



Media & Publishing

Provideing 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

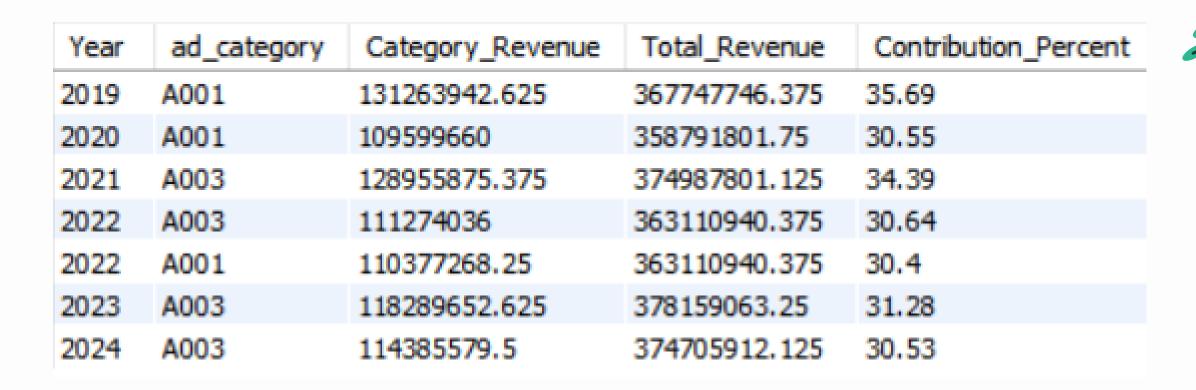
- 1: Monthly Circulation Drop Check
- 2: Yearly Revenue Concentration by Category
- 3: 2024 Print Efficiency Leaderboard
- 4: Internet Readiness Growth (2021)
- 5: Consistent Multi-Year Decline (2019→2024)
- 6: 2021 Readiness vs Pilot Engagement Outlier

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

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.



- 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.

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.

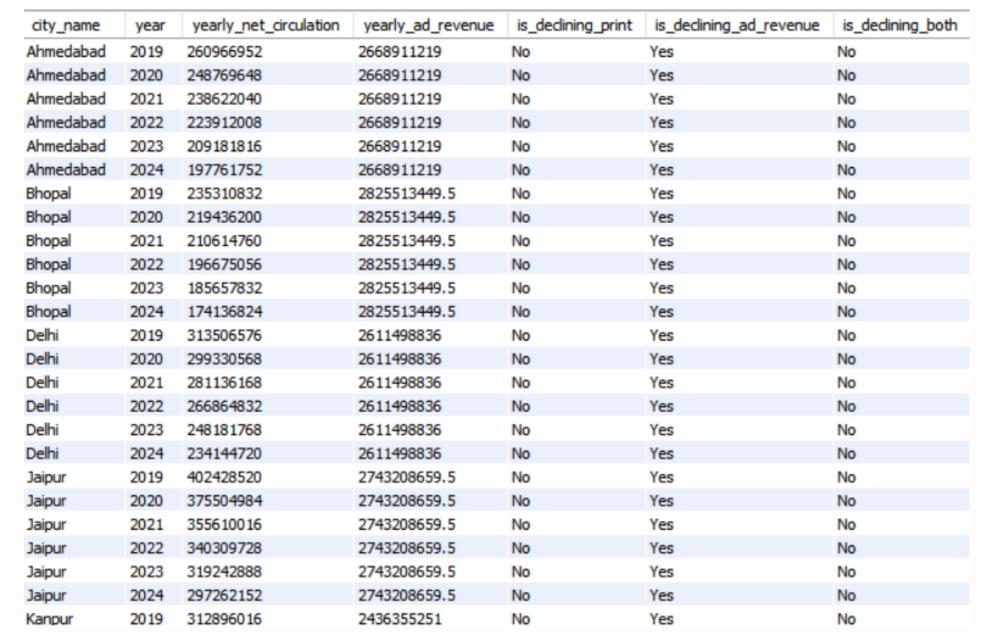


4. For each city, compute the change in internet penetration from Q1-2021 to Q4-2021 and identify the city with the highest improvement.

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



- 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.

city_name	readiness_score	2021	engagement_metric_2021	readiness_rank_desc	engagement_rank_asc	is_outlier
Kanpur	75.23	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?

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_ne
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?

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

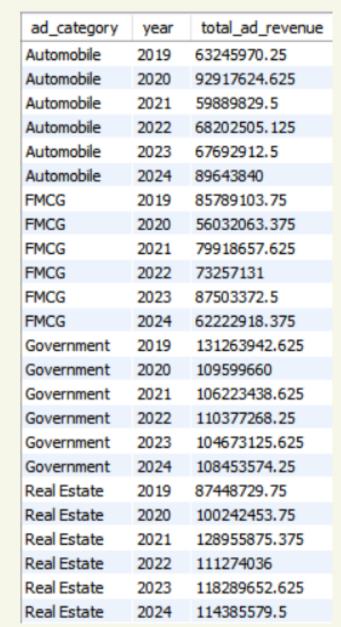
3. Which cities have the largest gap between copies printed and net circulation, and how has that gap changed over time?



- 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?



- 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?

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?

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
Delhi	56.07583363850912	15475.6000	9	6	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.





- 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.

THANKYOU

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