

**NATIONAL LIBRARY OF G20 COUNTRIES: A
COMPARATIVE STUDY WITH THEIR PRESENCE IN
SOCIAL MEDIA PLATFORMS**

Thesis submitted to the Faculty of Arts of Jadavpur University in partial fulfillment of the requirement for the Degree of Doctor of Philosophy in Library and Information Science

(Synopsis)

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Introduction:

A library is a traditionally collection of books and other resources for reading, study, and research. National Library serve as repositories of country's cultural and intellectual heritage, collecting and preserving materials such as books, manuscripts, maps, audio-visual and more. They also play a growing role in digital engagement through social media.

The study focuses on National Library of G20 countries, analyzing their traditional performance and social media performance. TOPSIS (Technique for Order of Preference by Similarity to Ideal Solution) method is used to rank libraries based on 5 quantitative indicators: working hours, collection size, budget, staff and library space. It also compares their social satisfaction rates and social media performance across platforms like Facebook, Twitter, Instagram and YouTube.

Background of the study

This study assesses the traditional and digital performance of National Libraries in G20 countries. It includes comparison between developed and developing countries, analyzing how these Institutions balance physical services with digital outreach.

Statement of the Problem

Comparative Study of National Libraries of G20 Countries and their performance in social media platform

Research Objectives

The study involves in measuring the National Libraries performance of G20 countries and making analysis of all. The objectives of study are evaluated the status of National Libraries in G20 countries. The objectives of study are as follows-

Traditional Rank and User Satisfaction metrics

- To evaluate the traditional rank of national libraries using TOPSIS analysis and compare it with user satisfaction rankings, identifying whether traditional performance metrics correlates with user satisfaction.

Platform-Specific Comparison:

- To analyze platform-specific engagement by identifying which social media platform (Facebook, Twitter, Instagram, or YouTube) shows the strongest correlation between post frequency, engagement per post, and follower count, and to identify the most engaging and widely used platforms.

Engagement Specific Comparison:

- To assess the relationship between social media engagement and traditional performance indicators, user satisfaction, and posting frequency, determining which national libraries rank highest in engagement.

Performance of National Library in Social Media

- To identify the posting behavior of national libraries, evaluating whether higher traditional performance (Pi) correlates with increased posting frequency and identifying libraries with the highest activity.

Cross Region Analysis

- To investigate regional differences in social media engagement and posting trends among national libraries, highlighting variations in strategy and effectiveness across geographic areas.

Comparison of Economic Developed and Developing Country

- To compare economic developed and developing countries with their national libraries' performance index (Pi), average social media post frequency, engagement levels, follower counts identifying disparities and trends.

Scope and Coverage of Research

This research focuses evaluating National Libraries of G20 countries. Parameters are set on the basis of a paper presented in the Conference on European National Library (CENL). TOPSIS method is used to rank the National Library 5 quantitative parameters selected by IFLA global vision and strategy outline. The TOPSIS ranking here is referred to as traditional metrics in the study because it evaluates national libraries based on well-established parameters based on ISO11620-2023, ISO 2789-2022 and ISO21248-2019. It also analysed their engagement in the social media platform.

Limitation

Some parameters on CENL report are not being able to consider because of non-availability of data. Facebook, X, Instagram and Youtube, these four important social medias have been taken for this study. National Library of China does not use any common social media. They use their own social media and that is totally restricted. So only traditional metrics is done on the available data from the website of National Library of China. There are more than one National Library having national importance for National Library of Italy and National Library of European Union. So National Library of Italy and National Library of European Union are not considered for the study.

Research Questions

Traditional Rank and User Satisfaction metrics

- What is the rank of National Library of G20 Countries on the basis of TOPSIS (traditional metrics)?
- What is user satisfaction rank of these National Libraries?
- Is there a significant correlation between traditional metrics and user satisfaction rank?
- Which National Library ranks highest as per traditional metrics?
- Which National Library ranked highest as per user satisfaction rate?

Platform-Specific Comparison:

- Which social media platform (Facebook, Twitter, Instagram, YouTube) shows strongest relationship between post per day and engagement per post?

- Which social media platform shows strongest relationship between engagement per post and followers?
- Which social media used for more engagement?
- Which social media are used more?
- Which social media is used for more post or frequently used??

Engagement Specific Comparison:

- Which National Library's engagement rank is high?
- Whether social media engagement correlates with traditional metrics?
- Whether social media engagement correlates with user satisfaction rank?
- Whether social media engagement correlates with posting frequency?

Performance of National Library in social media

- Whether high Pi leads National Library to high posting frequency?
- Which National Library's post frequency is high?
- Does the frequency of posting impact engagement rates across different platforms?
- Which social media are used more by post?

Cross Region Analysis

- What is the differences show in Pi score of different region?
- What are the regional differences of engagement per day in social media?
- What is the regional trend of post per day?
- Which library is more active and more engaged in social media?

Comparison of Economic Developed and Developing Country

- What is the difference identified on Pi for economic developed and developing countries?
- What is the difference identified on average post frequency, engagement and follower's count?
- Where is the difference identified on user satisfaction perspective of National Library of G20 countries?

Research Methodology

Five parameters are taken up for ranking based on IFLA Global Vision and Strategy outline. All National Libraries in world follows same standard and giving same services followed by International Standard of National Library. Services are being assessed by taking user satisfaction rate. 5 quantitative important parameters based on mentioned in ISO11620-2023, ISO 2789-2022 and ISO21248-2019 available in website of National Libraries. Rank is done based on Pi score of TOPSIS. These parameters are being considered for the study mentioned below:

| Parameter | Type | Method Used |
|---------------|--------------------------|----------------------------------|
| Working Hours | Operational Parameter | TOPSIS Analysis |
| Collection | Resource Parameter | |
| Budget | Financial Parameter | |
| Staff | Human Resource Parameter | |
| Library Space | Infrastructure Parameter | |

Then TOPSIS method has been applied on these criteria. TOPSIS is a multi-criteria decision-making (MCDM) method used to rank and select from a set of alternatives based on their closeness to an ideal solution. Developed by Hwang and Yoon in 1981, TOPSIS is grounded in the principle that the chosen alternative should have the shortest distance from the ideal solution and the farthest distance from the negative ideal solution (Hwang & Yoon, 1981).

Service is an important factor to assess the quality of the library. National Library is not an exception. To assess the quality, the user-satisfaction rate has been taken up. Percentage of positive review has been considered for the ranking.

In addition to traditional performance metrics and assessment of user satisfaction rate, the study also examines social media of National Library by analyzing followers count, engagement and posting frequency on social medias like facebook, twitter, Instagram, Youtube. The following methods are used:

| Category | Method Used |
|----------------------------|---------------------------|
| Post, Like, Share, Comment | Social Insider |
| Engagement | Like+Comment+Share |

To identify relationship between various performance indicators and social media engagement, correlation like Spearman and Pearson correlation methods have been used. The following correlations are examined:

| Category | Tool/ Method Used |
|--|---|
| TOPSIS Rank with User Satisfaction Rank | Correlation (Spearman Rank Correlation) |
| User Engagement Per Post with TOPSIS Rank | Correlation (Spearman Rank Correlation) |
| User Engagement Per Post and TOPSIS Rank | Correlation (Spearman Rank Correlation) |
| Social Media Post Per Day and Engagement Per Post | Correlation (Spearman Correlation) |
| TOPSIS with Post Per Day | Correlation (Spearman Rank Correlation) |
| Platform Specific Correlation | Correlation (Pearson) |
| For Correlation | Python in Google Colab |

Chapters of the study

Chapter 1 – Introduction: This chapter sets the outline for entire research study. It introduces the topic, states the problem or research questions, explains the significance of the research and sets objectives. It may also provide the overview of study.

Chapter 2 -Literature Review: This chapter reviews existing research, theories, and publications relevant to the study. It provides context by summarizing already known knowledge, identifying gaps in knowledge and justifying need for the current research. It helps to build research methodology and foundation of study.

Chapter 3 –National Libraries of G20 Countries: This chapter describes the National Libraries of G20 countries. It may cover their history, functions, organizational structure, services, digital contribution and history.

Chapter 4- Research Methodology: This chapter explains how the research is conducted. It describes the research design, methods of data collection, tools used and analysis procedures.

Chapter 5-Data Analysis and Interpretation: The Chapter presents the collected data and analyzes it to answer the questions. It includes statistical or qualitative analysis, charts, tables and graphs.

Chapter 6 – Findings, Conclusions, and Suggestions: This final chapter summarizes the key findings from the data analysis and discusses their implications. It also provides important practical suggestions for future research.

Findings

This study of national libraries using the TOPSIS (Technique for Order of Preference by Similarity to Ideal Solution) method based on traditional performance metrics revealed that the Library of Congress and British Library ranked higher. These rankings were primarily determined through indicators such as budget allocation, staff strength, collection size, opening time and space of National Library. User satisfaction is analysed by Review of users. Notably, it is represented weak or statistically insignificant correlation between traditional metrics and user satisfaction rankings, indicating that institutional resource strength alone does not directly translate into a more favorable public perception or user experience.

The platform-specific comparison reveals that YouTube demonstrates the strongest relationship between the number of posts per day and engagement per post. Facebook shows correlation

between engagement per post and the number of followers. Instagram had the highest average engagement per post across platforms; Twitter remained the most widely used social media platform among national libraries.

Regarding engagement-specific comparisons, Library of Congress and British Library has been found to have the highest engagement rankings with traditional metrics. Their social media strategies yielded stronger audience interaction. A positive correlation was identified between social media engagement and traditional metrics, indicates that resource availability does guarantee digital engagement success. However, correlation of social media engagement and user satisfaction ranks is almost zero, suggesting that social media interaction does not contribute to better public perception. Moreover, a positive relationship was observed between posting frequency and engagement levels.

In examining the performance of individual national libraries on social media, it is observed that a high-Performance Index (Pi), which combines metrics such as engagement rate, follower count, and content frequency, does not necessarily correlate with frequent posting. Some libraries achieved high Pi scores through more strategic, high-quality, and targeted posts rather than frequent updates. In contrast, libraries such as the National Library of India exhibits high posting frequencies though the level of engagement varied considerably based on content effectiveness.

Cross-regional analysis highlights significant differences in engagement patterns. Libraries located in North America shows the highest average engagement per day. These results reflect the activeness of users. . In contrast, National libraries across South America demonstrate the highest

frequency of daily posts, especially from National Library of India, reflecting community-oriented outreach.

A comparison between economically developed and developing countries reveals substantial disparities. Libraries in developed countries consistently exhibited higher Pi values, reflecting stronger digital performance. These libraries also recorded higher average engagement rates, greater follower counts, and broader reach. Conversely, national libraries in developing countries shows higher average posting frequencies but struggled with lower engagement rates, pointing to challenges related to quality of post and audience targeting.

Conclusion

National libraries must adopt a more integrated approach to performance evaluation that not only accounts for institutional inputs but also emphasizes user-centric outcomes and digital engagement effectiveness. Strategic use of social media, qualitative content, and responsiveness to user needs can significantly enhance library visibility, relevance, and public satisfaction in both physical and virtual spaces.