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## A Bibliometric Analysis of Library Collection Utilization: Evidence from Mahajana College Using Multi-Model Statistical Approaches

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### Abstract

*This study examines library collection utilisation at the Mahajana collection size and evaluates resource effectiveness by analysing circulation data for 36,085 documents. Quantitative techniques such as the Gini Coefficient, Lorenz Curve, Zipf's Law, Negative Binomial Distribution, and Bradford's Law assess inequality, distribution patterns, and randomness in usage. The results show pronounced inequality in circulation, with a Gini Coefficient of 0.94, meaning a small portion of the collection accounts for most usage. Notably, 72.15% of documents were unused during the study period. The data partially support the Pareto Principle but reject Price's Law, indicating usage is spread across a broader academic core rather than a narrow elite subset. In summary, library utilisation at Mahajan's college is highly skewed, curriculum-driven, and structurally concentrated. These findings offer an empirical basis for evidence-based collection development, weeding, and resource optimisation in academic libraries.*

### Keywords

Library Circulation Modelling; Over-dispersion Analysis; Gamma-Poisson Model; Power-Law

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## INTRODUCTION

In today's academic environment, the library is the intellectual backbone of an institution, supporting teaching, learning, and research. However, effectiveness cannot be measured solely by the size of the collection. Evaluating the frequency and efficiency of resource use is essential. This study addresses this by analyzing library circulation patterns using advanced quantitative methods.

Traditional collection evaluation relies on descriptive statistics, such as total holdings or circulation counts. While useful, these do not capture the structural dynamics of information usage. Library usage is often highly uneven, with a small proportion of documents meeting most user demand. This reflects the "Success-Breeds-Success" effect, where frequently used materials continue to attract more use.

To systematically analyse this behaviour, multiple bibliometric models and statistical distributions are used. The Lorenz Curve and Gini Coefficient measure inequality in circulation and visualise the concentration of use. Rank-frequency relationships are examined through Zipf's Law to assess whether usage follows predictable distribution patterns. Probabilistic models such as the Poisson and Negative Binomial Distributions test whether library circulation is random or influenced by cumulative processes. Bradford's Law is applied to identify the core, allied, and peripheral zones of information use within the collection.

By integrating these models, this research offers a comprehensive, data-driven evaluation of collection utility. The analysis identifies the core collection driving most library use and determines whether patterns result from random variation or systematic academic demand. This research contributes to Library and Information Science by providing a robust analytical framework for assessing collection efficiency. The findings support data-driven decisions in collection development, resource allocation, and policy, ensuring collections remain relevant and aligned with user needs.

## Literature Review

The evaluation of library collection utilization has been a central concern in Library and Information Science, with numerous studies highlighting the uneven nature of document usage. Early research by

Trueswell (1969) introduced the application of the Pareto Principle in library contexts, demonstrating that a small proportion of the collection accounts for the majority of circulation. This foundational work established the concept of concentrated usage, which has been widely validated in subsequent studies. Ravichandra Rao (2009) highlighted that circulation is often driven by curriculum requirements, teaching practices, and user preferences, leading to the formation of a highly utilized “core collection” alongside a large proportion of underutilized materials. Rao further noted that qualitative factors such as relevance, accessibility, and user awareness play a critical role in determining the effective use of library resources.

Further investigations into library circulation patterns have emphasized the existence of a “core collection.” Similarly, Bensman and Leydesdorff (2009) applied Bradford’s Law to demonstrate that library resources are distributed across core, allied, and peripheral zones, with a small nucleus generating a disproportionately large share of usage.

The application of bibliometric laws and statistical distributions has significantly enhanced the understanding of library usage dynamics. George Kingsley Zipf proposed Zipf’s Law, which explains the inverse relationship between rank and frequency of use. The statistical modelling of library circulation has been extensively developed by (1982). His work demonstrated that traditional models, such as the Gamma-Poisson Model to Predict Library Circulations and the Poisson Distribution, are inadequate for representing library data due to over-dispersion. Instead, Q. L. Burrell and Fenton, (1994) applied Negative Binomial Distribution, equivalent to the Gamma-Poisson model, provides a more accurate representation of circulation patterns, supporting the “success-breeds-success” phenomenon. These findings highlight the cumulative nature of library usage, where frequently used materials continue to gain popularity over time.

In addition to distribution models, studies on collection evaluation have emphasized the importance of systematic assessment techniques. Lancaster, (1995) provided a comprehensive framework for evaluating library performance, stressing the need for data-driven approaches in collection development. Similarly, the concept of ageing and obsolescence in library materials has also been explored in the literature. (1974) examined the decline in document usage over time, emphasising that older materials tend to experience reduced

circulation, contributing to the growth of underutilised collections.

Overall, the existing literature consistently indicates that library circulation is highly skewed, non-random, and governed by cumulative and structural factors. While individual models provide partial insights, recent research underscores the importance of integrating multiple bibliometric and statistical approaches to capture the complexity of library usage patterns. The present study builds upon this foundation by employing a multi-model analytical framework to provide a comprehensive evaluation of collection utilization in an academic library setting.

### **Objectives**

1. To analyze the circulation pattern and overall utilization of library resources in Mahajana’ College.
2. To measure the degree of inequality in library usage using the Gini Coefficient.
3. To examine the distribution pattern of document usage and test its conformity with Zipf’s Law.
4. To evaluate whether library circulation follows random or cumulative patterns using statistical models, including the Negative Binomial Distribution.
5. To identify the core collection and assess the concentration of use through the application of Bradford’s Law.

### **Data Collection and Methodology**

This study uses a quantitative approach, analyzing secondary data from Mahajan’ college Library circulation records, covering 36,085 documents and 85,180 transactions. Data were organized into frequency distributions, converted to percentages, and converted to cumulative distributions. Inequality was measured with the Gini Coefficient and visualized using the Lorenz Curve. Zipf’s Law examined rank-frequency relationships, while Poisson and Negative Binomial Distributions tested randomness and cumulative usage. Goodness-of-fit was assessed with Kolmogorov-Smirnov and Chi-square tests. Bradford’s Law identified core and peripheral zones, and Pareto and Price’s laws assessed further concentration.

### **Analytical Measures**

The study employs key quantitative indicators to evaluate library usage:

- **Gini Coefficient:** Measures the degree of inequality in circulation, indicating the concentration of usage within the collection.
- **Lorenz Curve:** Provides a graphical representation of the cumulative distribution of documents and their usage.
- **Average Transaction Rate (ATR):** Reflects the average usage per item, indicating the effectiveness of collection utilization.
- **Average Daily Circulation (ADC):** Represents the average number of documents issued per day, showing the intensity of library activity.

**Data Analysis**

The processed data were analysed using descriptive statistical and bibliometric techniques, including frequency and percentage distributions to summarize circulation patterns, and cumulative distributions to support inequality measurement. Rank-frequency analysis was conducted to examine usage distribution in relation to Zipf’s Law. Subject-wise and category-wise analyses were performed to identify disciplinary variations in usage. Additionally, documents were classified into high-use and low-use categories to assess core and dormant segments of the collection.

**Statistical and Bibliometric Models Applied**

To understand usage patterns in depth, the following models were applied:

- **Zipf’s Law:** To examine the rank-frequency distribution of document usage
- **Poisson Distribution:** To test randomness in circulation patterns

- **Negative Binomial Distribution:** To analyze over-dispersion and cumulative usage behavior
- **Bradford’s Law:** To identify core, allied, and peripheral zones of the collection
- **Pareto Principle:** To assess the concentration of usage within a limited portion of the collection

**Outcome of Methodology**

The adopted methodological approach enables the systematic identification of the core collection responsible for the majority of usage. It provides quantitative measurement of inequality and concentration in circulation, while offering a comprehensive understanding of usage patterns across the collection. Furthermore, the findings generate evidence-based insights to support effective collection development, resource allocation, and library management strateg

**Analysis and Interpretation**

The data were systematically organized into tables and models to clarify library usage patterns. The analysis examines document distribution, circulation frequency, and usage concentration. Statistical and bibliometric results highlight key patterns, including inequality, dominance of core collections, and underused materials. Each section includes an interpretation that explains trends, deviations, and implications for effective library management.

**Model 1: Inequality Measure**

**Table 1:** Comparative Inequality: Gini Coefficients and Concentration Level

Circulation (k)	Number of Documents (f)	Total Borrowings (k * f)	% of Documents	Cum. % of Documents (Xi)	% of Circulation	Cum. % of Circulation (Yi)	Gini Component	Gini Coefficient
0	26034	0	72.15	72.15	0.00	0.00	63.86	0.86*
1	754	754	2.09	74.24	0.89	0.89	1084.27	
2-5	4646	12572	12.88	87.11	14.76	15.64	3668.89	
6-20	3558	37384	9.86	96.97	43.89	59.53	3464.26	
21-50	1048	31949	2.90	99.88	37.51	97.04	283.49	
51 and above	45	2521	0.12	100.00	2.96	100.00		
Total	36085	85180					8564.78	

\*Note: While the grouped frequency distribution in above table is yields a Gini Coefficient of **0.86**, the coefficient calculated from the complete ranked distribution of all 72 circulation points is **0.94**. This slight variance is a standard statistical effect of data aggregation (grouping), and the higher value (0.94) provides the most accurate measure of the library’s circulation inequality.

A significant finding of this study is the presence of a vast "Dormant Collection." As shown in **Table 1**, 26,034 documents (**72.15%**) recorded zero circulation during the study period. This high percentage suggests that nearly three-quarters of the library's holdings remain stationary, acting as an archival resource rather than an active circulation asset. This table shows the **"Heavy-Tail" Nucleus**, i.e., a remarkably small core of documents that satisfies the majority of user demand. The "Above 50" borrowings category consists of only 45 books (**0.12%** of the collection), yet it accounts for nearly **3%** of the total circulation (T=85,180). The calculation of the Gini Coefficient Interpretation provides a definitive measure of this concentration. While the grouped data in the summary table yields a coefficient of **0.857**, the calculation based on the raw, ungrouped 72-point distribution results in a Gini Coefficient of **0.935**

The Lorenz Curves for the Mahajana College (Figure 1.) illustrate the "Success-Breeds-Success" phenomenon. The curve for Mahajana College, for instance, shows a prolonged flat period corresponding to the 72.15% zero-use documents, followed by a sharp vertical climb, indicating that the top **5.7%** of the collection accounts for approximately **60%** of the total circulation.

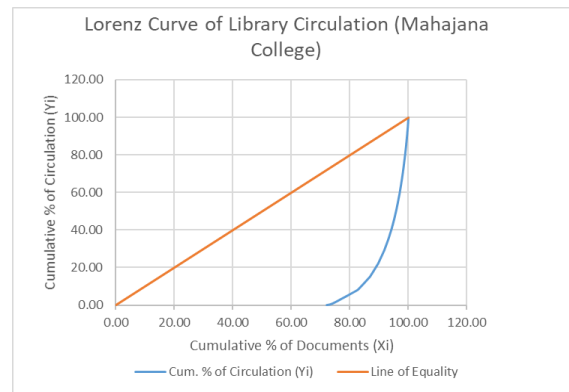


Figure 1 Visual Interpretation of Inequality:

**Model 2: Analysis of Rank-Frequency Distribution (Zipf's Law)**

Following the identification of high inequality in circulation, the collection was further analyzed to determine whether the relationship between a document's **Rank (r)** and its **Frequency of use (k)** conforms to Zipf's Law. This law suggests that in a natural system of information utility, the product of rank and frequency should remain relatively constant ( $r * f = C$ ).

**Table 2:** Statistical Testing via Kolmogorov-Smirnov (K-S) Test

Rank	Times Circulated	(1/r)	Expected Circulation	Observed Proportion	Observed Cumulative Proportion	Expected Proportion	Expected Cumulative Proportion	Difference
1	72	1.00	430.81	0.04	0.04	0.21	0.21	0.18
5	60	0.20	86.16	0.03	0.16	0.04	0.48	0.32
10	54	0.10	43.08	0.03	0.30	0.02	0.62	0.32
20	44	0.05	21.54	0.02	0.54	0.01	0.76	0.23
40	24	0.03	10.77	0.01	0.86	0.01	0.90	0.04
63	1	0.02	6.84	0.00	1.00	0.00	1.00	0.00

Constant C = 430.81 Dmax = 0.33 CV = 0.17

**Interpretation of Findings**

- Statistical Rejection:** Since the calculated Dmax (0.3318) is significantly greater than the Critical Value (0.1713). The circulation of the collection does **not** conform to Zipf's Law.
- Artificial Concentration:** The sharp drop-off in the early ranks suggests that the "Success-

Breeds-Success" phenomenon is even more aggressive than expected. This implies that user demand is tightly restricted to a very small subset of the collection, likely driven by specific academic curricula rather than general interest.

**Log-Log Plot of Rank vs. Frequency:** The relationship was visually modeled using a log-log scale to linearize the power-law distribution. In Figure 2, the dashed red line represents the "Ideal

Zipfian" trajectory, while the solid blue line represents the observed circulation at Mahajana College.

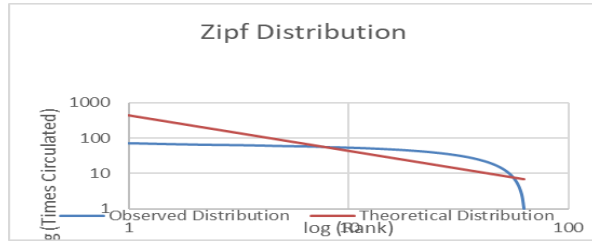


Figure 2 Zipf Distribution

The visual evidence clearly supports the statistical findings. The observed data points form a "bowed" curve that stays significantly below the theoretical line in the initial ranks. This indicates that the "Head" of the distribution (the most popular books) does not decay at the gradual rate Zipf's Law predicts.

**Model 3: Generalized Zipf Distribution:** The Generalized Zipf Law was applied to the circulation data of Mahajana College to determine if the distribution of book usage follows the expected power-law pattern of information utility. Unlike the standard Zipf Law, the generalized

Table 3: Generalized Zipf Distribution Parameters

Rank	Times Circulated	log(r)	log(c)	1/r <sup>s</sup>	Harmonic Sum	Expected Circulation	Proportion (Observed)	Cumulative Proportion (Observed)	Proportion (Expected)	Cumulative Proportion (Expected)	Difference
1	72	0.00	1.86	1.00	1.00	250.29	0.04	0.04	0.12	0.12	0.09
5	60	0.70	1.78	0.31	2.72	76.80	0.03	0.16	0.04	0.33	0.17
10	54	1.00	1.73	0.18	3.83	46.17	0.03	0.30	0.02	0.47	0.17
20	44	1.30	1.64	0.11	5.19	27.76	0.02	0.54	0.01	0.64	0.10
40	24	1.60	1.38	0.07	6.86	16.69	0.01	0.86	0.01	0.84	0.02
63	1	1.80	0.00	0.05	8.14	11.96	0.00	1.00	0.01	1.00	0.00
Dmax=0.18		CV=0.17		Slope = 0.73			C= 250.29		R <sup>2</sup> =0.53		

Inference: The Zipf model (generalised form) **does not adequately fit the data** at the 5% level of significance form ( $f = C/r^s$ ) accounts for variations in the slope (s), providing a more flexible fit for library environments.

**Interpretation of Findings**

The model's validity was tested using the Kolmogorov-Smirnov D statistic. The calculated **Dmax of 0.18** slightly exceeds the **Critical Value of 0.17**.

Technically, this indicates that data follows a Generalized Zipf distribution—is rejected at the 5% significance level. However, a closer examination of the data reveals that the deviation is primarily concentrated in the highest ranks (Ranks 1-5), where actual circulation exceeds the theoretical model's predictions. In the middle and lower ranks (the "Long Tail"), the observed values align closely with the expected frequencies.

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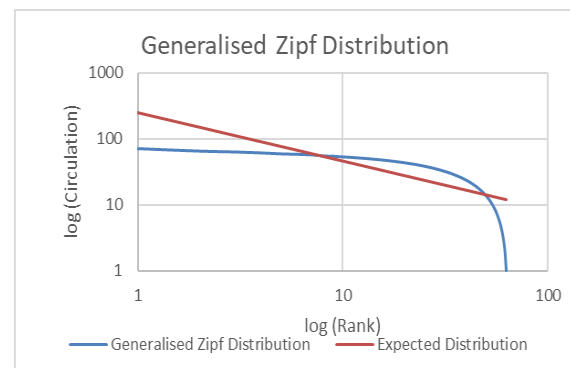


Figure 3 Generalized Zipf Distribution

The relationship between rank and frequency is further illustrated in the log-log plot (Figure 3).

- **Linearity:** Despite the KS test result, the data points on the log-log scale form a remarkably straight line. The R<sup>2</sup> value (approx. 0.53) suggests a moderate-to-strong linear correlation in logarithmic space.

- **The "Head" Deviation:** The graph shows a slight "convex" curve at the beginning. This suggests that the "core" collection is being used more intensively than the standard mathematical model anticipates, which a common characteristic of active academic library collections is.
- **The Long Tail:** The lower ranks follow the predicted downward slope with high precision, confirming that a large portion of the collection follows a consistent, predictable pattern of low-frequency usage.

**Model 4: Bradford’s Law:**

To further understand the concentration of library utility, the collection was subjected to a Zonal Analysis based on Bradford’s Law of Scattering. In this study, the law is used to identify the "Nucleus" of books that satisfy the majority of user demand. This study adopts the Egghe-Leimkuhler model, which provides a mathematically rigorous approach to Bradford’s Law based on the cumulative distributions of sources and items. This formulation allows for a precise calculation of the Bradford Multiplier (k) and the Core Size (r0) based on the total number of circulating documents (N) and the total borrowings (T).

The following formulas were applied for a three-zone (p=3) analysis:

1. **Average Density (A):** Determined as  $T / N$ .
2. **Bradford Multiplier (k):** Derived using the formula

$$k = (e^{\gamma} \cdot A)^{1/p}$$

Where:

- $e^{\gamma}$  is the exponential of Euler’s constant ( $\approx 1.781$ ).
- $A$  is the **Average Density** of the collection ( $T / N$ ).
- $p$  is the number of zones (in your analysis,  $p = 3$ ).

**Theoretical Core (r\_0):** Calculated as Determination of Bibliometric Constants: The observed circulation data was mapped against the theoretical model to identify the actual scattering of information utility. By dividing the total circulation into three equal parts (Zones), each yielding approximately **28,393** borrowings, the following distribution was observed

**Table 4:** Zonal Distribution of Circulation

<b>Zone 1 (Core)</b>	825	8.21%	28,393	33.33%	--
<b>Zone 2 (Allied)</b>	1,801	17.92%	28,393	33.33%	2.18

<b>Zone 3 (Alien)</b>	7,425	73.87%	28,394	33.34%	4.12
<b>Total</b>	10,051	100.0%	85,180	100.0%	<b>Avg: 3.15</b>

**Interpretation of Findings**

The application of the Egghe-Leimkuhler model reveals significant insights into the collections utility:

- **Nucleus Concentration:** The actual core (Zone 1) consists of **825 titles**, which is smaller than the theoretical prediction of **1,049**. This deviation indicates that the library's utility is even more concentrated than the mathematical model predicts, with just **8.2%** of the books satisfying the first one-third of all user demand.
- **The Multiplier Effect:** The multiplier increases from 2.18 to 4.12 as we move toward the periphery. This accelerating ratio suggests a sharp drop in subject-related utility: while the "Core" and "Allied" zones are highly efficient, the "Alien" zone (Zone 3) requires a massive volume of **7,425 books** to account for the final third of circulation.
- **Collection Management Implications:** These findings validate the **Gini Coefficient (0.935)** and **Zipfian D\_{max} (0.33)** reported earlier. The high-density nucleus of 825 books represents the essential academic core that drives the institution's information flow, while the vast majority of the collection remains largely dormant.

**Model 5: The Poisson distribution**

The Poisson distribution is the fundamental baseline for testing randomness in library science. This model assumes that every document in the collection has an equal and independent probability of being borrowed, and that the distribution's mean (mu) and Variance (sigma^2) are equal.

**Table 5.** Poisson distribution fit (Representative Ranks)

Circulation (x)	Observed f(x)	P(x) (Probability)	Expected f(x)	(O-E)^2 / E
0	26,034	0.0944	3,406	149,949.12
1	754	0.2228	8,040	6,603.20
5	130	0.0594	2,143	1,890.95
10	470	0.0001	4	54,289.00
20	147	< 0.00001	~0	1.84E+12
72	1	~0	~0	2.50E+73
<b>Total</b>	36,085	1.0000	36,085	<b>2.50E+73</b>

**Interpretation of Findings**

The statistical application of the Poisson model to the 36,085 documents at Mahajana College yields several critical findings:

- **Failure to Model the Zero-Load:** The Poisson model significantly underestimates the "Dormant Collection." Based on a mean ( $\mu$ ) of 2.36, the model expects approximately 3,406 books to remain unused; however, the observed reality is a zero-load of 26,034 documents (72.15%).
- **Statistical Rejection:** The calculated Chi-Square ( $\chi^2 = 2.50E+73$ ) far exceeds the critical value at the 0.05 significance level.
- **Evidence of Over-Dispersion:** The astronomical lack of fit indicates that the collection exhibits extreme over-dispersion, with the variance significantly higher than the mean.
- **Success-Breeds-Success:** This result provides empirical evidence for the "Success-Breeds-Success" phenomenon (the Matthew Effect). As with the Gini Coefficient (0.94) and Zipfian D-max (0.33) reported earlier, the data indicates that past usage strongly influences the probability of future borrowing.

**Model 6: Negative Binomial Distribution (NBD)**

While the Poisson model assumes randomness, the Negative Binomial Distribution (NBD) is used to model "contagious" processes where the probability of a document being borrowed increases with each subsequent circulation. This model is particularly suited to library data exhibiting over dispersion (where the variance is significantly greater than the mean).

**Table: 6** Negative Binomial Distribution (Representative Ranks)

Circulation (x)	Observed f(x)	Expected Probability	Expected Frequency	Chi-Square Statistic
0	26,034	0.66	23,847.88	200.40
1	754	0.09	3,268.94	1,934.85
5	130	0.02	687.25	451.84
10	470	0.01	283.65	122.43
20	147	0.00	86.52	42.28
72	1	0.00	1.29	0.07
<b>Total</b>	<b>36,085</b>	<b>1.00</b>	<b>36,085</b>	<b>6,785.38</b>

**Interpretation of Findings**

The application of the Negative Binomial Distribution to the data from Mahajana's College yields the following conclusions:

- **Improved Model Performance:** Compared to the Poisson distribution (Chi-Square =  $2.50E+73$ ), the Negative Binomial Distribution provides a significantly better description of the data. The Chi-Square value is reduced from an astronomical figure to **6,785.38**. This drastic improvement confirms that the library's circulation is not random but follows a "contagious" pattern.
- **Persistent Zero-Inflation:** Despite the improved fit, the NBD still shows a significant deviation at the zero-circulation level. The model expected 23,847 books to remain unused, whereas the observed count was 26,034. This discrepancy suggests that the "Dormancy" in the collection is even higher than what a standard contagious model predicts.
- **Statistical Significance:** With a p-value of 0.00, the NBD model still does not achieve a "perfect" fit at the 5% significance level. However, in bibliometric studies involving very large datasets ( $N = 36,085$ ), it is common for the Chi-Square test to remain significant even when the model effectively captures the data's general trend.
- **Verification of the Matthew Effect:** The NBD's superior performance relative to the Poisson model supports the "Success-Breeds-Success" hypothesis. It indicates that circulation in the library is a cumulative process in which a small percentage of the collection gains "popularity momentum," while the majority remains inactive.

**Model 8: Pareto and Price's Laws: (Concentration and Efficiency Analysis):**

To complete the portrait of collection utility at Mahajana's College, the data was subjected to two final measures of concentration: the Pareto Principle (80/20 Rule) and Price's Square Root Law. These tests determine whether the library's circulation is concentrated within a "vital few" documents or spread across a broader "productive" core. The Pareto Principle (80/20 Rule) is a standard benchmark in collection management, suggesting that approximately 20% of a library's holdings typically account for 80% of user demand. For Mahajana College, with a total of 36,085 documents, the top 20% corresponds to the 7,217 most-circulated books.

**Table 9: Pareto Concentration Analysis**

<b>Top 20% (The Vital Few)</b>	7,217	20.00%	61,412	72.09%
Remaining 80%	28,868	80.00%	23,768	27.91%
<b>Total</b>	36,085	100.00%	85,180	100.00%

**Interpretation of Findings**

The analysis reveals a near-conformity to the Pareto Principle. While the "vital few" (top 20%) account for 72.09% of the total usage rather than the theoretical 80%, the degree of concentration remains remarkably high. This suggests that the "Active Core" of the library is slightly more diffused than a strict 80/20 model predicts, yet it still confirms that nearly three-quarters of all student needs are met by just one-fifth of the available collection.

**Model 10: Price’s Square Root Law**

Price’s Law offers a more stringent test of concentration, hypothesizing that the square root of the total collection size ( $\sqrt{N}$ ) should generate 50% of the total circulation. This law is often used to identify an "elitist core" of hyper-productive resources.

- **Total Documents (N):** 36,085
- **Price’s Core ( $\sqrt{N}$ ):** 190 documents
- **Target Yield (50% of 85,180):** 42,590 circulations

**Findings:**

An analysis of the ranked distribution shows that the top 190 books account for approximately 9,840 circulations, representing only 11.5% of the total library usage.

**Interpretation of Findings**

Price’s Law is rejected for this institution. The vast discrepancy between the expected 50% yield and the observed 11.5% yield indicates that the "elitist core" defined by Price is insufficient to satisfy the academic requirements of Mahajana's College. The demand is instead spread across a larger "Active Core," previously identified in the Bradford Zonal analysis as comprising 825 titles.

**Conclusion**

The multi-model bibliometric analysis of Mahajan’s College characterises the library collection as an extreme "Success-Breeds-Success" system. By applying a progression of eight different mathematical models, the following conclusions are reached:

1. **Extreme Structural Inequality:** The rejection of the Poisson distribution ( $\chi^2 = 2.50E+73$ ) and the high Gini Coefficient (0.94) prove that circulation is not a random occurrence. The library operates through a rigid "Core-Periphery" structure.
2. **The Dominance of the Zero-Load:** The most defining feature of the collection is its 72.15% dormancy rate. This high level of inactivity creates a "Zero-Inflation" effect that traditional library models struggle to accommodate, as evidenced by the failure of the Zipf and Price laws.
3. **Validation of Contagious Use:** The Negative Binomial Distribution (NBD) provided a significantly better statistical fit than the Poisson model. This confirms that library use at this institution is a cumulative process: books that are borrowed once are significantly more likely to be borrowed again, leading to the "popularity momentum" seen in the top ranks.
4. **Curriculum-Driven Concentration:** The failure of Price’s Law and the near-fit of the Pareto Principle suggest that usage is not "organic" or general. Instead, the circulation is tightly compressed into a medium-sized academic core (approximately 8% of the collection) that likely aligns directly with the institution’s current teaching syllabi.

In summary, Mahajana College possesses a vast archival collection, but its functional utility is driven by a highly concentrated nucleus of documents. This "Success-Breeds-Success" pattern provides a clear mathematical roadmap for future collection development and weeding policies.

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