Kaiser criterion and Cattell's scree test, retaining two factors is advisable. Subsequent factors contribute minimally, as evidenced by the plateau of the curve, suggesting that a two-factor solution effectively summarizes the data structure. This solution aids interpretation.

4.4.3 Suitability of Factor Analysis

- The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy is 0.845, which is above the recommended threshold of 0.6, indicating that the sample is suitable for factor analysis.
- Bartlett's Test of Sphericity is significant ($p < 0.001$), meaning that the correlation matrix is not an identity matrix and that factor analysis is appropriate.

Table 3: Rotated Component Matrix

Rotated Component Matrix[a]		
	Component	
	1	2
Eco-Restoration Commitment		.882
Commitment to energy efficiency		.881
Proactive Pollution Control	.842	
Sustainable production practices	.846	
Promotion of renewable sources of energy	.813	
Ensures strong safety compliance.	.815	
Supports community environmental initiatives.	.847	
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.		
a. Rotation converged in 3 iterations.		

Based on the **Rotated Component Matrix**, the items loaded significantly on two distinct components:

Component 1: Pollution Control & Sustainable Practices

- Plantations to increase green coverage and reduce environmental pollution (.882)
- Commitment to energy efficiency (.881)
- Prevention of pollution, including emissions to air and water, effluent discharges, and noise (.842)
- Adoption of environmentally sound production processes and packaging techniques (.846)
- Encourages clean energy transition (.813)

Interpretation: This factor represents actions taken to minimize pollution, enhance energy conservation, and use environmentally friendly production methods. It focuses on sustainability efforts that directly reduce environmental harm.

Component 2: Safety & Social Responsibility

- Implementation of safety measures to protect employees and the public on-site and during waste disposal (.815)
- Active participation in social and farming initiatives for environmental sustainability (.847)

Interpretation: This factor captures safety measures and social responsibility initiatives. It emphasizes the well-being of employees and the community through responsible environmental practices.

The analysis suggests that **Environmental Protection (EP) efforts** in this context can be classified into two major dimensions:

i) Pollution Control & Sustainable Practices (focused on reducing environmental impact and adopting green technologies)- EP1

ii) Safety & Social Responsibility (focused on ensuring public and employee safety while promoting sustainability initiatives) – EP2

Table 4: Healthcare, Hygiene & Sanitation

	HEALTHCARE, HYGIENE & SANITATION
1.	Improves community healthcare access.
2.	Provides essential medical support.
3.	Enhances emergency medical reach
4.	Assists economically weaker patients.
5.	Promotes reproductive health awareness.
6.	Strengthens preventive healthcare measures.
7.	Supports overall health welfare.
8.	Promotes public hygiene awareness.
9.	Ensures safe water access.

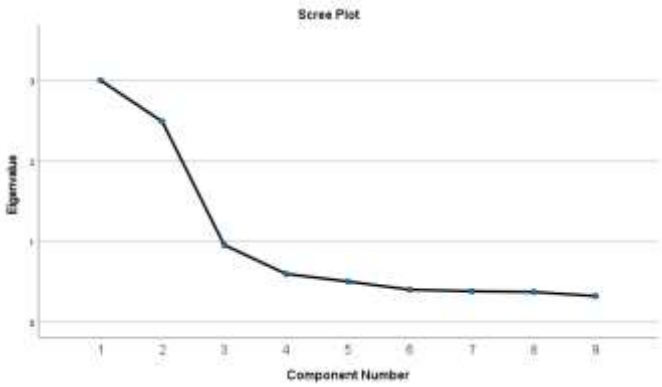
Healthcare, Hygiene & Sanitation as a CSR dimension comprises core initiatives designed to enhance community well-being. First, establishing, and operating polyclinics and hospitals expands healthcare access. Complementary services include free medical assistance and deployment of mobile medical vans and ambulances to reach underserved areas. Financial support programs alleviate treatment costs for poor patients, while family planning services promote reproductive health. Targeted disease prevention and treatment efforts address communicable diseases such as malaria, tuberculosis, and HIV/AIDS. Broad health-related assistance further supports vulnerable populations. Simultaneously, hygiene and sanitation programs are implemented alongside ensuring universal access to clean drinking water and hygienic facilities.

Table 5: Healthcare, Hygiene & Sanitation - KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.773
Bartlett's Test of Sphericity	Approx. Chi-Square	1483.403
	df	36
	Sig.	.000

The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy for Healthcare, Hygiene & Sanitation survey items is 0.773, indicating a "middling" to "meritorious" level of factorability (Kaiser, 1974). This value suggests that correlations between variables are sufficiently large relative to partial correlations, warranting reliable factor extraction. Bartlett's Test of Sphericity yielded χ^2 (36) =1483.403, $p<0.001$, demonstrating that the correlation matrix significantly differs from an identity matrix and that inter-item correlations are strong enough to statistically justify factor analysis. Together, these diagnostics confirm that the dataset satisfies key prerequisites for exploratory factor analysis, enabling a robust and meaningful extraction of latent factors underlying the construct.

Fig.2: Healthcare, Hygiene & Sanitation survey



Source: Created in SPSS -27 (Based on primary data Source)

Suitability of Factor Analysis

Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy: **0.773**

Since KMO is greater than **0.6**, the data is suitable for factor analysis.

Bartlett's Test of Sphericity

Chi-Square = 1483.403, **df = 36**, **Sig. = 0.000**

A significant Bartlett's test ($p < 0.001$) confirms that the correlation matrix is not an identity matrix, meaning factor analysis is appropriate.

Table 6: Healthcare, Hygiene & Sanitation-Rotated Component Matrix-

Rotated Component Matrix[a]		
	Component	
	1	2
Improves community healthcare access.	.698	
Provides essential medical support.	.717	
Mobile medical vans and ambulances is provided		.788
Financial support to poor patients is provided		.819
Promotes reproductive health awareness.		.771
Strengthens preventive healthcare measures.		.807
Supports overall health welfare.	.783	
Promotes public hygiene awareness.	.817	
Ensures safe water access.	.803	
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.		
a. Rotation converged in 3 iterations.		

Component 1: Healthcare Services & Assistance

Establishing and operating polyclinics and hospitals (.698)

Provides essential medical support. (.717)

Supports overall health welfare. (.783)

Interpretation: This factor represents institutional healthcare services, focusing on accessibility to hospitals, free medical assistance, and general health-related aid.

Component 2: Mobile, Financial & Public Health Support

Mobile medical vans and ambulances (.788)

Financial support to poor patients (.819)

Promotes reproductive health awareness. (.771)

Efforts directed towards preventing and treating communicable diseases (.807)

Promotes public hygiene awareness. (.817)

Ensuring access to clean drinking water and sanitation (.803)

Interpretation: This factor captures community-based health interventions, including mobile healthcare, financial aid, disease prevention, sanitation programs, and access to clean water.

The factor analysis categorizes Healthcare, Hygiene & Sanitation into:

- Healthcare Services & Assistance – Focused on medical facility access, free medical aid, and general health support.
- Mobile, Financial & Public Health Support – Covering mobile healthcare, financial assistance, disease prevention, sanitation, and clean water access.

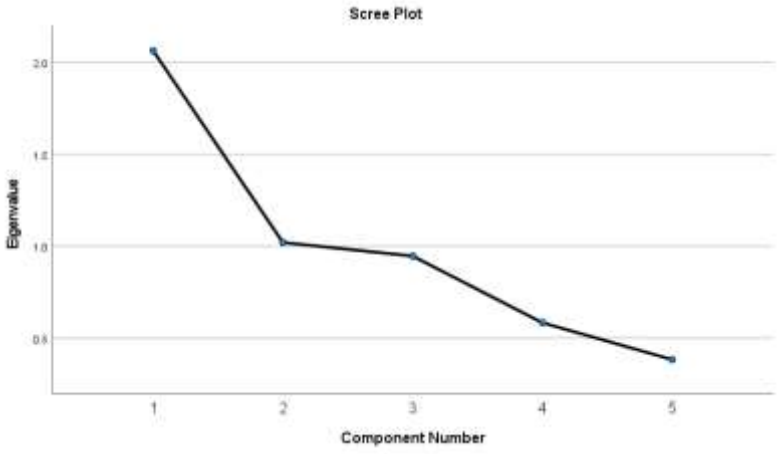
Table 7: Employee Volunteering Program

	EMPLOYEE VOLUNTEERING PROGRAM
1.	Builds structured volunteer engagement.
2	Encourages employee social participation.
3,	Promotes stakeholder economic empowerment.
4.	Enhances employee skill development.
5.	**Encourages employee motivation and performance.**

Table 8: Employee Volunteering Program- KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.666
Bartlett's Test of Sphericity	Approx. Chi-Square	363.346
	df	10
	Sig.	.000

Fig.3: Employee Volunteering Program



Source: Created in SPSS -27 (Based on primary data Source)

Employee Volunteering Program: A structured framework for encouraging employees to engage in volunteer activities, including recruitment, coordination, identifying opportunities, organizing exhibitions, conducting workshops, and recognizing employees.

KMO and Bartlett's Test: Statistical test results indicating the adequacy of the data for factor analysis.

- **KMO Measure (.666):** Suggests a middling level of sampling adequacy, meaning the data is acceptable for factor analysis.
- **Bartlett's Test (Sig. = .000):** Indicates that the correlation matrix is significantly different from an identity matrix, meaning factor analysis is appropriate.

Rotated Component matrix not been formed for one extracted component

Table 9: Employee Volunteering Program-Component Matrix

Component Matrix	
	Component
	1
Builds structured volunteer engagement.	
Encourages employee social participation.	.868

Promotes stakeholder economic empowerment.	.796
Enhances employee skill development.	.758
Encourages employee motivation and performance.	
Extraction Method: Principal Component Analysis.	
a. 1 components extracted.	

Our PCA analysis extracted only one component, meaning all variables load onto a single factor, making rotation unnecessary. The KMO value (.666) indicates moderate sampling adequacy, while Bartlett's Test (Sig. = .000) confirms the suitability of factor analysis. The highest loading is for "Identifying volunteer opportunities" (.868), followed by "Organizing exhibitions" (.796) and "Capacity-building workshops" (.758). However, "Establishing processes" and "Recognition and Rewards" did not load significantly. Since only one factor was extracted, this may has not rotated components matrix.

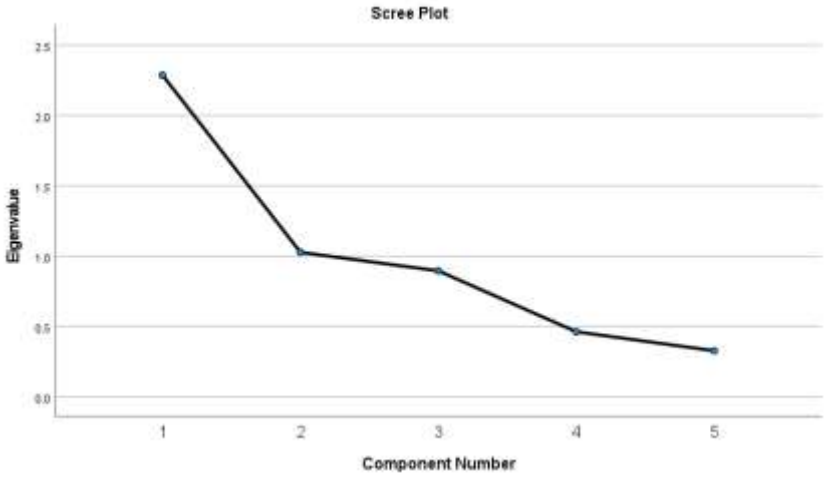
Table 10: Disaster Relief

	DISASTER RELIEF
1.	Demonstrates prompt humanitarian response.
2.	Aids community recovery initiatives.
3.	Provides financial disaster assistance.
4.	Utilizes expertise for relief operations.
5.	Fosters resilient community development.

Table 11: Disaster Relief - KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.724
Bartlett's Test of Sphericity	Approx. Chi-Square	517.177
	df	10
	Sig.	.000

Fig.4: Disaster Relief



Source: Created in SPSS -27 (Based on primary data Source)

Interpretation of Results

KMO Measure (.724)

- This suggests **good sampling adequacy**, indicating that our variables share common variance and are suitable for factor analysis.

Bartlett's Test of Sphericity (Sig. = .000, Chi-Square = 517.177, df = 10)

- The significance value of **.000** means the correlation matrix is significantly different from an identity matrix, confirming that factor analysis is appropriate..

Table 12: Disaster Relief- Component Matrix

Component Matrix[a]	
	Component
	1
Demonstrates prompt humanitarian response.	
Aids community recovery initiatives.	.855
Provides financial disaster assistance.	.813
Utilizes expertise for relief operations.	.875
Fosters resilient community development.	.363
Extraction Method: Principal Component Analysis.	
a. 1 components extracted.	

Our PCA extracted **one component**, meaning all variables load onto a single factor, making rotation unnecessary. The **strongest loadings** are for "Deploy technical expertise" (.875), "Support post-disaster rehabilitation" (.855), and "Allocate funds" (.813), indicating their strong contribution. However, "Rebuilding affected communities" (.363) shows weak loading, and "Extending relief measures" has no reported value. This suggests that the extracted component primarily reflects **immediate disaster response and resource allocation** rather than long-term recovery.

Table 13: Promotion of Education

	PROMOTION OF EDUCATION
1.	Promotes equal learning opportunities.
2	Encourages healthy learning practices.
3.	Advances women's educational empowerment.
4.	Strengthens vocational education infrastructure.
5.	Rewards academic excellence.
6.	Enhances students' career readiness.
7.	Creates youth employment opportunities.

Table 14: Promotion of Education - KMO and Bartlett's Test

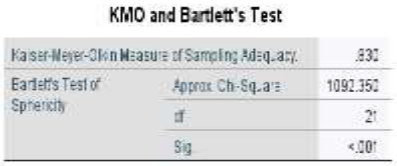
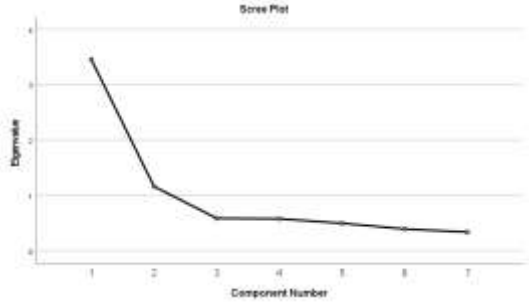


Fig.5: Promotion of Education



Source: Created in SPSS -27 (Based on primary data Source)

Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy = 0.830

- This indicates **high sampling adequacy**, suggesting that the data is suitable for factor analysis.
- A KMO value above **0.8** is considered **meritorious**, meaning that the variables share sufficient common variance for meaningful factor extraction.

Bartlett's Test of Sphericity (Chi-Square = 1092.350, df = 21, Sig. < .001)

- The **significant p-value (< .001)** confirms that the correlation matrix is not an identity matrix.
- This means there are **adequate relationships between variables**, making factor analysis appropriate.

Table 15: Promotion of Education- Component Matrix

Component Matrix[a]	
	Component
	1
Promotes equal learning opportunities.	.763
Encourages healthy learning practices.	.770
Advances women's educational empowerment.	.757
Strengthens vocational education infrastructure.	.700
Rewards academic excellence.	.609
Enhances students' career readiness.	.732
Creates youth employment opportunities.	.554
Extraction Method: Principal Component Analysis.	
a. 1 components extracted.	

Our PCA extracted **one component**, meaning all variables load onto a single factor, making rotation unnecessary. The **KMO value (.830)** confirms high sampling adequacy, while **Bartlett's Test (Sig. < .001)** validates the suitability of factor analysis. The **strongest loadings** are for "Instilling hygiene habits" (.770), "Empowering rural children" (.763), and "Empowering tribal women" (.757), indicating their major contribution. "Generating livelihood opportunities" (.554) and "Providing scholarships" (.609) have lower but acceptable loadings. This suggests a **unified educational development factor**, combining literacy, skill training, and career readiness. Further analysis can explore variance explained or additional factor extraction.

Table 16: Rural Development & Environment Sustainability

	RURAL DEVELOPMENT & ENVIRONMENT SUSTAINABILITY
1.	Improves farmers' income stability.
2.	Promotes sustainable agricultural growth.
3.	Enhances livestock health awareness.
4.	Development and maintenance of road Bridges and culverts& Drains
5.	Bridges and culverts& Drains
6.	Water infrastructure and Community centres
7.	Supports effective water conservation.
8.	Expands local green cover.
9.	Encourages clean energy transition
10.	Promotion of environmental concern

Table 17: Rural Development & Environment Sustainability-KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.871
Bartlett's Test of Sphericity	Approx. Chi-Square	2112.984
	df	45
	Sig.	.000

Fig.6: Rural Development & Environment Sustainability

Source: Created in SPSS -27 (Based on primary data Source)

KMO and Bartlett's Test Results

i) **KMO Measure (.871)** – Indicates **excellent** sampling adequacy, confirming that the dataset is highly suitable for factor analysis.

ii) **Bartlett's Test (Chi-Square = 2112.984, df = 45, Sig. = .000)** – The significant value (**p < .001**) shows that the correlation matrix is not an identity matrix, validating factor analysis.

Table 18: Rural Development & Environment Sustainability- Component Matrix

Component Matrixa	
	Component
	1
Improves farmers' income stability.	.411
Promotes sustainable agricultural growth.	.847
Enhances livestock health awareness.	.830
Development and maintenance of road Bridges and culverts Drain	.803
Bridges and culverts Drain	.835
Water infrastructure and Community centers	.835
Supports effective water conservation.	.806
Expands local green cover.	
Promotion of renewable sources of energy	
Promotion of environmental concern	
Extraction Method: Principal Component Analysis.	
a. 1 components extracted.	

Our PCA extracted one component, indicating that all variables load onto a single factor, making rotation unnecessary. The KMO value (.871) confirms excellent sampling adequacy, and Bartlett's Test (Sig. = .000) validates factor analysis suitability. The strongest loadings are for "Bridges, culverts, and drains" (.835), "Water infrastructure" (.835), and "Veterinary services awareness" (.830), suggesting a focus on infrastructure and agricultural sustainability. "Empowering farmers" (.411) has a weaker loading, indicating a lesser contribution. Missing loadings for plantations, renewable energy, and environmental concerns suggest reconsideration of these variables. Further analysis can explore variance explained or additional factor extraction.

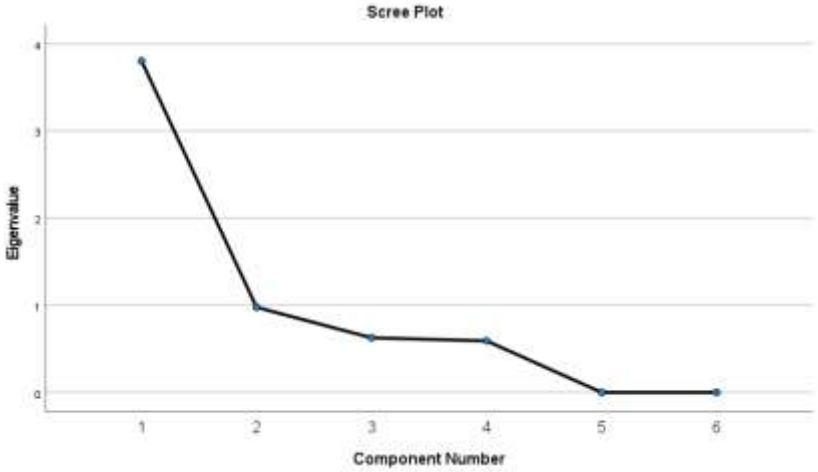
Table 19: Sport & Related Endeavours

	SPORT & RELATED ENDEAVORS
1.	Revives traditional rural sports.
2.	Encourages community sports participation.
3.	Develops rural athletic talent.
4	Building stadium and sports infrastructure
5.	Promotes wider sports representation.
6.	Encourages talented sports individuals.

Table 20: Sport & Related Endeavours-Communalities

Communalities		
	Initial	Extraction
Revives traditional rural sports.	1.000	.035
Encourages community sports participation.	1.000	.948
Develops rural athletic talent.	1.000	.948
Building stadium and sports infrastructure	1.000	.948
Endorsing sportspersons to participate in state, national and international events	1.000	.476
Encourages talented sports individuals.	1.000	.450
Extraction Method: Principal Component Analysis.		

Fig.7: Sport & Related Endeavours



Source: Created in SPSS -27 (Based on primary data Source)

Our PCA communalities indicate that "Organizing competitions" (.948), "Providing training" (.948), and "Building sports infrastructure" (.948) are strongly represented, highlighting their core role in sports development. "Endorsing sportspersons" (.476) and "Supporting with scholarships/equipment" (.450) show moderate representation, suggesting they contribute but are less central. However, "Promotion of rural sports" (.035) has an extremely low communality, meaning it is not well explained by the extracted factor. This suggests the need for factor re-evaluation or extracting multiple components. Further analysis can help refine variable grouping and enhance interpretation for a more meaningful sports-related factor structure.

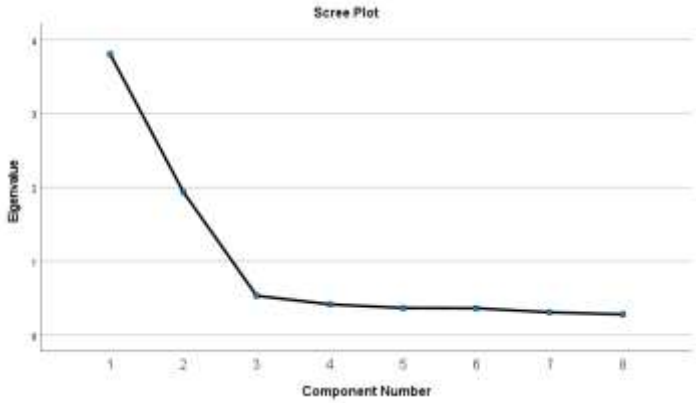
Table 21: Preservation of Cultural Heritage

	PRESERVATION OF CULTURAL HERITAGE
1.	Preserves national cultural heritage.
2.	Promotes cultural awareness initiatives.
3.	Safeguards indigenous linguistic heritage.
4.	Encourages community-based preservation.
5.	Revives traditional cultural practices.
6	Supports traditional artisan livelihoods.
7.	Restoration and renovation of memorials, monuments, and heritage structures
8.	Advances cultural research initiatives.

Table 22: Preservation of Cultural Heritage- KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.846
Bartlett's Test of Sphericity	Approx. Chi-Square	1799.606
	df	28
	Sig.	.000

Fig.8: Preservation of Cultural Heritage



Source: Created in SPSS -27 (Based on primary data Source)

KMO and Bartlett's Test Results:

i) **KMO Measure (.846)** – Indicates **high sampling adequacy**, confirming that the dataset is well-suited for factor analysis.

ii) **Bartlett's Test (Chi-Square = 1799.606, df = 28, Sig. = .000)** – The significant p-value (**< .001**) confirms that correlations exist among variables, making factor analysis appropriate.

Table 23: Preservation of Cultural Heritage- Rotated Component Matrix

Rotated Component Matrixa				
	Component			
	1	2	3	4
Preserves national cultural heritage.	.848			
Promotes cultural awareness initiatives.	.856			
Preservation and promotion of tribal languages, scripts, and literature	.830			
Encourages community-based preservation.	.856			
Revives traditional cultural practices.		.355	.874	
Supports traditional artisan livelihoods.		.730	.489	
Restoration and renovation of memorials, monuments and heritage structures		.387		.867
Conducting and supporting research on anthropological and ethnic issues		.871		
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.				
a. Rotation converged in 6 iterations.				

Our **Varimax-rotated PCA** extracted **four components**, suggesting that cultural heritage preservation is multidimensional.

Key Findings from the Factor Loadings:

Component 1: Institutional and Educational Support

"Support to museums, art galleries, and historical sites" (.848)

"Organize educational programs and workshops" (.856)

"Preservation and promotion of tribal languages, scripts, and literature" (.830)

"Engaging with local communities" (.856)

This factor highlights efforts related to education, awareness, and institutional support for cultural heritage.

Component 2: Folk and Tribal Cultural Promotion

"Preservation and promotion of folk and tribal cultures" (.874)

"Promotion of traditional crafts and skills" (.730)

These loadings suggest a focus on folk traditions, crafts, and tribal heritage sustainability.

Component 3: Research and Anthropological Studies

"Conducting and supporting research on anthropological and ethnic issues" (.871)

This factor is distinct, indicating academic and research-based cultural preservation efforts.

Component 4: Restoration and Heritage Conservation

"Restoration and renovation of heritage structures" (.867)

"Promotion of traditional crafts and skills" (.489) (cross-loading with Component 2)

This represents physical conservation and restoration of cultural heritage.

Table 24: Societal Aspect Variables

SL. NO.	**Societal Aspect Variables**
	Scale
1.	Provides employment to underprivileged.
2.	Enhances educational access equity.
3.	Improves community health support.
4.	Protecting the environment
5.	Promoting gender equality
6.	Helps in empowering human rights
7.	Encourages collective social growth.
8.	Strengthens local community engagement.
9.	Hygienic Water supply
10.	Education for children
11.	Vocational skill development
12.	Capacity building support
13.	Promoting women's empowerment and advocacy

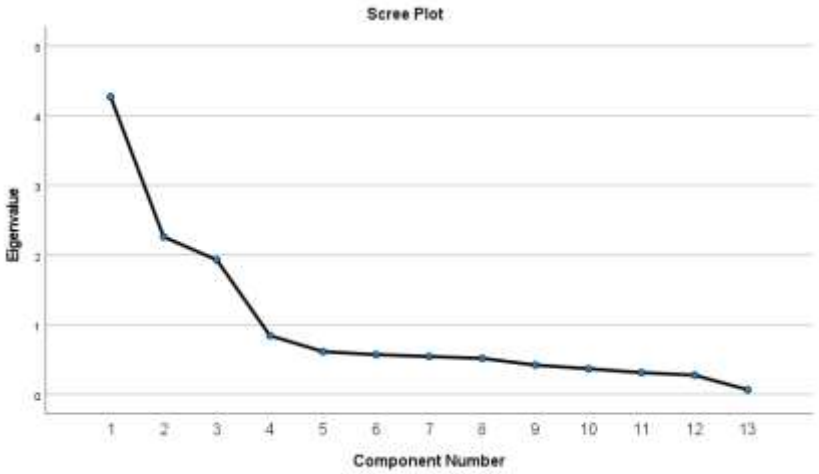
Table 25: Societal Aspect Variables- KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.802
Bartlett's Test of Sphericity	Approx. Chi-Square	2947.851
	df	78
	Sig.	.000

KMO and Bartlett's Test Results

i) **KMO Measure (.802)** – Indicates **high sampling adequacy**, suggesting that the dataset is suitable for factor analysis.
ii) **Bartlett's Test (Chi-Square = 2947.851, df = 78, Sig. = .000)** – The significant **p-value (< .001)** confirms that correlations exist among the variables, making factor analysis appropriate.

Fig.9: Societal Aspect Variables



Source: Created in SPSS -27 (Based on primary data Source)

Table 26: Societal Aspect Variables- Rotated Component Matrix[a]

Rotated Component Matrixa				
	Component			
	1	2	3	4
Provides employment to underprivileged.	.803			
Enhances educational access equity.	.836			
Improves community health support.	.856			
Protecting the environment	.797			
Promoting gender equality		.909		
Helps in empowering human rights		.884		
Encourages collective social growth.		.697		
Organised by community development programme		.751		
Hygienic Water supply			.817	
Education for children			.856	
Vocational skill development			.769	
Capacity building support			.777	
Promoting women's empowerment and advocacy				.938
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.				
a. Rotation converged in 5 iterations.				

Our **Varimax-rotated PCA** extracted **four components**, indicating that societal development is multidimensional.

Key Findings from Factor Loadings:

Component 1: Economic & Social Welfare

"Provides employment to underprivileged." (.803)

"Providing education opportunities" (.836)

"Extending help in healthcare" (.856)

"Protecting the environment" (.797)

This factor reflects broad social support, including employment, education, healthcare, and environmental protection.

Component 2: Community & Equality Initiatives

"Promoting gender equality" (.909)

"Empowering human rights" (.884)

"Community development initiatives" (.697)

"Organized by community development programs" (.751)

These variables highlight gender equality, human rights, and community engagement efforts.

Component 3: Basic Needs & Education Support

"Hygienic water supply" (.817)

"Education for children" (.856)

"Vocational skill development" (.769)

"Capacity building support" (.777)

This factor focuses on basic necessities (water), education, and vocational skill development.

Component 4: Women's Empowerment & Advocacy

"Promoting women's empowerment and advocacy" (.938)

This is a distinct factor, indicating women's empowerment as an independent dimension of societal development.

4.5 Impact Estimation of Latent Variables

CSR initiatives into three parts based on their potential influence on:

i) Customer Trust & Satisfaction

ii) Consumers' Perception of Value

iii) Overall Brand Building

Customer Trust & Satisfaction (CTS)

Initiatives that directly enhance the well-being, safety, and immediate service quality for the community tend to build trust and satisfaction. These include:

I. Environmental Protection

- Plantations to upsurge green attention and decrease contamination
- Efforts to reduce environmental impact (energy conservation, pollution prevention)
- Safety events to protect staffs and the public

II. Healthcare, Hygiene & Sanitation

- Establishing and operating polyclinics and hospitals
- Free medical assistance, mobile medical vans, and financial support for patients
- Hygiene and sanitation programs ensuring access to clean water

III. Employee Volunteering Program

- Processes for volunteer recruitment and support, capacity building for employees
- Recognition and rewards for employee volunteering (showing internal commitment and care)

IV. Disaster Relief

- Extending relief measures during natural disasters
- Supporting rehabilitation efforts and rebuilding communities

Consumers' Perception of Value (CPV)

Initiatives that add tangible benefits, development opportunities, and community enhancements often increase how consumers perceive the value offered by the company. These include:

I. Promotion of Education

- Initiatives for empowering rural children and tribal women through education
- Establishing skill development centers and providing scholarships
- Training programs and pre-job exam preparations

II. Rural Development & Environment Sustainability

- Empowering farmers, advancing agriculture and livestock initiatives
- Development of infrastructure (roads, bridges, water infrastructure, community centers)
- Initiatives on environmental concern and renewable energy promotion

III. Sport & Related Endeavours

- Promotion of rural sports, organizing local and regional competitions
- Training programs and building sports infrastructure
- Support for sportspersons via scholarships and equipment

Overall Brand Building (OBB)

Initiatives that are highly visible and contribute to the company's reputation as a socially responsible organization help in overall brand building. In this grouping, we consider:

I. Preservation of Cultural Heritage

- Support for museums, art galleries, and historical sites
- Organizing educational programs and events to raise cultural awareness
- Promotion and restoration of local and tribal cultural assets.

5. Conclusion

This study concludes that Corporate Social Responsibility (CSR) plays a significant and measurable role in enhancing brand building for Bharat Petroleum Corporation Limited (BPCL) in selected areas of Jharkhand. The empirical findings, based on data from 455 respondents, confirm that CSR initiatives positively influence customer trust, satisfaction, perceived value, and overall brand equity. Programs related to environmental protection, healthcare, education, rural development, and disaster relief emerged as particularly impactful, especially among economically vulnerable and socially diverse communities. The robustness of the results is supported by strong reliability and validity measures, including high Cronbach's alpha values and satisfactory KMO statistics. Factor analysis further revealed that CSR dimensions are multidimensional and strategically aligned with stakeholder expectations. Overall, the study demonstrates that BPCL's structured and community-oriented CSR approach not only contributes to socio-economic development in Jharkhand but also strengthens its corporate image and long-term brand loyalty. The findings underscore CSR as a strategic investment rather than a philanthropic obligation.

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