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IMPACT OF LIQUIDITY MANAGEMENT ON PROFITABILITY OF INDIAN PUBLIC SECTOR BANKS: A COMPARATIVE STUDY

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ABSTRACT

The examination of prominent public sector banks in India from 2019-20 to 2023-24 revealed significant trends and discoveries, providing critical insights into their financial health and performance. The research concentrated on five leading banks: Bank of India (BOI), State Bank of India (SBI), Punjab National Bank (PNB), Bank of Baroda (BOB), & Industrial Development Bank of India (IDBI). The profitability ratios, comprising Net Profit Ratio, Operating Profit Ratio (OPR), Return on Net Worth (RONW), Return on Capital Employed (ROCE), Book Value per Share, and Earnings Per Share (EPS), demonstrated varying trends among the banks. Although SBI and BOB consistently exhibited favorable ratios, BOI and IDBI encountered difficulties, incurring losses and demonstrating inefficiencies in capital deployment. The discrepancies in these statistics underscored the divergent financial fortunes of the banks. Liquidity parameters, including the Current Ratio & Quick Ratio, exhibited steady positions for SBI & PNB, while others displayed variable movements. IDBI continuously maintained a superior Current Ratio, signifying a robust liquidity position. Nonetheless, the distinct liquidity ratios exerted differing levels of impact, underscoring the necessity of a comprehensive strategy for liquidity management. Dividend payout ratios vary, indicating each bank's own strategy for dividend distribution. SBI regularly exhibited a large Dividend Payout Ratio, signifying a propensity to issue dividends, whilst BOI and IDBI maintained lower average percentages. Friedman tests indicated considerable disparities in financial ratios across the chosen banks, highlighting the necessity for a detailed understanding of each bank's plans and performances. The report offers a thorough analysis of the financial environment of prominent public sector banks. The findings underscore the necessity of evaluating many financial metrics for a comprehensive assessment of a bank's financial well-being. The banks' divergent performances highlight the dynamic characteristics of the banking system, prompting policymakers and stakeholders to modify policies in response to the unique difficulties and possibilities encountered by each institution.

Keywords: Financial Health and Performance, Public Sector Banks, Financial Indicators Liquidity & Profitability Ratios

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1. INTRODUCTION

The financial market allocates diverse revenues among different citizen groups based on a variety of metrics, as well as preparing public funds for sale. Diverse enterprises possess distinct financial prerequisites; for example, acquiring agricultural gear and equipment requires different types of loans. Furthermore, smaller enterprises do not require extensive credit.

The financial sector, predominantly consisting of banks, fulfils almost all of society's financial requirements. People often view the banking industry as crucial to the functioning of the economy. For any nation seeking economic advancement, cultivating a strong banking sector is essential (Abirami, K., 2018). A robust economy relies on a stable

financial system, in which a sturdy banking sector is crucial for mobilizing and effectively allocating public funds. In comparison with other nations, our nation confronts both material & financial obstacles. The rising incidences of financial misconduct and systemic failures have had a significant impact on Indian financial economy.

This situation presents significant issues, particularly for public banks, due to their reliance on government policy. Public banks frequently encounter political limitations when attempting to establish their presence in particular locations.

The Indian banking sector is integral to the nation's economic framework. It comprises multiple banks, private as well as public, collaborating to deliver financial services to people, enterprises, and the government.

Public Sector Banks: The government controls and governs these financial institutions. They are essential in providing banking services to rural & remote regions, thereby enhancing financial inclusion.

Private sector banks: Financial institutions that are owned by either individuals or corporations are known as private sector banks. They operate with a profit incentive and frequently implement innovative technologies and services in the banking sector.

International banks: In India, several foreign banks operate, increasing the variety of services offered.

Banks provide many services, such as savings and checking accounts, credit cards, loans, and investment goods. They function as financial intermediaries, enabling the movement of capital within the economy.

Regulation: The Reserve Bank of India (RBI) serves as principal regulatory authority supervising the operations of banks. It establishes regulations and protocols to guarantee stability and efficiency within the financial system.

The banking sector encounters obstacles like non-performing assets (NPAs), technological upheavals, and the necessity for ongoing adaptation to evolving economic conditions (Cheenu Goel et. al., 2013).

Banking industry of our country is a dynamic and essential component of the nation's economic framework, addressing the varied financial needs of its populace.

1.1. CONCERNING BANKING

According to the Oxford Dictionary, banking is defined as the management of customer deposits for forecasting purposes, demand payments, income-based credit extension, and merchant financing. Teacher Sayers defines a bank as a framework that primarily recognizes its obligations through the payments of others' commitments.

According to the Organizations Act of 1949, "subsidizing refers to the provision of loans or access to individuals' financial resources, to be repaid through requests and deducted from foreign exchange fees, transaction fees, and similar charges." Furthermore, "Financial Organization, India refers to any entity that utilizes corporate funds."

From the aforementioned locations, it is clear that a bank is a financial institution engaged in deposits & services. Furthermore, a banking foundation is any entity that collects goods or transactions and accepts public funds solely to finance its operations, without considering producers or vendors.

1.2. HISTORICAL PERSPECTIVE

Numerous tits have been observed. Originating from usury and hundi practices, it has progressed to include contemporary methods like real-time gross settlements and mobile banking. The following key points outline the historical evolution of Indian banking:

1.2.1. PRE-INDEPENDENCE ERA (1770-1947)

The roots of contemporary banking in India date back to late 18th century, when first banks were established. In 1770, the Bank of Hindustan marked the inception of banking in India, but it dissolved between 1829 and 1832. Established in 1786, the General Bank of India ceased its operations in 1791.

The Union Bank of Calcutta, established in 1829 through merger of Commercial Bank & Calcutta Bank, became insolvent in 1848. Allahabad Bank, established in 1865, persists in its banking activities today.

Oudh Commercial Bank, founded in Faizabad in 1881, terminated its activities in 1958. Lahore saw the establishment of the notable institution, Punjab National Bank, in 1894.

1.2.2. POST-INDEPENDENCE ERA (1947 TO PRESENT)

The post-independence era of banking in India consists of three primary segments: the pre-nationalization phase, the post-nationalization phase, and liberalization phase. We provide a comprehensive elucidation of these phases below.

1.2.3. PRE-NATIONALISATION PERIOD (1947–1969)

Bank of Baroda Limited and United Commercial Bank Limited are notable privately owned banks in India, each possessing substantial public deposits. The financial sector includes numerous commercial banks, managed by private organizations and government representatives.

Prior to nationalization, the RBI was not wholly state-owned. Due to the Indian Banks Recovery (Transfer of Ownership) Act, 1948, it became profitable. Following independence, India had 84 banks, but the division during the Common Era prior to the partition with Pakistan reduced them to two. This separation profoundly affected the operations of numerous banks, particularly in Punjab and West Bengal.

In 1947, thirty-eight banks ceased operations, seventeen of which were located in West Bengal. Furthermore, in 1948, 45 financial institutions ceased operations due to branch over-expansion and resource inadequacy.

1.2.4. NATIONALIZATION PERIOD (1969-1991)

During the pre-initial public offering period, the exposure of large corporations to undisclosed owners, such as firms and innovators, increased ownership and diminished government initiatives. The Indian government allocated ₹50 crore in store advances to 14 major banks. Private owners managed banks, except for the SBI, in the country's historical context; however, in 1969, the Private Bank of India, which became holding Bank of India, took over administration, management, and operation of the banks. He usurped control of his government. Fourteen large firms hold 85% of the nation's positions. Moreover, the bank's limited data collection offers minimal support, resulting in constrained credit availability. Consequently, he opted to strengthen the relationship between financial sector & government. The New Banking (Obtaining & Moving Establishments) Guidelines of 1969 provided regulations for the governance of the nation's banks. In 1969, there were 14 participating banks: Central Bank of India, Bank of Maharashtra, Syndicate Bank, Canara Bank, Indian Overseas Bank, Bank of India, Union Bank, UCO Bank, Allahabad Bank, Dena Bank, Bank of Baroda, Indian Bank, United Bank of India, and Punjab National Bank.

In 1980, the second phase of nationalization took place, including six new commercial banks with deposit liabilities surpassing ₹200 crore. The aim was to provide the government with enhanced authority over credit distribution within the nation. In this second phase, the government maintained control over ninety-one percent of the banking sector. The banks nationalized in 1980 comprised: Andhra Bank, Corporation Bank, New Bank of India, Oriental Bank of Commerce, Punjab & Sind Bank, Vijaya Bank.

The National Credit Council (NCC) was founded in February 1968 to assist the government & RBI in allocation of credit according to planned priorities. In 1969, the Indian government nationalized 14 prominent retail firms in the northern area to regulate credit distribution. The Main Bank Program, launched in 1969, sought to unify diverse funds nationwide and offer credit guarantees to essential sectors. The concept of lending in designated "areas of need" originated in 1972.

1.2.5. LIBERALIZATION PHASE (1991 ONWARD)

Territorial currency fluctuations are substantial alterations occurring among currencies in India, encompassing modifications in the financial system and capital markets. The principal rationale for reforming India's monetary sector is to provide a regulated, diversified, efficient, and robust environment. In light of this reality, the Indian Legislative Assembly sanctioned the establishment of the Commission on Financial Services (CFS), referred to as the Narasimham Committee, in August 1991.

The First Phase of Reforms (1991-92 to 1997-98) and Second Phase of Reforms (1997-98 onwards) comprise the two sub-phases of the liberalization phase.

The initial phase of reforms took place from 1991-92 to 1997-98. The monetary area faced challenges in the 1990s, such as adverse living conditions, persistent instability, and inadequate capital. We must strive for financial sector stability, taking into account these factors as well as the integrity of the various repayment guarantees. In April 1992, India suggested a peaceful agreement about asset distribution along with sufficient resources. We classified the bank's expansion into four categories: standard capital, insufficient capital, precarious capital, and detrimental capital. An eight-stage wellbeing framework previously evaluated banks. The latest model may indicate that banks are in robust condition. India has implemented stronger financial regulations to bolster capital in banks. Finally, an Indian bank with branches outside India must satisfy the 8% capital adequacy requirement. Comparative criteria pertain to obscure banks; nevertheless, the model employed by Reserve Bank of India is influenced by 1994 Excursion 31, which became the anomaly of the 1993 Excursion 31. Bank Establishment Information.

Indian public officials have implemented modifications following widespread protests, opting to allow public sector banks to directly access capital markets to generate funds from general populace. He understood that banks can acquire money from the capital market; nonetheless, the state should possess at least 51% of the revenue from public banks. Savings banks informed commercial enterprises about India to facilitate their access to Lok Adalat, assisting banks and small borrowers in circumventing NPAs while addressing their concerns. The Service of Money and Chapter 11 Recuperation Act initiated an initiative in 1993 to address non-performing assets (NPAs) and ensure the swift resolution and collection of these debts through legal channels.

The Second Phase of Reforms began in 1997 and continued until 1998. The enhancement of prudential rules grounded in internationally acknowledged criteria is the central emphasis of the forthcoming modifications to the financial industry. Public specialists are focusing on assisting banks in salvaging distressed assets; hence, banks may opt to reduce their non-performing assets. This phase proved to be effective. As the quality of capital increases, banks begin to extend credit, leading to significant improvements in financial accounts. During this period, margins contracted due to heightened competition, yet banks' profits increased owing to improved asset quality. Currently, banks offer prepayment services to agribusinesses and small to medium enterprises. Furthermore, banks ought to provide "no-frills" lending options. The RBI data indicates the establishment of approximately 13 million non-benefit accounts in just two years.

1.2.6. SIGNIFICANT TRANSFORMATION FROM 1991-92 ONWARDS

India has implemented two categories of banking sector changes: policy reforms and legislative reforms. Policy reforms pertain to alterations in various banking policies, whereas legal reforms concern modifications in legislative framework governing banks in India. The comprehensive account of significant banking sector reforms from 1991-92 onward is as follows:

Policy Reforms

- In April 1992, India established a robust framework based on worldwide standards for payment assurance, capital planning, storage, and capital adequacy.
- In January 1993, we adopted regulations governing the receipt of provincial confidential financial foundations.
- November 1994 saw the establishment of the Money Panel, and November 1995 saw the preparation of the Leader Board for the supervision of new and regulated banks (OSMOS system).
- Strategy declined from a peak of 38.5% in February 1992 to 25.0% in October 1997.
- The capital holding rate decreased from 15% in April 1993 to 4.5% in June 2003.
- The declaration of mortgage interest rates in April 1993 led to an increase in loan interest rates.
- In June 1995, the Companies Act of 1949 formed the Financial Supervisory Authority. MPBF was recommended in India in April 1997 at the recommendation of the Tondon Warning Gathering.
- To strengthen the banks' capital bases, the capital adequacy ratio increased from 8 percent to 9 percent in March 2000.

- In March 2004, the government increased the foreign direct investment cap in the banking industry from 49 percent to 74 percent.
- The company instituted a comprehensive policy framework in February 2005 to ensure diversified ultimate ownership and control, suitability of significant shareholders, the chief executive officer, and directors, sound corporate governance principles, minimum capital requirements, and operational transparency. Additionally, the same month saw the establishment of the strategic plan for foreign banks operating in India.
- We urged banks to implement no-frills accounts with minimal or zero minimum balance requirements in November 2005.

Judicial Reforms

- The Banks and Financial Institutions (Recovery of Finances) Act, 1993 established a tribunal to expedite independent adjudication and facilitate the recovery of non-performing assets. As a result, the nation instituted the Debt Recovery Tribunal (DRT).
- Legislation superseded the SBI Act of 1955 in October 1993. Reforms often entail the distribution of resources to the public. The Financial Institutions (Acquisition & Transfer of Undertakings) Acts of 1970 & 1980 have undergone amendments. These modifications have permitted state banks to engage in the capital market; nonetheless, the government's ownership must not surpass 51%. In the early months of 2002, the Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest (SARFAESI) Act 2002 came into effect.

1.3. SECTORS OF INDIAN BANKING

Customer happiness is crucial in the present market landscape. Marketers must customize products & services to meet various & evolving needs of customers. Likewise, in banking sector, clients exhibit a diverse range of requirements. Banks must launch an innovative array of banking solutions to meet these needs.

1.3.1. CORPORATE BANKING

Corporate banking typically serves major corporate entities, including both domestic and multinational firms, regardless of their ownership status (public or private). This sector primarily provides two principal categories of services: commercial banking and financial services designed for major clientele, particularly multinational corporations. Commercial banking offers traditional services including deposit acceptance, lending, and a range of banking operations such as mobile banking & credit cards. In contrast, substantial clients are presented with a comprehensive selection of products and services in corporate banking. In this area, international banking services include trade financing and foreign exchange operations, with banks protecting global enterprises through hedge products. Moreover, Extended provides substantial financial assistance to significant enterprises and governmental organizations, not solely through loans but also via the issuing of public securities.

Corporate banking ensures the availability of financing for a wide range of initiatives for both national and international clients. Traditionally, banks do not classify insurance as a banking business; however, corporate banking allows them to provide insurance-related goods and services. Corporate banking includes financial advising for various corporate and financial activities, including mergers and acquisitions, asset management, and taxation.

1.3.2. COMMERCIAL BANKING

The challenges in retail banking are substantial. Globally, contract credits have recently exhibited a trend. The rapid progression of new information, improvements in the macroeconomic environment, fluctuations in financial markets, and various microeconomic demand and supply-side factors propel the evolution of retail credit, particularly in emerging business sectors (Retail Banking: Potential Opportunities and Challenges, Discourse by Shyamala Gopinath, June 16, 2005). Retail banking encompasses the comprehensive concept executed by all commercial banking institutions. Retail establishments, credit cards, insurance, investments, and more are examples. Furthermore, there are multiple means through which banking institutions can reach their clients. This includes the phone center, bank branches, online banking, and other similar channels. Within the retail banking sector, a significant number of small clients are present.

1.3.3. GLOBAL BANKING

Banking operates across various nations, potentially posing issues for bank oversight internationally due to uncertainty about regulatory authority. Efficient collaboration and communication among states can mitigate this difficulty.

1.3.4. RURAL BANKING

Considering the significant population living in rural and semi-urban parts of India, it is essential for banks to broaden their services to these regions. This initiative, a recent and noteworthy one, represents an enhanced version of previous financial inclusion schemes in India. This project seeks to guarantee that banking services are accessible to every household, thereby closing the divide between urban and rural/semi-urban banking.

1.4. STRUCTURE OF INDIAN BANKING

Each nation functions under its own distinct financial framework and banking rules, dictated by certain policies and principles. The financial framework of India consists of multiple banking institutions, chiefly commercial banks and cooperative banks. These entities serve various sectors, including the economy, business, labor, goods, services, government pensions, mutual funds, and others. Governmental laws significantly shape India's financial infrastructure, a testament to its diverse economy. The government implements changes through the nationalization of banks, which often leads to the closure of regional banks and the creation of new ones. The government permits foreign banks to enter India and establish branches. The Indian Financial Sector, local Grameen Banks, and cooperative banks are among the diverse entities. Furthermore, India's financial system includes the postal savings bank. Structure of Indian banking pertains to organization and functioning of financial sector in India. Let us elucidate this concept in more accessible language:

Comprehending the Framework: Imagine the Indian banking framework as a large tree with multiple branches. Each branch signifies a distinct category of bank, collaboratively functioning to deliver financial services to individuals.

Bank Categories: There are two main categories of banks in India.

Commercial Banking Institutions:

These are banks with which the majority of individuals are acquainted, such as the State Bank of India (SBI), HDFC Bank, & ICICI Bank. They provide an extensive array of services to the public, encompassing savings accounts, loans, and investment alternatives.

Cooperative financial institutions:

These resemble community banks that concentrate on assisting particular groups, such as agriculturalists or local populations. They operate on a cooperative basis, indicating that customers frequently own and govern these banks.

Regulatory authorities and oversight agencies:

Regulators and watchdogs oversee the Indian financial sector, much like they would oversee a large tree that requires maintenance. The primary institutions are the Reserve Bank of India (RBI) and the Securities and Exchange Board of India (SEBI). They ensure that banks adhere to regulations and operate in the public's best interest.

Functions of Financial Institutions:

Every branch of the financial system has a distinct function. Commercial banks facilitate routine banking requirements by providing secure storage for funds and delivering lending services. Cooperative banks prioritize the distinct needs of particular communities.

Branches and ATMs:

Consider bank branches and ATMs to be the foliage of the banking institution. Individuals can conveniently access financial resources and banking services thanks to their nationwide distribution.

Digital Banking:

In recent years, digital banking has proliferated significantly within the financial sector. It enables banking via your computer or smartphone, facilitating swifter and more comfortable transactions.

Financial Inclusion:

An equitable financial system ensures universal access to its advantages. The Indian government is striving to include a greater number of individuals into the banking system via initiatives such as the Jan Dhan Yojana, with the objective of providing financial services to every household.

Challenges: Occasionally, the banking sector has difficulties, such as non-performing loans or economic fluctuations. Regulators and financial institutions collaborate to tackle these difficulties and maintain the robustness of the banking system.

The structure of Indian banking resembles a well-organized tree, delivering crucial financial services to the populace and fostering the nation's economic prosperity.

1.4.1. RESERVE BANK OF INDIA

Different countries refer to public banks by different names, and their capabilities may vary from one region to another. The Reserve Bank of India is country's primary monetary authority. Dr. B. R. Ambedkar's work "The Rupee Issue: Its Starting Points and Arrangement" presents strategies, methods, and recommendations that form the foundation of the Reserve Bank of India. We presented the book's concept to Hilton Youth Board. In 1926, the Holding Bank of India established its model. This year, the Hilton Youth Board of Trustees, also known as the Endowment Finance Panel, recommended that India establish a national bank. At that time, the rationale for establishing the public bank was to curtail the government's jurisdiction over monetary and credit systems and to enhance financial institutions nationwide.

On January 1, 1949, Bank of India officially came into existence. In 1966, it acquired the Indian Property Bank. In 1969, a pivotal event occurred with the nationalization of 14 major banks, followed by more nationalizations in 1980. In 1973, Foreign Exchange Regulation Act strengthened Indian banking sector, and Foreign Exchange Management Act supplanted it in 2000. In 1974, a goal-setting initiative for bank lending sectors began, establishing targets for Indian public banks the following year. During the 1991 crisis, when the rupee depreciated, the RBI was critical, and it maintained surveillance of the gold markets, demonstrating its commitment to economic support. It has consistently established comprehensive contingency preparations. The 2004 agreement established the monetary punishment plan for this year. Reserve Bank of India received authority to regulate money, gold-related enterprises, government securities, and unrecognized securities transactions in India in 2006-07.

Reserve Bank of India is oldest central bank in developing countries (Sethi & Bhatia, 2011). It operates under the supervision of a central board of directors, serving as India's monetary authority and regulatory body. The issuance of Indian currency falls under the jurisdiction of Reserve Bank of India. As regulator of India's banking sector, it serves as banker for banks operating within nation.

1.4.2. DESIGNATED FINANCIAL INSTITUTIONS

To qualify for the RBI's Second Schedule, a bank must comply with the following stipulations:

- The bank must conduct banking operations in India.
- The bank's paid-up capital & reserves must total no less than `5 lakh.
- The bank must prove to Reserve Bank of India that its operations align with interests of depositors.

The bank gains two advantages: The first aspect is the ability to obtain loans from Indian holding banks, as well as the methodology for calculating bank money per individual. On the other hand, booked banks may be subject to specific constraints, such as the requirement to dispatch statements at regular intervals, whereas non-scheduled banks are exempt from these restrictions. Proposed banks must adhere to the reserve requirements of India's regulated banks, while unlisted banks are required to comply with their own reserve mandates. Banks seeking to operate in India have the following primary objectives:

1.4.3. SCHEDULED COMMERCIAL BANKS (CB)

These banks perform conventional banking activities, including receiving deposits and providing credit to diverse segments of society. Scheduled banks comprise two categories: scheduled commercial banks and scheduled cooperative banks. Commercial banks operate on a profit-oriented basis, unlike cooperative entities that serve the interests of a particular group of members. In India, scheduled commercial banks fall into the following primary categories:

1) Public Sector Banks (PSU):

Currently, India possesses 22 regional public sector banks, classified into three categories: State Bank of India (inclusive of Bhartiya Mahila Bank), national banks, and IDBI Bank Limited. SBI is the largest national bank, having been established after IBI's nationalization in 1955. Founded in 1955, the SBI established its legislative structure and, by 1960, had connected with seven state banks. In the year 2017.

2) Private Sector Banks (PSB):

Prior to the establishment of public banks, the Indian monetary sector was predominantly associated with public sector banks; however, in 1991, the inception of private banks coincided with the postponement of economic reforms. The secret sector is currently a substantial component of the Indian economy. The government does not possess a substantial equity interest in commercial banks; instead, private investors hold that position. This indicates that the clandestine authority will exert control and regulation over financial institutions in the covert area. Public authorities enumerated the 14 main regional banks in 1969, and classified territorial libraries into two primary categories: new local libraries and historical territorial libraries. Old provincial banks are private institutions that existed prior to nationalization in 1969, whereas new local banks are authorized entities that were allowed to conduct financial operations following the 1991 regional settlement. This implies that the nationalization of private benefit organizations occurred because of their significant or minimal specialization in the nation's development. These banks only operate in designated zones and adjacent regions. Supervisors of heritage provincial banks have senior chiefs who hold significant responsibility for regional representation and communications. In contrast, New Provincial Investment Funds Banks emerged amid the early 1920s economic crisis. In 1993, amendments to the Monetary Announcing Act conferred authority to maintain accounts in novel private sectors. Emerging trends indicate that new regional enterprises are becoming increasingly prominent in the national financial industry.

3) Foreigen Banks

These foreign banks managed the majority of India's import and export activities, leading to their designation as commercial banks until the 1950s. These banks, despite being subsidiaries of foreign corporations, functioned within India. As the Indian economy grew, numerous foreign banks expanded their presence by establishing offices and branches within the country. Utilizing their proficiency in services such as ATMs, electronic banking, credit cards, and customer relationship management, these banks achieved notable advancements in the financial sector. They provided worldwide financing for diverse operations, including trade, travel, and overseas investments, addressing both commercial and retail banking requirements. Services encompass promotions, fund transfers (including remittances and savings management), and collaborations with local institutions such as clubs, associations, and other financial management services.

The RBI evaluates multiple criteria prior to granting licenses, such as the bank's minimum capital thresholds, oversight by the home country's regulatory authority, financial stability, both international and domestic ratings, bilateral relations between the bank's home nation and India, and adherence to obligations specified by the World Trade Organization (WTO) regarding the establishment of ATMs and branches in India.

Their implementation of new technologies and a highly skilled personnel has greatly enhanced the Indian banking sector. This has enhanced the prestige of foreign banks, rendering them technologically sophisticated and efficient, thereby considerably contributing to India's economic environment (Sethi and Bhatia, 2011).

1.4.4. REGIONAL RURAL BANKS (RRB):

These banks focused on sectors that conventional financial institutions often overlook, such as small-scale agriculture, local enterprises, and talented individuals. These banks sought to provide lending options for these

demographics. In 1975, India inaugurated its most prominent rural banks to cater to this demographic, coinciding with Mahatma Gandhi's birth anniversary.

The five banks were located in diverse regions, including Gorakhpur and Moradabad in Uttar Pradesh, Jaipur in Rajasthan, Bhiwani in Haryana, and Malda in West Bengal. Jaipur-Nag in Purpur has constantly represented the five rural banks in these regions. These banks possessed an allowed capital of Rs 1 lakh and a fixed capital of Rs 25 lakh, with the federal government owning 50%, the state government 15%, and the rest shares obtained from supporting organizations.

1) Structure of Regional Rural Banks

Regional Rural Banks (RRBs) are cooperative entities formed collaboratively by the State Government, Central Government, and Sponsored Banks. They cater to the needs of a particular, limited sector in the financial system. They have the authority to establish branches or agencies in government-designated areas within their adjacent districts. Initially capitalized at 1 crore, it increased to 5 crore in 1987 due to the Regional Rural Banks Amendment Act, 1987. In this capitalization structure, the Central Government possesses a 50% stake, the State Government retains 15%, and the sponsored commercial bank controls the remaining 35%. The sponsor bank additionally provides administrative assistance and facilitates the recruitment and training of personnel during the initial stages of the RRBs.

Roles: The Banking Regulations Act of 1949 sanctioned all Regional Rural Banks (RRB) in India to conduct banking operations within the country. In addition, Regional Rural Banks may also engage in the activities described in subsection 1 of section 6 of the Act, which are as follows:

1.4.5. SCHEDULED COOPERATIVE BANKS

These banks are distinct entities, interconnected with their members, who function as both proprietors and clients. Co-operative Banks, established by their members, operate under the idea of collaboration to address mutual interests. They offer a variety of banking and financial services to both members and non-members. Certain Co-operative Banks function in public stock markets, permitting non-members to possess a share of the bank, thereby forming semi-Co-operative Banks. Regulatory oversight of Co-operative Banks is governed by both banking regulatory agencies and cooperative legislation. Accessibility, transparency, and effective service provision. Co-operative Banks generally concentrate on rural and micro-financing, facilitating credit accessibility for farmers at low interest rates, customized to their socio-economic circumstances. Furthermore, they offer financial support to rural residents and farmers in need. These banks also offer personal credit services to small businesses and self-employed individuals. The establishment of Co-operative Banks in India originated in 1904 with the Cooperative Credit Societies Act, which sought to create such societies in both rural and urban regions. The Cooperative Societies Act of 1912 acknowledged non-credit societies and central cooperative entities. Establishment of Reserve Bank of India (RBI) in 1934 facilitated agricultural lending, leading to the creation of a distinct Agricultural lending Department, which was addressed by cooperative credit societies. In 1937, the Mehta Committee advocated for the reorganization of these groups into multi-purpose cooperatives.

- **Organization of Co-operative Banks in India**

The subsequent figure illustrates the framework of Co-operative Banks in India:

1) Non-Scheduled Banks

These banks do not satisfy the criteria specified in the RBI's second schedule. Consequently, the RBI prohibits them from obtaining loans and disqualifies them from participating in the clearing house. The RBI does not require non-scheduled banks to make periodic returns or maintain the cash reserve ratio. This category includes diverse institutions, such as Payment Banks and Non-Scheduled Urban Co-operative Banks. Here's a comprehensive explanation of these banks:

2) Local Area Banks

Represent minor private banks that predominantly function in rural and semi-urban regions. The establishment of Local Area Banks in India originated in 1996, initiated by a Government of India initiative designed to create these banks. The initiative sought to establish new privately-owned local banks, each governing two or three contiguous regions. The primary objective of establishing Local Area Banks was to mobilize rural deposits by building local institutions and ensuring the availability of financial resources for investments in such areas. The primary objective of establishing Local

Area Banks was to enhance the institutional credit framework and to address the deficiencies in availability. The minimum capital required for these banks is ₹5 crore, with a minimum commitment of ₹2 crore from promoters. Local Area Banks are required to finance agricultural and related activities, small-scale industries, agro-industrial ventures, trading enterprises, and the non-farm sector. Local Area Banks are required to provide financing for agricultural and related activities, small-scale industries, agro-industrial enterprises, trading operations, & non-farm sector.

3) Small Finance Banks (SFB)

Created to enhance the Government of India's financial inclusion initiative. The main goals of their establishment are to provide savings instruments to underserved and unserved societal segments and to lend loans to small enterprises, marginal farmers, micro-industries, and other entities within the unorganized sector. These banks seek to accomplish these objectives through efficient, technology-driven operations. Eligibility for the establishment of Small Finance Banks is granted to firms, societies governed by Indian residents, resident people or professionals possessing 10 years of expertise in banking and finance, and entities with a robust track record of a minimum of five years in their respective industries.

4) Payment Banks

Credit associations are financial institutions akin to banks, although their functions are more limited compared to other banks, and thus does not constitute a credit risk, as these institutions cannot offer loans or credit cards. The bank may accommodate customer requests, provide clearing services, mobile banking, and other financial services such as ATM/debit cards, online banking, and various account modifications. Dr. Nachiket Mor, appointed in September 2013, presented various ideas to ensure financial decision-making and enhance financial management. The report was delivered by the warning assembly to India Holding Bank. The report from the board proposes the establishment of many confidential banks or credit institutions to address the financial requirements of low-income individuals and private entities.

1.5. CONCEPTUAL FRAMEWORK OF LIQUIDITY

Liquidity management is a crucial element influenced by both local and global economic situations. In the current changing financial environment, global organizations must strategically prepare to meet their daily commitments to increase profitability and expand shareholder wealth. Effective liquidity management depends on the proficient administration of short-term assets, chiefly via working capital management. It is essential for the efficient functioning and success of any company enterprise. Nonetheless, there is no overarching guideline to determine the optimal liquidity level, as it is contingent upon numerous elements unique to each firm's context. Liquidity management became significant during the global financial crisis, particularly as loan accessibility diminished and costs increased, affecting both local and international financial markets. Recent governmental initiatives, including currency modifications in India, have impacted liquidity management, hence influencing the engagement of small investors in the capital markets.

Comprehending the significance of liquidity in working capital management and cash flow is essential. Numerous academics and specialists characterize liquidity as a company's capacity to fulfill its obligations promptly without incurring superfluous expenses. Liquidity might be likened to blood circulation in the body, vital for optimal functioning. Similarly, liquidity enhances prudent financial decision-making in company entities for both short-term and long-term financing needs, thereby impacting capital structure choices. For enterprises, liquidity management is essential for prompt access to resources, particularly in critical situations, while avoiding excessive allocation to illiquid assets. Sufficient liquidity guarantees a company's capacity to manage daily transactions, preventing possible financial difficulties arising from cash deficiencies. A well-managed liquidity situation is essential for a business's financial health and performance evaluation.

1.5.1. DEFINITION OF LIQUIDITY MANAGEMENT

"Liquidity" denotes an organization's ability to transform assets into cash value once all transactions have been completed. In the current economy, where liquidity is dominant, assets are frequently converted into cash, leading to ongoing obligations and payments, while cash continues to dominate the market. Liquidity is an essential requirement for any firm; it includes the amount, accessibility, and deployment of financial resources. This concept denotes the organization's capacity to effectively oversee its financial obligations and requirements, reducing expenses and

preventing delays that may impede corporate operations. Liquidity is essential for corporate operations. For a firm to prosper, it must sustain an optimal degree of liquidity. It should be neither inadequate nor extravagant. Inadequate liquidity may result in diminished production, heightened demand, superfluous expenditures, lenient credit conditions, inflated earnings, and other detrimental strategic consequences. The necessity for flexible productivity among the global workforce has grown significantly in recent decades.

1.5.2. GOALS OF LIQUIDITY MANAGEMENT

The primary objectives of liquidity management include the following:

- Assessing the company's liquidity position and executing steps for effective regulation.
- Evaluating the adequacy of the firm's liquidity and instituting corrective actions as necessary.
- Maintaining the efficacy of the company's liquidity plans and practices.

1.5.3. FUNDAMENTAL PRINCIPLE OF LIQUIDITY MANAGEMENT

Liquidity management entails evaluating four essential characteristics of current assets:

Short-term lifespan: Current assets generally possess a limited duration. The balance may persist for about a week, whereas invoices or batches may extend for 30 to 60 days. Inventory may endure for a duration of 30 to 100 days. The assets possess shorter periods owing to the company's operational requirements and the promptness of debtor activity, procurement, and manufacturing.

Current assets often undergo rapid conversion into alternative asset forms. This transition encompasses multiple phases of continuous effort. We record finished products, typically sold in bulk, at book value and ultimately convert them into cash through receivables.

The short life cycle of working capital components and their rapid interconversion have particular implications: The decisions pertaining to working capital management are ongoing and recurrent. A substantial difference exists between the returns and the current value.

Working capital management involves interrelated components. Effectively managing one component is impractical without taking others into account. For example, if a company holds a substantial inventory of finished products, it may need to provide more flexible financing terms and conditions. Investing in present assets cannot achieve an organization's ability to meet its short-term obligations. While interest in these assets may increase, the composition of available assets may differ. The professional department's current working capital is Rs. 4,00,000, with ongoing costs of Rs. 2,00,000. The organization divides its operations, primarily evaluating capital on a short-term basis. Despite this, the venture's stock valuation is estimated to be Rs. If it amounts to 640,000, the inverse holds true, thus establishing the concept of liquidity. We can convert the cargoes of preferred items into cash in the most liquid way. Nonetheless, we cannot now determine the duration required for a decision.

1.5.4. WORKING CAPITAL MANAGEMENT

The comprehensive notion of working capital is essential to financial management, significantly influencing a company's expansion and profitability. Liquidity, a fundamental element of cash management, intricately links to it. Typically, a company's balance sheet provides the essential metric for working capital. Current assets, anticipated to produce cash within one year, include categories such as cash and cash equivalents, prepaid expenses, inventory, accounts receivable, short-term investments, and others.

The working capital management cycle is particularly unique to manufacturing enterprises, however applicable to other sectors. This cycle seeks to enhance cash flow, raw material utilization, and manufacturing efficiency. Inventory and accounts payable have a significant influence on the working capital balance. This cycle offers a thorough overview, emphasizing the different stages that together constitute a company's working capital strategy.

1.6. LIQUIDITY MANAGEMENT AND PROFITABILITY RATIO ANALYSIS

Liquidity management & profitability are essential components of a bank's financial stability. Liquidity guarantees the capacity to fulfill short-term liabilities, whereas profitability indicates the institution's ability to produce consistent earnings.

1.6.1. LIQUIDITY RATIOS

Current ratio: The current ratio assesses a bank's capacity to fulfill short-term liabilities using its short-term assets. An elevated current ratio signifies improved liquidity.

Quick Ratio: Commonly referred to as the acid-test ratio, this metric assesses a bank's capacity to fulfil short-term obligations without depending on inventory liquidation.

Cash ratio: The cash ratio is the most conservative liquidity metric, concentrating solely on a bank's capacity to meet short-term obligations with its cash and cash equivalents.

1.6.2. LIQUIDITY RISK MANAGEMEN

Effective liquidity risk management entails balancing the assurance of liquidity with the optimization of profitability. It encompasses tactics such as sustaining liquid asset portfolios, diversifying funding sources, and formulating contingency plans.

1.6.3. ANALYSIS OF PROFITABILITY

Return on Assets (ROA): ROA assesses a bank's efficacy in employing its assets to produce profits.

Return on Equity (ROE): ROE evaluates the bank's capacity to earn profits from its shareholders' equity.

Net Interest Margin (NIM): NIM indicates the profitability of a bank's fundamental lending and investing operations.

Cost-to-Income Ratio: This metric evaluates a bank's efficiency by analyzing the expenses incurred in generating revenue.

Interaction between Liquidity & Profitability:

There is a trade-off among liquidity & profitability. Excessively high liquidity may lead to diminished profitability, as capital is allocated to low-yielding liquid assets. Banks seek to achieve an optimal equilibrium between liquidity and profitability by matching its asset & liability management strategies with prevailing market circumstances and risk tolerance.

Obstacles and Approaches:

Liquidity Difficulties:

External Shocks: Economic recessions or abrupt market disturbances. Regulatory Modifications: Amended liquidity prerequisites and reserve ratios. Approaches:

Stress Testing: Evaluating the effects of unfavorable circumstances on liquidity.

Contingency Planning: Formulating methods to address unforeseen liquidity deficits.

Challenges to Profitability:

Interest Rate Risk: Variations in interest rates affecting Net Interest Margin (NIM).

Economic Conditions: Economic recessions impacting loan quality and demand.

Strategies:

Diversification: Broadening revenue sources by a variety of products and services. Effective Cost Management: Regulating operating expenses to enhance overall profitability. A thorough comprehension of liquidity management & profitability measures is crucial for effective decision-making regarding finances in banking. Theoretical frameworks assist banks in addressing difficulties and enhancing their financial performance.

Significance of Liquidity Management: The main aim is to attain short-term solutions, with the efficiency & effectiveness of board of directors being essential elements of comprehensive financial management. Therefore, one must be prepared to own sufficient working capital. The amount of product available for purchase is dependent on the size of the transaction. Liquidity depends on the efficiency of separate divisions, which justifies maintaining inventory in each sector.

Cash is transformed into inventory: The acquisition of natural products, their conversion into labor, their transformation into finished commodities, and the successful execution of goods transfer constitute the essential stages in this perpetual process. Once the production cycle is complete, we should store the inventory.

Transformation of Inventory into Receivables: In the next phase, the company converts inventory into receivables by conducting credit sales to its clients. Companies that do not participate in credit sales would unwittingly bypass this crucial stage of the working capital cycle.

The transformation of receivables into liquid assets: The next stage entails converting these receivables into cash, so finalizing the working capital cycle. This cycle progresses from cash to inventory, then to receivables, & ultimately returns to cash.

1.6.4. PROFIT

Every firm's primary objective is to generate profit from total revenues minus related expenses within a designated period. It functions as the primary impetus for a company entity, frequently referred to as income, earnings, or margin. A prosperous unit demonstrates substantial profits, signifying exceptional efficiency. A failure to create profit endangers the company's capacity to remunerate invested capital, potentially resulting in its collapse.

Profit, in this context, denotes the excess income beyond expenses, governed by established standards, customs, and rules. Accountants depend on conceptual assumptions as well as concepts such as financial event recognition, matching, accrual accounting, and cost allocation. Nevertheless, these ideas are essentially defined by specialized rules rather than obvious real-world counterparts.

Gross Profit:

The Gross Profit Ratio (GPR) is important for management as it offers a view of operational efficiency and defines the average margin among operating costs and revenue. The main objective of calculating this ratio is to evaluate operational efficiency. It functions as a standard metric to assess a business's operational success, determined by divided the gross profit by net revenues.

Gross profit ratio = Gross profit / Net revenue x 100

Gross Profit = Total Revenue – Operating Expenses

Operating Profit Ratio:

Operating profit signifies excess of entire operating income over whole operational costs. It specifies the earnings derived only from a business's primary operations, excluding any financial or tax-related factors. This notion emphasizes evaluating a business's ability to generate profit, independent of external influences. The metric of operating profit seeks to evaluate the enduring performance of a corporation over a protracted duration. If this operational profit becomes negative, the business may require external capital to maintain its operations. The computation of operating profit adheres to particular formulas.

Operating profit ratio = Operating profit / Net sales x 100

Operating profit = Gross profit - Operating Expenses

or

Operating profit = Net sales - Operating cost

or

Operating profit= Net sales - (Cost of goods sold + Administrative and office expenses + Selling and distribution exp.)

or

(Net profit + Non-operating expenses) - (Non-operating incomes)

If the higher ratio, then better it is.

Net Profit:

Net profit denotes the disparity between total expenses and total revenue of an item. It demonstrates the relationship between post-transaction costs and profit. The ultimate gain is determined by calculating total earnings after subtracting non-operating income & expenses. This model represents the owner's residual net worth after all obligations have been fulfilled. Net profit can be ascertained using three distinct methodologies: profit before taxes, profit before expenses, & income before interest and taxes.

The following formula is employed to compute the net profit ratio.

Net profit ratio = Net Profit after Tax / Net sales x 100

1.6.5. PROFITABILITY

Profitability, derived from the combination of "profit" & "ability," represents the earning potential of a company entity. It functions as a standard for evaluating performance, indicating the management's efficacy within an organization. Profitability fundamentally resides in the generation of profit via the efficient utilization of existing resources. Professors Harward and Upton explain that profitability signifies the capacity of an investment to generate profits from its use. It is crucial to recognize that profitability, although not directly associated with profit as a return to capital stakeholders, emphasizes Return on Capital (ROC) as a principal aim.

Profitability might differ based on the scale of investment between two separate corporate units. It is fundamentally the ability of invested capital to produce returns through the efficient use of existing resources. Evaluating profitability assists in gauging a business's success and overall efficacy. Profitability is differentiated from "profit," with profit signifying the total earnings, whereas profitability particularly refers to the capacity to make profit.

W. M. Harper posits that profitability serves as a comparison metric, highlighting the most advantageous option, whereas profit, viewed in absolute terms, represents the total revenue generated from a transaction. Elevated earnings do not invariably assure effective managerial efficiency, whereas insufficient profitability does not inherently signify managerial ineptitude. Profitability serves as a crucial factor in a firm's performance, resulting in improved organizational efficiency. Nonetheless, a venture's profitability is not only reliant on operational efficiency; it is also affected by numerous other aspects, highlighting the complex nature of economic success.

The significance of profitability:

Although profits reflect a market's vitality, an organization's genuine success is not exclusively defined by the extent of its interconnected profits. Marketing functions as a potent instrument for market expansion in this setting. Profitability analysis functions as an essential instrument for several stakeholders, including management, investors, shareholders, and government entities.

It allows management to evaluate the effectiveness of its initiatives and policies. Furthermore, it assists creditors in assessing creditworthiness. Domestic and foreign investors meticulously assess profitability to make informed investment decisions, impacting their choices to invest, divest, or retain shares in a company.

Moreover, personnel within the firm may contemplate ancillary advantages. This comprehensive profitability study aids stakeholders in making critical decisions and comprehending the organization's overall health and prospects. Profitability can be calculated using the following formula:

Profitability = Operating Income / Operating Asserts Whereas, Operating income = Net sales - Cost of goods sold - Operating expenses

Operating assets = total assets – financial nature assets

Profitability measurement instruments require an assessment of efficiency across several levels. Murthy's application: A crucial aspect of evaluating the production association is proportionality, including production capacity, shares obtained from the association, and the favorable impact of economic benefits or resources on the firm. Bullock and Harmed assert that the definition of income is a crucial tool for forecasting a business's long-term performance. This projection influences several management decisions, such as securing funding, expansion, and addressing matters related to incentives and income generation. Efficiency can be expected in both the short term and the long term. The true importance of Efficiency and Execution Exploration should be seen in the manner in which the organization and its

management partners govern the outputs uniformly. Moreover, by delineating distinct attributes, the efficacy of each enterprise should be apparent and assessed.

The Importance of Profitability: Profitability is a crucial component for any organization. A business's vitality depends on adequate profits and sustained profitability. In the business domain, profitability is the cornerstone, serving as a crucial driving factor. The primary objective of a business entity is to achieve a reasonable return on invested capital while maintaining a strong and profitable financial position.

1.6.6. RATIO ANALYSIS

Ratio analysis is an essential method in financial statement analysis, employing ratios to assess a company's financial health and performance. Analyzing and evaluating diverse ratios provides proficient analysts with enhanced insight into a company's financial stability and operational efficacy. The principal responsibility of financial managers is to convey data in a manner that is understandable to many stakeholders, including the public, government, and researchers, encompassing figures and statistical information. Ratio analysis functions as an effective instrument in financial analysis, providing a benchmark for evaluating a company's financial status and performance. It is especially beneficial in assessing a company's profitability and liquidity, both essential factors for a business's growth and development. Accounting ratios illustrate critical links between numerical data in financial statements, including the Profit and Loss (P&L) account and the balance sheet of a particular organization.

Benefits of Ratio Analysis:

A multitude of advantages arises from ratio analysis:

Enables educated decision-making: Ratio analysis facilitates the assessment of the soundness of the business's financial decisions.

Facilitates comprehensive temporal analysis: Trend analysis facilitates the forecasting of future scenarios by examining company trends, hence offering useful insights.

Pinpoints problematic areas: Facilitates the identification of essential and beneficial aspects inside financial accounts, focusing attention on areas necessitating enhancement or optimization for improved results.

Facilitates SWOT analysis: Enhances comprehension of corporate transformations, offering insights into existing dangers and possibilities.

Facilitates many comparisons: Facilitates the comparison of a company's financial performance to specific benchmarks across various accounting periods.

Facilitates the analysis of financial statements: An essential instrument for evaluating financial statements, assisting stakeholders such as governmental entities, lenders, creditors, and investors in comprehending a business's profitability and liquidity status.

Constraints of Ratio Analysis:

Although ratio analysis offers significant insights, it also has limitations:

Restricted accounting information: Official data may appear precise; nonetheless, they are influenced by judgments and materiality, impacting their correctness.

Neglected non-monetary dimensions: Ratio analysis predominantly emphasizes financial elements, frequently disregarding non-economic components.

Disparities in accounting standards: including variations in inventory valuation, cost estimation, and data adjustments, complicate cross-sectional data analysis.

Deceptive ratios: Ratios can be misleading in the absence of absolute facts; comparisons between companies based solely on ratios may yield erroneous conclusions.

Absence of adequate standards: Variations particular to industry complicate the establishment of universally applicable standard ratios.

Ratio analysis is based on historical financial accounts, while management emphasizes future forecasts and corporate strategies.

Classification of Ratios:

This study will concentrate on Liquidity Management & Corporate Profitability ratios, facilitating evaluation and interpretation in these domains.

Profitability Ratios	**Liquidity & Efficiency Ratios**
1. Gross Profit Ratio	1. Current Ratio
2. Operating Profit Ratio	2. Quick Ratio
3. Net Profit Ratio	3. Debt Equity Ratio
4. Dividend Payout Ratio	4. Debtors Turnover Ratio
5. Divided Per Share	5. Creditors Turnover Ratio
6. Earnings Per Share	
7. Book Value per Share	
8. Asset Turnover Ratio	
9. Return on Asset	
10. Return on Capital Employed	

Descriptions of Different Ratios

Profitability Ratios: These ratios indicate a company's efficiency in generating profit.

Profit Margin: It indicates the percentage of profit a company generates from its sales.

Return on Investment (ROI): This metric assesses the efficiency with which a company utilizes its capital to produce returns.

Liquidity Ratios: Liquidity ratios indicate if a corporation possesses sufficient "liquid assets" (cash or assets readily convertible to cash) to fulfill its short-term liabilities.

Current Ratio: It assesses a company's current assets in relation to its current liabilities.

Quick Ratio: Comparable to the current ratio, yet omits certain assets that may require time to be liquidated into cash.

Solvency Ratios: These ratios assess a company's long-term viability and its capacity to fulfill long-term liabilities.

The Debt-to-Equity Ratio: indicates the proportion of a company's debt utilized to finance its assets relative to shareholders' equity.

Interest Coverage Ratio: This metric assesses a company's ability to fulfill interest obligations on its existing debt.

Efficiency Ratios: These ratios evaluate a company's resource utilization effectiveness.

Inventory Turnover: It quantifies the speed at which a corporation sells its goods.

Accounts Receivable Turnover: It indicates the efficiency with which a company collects payments from its clientele.

In summary, ratio categorization involves categorizing financial data to provide a thorough understanding of a company's performance and financial management.

2. RESEARCH OBJECTIVES

- To assess the profitability of chosen public sector banks throughout the study period.
- To evaluate the liquidity management of selected public sector banks during the study period.

- To ascertain the trade-off between liquidity and profitability of selected public sector banks during the research period.
- To provide recommendations and suggestions for enhanced efficiency improvement.
- To analyze the substantial differences among several ratios of selected public sector banks from the financial year 2019-20 to 2023-24.

3. RESEARCH HYPOTHESIS

1) H01: There is no substantial difference in the Operating Profit Ratio of selected public sector banks from the financial year 2019-2020 to 2023-2024.
2) H11: A considerable disparity exists in the Operating Profit Ratio of selected public sector banks from the financial year 2019-2020 to 2023-2024.
3) H02: There is no substantial difference in the Net Profit Ratio of the selected public sector banks from the financial year 2019-2020 to 2023-2024.
4) H12: A notable disparity exists in the Net Profit Ratio of the selected public sector banks from the financial year 2019-2020 to 2023-2024.
5) H03: There is no major disparity in the Return on Capital Employed (ROCE) Ratio of the selected public sector banks from the financial year 2019-2020 to 2023-2024.
6) H13: A substantial disparity exists in the Return on Capital Employed (ROCE) Ratio of selected public sector banks from the financial year 2019-2020 to 2023-2024.
7) H04: There is no statistically significant difference in the Return on Net Worth Ratio of the selected public sector banks from the financial year 2019-2020 to 2023-2024.
8) H14: A notable disparity exists in the Return on Net Worth Ratio among selected public sector banks from the financial year 2019-2020 to 2023-2024.
9) H05: There is no major disparity in the Earnings Per Share Ratio of the selected public sector banks from the financial year 2019-2020 to 2023-2024.
10) H15: A substantial disparity exists in the Earnings Per Share Ratio of selected public sector banks from the financial year 2019-2020 to 2023-2024.
11) H06: There is no statistically significant variation in the Book Value Per Share Ratio of the selected public sector banks from the financial year 2019-2020 to 2023-2024.
12) H16: A notable disparity exists in the Book Value Per Share Ratio of selected public sector banks from the financial year 2019-2020 to 2023-2024.
13) H07: There is no substantial disparity in the Dividend Payout Ratio of the selected public sector banks from the financial year 2019-2020 to 2023-2024.
14) H17: A notable disparity exists in the Dividend Payout Ratio among selected public sector banks from the financial year 2019-2020 to 2023-2024.
15) H08: There is no substantial disparity in the Current Ratio of the selected public sector banks from the financial year 2019-2020 to 2023-2024.
16) H18: A notable disparity exists in the Current Ratio of the selected public sector banks from the financial year 2019-2020 to 2023-2024.
17) H09: There is no substantial difference in the Quick Ratio of the selected public sector banks from the financial year 2010-11 to 2019-20.
18) H19: A notable disparity exists in the Quick Ratio of the chosen public sector banks from the financial year 2019-2020 to 2023-2024.
19) H010: There is no substantial disparity in the Return on Assets (ROA) Ratio of the selected public sector banks from the financial year 2019-2020 to 2023-2024.

20) H110: A notable disparity exists in the Return on Assets (ROA) Ratio among selected public sector banks for the financial years 2019-2020 to 2023-2024.
21) H011: There are no notable differences in Net Interest Margin among the selected Public Sector Banks for the financial years 2019-2020 to 2023-2024.
22) H111: There is a substantial disparity in Net Interest Margin among the chosen Public Sector Banks for the financial years 2019-2020 to 2023-2024.
23) H012: There are no notable differences in the Cost to Income Ratio among the selected Public Sector Banks for the financial years 2019-2020 to 2023-2024.
24) H112: There is a substantial disparity in the Cost to Income Ratio among the selected Public Sector Banks for the financial years 2019-2020 to 2023-2024.

4. MATERIALS AND METHODS

4.1. SAMPLE PLAN

This study focuses on five prominent public sector banks, specifically SBI, Bank of Baroda, PNB, Bank of India, and IDBI, selected based on market capitalization. The analysis encompasses a ten-year period from 2019-2020 to 2023-2024. This research is based on secondary data, and the researcher has selected five main public sector banks.

4.2. STATISTICAL TOOLS

A statistical analysis researcher will utilize the following statistical tools with the assistance of SPSS and Microsoft Excel software.

- Mean and Average
- Standard Deviation
- Multiple Regression
- Friedman Test
- Chai-Square

4.3. LIMITATIONS OF RESEARCH

Below are the limitations, which will enhance our understanding in the future. The study's shortcomings are as follows:

- The current study expresses concern that the initiation of local banks would not address the issues within the financial sector, and the audit's impact is confined to five specific banks.
- The outcomes do not affect the entire financial market. This analysis encompasses the decade from 2019-2020 to 2024-2024.
- This study exclusively utilized secondary data derived from yearly reports released by banks and various online sources. The information is derived from front-page announcements and does not specify the bank's exact location.

5. LITERATURE REVIEW

A literature review is an investigation conducted by an author to evaluate the fundamental elements of existing knowledge, including key findings and methodological progress in a certain field. Literature reviews are often classified as secondary sources and are often associated with academic literature, such as these, scholarly papers, and other published materials. The fundamental objective of a literature review is to situate the current study within the existing literature and identify any gaps between previous research and the present investigation.

Mithun Chokroborty, Al Hasan, (2024): Their study analyzes the findings pertaining to liquidity management and looks at how it affects profitability of private sector banks that are listed on DSE & publicly. Nine public banks (6 state-

owned & three specialized) & nine private banks listed on DSE make up sample of 18 banks used in this study. We also utilize information from 2013 to 2017 to evaluate how liquidity management affects profitability. This study highlights the liquidity status of Bangladesh's banking industry, demonstrating that issues with liquidity have persisted since 2018. The study's analysis section evaluated the state of liquidity management prior to 2018 and discovered a connection among liquidity and profitability in banks in the private and public sectors. The association is evaluated using financial indicators. Profitability is determined by return on equity and return on assets, while liquidity management is assessed using the cash-deposit ratio, credit-deposit ratio, current ratio, & investment-deposit ratio. Use descriptive statistics to determine the mean, standard deviation, maximum, & minimum values for each ratio. We have employed the Pearson correlation to evaluate the link among one variable & the others. We assess the relationship among profitability and liquidity by using a model of regression in which all liquidity ratios are independent variables and return on assets is the dependent variable. The dependent variable we employ to evaluate the relationship is return on equity. We construct the regression model separately for both private and public banks registered on the DSE in order to determine the impact of managing liquidity on profitability and assess its efficacy. When it comes to the effectiveness of liquidity management, banks from the private sector that are listed on the DSE in Bangladesh perform better than public sector banks. The DSE-listed private sector banks are so adept at managing their liquidity that it has no effect on their financial performance. However, public sector banks must enhance their liquidity management performance to manage profitability and liquidity simultaneously and stay competitive with private sector banks listed on the Bangladesh Stock Exchange.

Sukanya S. (2024): According to the author, any business, no matter how big, medium, or small, needs financial resources to stay in business and achieve its goals. Liquidity is the capacity to quickly buy or sell a security or asset on the market without affecting its price. The degree to which a market, such a national stock exchange or an urban real estate market, makes it easier to buy and sell assets at stable prices is known as market liquidity. Profitability denotes a firm's capacity to generate optimal profit through the efficient application of its resources. Profitability ratios provide a straightforward way to assess the firm's profitability. The primary aims of their study are to comprehend the causes influencing the firm's liquidity and profitability and to examine how liquidity and profitability affect the firm's financial condition. To obtain this he used methods such as ratio analysis, correlation, cash flow statement analysis, and trend analysis to obtain accurate results are also positive and beneficial to the organizations.

Shah Ishan Sandip et. al. (2023): Through the use of a variety of financial criteria, he evaluates the efficiency, profitability, liquidity, and solvency of ten public and ten private sector banks between 2017 & 2022. They found that in most of the financial measures they looked at, banks in the private sector have performed better than public sector banks. Private sector banks have proven to have superior profitability indicators, including return on equity (ROE) & net interest margin (NIM). This is made possible by better asset quality, increased operational efficiency, and reduced administrative costs. On the other hand, public sector banks have struggled to stay profitable. On the other hand, low loan recovery rates along with elevated non-performing asset (NPA) rates have made it difficult for public sector banks to be profitable. However, banks in the public sector have shown superior liquidity measures, including the current ratio and cash-to-deposit ratio, which indicate a greater quantity of cash on hand to meet short-term obligations. This is mostly due to the fact that public sector banks are a reliable source of funding since government ownership and backing enable them to maintain higher cash reserves. However, the advances-to-deposits ratio, which measures how successfully private sector banks use assets to generate revenue, is one of their stronger efficiency ratios.

Bhati Shyam et. al. (2021): The primary objective of their study is to evaluate the effectiveness of liquidity management methods for each kind of bank in India by comparing the financial determinants of banks from the public and private sectors. This research examines the long-term impacts of different microeconomic, macroeconomic, & regulatory policies on the management of liquidity by both kinds of banks from 1996 to 2016. The study's findings demonstrate the importance of asset-based liquidity for banks in the public and private sectors. Both private and public sector banks' liquidity was shown to be significantly correlated with a number of explanatory parameters, including call rate, cash reserve ratio, capital to total assets, discount rate, foreign exchange reserves with RBI, as well as size (LogTA). A number of parameters, such as LogTA (in L1), CapitalTA (in L1 & L4), and SLR (in L3 and L4), had a significant positive influence on private banks' liquidity, whereas Fxreserve and ROE (in L2) showed a significant negative correlation. Liquidity in public banks was strongly impacted negatively by CapitalTA (in L3 & L4), CRR (in L4), NPA/Advances (in L3), & LogTA (in L1), but positively by the ROE (in L2 & L3), discount rate (in L4), & NPA/Advances (in L4). The study's findings cast doubt on the wisdom of enforcing consistent regulatory standards for all bank types with regard to liquidity production.

Krishna Sudheer, (2020): This article focuses on assessing the financial performance of commercial & cooperative banks, which are institutions that direct community savings into productive investments. Commercial banks exhibit strong financial stability, particularly through increased net profit production. To strengthen their offerings, cooperative banks should promote client involvement and increase awareness of their services. Utilizing advanced technology like ATMs, electronic fund transfers, and debit/credit cards can mitigate time limitations. In light of intensifying competition and heightened expectations, it is essential to enhance banksawareness and recognize the critical role of technology in the banking industry.

Raiyani Jagdish R, (2020): He thought about evaluating the performance of the banks. As acknowledged by major regulators worldwide, the CAMEL Rating is a commonly used system for evaluating the performance of financial institutions, particularly commercial banks, with an emphasis on capital sufficiency, managerial capacity, asset quality, earnings ability, & liquidity. The relative performance of well-known public, private, and foreign banks is examined in this study. All banks' annual reports covering a uniform nine-year period, from 2008–09 to 2016–17, provided the data we used. Using the parameters of the CAMEL Model, he examined the calculated ratios for every bank. The study found that in terms of capital sufficiency, liquidity management and management effectiveness, foreign banks perform better than banks in the public and private sectors. With lowest average of 1.0973, private sector banks outperform foreign and public sector banks in terms of asset quality. With a higher average of 19.2344, public sector banks do better than private sector banks and foreign banks in terms of earning quality. The public sector banks' overall financial performance was assessed using CAMEL criteria. With an average of 14.0047, foreign banks had the best overall score, followed by public sector banks (11.756) and private sector banks (11.2778). Overall, when evaluating and managing bank performance using financial measures utilizing the CAMEL framework, international banks performed better than banks in public & private sectors.

Krishna Sudheer, (2020): Financial success of commercial and cooperative banks—organizations that channel community resources into profitable investments—is the main topic of this essay. Strong financial stability is demonstrated by commercial banks, especially in the form of higher net profit output. Cooperative banks should encourage customer interaction and raise knowledge of their services in order to improve their offerings. Time constraints can be lessened by utilizing cutting-edge technology such as debit/credit cards, electronic fund transfers, and ATMs. It is crucial to raise banks' understanding and acknowledge the vital role that technology plays in the banking sector given the increased competition and elevated expectations.

6. RESULTS & DISCUSSION

6.1. OPERATING PROFIT RATIO

Table 1: Operating Profit Ratio (%) From (2019-20 to 2023-24)

Banks	Year				
	2020	2021	2022	2023	2024
BOB	-12.85	-16.36	-6.02	4.55	2.92
PNB	-11.77	-7.98	-6.45	-6.32	0.64
SBI	-11.94	-8.7	-3.22	4.1	2.26
BOI	-22.83	-13	-11.75	-6.45	0.36
IDBI	-83.34	-16.38	-12.3	-3.53	7.65

(Source: Computed and compiled from published annual reports and BSE Database website)

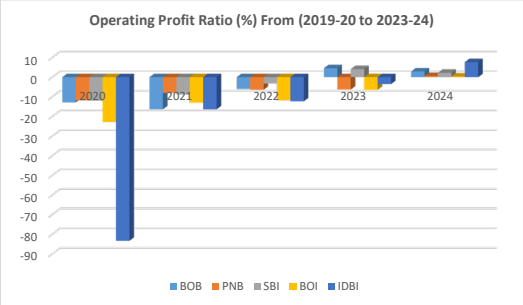

Chart: 1

The data shown illustrates the Operating Profit Ratio (OPR) for five distinct banks (BOB, PNB, SBI, BOI, and IDBI) spanning a decade from 2019-20 to 2023-24. The Operating Profit Ratio is a financial indicator that assesses a bank's operational efficiency by comparing its operating profit to its net sales or revenue. It denotes the proportion of revenue that persists as profit subsequent to the settlement of operating expenses. This is an analysis of the Operating Profit Ratio trends for the specified banks over the past decade-

Hypothesis 1 Test:

Table 2: Friedman Test on Operating Profit Ratio

Ranks

	Mean Rank
Operating Profit Ratio BOB	3.60
Operating Profit Ratio PNB	3.40
Operating Profit Ratio SBI	4.00
Operating Profit Ratio BOI	1.80
Operating Profit Ratio IDBI	2.20

Test Statistics[a]

N	5
Chi-Square	7.200
df	4
Asymp. Sig.	.126

a. Friedman Test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Operating Profit Ratio BOB, Operating Profit Ratio PNB, Operating Profit Ratio SBI, Operating Profit Ratio BOI and Operating Profit Ratio IDBI are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.126	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Diagram: 1 Hypothesis 1 Test Summary

The Friedman test of Table No. 1, as presented in Table No. 2, yields a p value of .126, indicating a significantly higher significance level than 0.05. Our null hypothesis is accepted. That is, "There is no substantial difference in the Operating Profit Ratio of selected public sector banks from the financial year 2019-2020 to 2023-2024".

6.2. NET PROFIT RATIO

Table 3: Net Profit Ratio (%) From (2019-20 to 2023-24)

Banks	Year				
	2020	2021	2022	2023	2024
BOB	0.71	1.17	10.4	15.74	15.79
PNB	0.62	2.5	4.61	2.94	7.71
SBI	5.63	7.69	11.49	15.12	14.71
BOI	-6.98	5.32	8.94	8.44	10.4
IDBI	-61.88	6.82	13.33	17.72	21.32

(Source: Computed and compiled from published annual reports and BSE Database website)

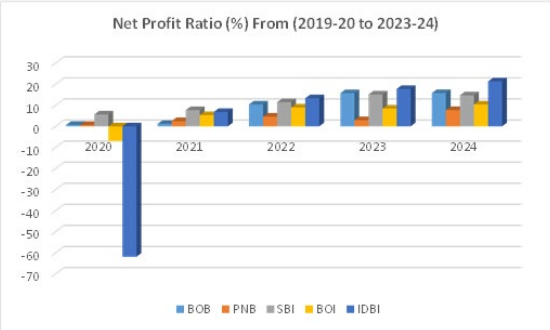

Chart: 2

The amount of gross money left over after deducting the whole cost of action is known as the net profit. The net profit percentage illustrates the connection among net profit soon after taxes & sales revenue. This ratio displays the overall profitability of the specific business. It arrives at its destination after operating and non-operating earnings and costs have been taken into consideration. The proportion of revenue from sales that the proprietors still cannot access after all expenses have been covered is also displayed by the ratio. It is computed in a number of ways, including net profit before interest, net profit before tax, and net profit before interest and tax. We use the following formula to calculate the net profit ratio:

=Net Profit after Tax / Sales×100

A higher net profit ratio indicates greater profitability for the commercial enterprise. The net profit ratio is a metric that assesses net profit margin in relation to operational revenue. In addition to indicating profitability, it is the primary variable in calculation of return on investment. It indicates overall efficiency of the business and holds considerable importance for investors.

Hypothesis 2 Test:

Table 4: Friedman Test on Net Profit Ratio

Ranks

	Mean Rank
Net Profit Ratio (%) BOB	3.20
Net Profit Ratio (%) PNB	1.60
Net Profit Ratio (%) SBI	4.00
Net Profit Ratio (%) BOI	2.20
Net Profit Ratio (%) IDBI	4.00

Test Statistics[a]

N	5
Chi-Square	9.280
df	4
Asymp. Sig.	.054

a. Friedman Test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Net Profit Ratio (%) BOB, Net Profit Ratio (%) PNB, Net Profit Ratio (%) SBI, Net Profit Ratio (%) BOI and Net Profit Ratio (%) IDBI are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.054	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Diagram: 2 Hypothesis 2 Test Summary

The Friedman test of Table No. 3, as presented in Table No. 4, yields a p value of .054, indicating a higher significance level than 0.05. Our null hypothesis is accepted. That is, "There is no substantial difference in the Net Profit Ratio of selected public sector banks from the financial year 2019-2020 to 2023-2024".

6.3. NET PROFIT RATIO

Table 5: Return on Capital Employed (ROCE) Ratio (2019-20 to 2023-24)

Banks	Year				
	2020	2021	2022	2023	2024
BOB	1.77	1.85	1.81	1.91	2.01
PNB	1.8	1.85	1.61	1.57	1.63
SBI	1.79	1.64	1.42	1.59	1.47
BOI	1.8	1.53	1.4	1.68	1.58
IDBI	1.74	2.5	2.59	2.78	2.78

(Source: Computed and compiled from published annual reports and BSE Database website)

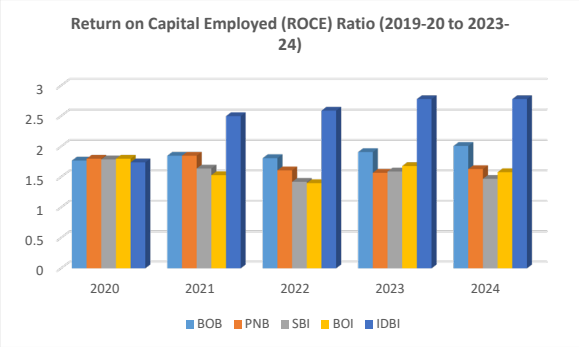

Chart: 3

The relationship between profit and capital used over specified time periods is evaluated by the Return on Capital Employed (ROCE) Ratio. The Return on Capital Employed ratio is another name for ROCE. The total amount of money invested in company is referred to as capital. By quantifying operational profit as a percentage of capital utilized, it evaluates a company's profitability. The total of long-term finance and shareholder equity is referred to as capital utilized. On the other hand, current liabilities are deducted from total assets to calculate capital consumed. As an alternative, you can compute the return on the capital used using gross capital used, net capital working, average capital utilized, along with proprietor's net capital used. This study calculates return on the capital used using the net capital used approach. The optimal ratio is a 50% increase to attain a target level. The following formula is used to determine the return on capital employed:

$$= \frac{\text{Net profits After Taxes} \times 100}{\text{Net Capital Employed}}$$

Hypothesis 3 Test:

Table 6: Friedman Test on Return on Capital Employed (ROCE)

Ranks

	Mean Rank
Return on Capital Employed (ROCE) Ratio BOB	3.50
Return on Capital Employed (ROCE) Ratio PNB	3.00
Return on Capital Employed (ROCE) Ratio SBI	2.00
Return on Capital Employed (ROCE) Ratio BOI	2.30
Return on Capital Employed (ROCE) Ratio IDBI	4.20

Test Statistics[a]

N	5
Chi-Square	6.490
df	4
Asymp. Sig.	.165

a. Friedman Test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Return on Capital Employed (ROCE) Ratio BOB, Return on Capital Employed (ROCE) Ratio PNB, Return on Capital Employed (ROCE) Ratio SBI, Return on Capital Employed (ROCE) Ratio BOI and Return on Capital Employed (ROCE) Ratio IDBI are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.165	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Diagram: 3 Hypothesis 3 Test Summary

The Friedman test of Table No. 5, as presented in Table No. 6, yields a p value of .165, indicating a significantly higher significance level than 0.05. Our null hypothesis is accepted. That is, "There is no major disparity in the Return on Capital Employed (ROCE) Ratio of the selected public sector banks from the financial year 2019-2020 to 2023-2024".

6.4. RETURN ON EQUITY/NETWORTH (ROE)

Table 7: Return on Equity/Net worth (ROE) Ratio (2019-20 to 2023-24)

Banks	Year				
	2020	2021	2022	2023	2024
BOB	0.76	1.07	8.46	14.36	15.85
PNB	0.58	2.41	3.9	2.74	8.39
SBI	6.95	8.86	12.33	16.75	17.46
BOI	-7.88	5.47	7.06	7.72	10.18
IDBI	-46.82	4.45	7.34	9.82	13.43

(Source: Computed and compiled from published annual reports and BSE Database website)

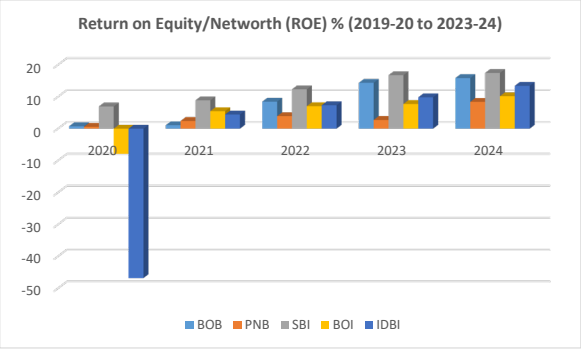

Chart: 4

Return on equity (ROE), often referred to as return on net worth (RONW), is a financial metric that assesses a company's capacity to produce profits from its shareholders' equity. It illustrates how effectively a corporation uses the capital its shareholders provide to generate revenue. A high ROE signifies that the organization is more adept at creating profits from shareholders' equity. It demonstrates effective management and profitability in relation to the equity base.

$$\text{ROE} = \frac{\text{Net Income}}{\text{Shareholders' Equity}} \times 100$$

Hypothesis 4 Test:

Table 8: Friedman Test on Return on Equity/Net worth (ROE)

Ranks

	Mean Rank
Return on Equity/Networth (ROE) BOB	3.40
Return on Equity/Networth (ROE) PNB	1.60
Return on Equity/Networth (ROE) SBI	5.00
Return on Equity/Networth (ROE) BOI	2.40
Return on Equity/Networth (ROE) IDBI	2.60

Test Statistics[a]

N	5
Chi-Square	13.280
df	4
Asymp. Sig.	.010

a. Friedman Test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Return on Equity/Networth (ROE) BOB, Return on Equity/Networth (ROE) PNB, Return on Equity/Networth (ROE) SBI, Return on Equity/Networth (ROE) BOI and Return on Equity/Networth (ROE) IDBI are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.010	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Diagram: 4 Hypothesis 4 Test Summary

The Friedman test of Table No. 7, as presented in Table No. 8, yields a p value of .010, indicating a lower significance level than 0.05. Our null hypothesis is rejected. That was, "There is no statistically significant difference in the Return on Net Worth Ratio of the selected public sector banks from the financial year 2019-2020 to 2023-2024" & so we accepted that "A notable disparity exists in the Return on Net Worth Ratio among selected public sector banks from the financial year 2019-2020 to 2023-2024."

6.5. EARNINGS PER SHARE RATIO (EPS)

Table 9: Earnings per Share Ratio (EPS) (2019-20 to 2023-24)

Banks	Year				
	2020	2021	2022	2023	2024
BOB	0.76	1.07	8.46	14.36	15.85
PNB	0.58	2.41	3.9	2.74	8.39
SBI	6.95	8.86	12.33	16.75	17.46
BOI	-7.88	5.47	7.06	7.72	10.18
IDBI	-46.82	4.45	7.34	9.82	13.43

(Source: Computed and compiled from published annual reports and BSE Database website)

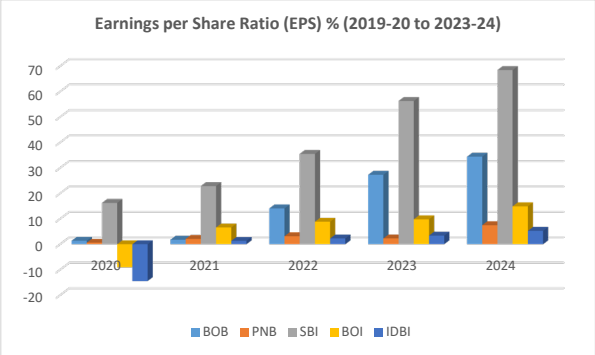

Chart: 5

The Earnings per Share (EPS) ratios helps determine the market price of equity shares and evaluates a company's earning potential from the owner's point of view. A business has to assume the use of dilutive option and other possible dilutive stock shares in order to compute diluted earnings per share. The expected revenues from these offers should be regarded as having been acquired by issuing shares at their true value. Equity issuance without consideration is the difference between the number of shares that could be issued and the number which would be issued at fair value. Higher earnings per share indicate greater profitability for a corporation. This ratio is crucial from the perspective of equity shareholders and for stock market share price. This also facilitates comparison with others to evaluate its fairness and ability to distribute dividends. We provide the formula for EPS below.

Hypothesis 5 Test:

Table 10: Friedman Test on Return on Equity/Net worth (ROE)

Ranks

	Mean Rank
Earnings per Share Ratio (EPS) BOB	3.60
Earnings per Share Ratio (EPS) PNB	2.20
Earnings per Share Ratio (EPS) SBI	5.00
Earnings per Share Ratio (EPS) BOI	3.00
Earnings per Share Ratio (EPS) IDBI	1.20

Test Statistics[a]

N	5
Chi-Square	16.480
df	4
Asymp. Sig.	.002

a. Friedman Test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Earnings per Share Ratio (EPS) BOB, Earnings per Share Ratio (EPS) PNB, Earnings per Share Ratio (EPS) SBI, Earnings per Share Ratio (EPS) BOI and Earnings per Share Ratio (EPS) IDBI are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.002	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Diagram: 5 Hypothesis 5 Test Summary

The Friedman test of Table No. 9, as presented in Table No. 10, yields a p value of .002, indicating a lower significance level than 0.05. Our null hypothesis is rejected. That was, "There is no major disparity in the Earnings per Share Ratio of the selected public sector banks from the financial year 2019-2020 to 2023-2024." & so we accepted that "A substantial disparity exists in the Earnings per Share Ratio of selected public sector banks from the financial year 2019-2020 to 2023-2024."

6.6. BOOK VALUE PER SHARE (RS.)

Table 11: Book Value per Share (Rs.) (2019-20 to 2023-24)

Banks	Year				
	2020	2021	2022	2023	2024
BOB	155.3	148.8	165.92	189.7	216.75
PNB	92.55	86.79	86.72	90.69	96.7
SBI	259.96	284.47	313.84	367.08	422.7
BOI	133.68	139.38	134.33	143.68	151.27
IDBI	32.78	34.24	38.75	42.15	46.39

(Source: Computed and compiled from published annual reports and BSE Database website)

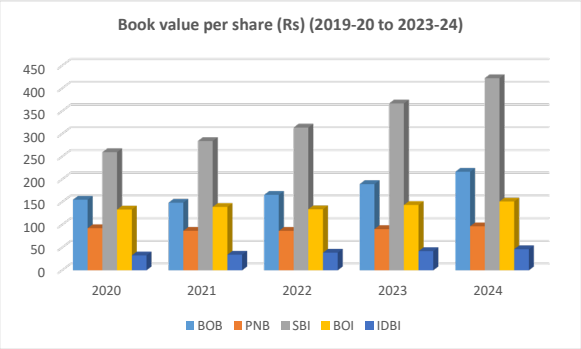

Chart: 6

Book value per share is merely one approach for assessing a company's valuation. You may utilize the business enterprise value, market value of firm, & market capitalization in specific situations or compare them to each other for discrepancies. For instance, the value of a firm takes into account both market value of company's equity & its debt, while book value per share only looks at the equity that appears on the balance sheet. Theoretically, Book Value Per Share mirrors net worth, which is defined as assets minus liabilities, and represents the result of terminating operations. One may contend that a corporation's balance sheet may not accurately represent the actual outcomes if the company liquidated all its assets. This research calculates the adjusted book value per share, providing an accurate representation of assets.

BVPS = Net Assets / Number of shares

Hypothesis 6 Test:

Table 12: Friedman Test on Book Value per Share

Ranks

	Mean Rank
Book value per share (Rs) BOB	4.00
Book value per share (Rs) PNB	2.00
Book value per share (Rs) SBI	5.00
Book value per share (Rs) BOI	3.00
Book value per share (Rs) IDBI	1.00

Test Statistics[a]

N	5
Chi-Square	20.000
df	4
Asymp. Sig.	.000

a. Friedman Test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Book value per share (Rs) BOB, Book value per share (Rs) PNB, Book value per share (Rs) SBI, Book value per share (Rs) BOI and Book value per share (Rs) IDBI are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Diagram: 6 Hypothesis 6 Test Summary

The Friedman test of Table No. 11, as presented in Table No. 12, yields a p value of .000, indicating a lowest significance level than 0.05. Our null hypothesis is strongly rejected. That was, "There is no statistically significant variation in the Book Value per Share Ratio of the selected public sector banks from the financial year 2019-2020 to 2023-2024." & so we accepted that "A notable disparity exists in the Book Value per Share Ratio of selected public sector banks from the financial year 2019-2020 to 2023-2024."

6.7. DIVIDEND PAYOUT RATIO

Table 13: Dividend Payout Ratio (2019-20 to 2023-24)

Banks	Year				
	2020	2021	2022	2023	2024
BOB	0	0	2.85	5.5	7.6
PNB	0	0	0.64	0.65	1.5
SBI	0	4	7.1	11.3	13.7
BOI	0	0	2	2	2.8
IDBI	0	0	0	0	1.5

(Source: Computed and compiled from published annual reports and BSE Database website)

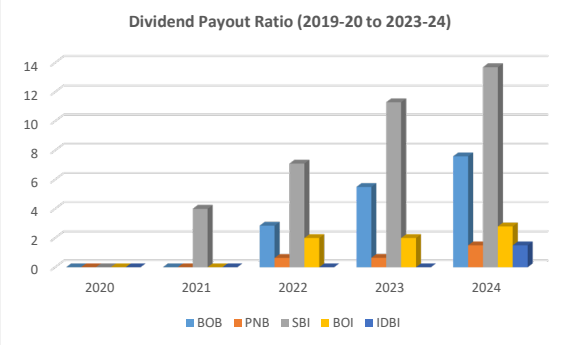

Chart: 7

The percentage of a company's profits given as dividends to investors and other stakeholders is known as the dividend payout ratio. The computation is carried out by dividing the amount of dividends paid out for the period in question by the total earnings for that same time period. The retention ratio, also known as the plowback period, measures the percentage of profits that a business reinvests in initiatives to support future growth. The proportion of dividends paid out is the reverse of this ratio. One important indicator for evaluating a company's profitability from the standpoint of an investor is the dividend payout ratio. While a high payout ratio means that the firm distributes a large portion of its revenue to its common shareholders, a low payout ratio means that the company devotes a large portion of its income to future growth. While a low dividend ratios is beneficial for investors hoping to increase the value of their common stock in the future, a company that pays out large dividends usually draws in investors looking for steady dividend income. The percentage of profits that the company distributes as dividends is measured by the dividend payout ratio. This ratio shows the relationship among dividend payments on the capital of equity shares and the amount of money left over after paying preference dividends and taxes. You can compute this ratio using the following formula:

$$= \frac{\text{Dividends per Share}}{\text{Earnings per Share}} \times 100$$

or

$$= \frac{\text{Equity Dividend Net profit}}{\text{Preference Dividend}} \times 100$$ Hypothesis 7 Test:

Table 14: Friedman Test on Dividend Pay-out Ratio

Ranks

	Mean Rank
Dividend Payout Ratio % BOB	3.50
Dividend Payout Ratio % PNB	2.20
Dividend Payout Ratio % SBI	4.60
Dividend Payout Ratio % BOI	2.90
Dividend Payout Ratio % IDBI	1.80

Test Statistics[a]

N	5
Chi-Square	14.203
df	4
Asymp. Sig.	.007

a. Friedman Test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Dividend Payout Ratio % BOB, Dividend Payout Ratio % PNB, Dividend Payout Ratio % SBI, Dividend Payout Ratio % BOI and Dividend Payout Ratio % IDBI are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.007	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Diagram: 7 Hypothesis 7 Test Summary

The Friedman test of Table No. 13, as presented in Table No. 14, yields a p value of .007, indicating a lower significance level than 0.05. Our null hypothesis is so rejected. That was, "There is no substantial disparity in the Dividend Payout Ratio of the selected public sector banks from the financial year 2019-2020 to 2023-2024," & so we accepted that

"A notable disparity exists in the Dividend Payout Ratio among selected public sector banks from the financial year 2019-2020 to 2023-2024."

6.8. CURRENT RATIO

The current ratio (CR) is a fundamental liquidity ratio. The current ratio (CR) evaluates how well a company can use its current assets to pay its current liabilities. This ratio assesses firm's capacity to fulfill its short-term obligations promptly. We anticipate converting current assets into cash within the typical operating cycle or within one year. The ideal ratio is 2:1, meaning that in order to exhibit a respectable short-term solvency position, an organization should have twice as many current assets as current liabilities. short-term investments, Marketable securities, accounts receivable, short-term portion of notes receivable, inventories, short-term prepayments, cash and cash equivalents, and just current year revenue are all considered current assets. Current liabilities are debts that must be paid off within a year or within the normal course of business. Accounts payable, wages and salaries payable, current tax obligations, sales taxes due, & accumulated expenses are all considered current liabilities. But after a certain point, a higher current ratio might not be beneficial.

Table 15: Current Ratio (2019-20 to 2023-24)

Banks	Year				
	2020	2021	2022	2023	2024
BOB	1.33	1.34	1.24	0.93	0.9
PNB	2.47	3.46	2.59	2.3	1.86
SBI	1.78	1.93	1.48	1.46	1.56
BOI	1.9	2.13	1.53	1.4	1.17
IDBI	7.38	3.22	2.93	1.71	1.3

(Source: Computed and compiled from published annual reports and BSE Database website)

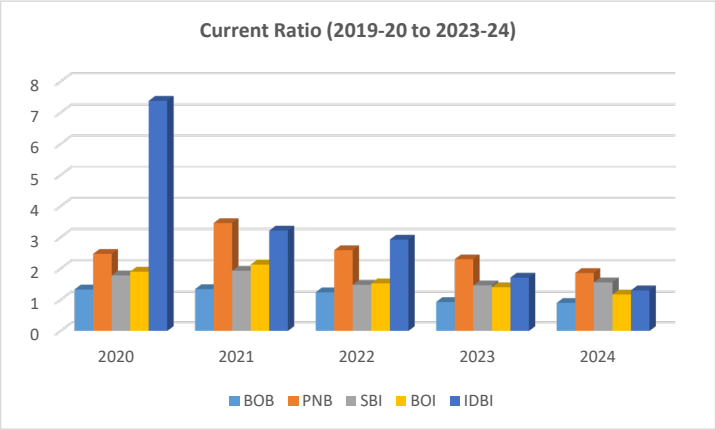

Chart: 8

This ratio determines if an enterprise has adequate current assets to settle its current liabilities. This ratio indicates the short-term solvency or liquidity condition of an organization. The formula to calculate this ratio is as follows:

= Current Assets / Current Liabilities

The following points should be considered when determining the current ratio:

Current assets are those that are anticipated to be sold within a year. Current liabilities are obligations that are due within a year.

Current liabilities are defined as long-term loans that must be repaid within a year.

Investment pertains to non-current assets (fixed assets). Fixed assets include long-term investments. Short-term investments, defined as those with a duration of less than 12 months, together with marketable securities, should be classified as current assets.

Goodwill, copyrights, loose tools, patents, and trademarks should not be classified as current assets.

Mortgage loans & bank loans are classified as long-term obligations and are therefore excluded from current liabilities.

Hypothesis 8 Test:

Table 16: Friedman Test on Current Ratio

Ranks

	Mean Rank
Current Ratio (BOB)	1.00
Current Ratio (PNB)	4.60
Current Ratio (SBI)	2.60
Current Ratio (BOI)	2.60
Current Ratio (IDBI)	4.20

Test Statistics[a]

N	5
Chi-Square	16.640
df	4
Asymp. Sig.	.002

a. Friedman Test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Current Ratio (BOB), Current Ratio (PNB), Current Ratio (SBI), Current Ratio (BOI) and Current Ratio (IDBI) are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.002	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Diagram: 8 Hypothesis 8 Test Summary

The Friedman test of Table No. 15, as presented in Table No. 16, yields a p value of .002, indicating a lower significance level than 0.05. Our null hypothesis is so rejected. That was, "There is no substantial disparity in the Current Ratio of the selected public sector banks from the financial year 2019-2020 to 2023-2024," & so we accepted that "A notable disparity exists in the Current Ratio of the selected public sector banks from the financial year 2019-2020 to 2023-2024."

6.9. QUICK RATIO

Table 17: Quick Ratio (2019-20 to 2023-24)

Banks	Year				
	2020	2021	2022	2023	2024
BOB	16.7	18.09	20.94	19.12	22.37
PNB	38.31	38.46	31.22	33.09	30.25
SBI	17.05	16.56	14.49	14.11	15.17
BOI	24.12	26.36	20.1	25.47	25.36
IDBI	28.19	13.2	15.91	12.23	12.21

(Source: Computed and compiled from published annual reports and BSE Database website)

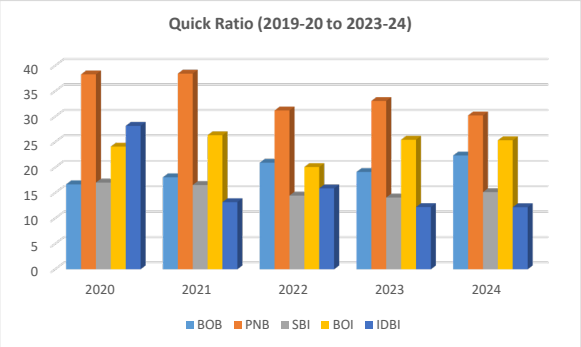

Chart: 9

The Quick Ratio, commonly known as Acid Test or Liquid Ratio. It is an adjunct to the current ratio. The acid test ratio is a more rigorous assessment of a firm's capacity to meet its short-term liabilities as they arise. The quick ratio quantifies the link between quick assets and current liabilities. A quick ratio of 1:1 is considered satisfactory. A high rapid ratio indicates that the corporation is in a comparatively stronger position to fulfil its present obligations promptly. A low quick ratio indicates a poor liquidity position for the firm. Quick, or liquid, assets refer to those that are receivable within a twelve-month period from their inception and are readily convertible into cash. We understand that current assets, which are either already liquid or have the potential to become cash, do not include equities. Quick or liquid liability refers to obligations that are due within the financial year and are readily payable in cash.

= Liquid Assets / Liquid Liabilities

Liquid Assets = Current Assets – Inventories

Liquid Liabilities = Current Liabilities – Bank overdraft

Hypothesis 9 Test:

Table 18: Friedman Test on Quick Ratio

Ranks

	Mean Rank
Quick Ratio (BOB)	2.80
Quick Ratio (PNB)	5.00
Quick Ratio (SBI)	1.80
Quick Ratio (BOI)	3.60
Quick Ratio (IDBI)	1.80

Test Statistics[a]

N	5
Chi-Square	14.560
df	4
Asymp. Sig.	.006

a. Friedman Test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Quick Ratio (BOB), Quick Ratio (PNB), Quick Ratio (SBI), Quick Ratio (BOI) and Quick Ratio (IDBI) are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.006	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Diagram: 9 Hypothesis 9 Test Summary

The Friedman test of Table No. 17, as presented in Table No. 18, yields a p value of .006, indicating a lower significance level than 0.05. Our null hypothesis is so rejected. That was, "There is no substantial difference in the Quick Ratio of the selected public sector banks from the financial year 2010-11 to 2019-20," & so we accepted that "A notable disparity exists in the Quick Ratio of the chosen public sector banks from the financial year 2019-2020 to 2023-2024."

6.10. RETURN ON ASSETS (ROA) RATIO

Table 19: Return on Assets (ROA) Ratio (2019-20 to 2023-24)

Banks	Year				
	2020	2021	2022	2023	2024
BOB	0.04	0.07	0.56	0.96	1.12
PNB	0.04	0.16	0.26	0.17	0.52
SBI	0.36	0.45	0.63	0.91	0.98
BOI	-0.45	0.29	0.46	0.49	0.69
IDBI	-4.29	0.45	0.8	1.1	1.55

(Source: Computed and compiled from published annual reports and BSE Database website)

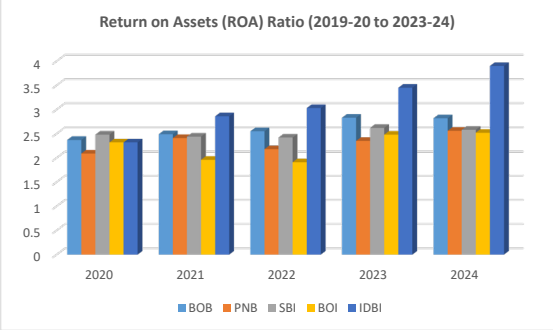

Chart: 10

The return on assets (ROA) ratio assesses the efficiency with which a firm or bank utilizes its assets to generate profit. It demonstrates the profit a company may generate from its total assets and serves as a crucial indicator of operational efficiency. An elevated ROA signifies that the organization demonstrates greater efficiency in generating profit from its assets.

$$\text{ROA} = \frac{\text{Net Income}}{\text{Total Assets}} \times 100$$

Hypothesis 10 Test:

Table 20: Friedman Test on Return on Assets Ratio

Ranks

	Mean Rank
Return on Assets (ROA) (BOB)	3.10
Return on Assets (ROA) (PNB)	1.70
Return on Assets (ROA) (SBI)	3.90
Return on Assets (ROA) (BOI)	2.20
Return on Assets (ROA) (IDBI)	4.10

Test Statistics[a]

N	5
Chi-Square	8.898
df	4
Asymp. Sig.	.064

a. Friedman Test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Return on Assets (ROA) (BOB), Return on Assets (ROA) (PNB), Return on Assets (ROA) (SBI), Return on Assets (ROA) (BOI) and Return on Assets (ROA) (IDBI) are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.064	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Diagram: 10 Hypothesis 10 Test Summary

The Friedman test of Table No. 19, as presented in Table No. 20, yields a p value of .064, indicating a higher significance level than 0.05. Our null hypothesis is so accepted. That is, "There is no substantial disparity in the Return on Assets (ROA) Ratio of the selected public sector banks from the financial year 2019-2020 to 2023-2024."

6.11. NET INTEREST MARGIN

Table 21: Net Interest Margin (2019-20 to 2023-24)

Banks	Year				
	2020	2021	2022	2023	2024
BOB	2.37	2.49	2.55	2.83	2.82
PNB	2.09	2.41	2.18	2.35	2.56
SBI	2.48	2.44	2.42	2.62	2.58
BOI	2.32	1.96	1.91	2.48	2.52
IDBI	2.32	2.86	3.03	3.45	3.9

(Source: Computed and compiled from published annual reports and BSE Database website)

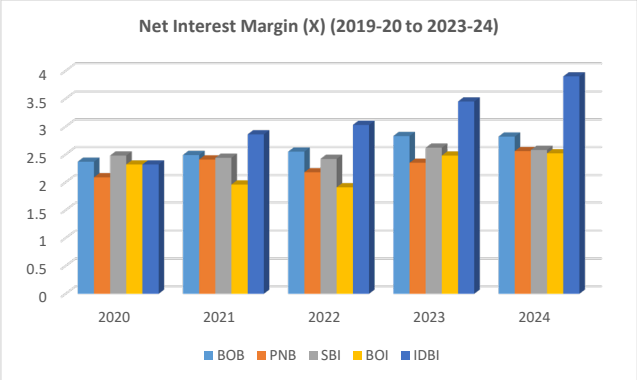

Chart: 11

Net interest margin (NIM) is a crucial profitability metric for financial institutions, particularly banks, that quantifies the disparity between interest income earned and interest expenses incurred, relative to total interest-bearing assets. This serves as a crucial metric for assessing a bank or financial institution's efficacy in managing investment strategies and funding expenses. An elevated NIM signifies that the bank is generating greater income from its interest-bearing assets compared to its interest expenses, reflecting enhanced profitability.

$$NIM = \frac{Interest\ \ Income - Interest\ \ Expenses}{Average\ \ Earning\ \ Assets} \times 100$$

Hypothesis 11 Test:

Table 22: Friedman Test on Return on Assets Ratio

Ranks	
	Mean Rank
Net Interest Margin (BOB)	4.00
Net Interest Margin (PNB)	1.60
Net Interest Margin (SBI)	3.40
Net Interest Margin (BOI)	1.50
Net Interest Margin (IDBI)	4.50

Test Statistics[a]	
N	5
Chi-Square	15.394
df	4
Asymp. Sig.	.004

a. Friedman Test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Net Interest Margin (BOB), Net Interest Margin (PNB), Net Interest Margin (SBI), Net Interest Margin (BOI) and Net Interest Margin (IDBI) are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.004	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Diagram: 11 Hypothesis 11 Test Summary

The Friedman test of Table No. 21, as presented in Table No. 22, yields a p value of .004, indicating a lower significance level than 0.05. Our null hypothesis is so rejected. That was, "There are no notable differences in Net Interest Margin among the selected Public Sector Banks for the financial years 2019-2020 to 2023-2024," & so we accepted that "There is a substantial disparity in Net Interest Margin among the chosen Public Sector Banks for the financial years 2019-2020 to 2023-2024."

6.12. COST TO INCOME RATIO

Table 23: Cost to Income Ratio (2019-20 to 2023-24)

Banks	Year				
	2020	2021	2022	2023	2024
BOB	43.13	48.69	45.26	47.71	47.7
PNB	41.81	44.1	43.07	51.69	53.37
SBI	42.57	43.34	57.91	53.86	59.01
BOI	50.8	40.69	40.33	51.07	51.73
IDBI	96.2	47.98	49.65	44.71	46.1

(Source: Computed and compiled from published annual reports and BSE Database website)

Banks and financial institutions use cost-to-income ratio as a key efficiency measure to evaluate their operational efficiency. It shows how much the bank spends on generating one unit of income. A lower ratio indicates better efficiency, meaning the bank is able to control its costs in relation to its income.

$$\text{Cost to Income Ratio} = \frac{\text{Operating Expenses}}{\text{Operating Income}} \times 100$$

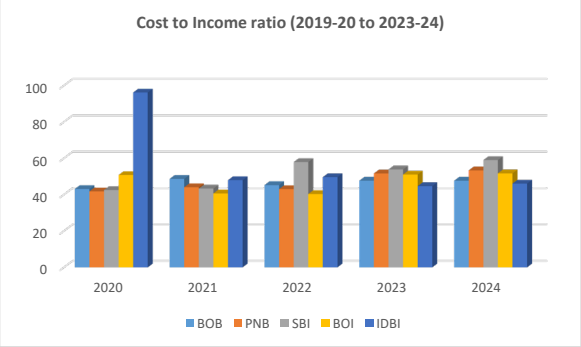

Chart: 11

Hypothesis 12 Test:

Table 24: Friedman Test on Cost to Income Ratio

Ranks	
	Mean Rank
Cost to Income (BOB)	3.00
Cost to Income (PNB)	2.80
Cost to Income (SBI)	3.80
Cost to Income (BOI)	2.40
Cost to Income (IDBI)	3.00

Test Statistics[a]	
N	5
Chi-Square	2.080
df	4
Asymp. Sig.	.721

a. Friedman Test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Cost to Income (BOB), Cost to Income (PNB), Cost to Income (SBI), Cost to Income (BOI) and Cost to Income (IDBI) are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.721	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Diagram: 12 Hypothesis 12 Test Summary

The Friedman test of Table No. 23, as presented in Table No. 24, yields a p value of .721, indicating a higher significance level than 0.05. Our null hypothesis is so accepted. That is, "There are no notable differences in the Cost to Income Ratio among the selected Public Sector Banks for the financial years 2019-2020 to 2023-2024."

7. CONCLUSIONS AND RECOMMENDATIONS

Overall, we found 12 types of data from the financial years 2019–20 to 2023–24 from Bank of Baroda, Punjab National Bank, State Bank of India, Bank of India, and IDBI Bank, which we tested using Friedman test and the chi square test. We discovered the relationship between the 12 types of data from the aforementioned five banks over a period of five years by 12 hypotheses. Our analysis yielded the following results:

We found no significant difference in operating profit ratio of five banks mentioned above over last five years. This ratio was found to be the highest for IDBI Bank in 2024 in comparison to all the banks in the last five years. Bank of Baroda's 2023 operating profit ratio, at 4.55 %, trailed behind at 7.65 %. In 2020, IDBI Bank recorded the lowest operating profit ratio at -83.34 %.

Upon examining the net profit ratio, we found no significant differences among the five banks mentioned above over the last five years. Among all above banks, IDBI Bank has highest net profit ratio in the last five years, which is 21.32 %. In 2020, we found that IDBI Bank's net profit ratio was the lowest, at -61.88 %.

Upon examining return on capital employed ratio of five banks mentioned above over last five years, we found no significant difference in the return on capital ratio among them. In 2023 and 2024, IDBI Bank achieved the highest ratio of 2.78 %. In 2022, Bank of India recorded the lowest return on capital ratio at 1.4.

We found a significant difference in Return on Equity/Networth (ROE) ratio of all the banks after studying Return on Equity/Networth (ROE) ratio of above five banks for last five years. SBI Bank had the highest return on equity/net worth (ROE) ratio in 2024, which was 17.46 %, while IDBI Bank had the lowest return on equity/net worth (ROE) ratio in 2020, which was -46.82 %.

Upon examining the Earning per Share Ratio of the five aforementioned banks over the past five years, we discovered a significant difference. In 2024, SBI Bank achieved the highest Earnings per Share ratio of 68.44 %, while IDBI Bank recorded the lowest ratio of 14.48 % in 2020.

We found a significant difference in Book value per share of above five banks over the last 5 years. We found that SBI Bank had the highest Book value per share in 2024, at Rs 422.70, while IDBI had the lowest Book value per share in 2020, at Rs 32.78.

Upon examining the dividend payout ratios of the aforementioned five banks over the past five years, we discovered a notable disparity in these ratios. In 2024, SBI Bank achieved the highest dividend payout ratio at 13.7%, whereas in 2020, all banks had 0 dividend payout ratio, and in 2021, nearly all banks, except SBI, had 0 dividend payout ratio at all.

On studying the current ratio of the last 5 years of the above five banks, which is an integral part of the bank's liquidity, what happened was that there is a considerable difference in current ratio of above five banks for the last 5 years. In 2020, IDBI achieved the highest rate of 7.38 %, while Bank of Baroda recorded the lowest ratio of 0.90 % in 2024. Whereas this ratio of PNB Bank in 2024 was the highest in 2024 as compared to the ratios of the other four banks.

On studying the quick ratio of the last 5 years of the five banks, it was found that a considerable difference was found in the quick ratio of the five banks in the last 5 years. In 2021, Punjab National Bank achieved highest quick ratio of 38.46 %, while IDBI Bank recorded lowest quick ratio of 12.21% in 2024. Other banks maintained adequate contingency funds, as evidenced by their quick ratios exceeding 12.21%.

Upon examining Return on Assets (ROA) ratios of aforementioned five banks over past five years, we discovered no significant variation in these ratios. IDBI Bank achieved the highest ratio of 1.55% in 2024 and the lowest ratio of -4.29 in 2020.

Upon examining the net interest margin of the aforementioned five banks over the past five years, we discovered a notable disparity in these margins. IDBI Bank achieved the highest net interest margin of 3.9 in 2024, while Bank of India recorded the lowest margin of 1.91 in 2022.

After examining the cost-to-income ratios of the five banks mentioned above over the past five years, we found no significant differences in these ratios. IDBI Bank had the highest cost to income ratio in 2020, at 96.2%, while Bank of India had the lowest, at 40.33% in 2022. This indicates that the profitability performance of IDBI Bank was the lowest in 2020.

Comparing the profitability of the five banks mentioned above over the last five years reveals that SBI Bank ranks first, followed by Bank of Baroda, Punjab National Bank, Bank of India, and IDBI Bank.

We plan to conduct additional research on the topics mentioned below-

- Perform a comprehensive analysis of individual liquidity parameters, including the current ratio & quick ratio, to ascertain the distinct liquidity issues and strengths of each chosen public sector bank.
- Examine the liquidity management and profitability of chosen public sector banks in comparison to their private sector equivalents to discern any sector-specific patterns or disparities in financial strategies.
- Examine the impact of macroeconomic factors, such as interest rates & inflation, on liquidity and profitability, analyzing how external economic conditions may influence performance of public sector banks.
- Assess the efficacy of risk management strategies implemented by banks to address liquidity concerns, evaluating their capacity to limit financial risks and maintain stability.
- Examine 'impact of technology' on liquidity management, emphasizing how integration of digital banking platforms and fintech solutions improves efficiency and profitability.

CONFLICT OF INTERESTS

None.

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