



Bharat Herald

Media & Publishing

Providing Insights to Guide a Legacy Newspaper's
Survival in a Post- COVID Digital Era



Executive Summary

Bharat Herald, a leading Indian publisher, has faced steady declines in print circulation and ad revenue from 2019 to 2024. At the same time, internet and smartphone penetration rates indicate a strong potential for digital adoption. To guide the company's transition strategy, this project analyzed data across print sales, ad revenue, city readiness, and digital pilot engagement.



AD-HOC Requests



- 1: Monthly Circulation Drop Check
- 2: Yearly Revenue Concentration by Category
- 3: 2024 Print Efficiency Leaderboard
- 4: Internet Readiness Growth (2021)
- 5: Consistent Multi-Year Decline (2019→2024)
- 6: 2021 Readiness vs Pilot Engagement Outlier

1: Generate a report showing the top 3 months (2019–2024) where any city recorded the sharpest month-over-month decline in net_circulation.



SQL Query Output

City_ID	Month	Dedine
C010	2019-02-01	-43502
C010	2020-11-01	-41531
C005	2023-05-01	-40871

- The query tracks month-over-month changes in net circulation for each city between 2019 and 2024.
- It uses the LAG() function to capture the previous month’s circulation and compares it with the current month.
- The difference shows whether circulation declined or increased month-to-month.
- Sorting by the largest declines highlights the sharpest drops in circulation.
- Finally, the top 3 months across all cities with the biggest declines are reported.

2: Identify ad categories that contributed > 30% of total yearly ad revenue.



SQL Query Output

Year	ad_category	Category_Revenue	Total_Revenue	Contribution_Percent
2019	A001	131263942.625	367747746.375	35.69
2020	A001	109599660	358791801.75	30.55
2021	A003	128955875.375	374987801.125	34.39
2022	A003	111274036	363110940.375	30.64
2022	A001	110377268.25	363110940.375	30.4
2023	A003	118289652.625	378159063.25	31.28
2024	A003	114385579.5	374705912.125	30.53

- The query calculates the total ad revenue per category for each year.
- It then compares each category’s revenue share against the year’s overall total.
- Categories with > 30% contribution are marked as dominant for that year.
- This highlights which ad categories were the biggest drivers of revenue.
- It helps track shifts in advertiser reliance across years.

3 .For 2024, rank cities by print efficiency and return top 5.



SQL Query Output

City_ID	city_name	copies_printed_2024	net_circulation_2024	efficiency_ratio	efficiency_rank_2024
C007	Ranchi	2309444	2092062	91.00	1
C004	Patna	2506557	2252819	90.00	2
C005	Jaipur	4594153	4128641	90.00	2
C006	Mumbai	3982371	3569229	90.00	2
C009	Ahmedabad	3046823	2746691	90.00	2

- We calculate print efficiency as the ratio of net_circulation ÷ copies_printed.
- This shows how effectively each city converts printed copies into actual circulation.
- Cities are ranked by efficiency (higher = better utilization of printed copies).
- The top 5 cities represent the most efficient print operations in 2024.
- This metric helps identify profitable and sustainable cities for print.

4. For each city, compute the change in internet penetration from Q1-2021 to Q4-2021 and identify the city with the highest improvement.



SQL Query Output

city_name	internet_rate_q1_2021	internet_rate_q4_2021	delta_internet_rate
Kanpur	74.27	76.77	2.5

- Internet penetration is measured per city across quarters of 2021.
- We calculate the difference between Q4-2021 and Q1-2021 penetration rates.
- A positive difference indicates growth in internet adoption.
- The city with the highest delta Kanpur shows the strongest digital readiness improvement.

5. Find cities where both net_circulation and ad_revenue decreased every year from 2019 through 2024



SQL Query Output

city_name	year	yearly_net_circulation	yearly_ad_revenue	is_declining_print	is_declining_ad_revenue	is_declining_both
Ahmedabad	2019	260966952	2668911219	No	Yes	No
Ahmedabad	2020	248769648	2668911219	No	Yes	No
Ahmedabad	2021	238622040	2668911219	No	Yes	No
Ahmedabad	2022	223912008	2668911219	No	Yes	No
Ahmedabad	2023	209181816	2668911219	No	Yes	No
Ahmedabad	2024	197761752	2668911219	No	Yes	No
Bhopal	2019	235310832	2825513449.5	No	Yes	No
Bhopal	2020	219436200	2825513449.5	No	Yes	No
Bhopal	2021	210614760	2825513449.5	No	Yes	No
Bhopal	2022	196675056	2825513449.5	No	Yes	No
Bhopal	2023	185657832	2825513449.5	No	Yes	No
Bhopal	2024	174136824	2825513449.5	No	Yes	No
Delhi	2019	313506576	2611498836	No	Yes	No
Delhi	2020	299330568	2611498836	No	Yes	No
Delhi	2021	281136168	2611498836	No	Yes	No
Delhi	2022	266864832	2611498836	No	Yes	No
Delhi	2023	248181768	2611498836	No	Yes	No
Delhi	2024	234144720	2611498836	No	Yes	No
Jaipur	2019	402428520	2743208659.5	No	Yes	No
Jaipur	2020	375504984	2743208659.5	No	Yes	No
Jaipur	2021	355610016	2743208659.5	No	Yes	No
Jaipur	2022	340309728	2743208659.5	No	Yes	No
Jaipur	2023	319242888	2743208659.5	No	Yes	No
Jaipur	2024	297262152	2743208659.5	No	Yes	No
Kanpur	2019	312896016	2436355251	No	Yes	No

- This checks whether a city’s print circulation and ad revenue dropped every single year from 2019–2024.
- “Strictly decreasing” means values must go down year after year without exceptions.
- We mark each city with flags like is_declining_print, is_declining_ad_revenue, and is_declining_both.
- Cities marked “Yes” for both indicate sustained business decline.
- These are high-risk cities, signaling where digital transition urgency is greatest.

6. In 2021, identify the city with the highest digital readiness score but among the bottom 3 in digital pilot engagement.



SQL Query Output

city_name	readiness_score_2021	engagement_metric_2021	readiness_rank_desc	engagement_rank_asc	is_outlier
Kanpur	75.23	7257.80	1	1	Yes
Varanasi	73.89	20690.75	2	10	No
Bhopal	73.21	16622.20	3	8	No
Lucknow	73.2	16580.60	4	7	No
Ahmedabad	72.39	20682.75	5	9	No
Patna	70.77	12478.00	6	3	No
Ranchi	68.64	7737.20	7	2	No
Mumbai	68.33	14703.80	8	5	No
Delhi	56.08	15475.60	9	6	No
Jaipur	54.95	12613.40	10	4	No

- Readiness Score is the average of literacy, smartphone, and internet penetration rates for each city in 2021.
- Cities are ranked by readiness (descending) and engagement (ascending).
- The outlier city = high readiness but low engagement (bottom 3).
- This highlights a mismatch: people are digitally ready but not engaging with pilots.
- Such outliers point to execution issues (e.g., poor UX, weak outreach) rather than lack of readiness.

Primary Analysis



1. Print Circulation Trends
2. Too Performing Cities
3. Print Waste Analysis
4. Ad Revenue Trends by Category
5. City-Level Ad Revenue Performance
6. Digital Readiness vs. Performance
7. Ad Revenue vs. Circulation ROI
8. Digital Relaunch City Prioritization

1. What is the trend in copies printed, copies sold, and net circulation across all cities from 2019 to 2024? How has this changed year-over-year?



SQL Query Output

year	total_copies_printed	total_copies_sold	total_net_circulation	prev_copies_printed	yoy_change_copies_printed	prev_copies_sold	yoy_change_copies_sold	prev_net_circulation	yoy_change_net_circulation
2019	44109170	41848668	39588166	NULL	NULL	NULL	NULL	NULL	NULL
2020	41873081	39719961	37566841	44109170	-5.07	41848668	-5.09	39588166	-5.11
2021	39514776	37501500	35488224	41873081	-5.63	39719961	-5.59	37566841	-5.53
2022	37267848	35395333	33522818	39514776	-5.69	37501500	-5.62	35488224	-5.54
2023	35165397	33363340	31561283	37267848	-5.64	35395333	-5.74	33522818	-5.85
2024	33054499	31325782	29597065	35165397	-6.00	33363340	-6.11	31561283	-6.22

- We aggregate yearly totals of copies printed, copies sold, and net circulation across all cities.
- Year-over-year comparisons show whether circulation and print operations are growing, stable, or declining.
- If printed copies rise but net circulation falls, it indicates higher returns/wastage.
- A steady decline across all three signals a structural shift away from print.
- This trend informs whether print is sustainable long-term or digital transition must accelerate

2. Which cities contributed the highest to net circulation and copies sold in 2024? Are these cities still profitable to operate in?



SQL Query Output

city_name	total_copies_sold_2024	total_net_circulation_2024	circulation_efficiency_pct	is_profitable_city
Jaipur	4361397	4128641	89.87	Yes
Varanasi	4357583	4123611	89.81	Yes
Mumbai	3775800	3569229	89.63	Yes
Delhi	3478045	3252010	87.80	Yes
Kanpur	3443849	3250179	89.35	Yes

- We filter 2024 data and rank cities by net circulation and copies sold.
- This highlights the top-performing markets that drive the bulk of readership.
- Profitability check comes from comparing copies printed vs. net circulation (i.e., wastage/returns).
- Cities with strong sales but high returns may look big but are less profitable.
- Results help decide where to continue, scale back, or optimize print operations

3. Which cities have the largest gap between copies printed and net circulation, and how has that gap changed over time?



SQL Query Output

city_name	year	total_copies_printed	total_net_circulation	circulation_gap	gap_pct
Varanasi	2019	6260382	5531144	729238	11.65
Varanasi	2021	5406136	4816364	589772	10.91
Jaipur	2020	5790073	5215347	574726	9.93
Varanasi	2020	5771271	5199575	571696	9.91
Mumbai	2020	5107030	4560074	546956	10.71
Jaipur	2022	5268178	4726524	541654	10.28
Jaipur	2021	5475602	4939028	536574	9.80
Jaipur	2023	4968025	4433929	534096	10.75
Varanasi	2022	5196085	4662785	533300	10.26
Jaipur	2019	611461	5589285	525402	8.59
Mumbai	2019	5256251	4742773	513478	9.77
Delhi	2019	4862344	4354258	508086	10.45
Mumbai	2021	4790616	4289158	501458	10.47
Kanpur	2019	4839564	4345778	493786	10.20
Ahmedabad	2020	3924498	3455134	469364	11.96
Varanasi	2024	4591555	4123611	467944	10.19
Jaipur	2024	4594153	4128641	465512	10.13
Varanasi	2023	4924787	4463159	461628	9.37
Ahmedabad	2019	4084089	3624541	459548	11.25
Delhi	2021	4360039	3904669	455370	10.44
Kanpur	2020	4617994	4163238	454756	9.85
Delhi	2024	3704080	3252010	452070	12.20
Delhi	2020	4608009	4157369	450640	9.78
Delhi	2023	3888045	3446969	441076	11.34
Mumbai	2023	4229402	3792254	437148	10.34
Delhi	2022	4127806	3786456	431350	10.42

- We calculate the gap = copies printed – net circulation for each city and year.
- Large gaps mean higher unsold copies/returns, signaling inefficiency.
- Tracking this gap over time shows whether cities are improving or worsening in circulation management.
- Cities with consistently rising gaps may indicate declining readership or poor distribution.
- This insight guides decisions on optimizing print volumes and reducing waste.

4. How has ad revenue evolved across different ad categories between 2019 and 2024? Which categories have remained strong, and which have declined?



SQL Query Output

ad_category	year	total_ad_revenue
Automobile	2019	63245970.25
Automobile	2020	92917624.625
Automobile	2021	59889829.5
Automobile	2022	68202505.125
Automobile	2023	67692912.5
Automobile	2024	89643840
FMCG	2019	85789103.75
FMCG	2020	56032063.375
FMCG	2021	79918657.625
FMCG	2022	73257131
FMCG	2023	87503372.5
FMCG	2024	62222918.375
Government	2019	131263942.625
Government	2020	109599660
Government	2021	106223438.625
Government	2022	110377268.25
Government	2023	104673125.625
Government	2024	108453574.25
Real Estate	2019	87448729.75
Real Estate	2020	100242453.75
Real Estate	2021	128955875.375
Real Estate	2022	111274036
Real Estate	2023	118289652.625
Real Estate	2024	114385579.5

- We compare yearly ad revenue trends by category from 2019-2024.
- Categories with consistent or rising revenue show long-term strength.
- Categories with declining revenue highlight loss of advertiser confidence.
- This helps identify which segments to prioritize or re-engage.
- The trend analysis provides a roadmap for advertising strategy and resource allocation.

5. Which cities generated the most ad revenue, and how does that correlate with their print circulation?



SQL Query Output

city_name	total_ad_revenue	total_net_circulation
Patna	17044215453	1134282168
Bhopal	16953080697	1221831504
Mumbai	16473492801	1797195312
Jaipur	16459251957	2090358288
Lucknow	16111419237	888003720
Ahmedabad	16013467314	1379214216
Delhi	15668993016	1643164632
Ranchi	15597663228	1061282016
Varanasi	14720519871	2073357936
Kanpur	14618131506	1638666792

- First, rank cities by total ad revenue over the chosen years.
- Compare this with their net circulation performance.
- High circulation + high ad revenue = strong profitable market.
- Low circulation but high ad revenue = ad-driven market worth nurturing.
- This analysis shows where ad revenue and print reach are aligned or mismatched

6. Which cities show high digital readiness (based on smartphone, internet, and literacy rates) but had low digital pilot engagement?



SQL Query Output

city_name	readiness_score	avg_engagement	readiness_rank	engagement_rank	high_ready_low_engagement
Kanpur	75.23083305358887	7257.8000	1	1	Yes
Varanasi	73.8874994913737	20690.7500	2	10	No
Bhopal	73.21000099182129	16622.2000	3	8	No
Lucknow	73.20416736602783	16580.6000	4	7	No
Ahmedabad	72.39333216349284	20682.7500	5	9	No
Patna	70.77083333333333	12478.0000	6	3	No
Ranchi	68.64083290100098	7737.2000	7	2	No
Mumbai	68.33166694641113	14703.8000	8	5	No
Delhi	56.07583363850912	15475.6000	9	6	No
Jaipur	54.947500228881836	12613.4000	10	4	No

- Compute a digital readiness score per city from smartphone, internet, and literacy rates.
- Rank cities by readiness to spot the most digitally capable.
- Compare this with their digital pilot engagement levels.
- Cities with high readiness but low engagement are untapped opportunities.
- These cities should be prioritized for better content strategy or outreach.



Suggestions From Insights

1. Phased Transition Strategy – Start Phase 1 in Delhi, Lucknow, Jaipur with aggressive digital push, while gradually reducing print dependence in loss-making cities.
2. Advertiser Confidence – Highlight high-readiness cities in pitches, introduce bundled print and digital ad packages.
3. Content Delivery – Expand WhatsApp bulletins & mobile-first e-papers, as feedback showed high usability in Tier 2 cities.
4. Monetization Models – Pilot loyalty programs and subscription bundles in top 3 cities.
5. Local Voices – Collaborate with regional influencers & journalists to boost credibility and engagement.

THANK YOU

Presented By:
GIRISH K S
Data Analyst

