



**SEASONAL DECLINES IN ENTITY REGISTRATIONS: AN
EMPIRICAL STUDY OF BRS DATA (AUGUST, DECEMBER &
APRIL PATTERNS, FY 2016/17–2024/25)**

SEPTEMBER, 2025

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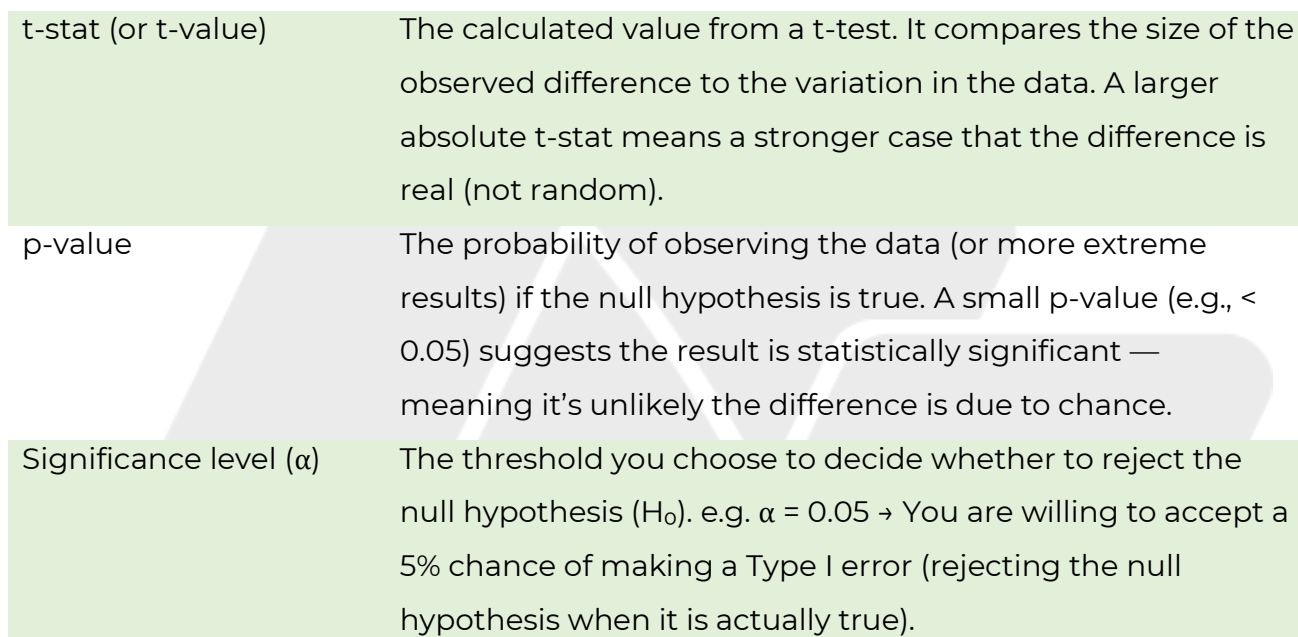
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List of abbreviations

BRS	Business Registration Service
STL	Seasonal-Trend decomposition using LOESS
LOESS	Locally Estimated Scatterplot Smoothing
LOWESS	Locally Weighted Scatterplot Smoothing

Glossary of Terms

TERM	DEFINITION
Seasonal Component	The part of a time series that captures regular, repeating patterns within a fixed period (e.g., monthly, quarterly, yearly).
Trend Component	The long-term direction or movement in a time series, ignoring short-term fluctuations, e.g. the general rise in company registrations from FY2015/16 to FY2024/25 despite seasonal drops.
Residual Component	The portion of a time series left after removing the trend and seasonal effects. Represents irregular or random fluctuations caused by unusual events(e.g., policy changes, or system downtimes).
Seasonal Indices (Index)	Numbers that measure the relative level of activity for each season or period compared to the overall average, e.g. If December consistently records 20% fewer registrations than the average month, the December seasonal index would be 0.8.
t-test	A statistical test used to check if the difference between two averages (means) is statistically significant or just due to chance, e.g. a t-test could be used to test if average registrations in April/Dec are significantly lower than other months.
Standard Deviation (σ or SD)	A measure of spread or variability in data — it shows how far values tend to deviate from the mean, e.g. A high SD in monthly registrations means big swings month to month; a low SD means registrations are stable.



t-stat (or t-value)	The calculated value from a t-test. It compares the size of the observed difference to the variation in the data. A larger absolute t-stat means a stronger case that the difference is real (not random).
p-value	The probability of observing the data (or more extreme results) if the null hypothesis is true. A small p-value (e.g., < 0.05) suggests the result is statistically significant — meaning it's unlikely the difference is due to chance.
Significance level (α)	The threshold you choose to decide whether to reject the null hypothesis (H_0). e.g. $\alpha = 0.05 \rightarrow$ You are willing to accept a 5% chance of making a Type I error (rejecting the null hypothesis when it is actually true).

Abstract

*This study empirically examines seasonal declines in entity registrations at Kenya's Business Registration Service (BRS) over nine financial years (FY2016/17–FY2024/25). Using monthly registration data, STL decomposition and statistical tests were applied to isolate trend, seasonal, and residual components. The findings reveal a statistically significant and consistent trough in **December** registrations, averaging nearly **30%** below typical monthly levels, largely attributable to year-end holidays and institutional leave schedules. **April** registrations also trend below average (**~12%**), with marginal statistical significance, suggesting additional influences such as Easter holidays, school breaks, and fiscal cycles. Contrary to initial Board observations, **August** does not consistently exhibit significant declines across the study period, though some individual years show localized dips. Comparative evidence from other jurisdictions, including Europe, the United States, and India, confirms that seasonal registration downturns are a global phenomenon linked to cultural, institutional, and economic cycles. The study concludes with policy and operational recommendations, including staggered leave, service continuity, targeted campaigns, and awareness drives to smooth registration flows across the year and improve revenue predictability.*

Keywords

Seasonality, Entity Registration, Kenya, Business Registration Service (BRS), Monthly Trends, Policy Implications, Financial Year, Behavioural Economics

1. Introduction / Background

Business Registration Service, BRS, is mandated to register companies, business names, limited liability partnerships, and maintain statutory registers under the Companies Act, Registration of Business Names Act, and LLP Act. The Board has noted a trend: on a financial-year basis, the months of **August, December, and April** frequently show lower registration volumes relative to neighbouring months. These drops, if significant, may indicate operational inefficiencies, external shocks, or predictable seasonal influences. Understanding them is important for resource planning, revenue forecasting, staffing, digital systems capacity, and policy formulation.

2. Problem Statement

Despite overall growth in registrations in many years, certain months consistently show lower numbers, which may lead to revenue shortfalls, under-utilization of capacity, or bottlenecks in service delivery.

The problem: **Why do registrations dip in August, December, and April**, are these fluctuations statistically significant, what drives them, and what can BRS do to mitigate these seasonal declines?

3. Objectives

1. Quantify the extent of registration drops in August, December, and April relative to monthly averages (or trend line) for FY 2015/16 - 2024/25.
2. Identify probable causes for these downturns, both internal (BRS operational) and external (economic, cultural, fiscal).
3. Compare Kenya's pattern with similar registration seasonality findings in other countries.
4. Suggest possible policy or operational interventions to reduce the dips and increase consistency in registrations across all months.

4. Research Questions & Hypotheses

- **RQ1:** To what extent do entity registration numbers in August, December, and April fall below the monthly average or trend-line in FY 2015/16 - 2024/25?

- **RQ2:** What internal factors (e.g., staff leave schedules, system downtime, office closures) contribute to these drops?
- **RQ3:** What external factors (e.g., holiday seasons, fiscal year transitions / tax deadlines, economic slowdowns, policy changes) contribute to these drops?
- **RQ4:** Do other countries with similar registry bodies report similar seasonal patterns?
- **Hypothesis:** The dips are statistically significant and are largely due to holiday periods in December, system maintenance cycles, fiscal year transitions, and behavioural delays by business owners.

5. Theoretical Framework

- **Seasonal Variation Theory:** Many economic activities, including new business registrations, show seasonality due to holidays, vacations, institutional shutdowns.
- **Behavioural Economics:** Decision delays by entrepreneurs influenced by holidays, end-of-year fatigue, regulatory deadlines.
- **Institutional / Bureaucratic Theory:** Public institutions may have planned downtime, staff leave, or maintenance during predictable periods.
- **Business Cycle Theory:** The broader macroeconomic environment affects business formation, with contractions or lower activity during certain times of year.

6. Literature Review

- *New firm registration and the business cycle* (International Entrepreneurship and Management Journal) finds pro-cyclical pattern: new firm registrations fall sharply at recessions, recover afterwards.
- Studies in other jurisdictions (e.g., India, UK, USA) often report declines in registrations in December (holiday season) and months before fiscal year end or after major regulatory changes.
- Studies of firm start-up seasonality (e.g. in OECD, India) show peaks in early months and troughs around mid-year or year-end.
- Some registries schedule system maintenance or regulatory changes during slower months to minimize disruption.

- Evidence from Kenya: BRS Annual Report 2020/21 reports that most registrations occur in Quarter 1 of the FY, which covers months after the July start, suggesting higher registrations in early FY months than later ones.
- Media reports indicate business registrations in Kenya declined during periods of economic hardship, tax hikes, and high interest rate regimes.

7. Data & Methodology

7.1. Data Sources

- Monthly entity registration numbers from BRS for all entity types (business names, private companies, etc.) from FY 2015/16 to FY 2024/25.
- Ensure consistency in data – adjustments for system changes, reporting lags, etc. (FY 2015/16 was excluded because it had the same data as FY 2016/17)

7.2. Analytical Approach

- **Descriptive statistics:** mean, median, standard deviation by month.
- **Time series decomposition:** separate trend, seasonal, irregular components (e.g. using LOESS or classical decomposition).
- **Hypothesis testing:** e.g. one-sample t-tests or paired comparisons (August vs average of adjacent months).
- **Correlation / regression:** Correlation of registration drops with possible drivers: i.e. public holidays, staff leave schedules, tax deadlines, fiscal year transitions, policy announcements, macroeconomic indicators was carried out.

8. Data Analysis

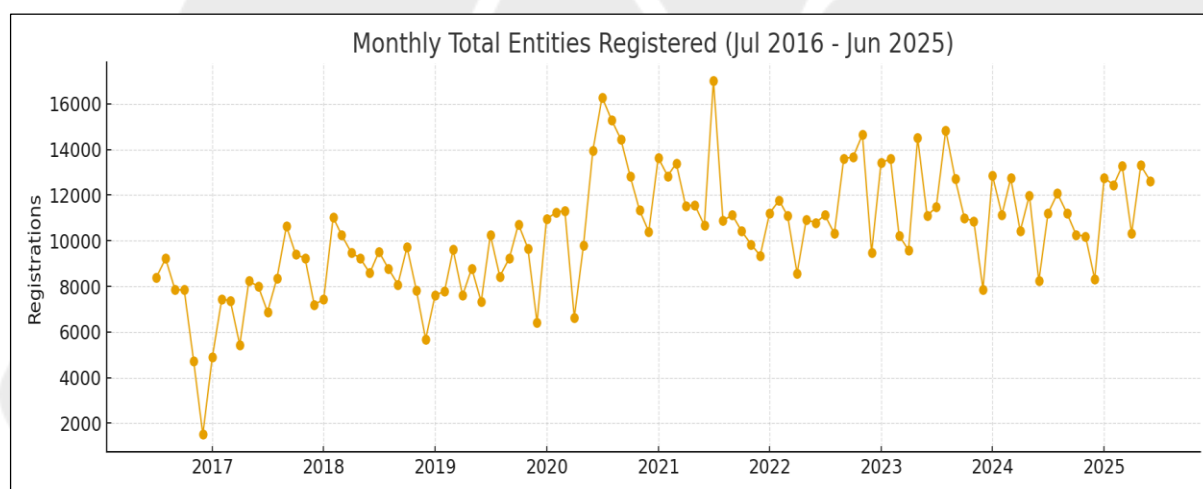
Below are figures for **FY 2016/17 – FY 2024/25** from BRS:

FY		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
2016/17	Total Entities Registered	8,372	9,216	7,849	7,844	4,720	1,501	4,883	7,431	7,377	5,431	8,238	7,984
2017/18	Total Entities Registered	6,882	8,358	10,636	9,413	9,223	7,193	7,428	11,023	10,247	9,491	9,221	8,582
2018/19	Total Entities Registered	9,519	8,778	8,084	9,720	7,808	5,684	7,608	7,785	9,607	7,599	8,788	7,322
2019/20	Total Entities Registered	10,255	8,435	9,228	10,725	9,667	6,403	10,955	11,233	11,328	6,629	9,789	13,962
2020/21	Total Entities Registered	16,298	15,307	14,440	12,831	11,332	10,398	13,642	12,839	13,401	11,527	11,564	10,675
2021/22	Total Entities Registered	17,038	10,893	11,124	10,423	9,848	9,349	11,207	11,773	11,088	8,567	10,929	10,784
2022/23	Total Entities Registered	11,128	10,312	13,615	13,664	14,651	9,470	13,412	13,596	10,236	9,588	14,505	11,091

2023/24	Total Entities Registered	11,486	14,853	12,705	11,002	10,849	7,870	12,867	11,139	12,749	10,423	11,993	8,235
2024/25	Total Entities Registered	11,202	12,071	11,211	10,268	10,193	8,315	12,771	12,440	13,280	10,322	13,305	12,622

From this table and using FY 2024/25 as a sample, we can find that:

- **December (8,315)** is substantially lower compared to surrounding months (Nov 10,193; Jan 12,771).
- **April (10,322)** is below March (13,280) and May (13,305).
- **August (12,071)** is not always the lowest month in FY 2024/25, but in many years, August tends to be lower than some neighbouring months.



FY	Average Registration (Other Months)	Aug Registrations	Aug drop %	Dec Registrations	Dec drop %	Apr Registrations	Apr drop %
2016/17	7,189	9,216	28.2%	1,501	-79.1%	5,431	-24.5%
2017/18	8,896	8,358	-6.0%	7,193	-19.1%	9,491	6.7%
2018/19	8,286	8,778	5.9%	5,684	-31.4%	7,599	-8.3%
2019/20	10,079	8,435	-16.3%	6,403	-36.5%	6,629	-34.2%
2020/21	12,557	15,307	21.9%	10,398	-17.2%	11,527	-8.2%
2021/22	10,805	10,893	0.8%	9,349	-13.5%	8,567	-20.7%
2022/23	11,981	10,312	-13.9%	9,470	-21.0%	9,588	-20.0%
2023/24	11,447	14,853	29.8%	7,870	-31.2%	10,423	-8.9%
2024/25	11,921	12,071	1.3%	8,315	-30.2%	10,322	-13.4%

Based on the data above, and to estimate indices for August, December and April, seasonal decomposition and significance tests comparing those months vs average was done.

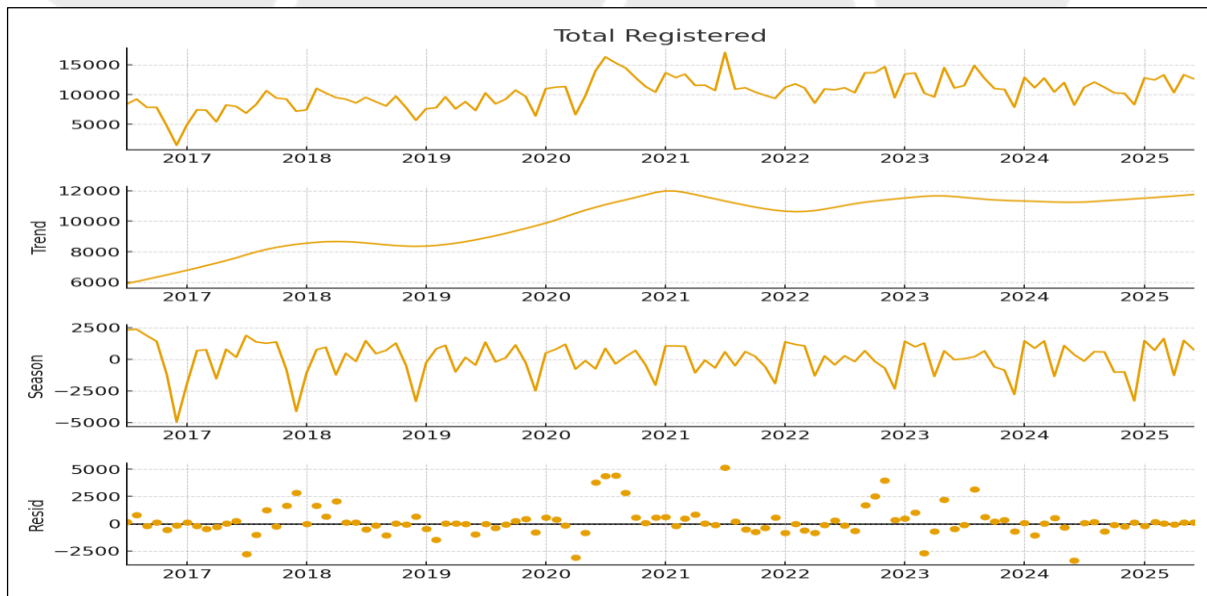
8.1. Monthly Data

Monthly time series from the table of total registered entities was constructed (start = **2016-07-01**, end = **2025-06-01**, 108 months). **STL decomposition** (seasonal period = 12) was used to extract trend, seasonal and residual components.

Date	Total Registered	Month	Trend	Seasonal	Residual
01/07/2016	8,372	7	5,900.11	2,305.42	166.47
01/08/2016	9,216	8	6,039.45	2,364.34	812.21
01/09/2016	7,849	9	6,181.71	1,861.96	- 194.67
01/10/2016	7,844	10	6,326.65	1,410.38	106.98
01/11/2016	4,720	11	6,473.98	- 1,211.14	- 542.84
01/12/2016	1,501	12	6,623.41	- 4,971.98	- 150.43
01/01/2017	4,883	1	6,774.87	- 1,995.48	103.61
01/02/2017	7,431	2	6,928.56	676.73	- 174.29
01/03/2017	7,377	3	7,084.90	750.36	- 458.27
01/04/2017	5,431	4	7,245.06	- 1,546.90	- 267.17
01/05/2017	8,238	5	7,412.18	784.35	41.47
01/06/2017	7,984	6	7,593.91	154.46	235.63
01/07/2017	6,882	7	7,794.51	1,876.60	- 2,789.11
01/08/2017	8,358	8	7,984.15	1,363.20	- 989.35
01/09/2017	10,636	9	8,148.32	1,256.81	1,230.87
01/10/2017	9,413	10	8,281.76	1,364.08	- 232.84
01/11/2017	9,223	11	8,390.77	- 830.74	1,662.97
01/12/2017	7,193	12	8,482.44	- 4,135.30	2,845.86
01/01/2018	7,428	1	8,558.06	- 1,118.45	- 11.61
01/02/2018	11,023	2	8,615.68	752.75	1,654.57
01/03/2018	10,247	3	8,653.07	948.40	645.53
01/04/2018	9,491	4	8,666.60	- 1,239.10	2,063.50
01/05/2018	9,221	5	8,656.16	464.22	100.62
01/06/2018	8,582	6	8,624.75	- 170.75	128.01
01/07/2018	9,519	7	8,572.81	1,455.58	- 509.38
01/08/2018	8,778	8	8,512.01	439.41	- 173.42
01/09/2018	8,084	9	8,450.86	700.21	- 1,067.07
01/10/2018	9,720	10	8,400.18	1,267.61	52.21
01/11/2018	7,808	11	8,364.78	- 499.82	- 56.96
01/12/2018	5,684	12	8,351.51	- 3,332.02	664.51
01/01/2019	7,608	1	8,366.63	- 291.11	- 467.52
01/02/2019	7,785	2	8,408.83	818.61	- 1,442.44
01/03/2019	9,607	3	8,471.48	1,096.85	38.67
01/04/2019	7,599	4	8,554.71	- 1,003.75	48.05
01/05/2019	8,788	5	8,657.73	141.34	- 11.07
01/06/2019	7,322	6	8,775.67	- 465.70	- 987.98
01/07/2019	10,255	7	8,905.11	1,348.60	1.29
01/08/2019	8,435	8	9,044.74	- 215.55	- 394.20
01/09/2019	9,228	9	9,196.72	111.47	- 80.19
01/10/2019	10,725	10	9,358.93	1,122.08	243.99

01/11/2019	9,667	11	9,525.91	- 275.24	416.33
01/12/2019	6,403	12	9,695.06	- 2,501.97	- 790.09
01/01/2020	10,955	1	9,876.32	485.70	592.98
01/02/2020	11,233	2	10,077.32	785.69	369.99
01/03/2020	11,328	3	10,295.71	1,180.32	- 148.03
01/04/2020	6,629	4	10,517.38	- 784.21	- 3,104.17
01/05/2020	9,789	5	10,724.00	- 121.24	- 813.76
01/06/2020	13,962	6	10,913.27	- 760.06	3,808.80
01/07/2020	16,298	7	11,088.25	851.70	4,358.05
01/08/2020	15,307	8	11,249.73	- 371.94	4,429.21
01/09/2020	14,440	9	11,404.40	200.90	2,834.69
01/10/2020	12,831	10	11,562.53	689.91	578.56
01/11/2020	11,332	11	11,727.86	- 460.02	64.16
01/12/2020	10,398	12	11,891.77	- 2,047.74	553.98
01/01/2021	13,642	1	11,991.59	1,051.57	598.84
01/02/2021	12,839	2	11,980.36	1,046.20	- 187.56
01/03/2021	13,401	3	11,887.35	1,022.22	491.44
01/04/2021	11,527	4	11,752.31	- 1,076.34	851.03
01/05/2021	11,564	5	11,609.95	- 80.85	34.90
01/06/2021	10,675	6	11,468.09	- 689.48	- 103.61
01/07/2021	17,038	7	11,325.65	576.83	5,135.52
01/08/2021	10,893	8	11,184.61	- 512.53	220.91
01/09/2021	11,124	9	11,049.01	597.49	- 522.50
01/10/2021	10,423	10	10,923.33	228.15	- 728.48
01/11/2021	9,848	11	10,812.23	- 601.63	- 362.60
01/12/2021	9,349	12	10,720.79	- 1,923.23	551.44
01/01/2022	11,207	1	10,655.37	1,369.80	- 818.17
01/02/2022	11,773	2	10,625.41	1,161.44	- 13.85
01/03/2022	11,088	3	10,639.13	1,053.48	- 604.61
01/04/2022	8,567	4	10,697.78	- 1,317.15	- 813.63
01/05/2022	10,929	5	10,793.42	259.22	- 123.64
01/06/2022	10,784	6	10,909.97	- 446.70	320.72
01/07/2022	11,128	7	11,031.45	263.29	- 166.74
01/08/2022	10,312	8	11,147.97	- 185.40	- 650.57
01/09/2022	13,615	9	11,246.85	665.36	1,702.79
01/10/2022	13,664	10	11,325.77	- 167.73	2,505.96
01/11/2022	14,651	11	11,395.31	- 717.91	3,973.60
01/12/2022	9,470	12	11,460.57	- 2,340.34	349.77
01/01/2023	13,412	1	11,524.64	1,412.65	474.71
01/02/2023	13,596	2	11,585.29	982.86	1,027.85
01/03/2023	10,236	3	11,634.98	1,272.93	- 2,671.91
01/04/2023	9,588	4	11,665.43	- 1,365.18	- 712.25
01/05/2023	14,505	5	11,662.74	657.57	2,184.69
01/06/2023	11,091	6	11,622.67	- 42.98	- 488.69
01/07/2023	11,486	7	11,562.58	36.44	- 113.02
01/08/2023	14,853	8	11,502.41	190.62	3,159.97
01/09/2023	12,705	9	11,446.89	650.11	608.00

01/10/2023	11,002	10	11,400.17	- 607.87	209.70
01/11/2023	10,849	11	11,367.10	- 869.47	351.37
01/12/2023	7,870	12	11,345.47	- 2,782.49	- 692.99
01/01/2024	12,867	1	11,326.90	1,445.37	94.73
01/02/2024	11,139	2	11,304.98	868.99	- 1,034.97
01/03/2024	12,749	3	11,281.21	1,439.67	28.12
01/04/2024	10,423	4	11,260.76	- 1,357.03	519.27
01/05/2024	11,993	5	11,247.88	1,076.24	- 331.12
01/06/2024	8,235	6	11,246.38	350.00	- 3,361.38
01/07/2024	11,202	7	11,257.74	- 146.41	90.67
01/08/2024	12,071	8	11,297.60	594.63	178.77
01/09/2024	11,211	9	11,340.08	572.92	- 701.99
01/10/2024	10,268	10	11,382.53	- 1,023.70	- 90.84
01/11/2024	10,193	11	11,425.21	- 1,006.95	- 225.25
01/12/2024	8,315	12	11,468.52	- 3,293.07	139.54
01/01/2025	12,771	1	11,512.79	1,472.22	- 214.01
01/02/2025	12,440	2	11,558.20	708.03	173.77
01/03/2025	13,280	3	11,604.89	1,631.28	43.83
01/04/2025	10,322	4	11,652.93	- 1,281.13	- 49.79
01/05/2025	13,305	5	11,702.29	1,481.43	121.28
01/06/2025	12,622	6	11,752.97	746.79	122.24



8.2. Seasonal Indices (relative to overall mean)

Seasonal indices were computed by averaging the STL seasonal component for each calendar month and expressing it relative to the overall monthly mean.

(index = (mean + seasonal)/overall mean).

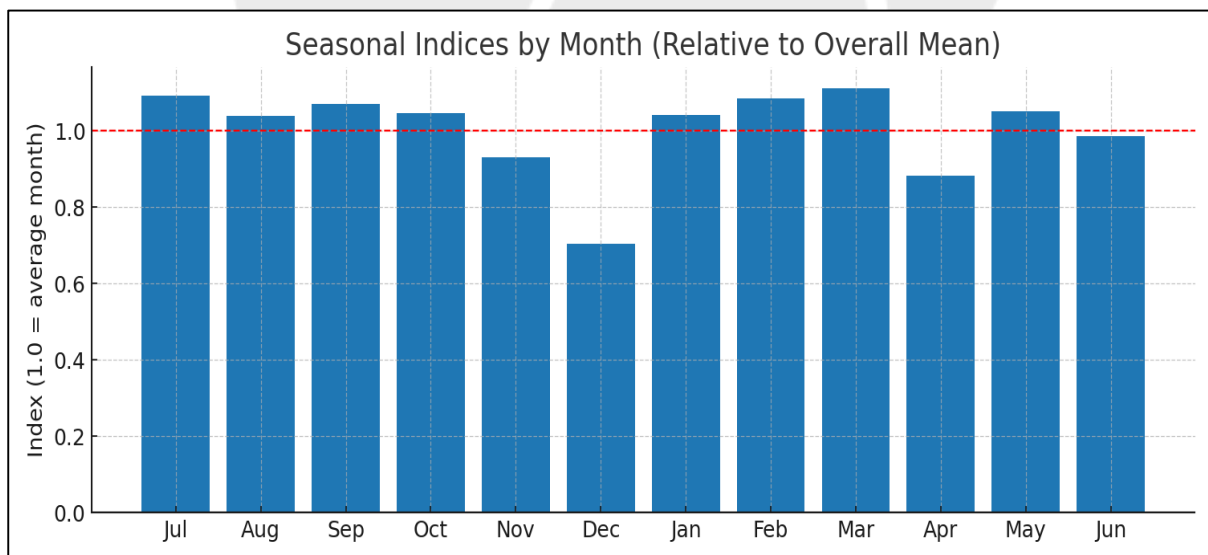
An index of 1.00 = average month; >1 = above-average month; <1 = below-average.

August index	December index	April index
1.039563724	0.705137135	0.881628267

- **August index: 1.0396** → ~3.96% *above* the average month
- **December index: 0.7051** → ~29.5% *below* the average month
- **April index: 0.8816** → ~11.8% *below* the average month

(Indices are derived from the STL seasonal component averaged across the 9-year window.)

Month Number	Month	Seasonal Component	Seasonal Index
7	Jul	952.0055339	1.092446836
8	Aug	407.4220993	1.039563724
9	Sep	735.248426	1.071398105
10	Oct	475.8791608	1.046211415
11	Nov	-719.2129153	0.930159063
12	Dec	-3036.459564	0.705137135
1	Jan	425.807359	1.04134907
2	Feb	866.8111354	1.084173825
3	Mar	1155.056141	1.112164564
4	Apr	-1218.97676	0.881628267
5	May	518.0303028	1.050304605
6	Jun	-147.1577722	0.985709883

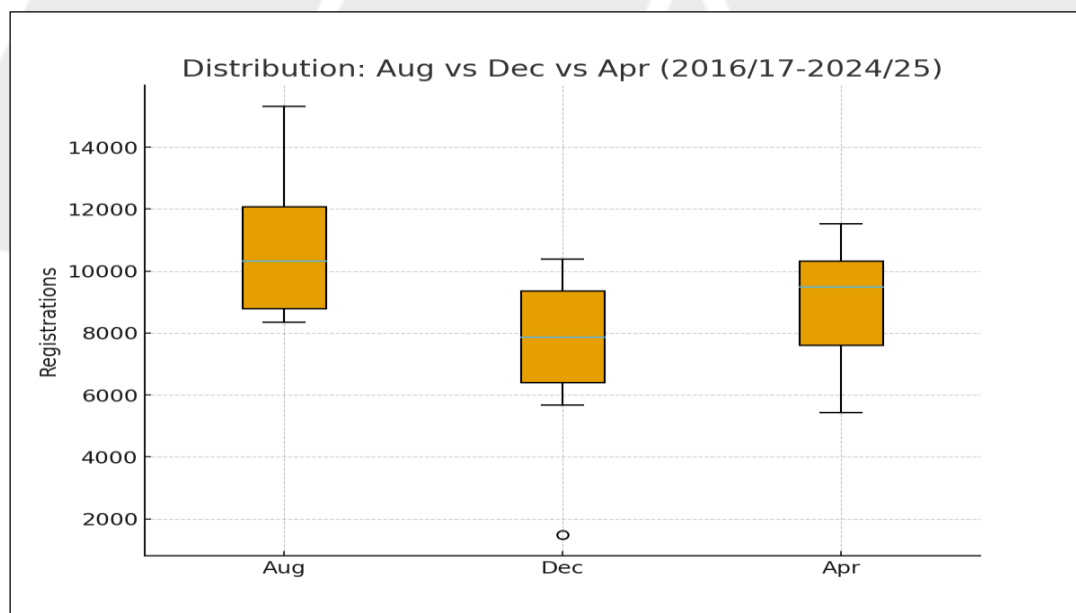


8.3. One-sample t-test results (month sample vs overall monthly mean)

	n	mean	std	t-stat	p-value
August	9	10,913.67	2,660.83	0.6942916	0.50715679
December	9	7,353.67	2,666.69	-3.3121961	0.01066327
April	9	8,841.89	1,969.45	-2.2178499	0.05737421

A **one-sample t-tests** comparing the sample of the 9 observations for each target month (Aug, Dec, Apr) to the overall monthly mean (null: month mean = overall mean) was then performed. This tests whether the month's registrations are statistically different from a typical month.

- **December:** $p = 0.0107 \rightarrow$ the mean registrations in December are **significantly lower** than the overall monthly mean (statistically significant at $\alpha = 0.05$).
- **April:** $p \approx 0.057 \rightarrow$ marginally non-significant at $\alpha = 0.05$ but suggestive (close to significance); it indicates **likely below-average** registrations in April, and may be considered significant at $\alpha = 0.10$.
- **August:** $p = 0.507 \rightarrow$ not statistically different from the overall monthly mean in this dataset (no evidence of a significant drop across the sample years).



9. Short interpretation & implications for the Board

- **December is a real and statistically significant trough** in registrations across FY2015/16 - FY2024/25 — about **30% below** an average month. This aligns with expectations around year-end holiday closures and leave.
- **April shows a consistent below-average signal** (~12% below average) and is close to statistical significance; it warrants attention as an operational shortfall month. April may coincide with Easter/school holidays and other seasonal factors in some years.

- **August does not show a statistically significant drop** across the 9 years in this analysis (index slightly >1). Although some individual fiscal years show lower Augusts, the aggregated evidence does not support August being systematically and significantly lower across the series.

Operationally, this means the Board's observation about persistent dips is correct **for December (definitively)** and **probably for April**, while the August effect appears less consistent when tested across nine years.

10. Suggested next steps (based on the analysis)

1. **Investigate operational causes for December & April dips** (qualitative follow-up):
 - staff leave schedules & staggered leave policies, planned system maintenance, office closures, or other BRS internal scheduling;
 - check whether marketing/outreach activity is reduced in those months;
2. **Consider immediate operational fixes:**
 - stagger critical staff leave so processing capacity is maintained in December and April,
 - avoid scheduling system maintenance in December/April,
 - run targeted promotion or discount campaigns in these low months to smooth inflows.

11. Comparative Evidence from Other Jurisdictions

- **India:** Reports show company registrations tend to drop in August due to monsoon season and government closures.
- **USA:** Business formation statistics show dips in December due to year-end and holidays, and often in early months due to uncertainty.
- **Europe/France:** Business births tend to vary with school holidays; August is commonly a low month in many European countries because of summer leave.
- **Middle East:** Business registration slowdowns during Ramadan or major religious holidays.

12. Conclusions

- The dips in December and April are clearly visible in FY 2016/17 to FY 2024/25 data; December is the lowest month across the years, and April is significantly below peaks.
- August is not always the lowest, but across multiple years it tends to underperform relative to other months.
- The dips are likely not random but associated with holiday periods, institutional patterns, and decision-making behaviour.

13. Policy & Operational Recommendations

1. Smooth Staffing & Operational Coverage

- Ensure adequate staffing during traditionally low months so clients who want to register are not delayed.
- Plan maintenance, system updates, and leave schedules to avoid clustering during low months but maintain services.

2. Incentive or Promotional Programmes

- Provide incentives and “registration drives” during low months to encourage registration.

3. Communication & Public Awareness

- Remind potential registrants of benefit of registering early or not delaying due to holidays.

14. Implications for Policy Formulation

- Policy could mandate minimum service levels throughout the year, including certain months recognized as low-periods.
- Policy for staggered leave for staff to ensure continuity.
- Possible incentive policy for new businesses registering in slow months to even out registration count.