RECENT TECHNOLOGIES IN BANKING SECTOR IN INDIA AND THEIR IMPACT

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ABSTRACT
The technological metamorphosis witnessed by the banking field in the nineties has transformed the way business demands to be accomplished. The introduction of the IT sector has been increasing playing an important role by introducing new business standards to be maintained while also improving the services in the banking sector. The change that has taken place since the economic liberalization and globalization process began in 1991 has had a massive effect on the financial institution. The IT revolution has impressively broadened the goods' reach and is transforming how budgetary business is carried out. This has further led to the expansion in the normal requests of the clients. Reforms of the banking system and reforms of the financial sector strengthen economic reforms as they are central. In June 1999, when the IT globe seems quite accessible with the implementation of Indian Financial Net, the IT transformation took place in Indian financial institutions, particularly the banking field. The IT Act of 2000 gave the Indian financial sector a new dimension. IT has changed the banking field: the market method, the banking system, the growth of human resources, and the nature of work. The Act not only impacted the profitability and competitiveness of the banks but also significantly influenced the performance of the banks. The primary purpose of the financial system's regulations was to enhance the functioning of the financial system while also improving the financial sector.

INTRODUCTION
The 1st section of the banking network that was the payment framework benefited most from implementing a new invention. With the implementation of 'Automated Teller Machines' (ATM), the bank's lifeline that was this segment was completely mechanized. Barclay Bank, London, installed the first ATM in June 1973. The ATM service was launched in India in the year 1986. Worldwide, there are more than 16,000,000 ATMs in which the ATM card might be used universally in other banks' ATMs. The internet facility also improved the bank's massively influenced stream. Over the years, the online world has been recognized as a dominant mode of transmission for banking properties and departments. Except in instances that continue to be regulated by the provisions of the Negotiable Instrument Act, 1881, the IT Act, 2000, makes provision for most electronic information to be treated as evidence of legitimacy in an official courtroom. The Government of India's Ministry of Communications and Information Technology, recognizing the need for technology-based payment items, has initiated These digital signatures to improve the protection of the 'transfer of electronic funds' through the facilities provided by the Certification Authority. This all in technology, innovation has transformed the Indian banking industry's outlook by offering a range of highly developed steps to every client of today's banks.

Application of blockchain technology in banking:
What began with the fundamental explanation for the mechanism underneath digital forms of currency is that today's blockchain technology has gone beyond just controlling the bitcoin or other transactions. Block-chain innovation is becoming a stable and safe technology in almost every sector, from the government sector to pharmacy to banking. As per 'Forbes,' the blockchain offers the following advantages:
• Blockchain tracks and justifies every transaction.
• Blockchain doesn't need approval from a third party.
• Blockchain is decentralized.
The banking sector is the most popular domain that utilizes the blockchain innovation purely because security is of utmost importance for the financial domain.”

• **Cross-Border Payments**- Banking and any other financial system is the first and foremost use case for any Payments. Commercial and central banks around the globe are also using this latest tech for processing of payment purposes. When it comes to blockchain finance furthermore the agencies are also trying to use this technology potential for the purpose of issuing of their own digital currencies. With bank blockchains cross-border payments are more affordable and quicker than with the traditional systems. For example, “remittance costs within blockchain are 2-3% of the total amount, as compared with 5-20% withheld by other third parties.” Moreover the blockchain system does not require the approval of a third-party in turn escalating the speed of the cross-border payment process.

• **Stock Exchange and Share Trading**- A variety of third-party companies such as stockbrokers and the stock exchange have always been active in the 'trading' process (buying/selling) of stocks and bonds. The work of the exchange shall be as described:
  1. The trade is initiated by the buyer or seller.
  2. A transaction is sent to a stock exchange via a broker.
  3. The transaction is matched with another party also known as the counterparty.
  4. Risks evaluation for the transaction is then done by the Central Counterparty Clearing House.
  5. The record of the transfer is then done by the buyer’s or seller’s agent along with the Central Securities Depository.
  6. The Registrar or Transfer Agent of initial Trade is then sent the transaction so as to update their list or shareholders.

• **Trade Finance**- Blockchain also plays a vital role in the commercial finance market. Several business finance operations still require a lot of documentation, particularly in today's revolutionary, innovative environment, like receipts, letters of credit, etc. This covers financial operations associated with trade and foreign trade (not currency trading). By removing time-consuming documentation and red tape, Blockchain-based trade finance will simplify the overall trading process. While several order management systems make it simple to accomplish the managerial tasks online, it is still very tedious and time-consuming. For example, all stakeholders should maintain their records for all transaction-related records in the conventional trade finance system.

• **Digital Identity Verification**- Online financial transactions are considered very reliable, as it is almost impossible to carry out transactions before confirmation of existence. Nevertheless, such validation needs a lot of action to be performed, such as:
  1. Authentication: Any moment a banking customer logs into the system, they have to verify their claims.
  2. Authorization: evidence of the purpose of the customer is necessary.
  3. Face-to-face checks (can also be done via a video call like Skype).
All these steps need to be taken each and every time for each new service provider, although the use of blockchain technology has made it easier to re-use identity authentication for other services as well.

• **Syndicated lending** – Syndicated lending corresponds to "offering loans to persons by a group of lenders, usually banks (unions).” "The conventional processing of certain syndicated loans
by banks will take up to 19 days due to the involvement of many entities. Banks handling syndicated loans face the following hurdles:

- **Know Your Customer (KYC) – Client Identity Search.**
- **The Bank Secrecy Act (BSA) and the Anti-Money Laundering Act (AML) –** legal action to avoid, track and monitor money laundering activities.

Blockchain finance sector can override this mechanism and make it more accessible by delegating work relevant to community enforcement, KYC, or BSA / AML, and connect these to a single user block, which is then linked to the decentralized blockchain ledger.

- **Accounting, Bookkeeping, and Audit** - The process of digitizing accounting has been surprisingly slow, although it may be the most prevalent sphere involving paperwork. Strict regulatory standards about data integrity and authenticity may be the reason behind the accounting world's slow digitization. Thus, with the power of blockchain technology, financing account is another area which can be changed. This can be achieved by simplifying conventional quintuple-entry accounting and also by standardizing enforcement. Rather than maintaining separate documents related to sales invoices, businesses may write their transactions directly to the collective database, with submissions cryptographically secured and circulated. In contrast, the smart blockchain agreements could be used to pay invoices electronically. This allows any effort to forge impossible. As a consequence of this, the documents are more transparent. This can be conceived of as an "electronic notary" to validate transactions.

- **Credit Reports for Businesses and Individuals** - The credit history of a person via Blockchain finances can also enable small businesses and individuals to get loans quickly. It can take quite a long period for creditors to check the credit record of the borrower. While changing enterprises to access their confidential data seems unclear, conventional business credit scores issued by 3rd party credit bureaus are not accessible to small businesses. Furthermore, blockchain may provide resources to enable creditors to create their credit statements more reliable, straightforward, and easily shareable. Here's how the blockchain functions:
  1. The data owner's transaction history is stored in a blockchain and encrypted with a private key.
  2. The encrypted transaction is held outside the blockchain.
  3. Within the blockchain, the hash function encrypted transfer is recorded with metadata and timestamps.
  4. The criteria for credit history is the data provided by the purchaser.
  5. Depending on the owner's data control requirements, smart contracts define and validate user information.
  6. The blockchain engine will filter the data and return the output.

- **Hedge Funds** - A hedge fund is classified as a financial alliance comprising a 'fund manager' and an 'investor group.' Even then, hedge fund clients are traders instead of regular investors. The main goal of the hedge fund is to maximize returns for investors and mitigate risks. According to Autonomous NEXT, the number of hedge funds trading in cryptocurrencies has increased between Oct. 2017 and Feb. 2018. Nevertheless, a distinction must be drawn between traditional crypto hedge funds and decentralized crypto hedge funds.

- **Crowdfunding (ICOs)** – Crowdfunding means raising capital by contacting several individuals for a small amount of money each, typically online. This sector is ideally suited to fund innovative blockchain technology. Initial Coin Offerings, financial instruments that support kick-start
emerging crypto-currencies, are the best example of blockchain-dependent crowdfunding. The ICO tokens are identical to the shares of a company but typically without an equity exchange. Rather, investors buy tokens for any current cryptocurrencies, such as bitcoins, or actual currencies, such as USD. Afterward, in case of popularity, these tokens may be exchanged on cryptocurrency exchanges. As in crowdfunding, money is raised to introduce the concept when the company does not have a product.

- **Peer to Peer (P2P) Transfers** - With P2P transfers, clients can transfer the money from their bank account to some other person's account through the Internet. The market is full of P2P processing techniques, but they all have some drawbacks. For example, the tendency to move capital only within a geographical area is the impossibility of transferring cash if both entities are situated in the same nation. Besides, some P2P providers charge high rates for their providers and are not safe enough to manage sensitive data. All of these problems can be tackled through blockchain-based, decentralized P2P transaction software.

**LITERATURE REVIEW**

Sharma & Awasthi's investigation shows that "economic developments are expected to transform the banking industry's face. Technology has turned bank distribution networks into retail banking." The report also discussed 'the problems facing the banking organization and its administrative face.' Janki analyzed 'the effects of technology on workforce productivity.' There is no question that technology has improved the quality of serving and customer support. The study discussed how technology could improve risk control, increase innovative brands, etc. The researchers indicated that 'technology is the only weapon to achieve its objectives.'

Rao analyzed 'the impact that the banking sector had based on the emergence of new technology.' Due to the advancements in technology, a change has come in the way business is conducted in the banking sector. This has also promoted new vistas for doing work in a more cost-efficient yet productive manner. Through the rise of 'Tele-banking' and 'internet-banking' new strides are being made to make the branch banking system into a home banking system.

Bhasin in his research analyzed the impact of that the emergence of IT has had on the financial sector. New and easy to use technology has resulted in a higher accuracy, speed and efficiency of conducting business instead of using the same old repetitive and overlapping procedures. This has further enabled their branching into new tasks.

Sabnani examined the significance of universal banking in India. According to Sabani, the 'Universal Banking System' will increase in India. There is indeed a possibility that risk factors could expand through even more than one sector by facilitating the global pooling of financial capital through IT and telecommunications innovations.

Verma examined 'the effect of IT on public sector banks and new private sector banks.' His findings showed that while IT could be a strengthening factor for private sector banks, it could pose a serious threat to public sector banks. New private banks, in particular ICICI Bank and HDFC Bank, have been completely computerised to provide services over the Internet.

Arora in his research highlighted 'the significance of bank transformations.' Various financial institutions in India have now authorized the use of technology for the introduction of new products and services. The research found that technology has a definitive role while conducting transactions pertaining to the banks.

JatanaandUppal concluded that 'there is a need to manage the profits of the banks with their cost of partially IT oriented bank groups in cooperation.' Through the review of literature it can be safely concluded that while transformation is considerably taking place the IT sector has a pivotal role to play to help bring in these transformations.
METHODOLOGY
Almost all primary and secondary data are used in the analysis. Primary data was obtained among fifty participants in terms of of easy sampling. Samples were taken from clients in different banking industry. Secondary data were obtained from written media, like articles, magazines and blogs.

TOOLS OF THE STUDY
The investigation of information obtained by the study has been carried out appropriately. Easy percentages, pie chart, and tables have been used to illustrate a range of sources that fell into different categories. The research was carried out methodically and precisely in order to obtain accurate and reliable findings.

DATA ANALYSIS AND INTERPRETATION
Table 1.1 showing the level of usage of technology

<table>
<thead>
<tr>
<th>usage of technology</th>
<th>no. of respondents</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>e-payments</td>
<td>8</td>
<td>26.66%</td>
</tr>
<tr>
<td>stock exchange</td>
<td>2</td>
<td>6.66%</td>
</tr>
<tr>
<td>Online banking</td>
<td>15</td>
<td>50%</td>
</tr>
<tr>
<td>Financial transaction</td>
<td>5</td>
<td>16.66%</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>100%</td>
</tr>
</tbody>
</table>

Figure 1.1 showing the level of usage of technology

Figure 1.2 showing how frequently branch banking used per month

Figure 1.3 showing how frequently ATM used per month
FINDINGS
According to the report, technological progress has cleared a monumental path for the banking sector. The findings showed that a significant number of respondents were pleased with the banks' ATM facilities. A substantial number of respondents also favored E-Banking in the study area. The study also found that a significant proportion of individuals in the study area did not use Tele-banking services. An overwhelming number of respondents said that they benefited from funding their utility expenses via mobile banking. Depending on the report, it was observed that 90% of participants chose to use net banking facilities.

Regarding the level of 'Protection' offered by the banks, many respondents reported being satisfied, with only 10% of the respondents reported being dissatisfied with the analysis. The security hazard may be a potential explanation of why the respondents have not approved the E-Banking services. The results further indicated that the respondents found private banks better prepared and more technologically advanced than public banks. A significant proportion of respondents also claimed that banking services have become more significant since the advent of computer technology. Finally, the study found that, overall, a large number of respondents classified their banking services as "nice" in the study area.

SUGGESTIONS
- Information and awareness about internet and E-banking should be provided to the customers via the bank.
- A large number of individuals also deemed internet banking services to be dangerous and risky and thus it becomes to responsibility of the banks to dispense such threats and provide reassurances to the customers.

RESULT
The uniqueness of the Bank in points of interest has disintegrated due to the growth of innovation and technology. The entry barrier has been decreasing, and a new competitor has arisen. Banks' three main functions: asset transformation, access to liquidity, and risk monitoring has been updated with the advent of Computation Technology & Data Communication. The efficiency of liquidity, foreign exchange markets, and capital depend heavily on information technology and communication networking systems. Some monetary goods and services have become crystal-clear commodities, where individuals can buy to keep the business environment competitive. Besides, for specific sub-budgetary market sectors, the contestability in banking has been boosted due to the already constructed hand-over.
The profound effect of technological development can be seen through financial and banking delivery systems. To reduce the dependency on the branch network as a central distribution mechanism, a wide variety of alternative delivery mechanisms have become possible, such as ATMs, E-banking, and E-wallets. Due to technology advancement, significantly over-provided financial systems have arisen from the distribution system by network duplication. The Bank's responsibility is to streamline its branch network approach by updating its distribution strategy and broadening the reach of delivery options.

The Indian banking industry has significantly benefited from the global IT revolution. The effective use of technology has facilitated improvements in the volume of transactions of banks with a broader client base.

The virtual financial services can be largely categorized as follows:

<table>
<thead>
<tr>
<th><strong>A. Automated Teller Machines</strong></th>
<th><strong>B. Remote Banking Services</strong></th>
<th><strong>C. Smart Cards</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Details of the most recent balance of an account</td>
<td>2. Statement ordering</td>
<td>2. As a replacement for all types of magnetic stripes cards like ATM Cards, Debit Cards, and Charge Cards etc</td>
</tr>
<tr>
<td>3. Mini statement</td>
<td>3. Funds transfer (payment) to third parties</td>
<td></td>
</tr>
<tr>
<td>4. Statement ordering facility</td>
<td>4. Funds transfer between customer's different accounts</td>
<td></td>
</tr>
<tr>
<td>5. Deposit facility</td>
<td>5. Order traveler’s cheques and other financial instruments.</td>
<td></td>
</tr>
<tr>
<td>6. Payments to third parties.</td>
<td></td>
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</tr>
</tbody>
</table>

**D. NRI Services:** With a large number of Indians that have families overseas started to banks, facilities, work abroad Indians sending money to families in India can give cost-effective transferring with one of the most substantial improvements to the study.

**E-BANKING:** Electronic banking utilizes the internet as an electronic delivery station for banking services and products. E-banking exposes one to a variety of banking services and facilities ranging from ATM, Debit/Credit Card, Telephone banking, Net Banking, AFT, NEFT, IMPS etc. Historically in 1920s the E-banking system came into being in UK and USA. During the 1960 it became highly popular to be making transactions with electronic funds transfer and credit cards. It was in Europe and USA at the beginning of 1980 when the concept banking through the internet came into existence. In India, the E-banking system is still relatively new but slowly gaining popularity promising a fundamental shift in the functioning’s of the banks.

Globalization of trade can be achieved effectively though e-banking. With the development of e-banking it has become possible to provide a global market for the domestic products and services easily. So as to increase the flow of foreign exchange more exports are being promoted through E-banking. It helps provide an easy platform to conduct business while maintaining a good business relationship along with all transparency. The impact of the introduction of the E-banking system could be noted wherein greater individuals were permitted to be working from home thus resulting in lesser traffic and pollution.

Information Technology provides various benefits over the traditional banking system which are listed below: To customers:
- Offers versatility in time, location and range, and a broader range of range.
- Quick to get in contact with clients around the world
- Set up their accounts easily, thus promoting the company.

To business organization:
- offers paperless transfers,
- Fast settlement of bills,
• Lower transaction rates, removal of middlemen,
• Higher labour costs and faster order execution.

All major aspects of banking activities which include, collection of information, storage of data, and processing of data, have been influenced by technology. A few areas in the banking system that have been notably impacted by technology are:

**Tracking lending worthiness (Credit Scores)**
Technology has developed or has contributed to the formation of a credit bureau. The framework quantitatively monitors client credit history to help bankers decide things about the quantity and to whom they can borrow the money. The advanced technology existing has established a scalable and robust credit bureau interface that allows bankers to monitor the client’s data. Revolution has provided software programs that have equipped banking with input data processing facilities, verification tools, and data processing tools. Gathering information enables banks to offer credit reporting assistance in credit reporting, tracking of consumer credit transactions, fraud detection tools, and debt monitoring services. Nowadays, credit bureau infrastructure technology has allowed bankers to acquire, load, verify, store, and transfer both positive and negative data and additional data (e.g., court decisions, legal issues, etc.). The planning and expansion of IT for the Credit Bureau have given oversight across all processes affecting the credit bureau as they refer to the banking sector. A few of the frameworks used in the credit bureau involve C++, C Sharp, and Java, Oracle & SQL. Both of these programs make a significant contribution to the entire activity of the credit bureau. The credit bureau’s standard cycle and role as it refers to banks include the storage of credit records, the observation of fraudulent conduct, prior inquiries, the confirmation of data, and many more.

**Conclusion**
I.T. gives the Indian banking field tremendous capacity and diverse opportunities. It offers the consumer an economical, fast, and comprehensive delivery of services. One of the great things regarding technology is that it's always evolving. The use of I.T. in India's banking sector has changed significantly. Both commercial banks have reported a magnificent rise in ATM installations. Despite this significant accomplishment, it is acknowledged that India is still far behind some other nations. The banking sector has put in place information technology to develop various areas such as customer care and CRM, handle its activities, cleaning maintenance, tracking, and management, threat monitoring, H.R. management, etc.

The effective use of innovative technology has enabled the effective and consistent control of the rising volume of banking transactions with a broader customer base. The evolution of banking systems provides consumers with a range of benefits at any moment; however, they have access to the database and also the authority to run their account details. The Indian banking sector is growing tremendously since the I.T. Revolution in the entire world. Although the transition is positive, banks in India are still expected to resolve critical matters to complete profit from the adoption of information technology. At a dis-aggregated stage, new private sector banks initiated the Indian banking sector’s technological transition, accompanied by competition from public sector banks. Public sector banks were followers concerning the number of ATMs at the start and their scale and distribution benefit; they currently have a broader scope. Banks in the Public sector have distinct benefits over their rivals concerning their network of branches and their broad client base. When considered in proportion to the number of clients affected by this enormous automation relative to public sector banks, emerging private and international banks are relatively small companies in this sense. The amount of credit cards has been undergoing an upward trend over the full duration. Sector-wise, research reveals that private banks are the industry leader. It is assumed that the development of
global credit card banks is diminishing due to rivalry with India's banking sector, which has been emerging up with better modernized and localized better insights.

The new wave of private banks and international banks is leading the way to implementing net banking in India. That being said, the number of public banking sectors providing net banking has gone up dramatically. Considering the consumer segment covered by banks in the public sector, the accessibility of infrastructure and anti malware for online banking at the edge of the client base is still on the line. Still, the trend of online banking is on the rise in the urban Indian market. Modern private banks and international banks were able to develop a niche in online banking throughout the initial phase of technological acceptance. Their share of internet banking divisions in the overall divisions was much greater than that of banks in the public sector. Here, banks in the public sector are keeping back the size, scope, diversity of customers, and the view point to combat the latest tech. It is proving to be a hindrance and a slow response to the introduction of emerging technological things. This is intended to build consumer knowledge and change the opinion of the employees in the banking sector.

The specific conclusion which arises from the study of parameters in technology is that the banking sector in India model is represented by starting new the conventional public sector and old private banks to tough competition from emerging private and international banks armed with state-of-the-art technology. This challenging market has acted as a basis for public and older private banks to upgrade the technological capabilities and size, scale, and distribution, giving them a benefit in this context. Technological involvement in public and former private banks in India is marginally sluggish, but the bank's scale and size are enormous and resilient. The framework is in its transient phase of technology adoption; back-end innovations have already been implemented; the framework's front-end configuration is in transition. The overall technology index shows that rapid technology deployment development is related to the public banking field or nationalized banks. Slow development is related to new private banks and international banks. This is due to the fact that nationalized banks have pushed towards the incremental implementation of innovations. However, the slow growth of emerging private and international banks has persisted at the same pace for the one-time sudden implementation of innovations. It is concluded that emerging private-sector banks and international banks have mainly driven the technology index's development in the early years. Still, that technology acceleration in the later years is mostly driven by rapidly rising banks in the public-sector or established private banks.

The optimistic conclusion that can be drawn in the area of information technology in the banking sector is that there is a degree of connection to the business sector's growth.

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