ROLE OF DIGITAL BANKING IN STRENGTHENING E-TICKETING WITH SPECIAL REFERENCE TO IRCTC

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Abstract

Digital banking has affected the operations of every sector in economy, especially service sector. Through digital banking the people are able to avail various services from the home as per their convenience. They are easily booking train tickets without going to railway stations for ticket bookings and without waiting in long que. Indian Railway Catering and Tourism Corporation (IRCTC) is the online platform handling millions of railway ticketing and payment transactions annually. The present study examines the role of digital banking in strengthening IRCTC's e-ticketing operations, fare collection, and the performance of its in-house payment gateway, IRCTC i-Pay. The study is based on secondary data collected from IRCTC annual reports covering the period from 2014–15 to 2023–24. Percentages and CAGR and growth analysis are used for analysis. The results showed continuous long-term growth in e-ticket bookings, a sharp structural shift towards mobile app-based transactions, consistent growth in fare collection, and rapid expansion of i-Pay transaction volume and revenue. The findings confirmed that digital banking has significantly strengthened IRCTC's operational efficiency and revenue generation.

Keywords: Digital banking, IRCTC, e-ticketing, mobile app payments, i-Pay, online transactions

Introduction

Digital transformation in Indian banking system has accelerated the adoption of digital payment mechanisms across all public and private sector services. Digital banking instruments such as ATM cards, credit cards, UPI, mobile wallets, and internet banking have reshaped the way of availing public and private sector services. The Indian Railway Catering and Tourism Corporation plays a central role in railway ticketing and tourism services in India. Since its establishment in 1999, IRCTC has transitioned from manual reservation systems to a fully digital ticketing platform. The integration of digital banking options enabled passengers to

book tickets, cancel reservations, and receive refunds without physical interaction. The role of digital banking has been significant in improving the efficiency and reach of IRCTC.

The launch of the IRCTC i-Pay payment gateway further strengthened transaction security and reduced dependency on external aggregators.

IRCTC launched its own Digital Payment Gateway: IRCTC i-Pay (A PCI-DSS Compliant Payment Solution) on 28th February, 2019. It is one-stop payment mechanism that facilitates payments through all payment modes (like Internet Banking, Debit Card, Credit Card, Wallets, UPI Account & Autopay) and for safe and secure transactions among the merchant website, multiple issuing institutions, acquiring banks and the payment gateway providers. It strengthened transaction security and reduced dependency on external aggregators. The rapid growth of smartphone penetration and mobile internet access has led to increased reliance on mobile app-based ticket booking. The availability of secure and fast payment options has boosted the volume of e-ticket bookings and increased revenue collection from railway services.

Review of Literature

Bala and Sharma (2025), This review paper examines the factors influencing digital payment adoption in India. It identifies demographic, technological, economic, and psychological factors shaping consumer behavior. The study highlights the role of smartphones, fintech, and policy support in expanding digital payments. It emphasizes how digital payment systems have transformed service sectors. The findings imply that such developments enhance e-ticketing platforms like IRCTC by increasing user acceptance.

Meeravali et al. (2024), This study explores smart travel technologies in railway ticketing and passenger management. It highlights the use of AI, IoT, cloud computing, and contactless payment systems. The research shows that digital ticketing reduces manual processes and improves security. It also enables real-time seat allocation and personalized services. The authors conclude that digital banking and smart payment systems significantly enhance e-ticketing efficiency.

Murthy, Goel, and Jain (2023), This study examines the role of digital transformation in enhancing railway passenger experiences through smart ticketing systems. The authors highlight the integration of online booking, digital payments, and real-time information systems in railways. The research emphasizes how digital payment gateways and mobile

applications have simplified ticket booking processes. It also notes improved operational efficiency and customer satisfaction through reduced queues and faster transactions. The findings indicate that digital initiatives significantly strengthen e-ticketing platforms like IRCTC.

Nilosey and Kharche (2017), The study evaluates the IRCTC e-wallet scheme and its role in simplifying online ticket booking. It explains how the wallet acts as a prepaid digital banking solution for frequent railway users. The system reduces transaction time and dependence on third-party payment gateways. It also minimizes booking failures during high-demand periods. The authors conclude that e-wallet integration strengthens IRCTC's digital ticketing infrastructure.

Objectives of the Study

1. To analyse the growth and performance of IRCTC's e-ticketing system in terms of ticket volume and fare collection during the period 2014–15 to 2023–24.
2. To evaluate the evaluate the performance of IRCTC i-Pay in terms of transaction volume and revenue value.
3. To analyse the structural shift towards mobile app-based ticket booking and its role in expanding digital banking adoption in railway services.

Research Methodology

The study used analytical research design. It is based on secondary data collected from annual reports of IRCTC. The data over a period of 10 years from 2014-15 to 2023-24 is considered for the analysis of e-ticket bookings and fare collection. In the same way, the secondary data from 2018–19 to 2023–24 is taken to analyse IRCTC i-Pay transactions. The study used the statistical tools: Percentages and CAGR and growth analysis.

Role of Digital Banking on IRCTC's Operations

The following data provides the clear insights into the role of digital banking on IRCTC's operations by considering:

- Year-wise e-tickets booked through IRCTC Platform
- Year-wise e-ticketing fare collected
- IRCTC i-Pay – Payment Aggregator Transactions (in Volume and Value)

Table 1 : Year Wise e-tickets Booked through IRCTC Platform

Year	Total e-Tickets Booked (in Lakhs)	Yearly Growth (%)	e-Tickets Booked through Mobile App (in Lakhs)	Yearly Growth (%)	% of e-Tickets Booked through Mobile App
2014-15	1,830	-	18	-	0.98
2015-16	1,993	8.91	75	316.67	3.76
2016-17	2,093	5.02	130	73.33	6.21
2017-18	2,466	17.82	484	272.31	19.63
2018-19	2,842	15.25	1,023	111.36	36.00
2019-20	3,019	6.23	1,415	38.32	46.87
2020-21	1,740	-42.37	808	-42.90	46.44
2021-22	4,174	139.89	1,915	137.00	45.88
2022-23	4,313	3.33	2,042	6.63	47.35
2023-24	4,530	5.03	2,322	13.71	51.26
CAGR		**9.49**		**62.58**	

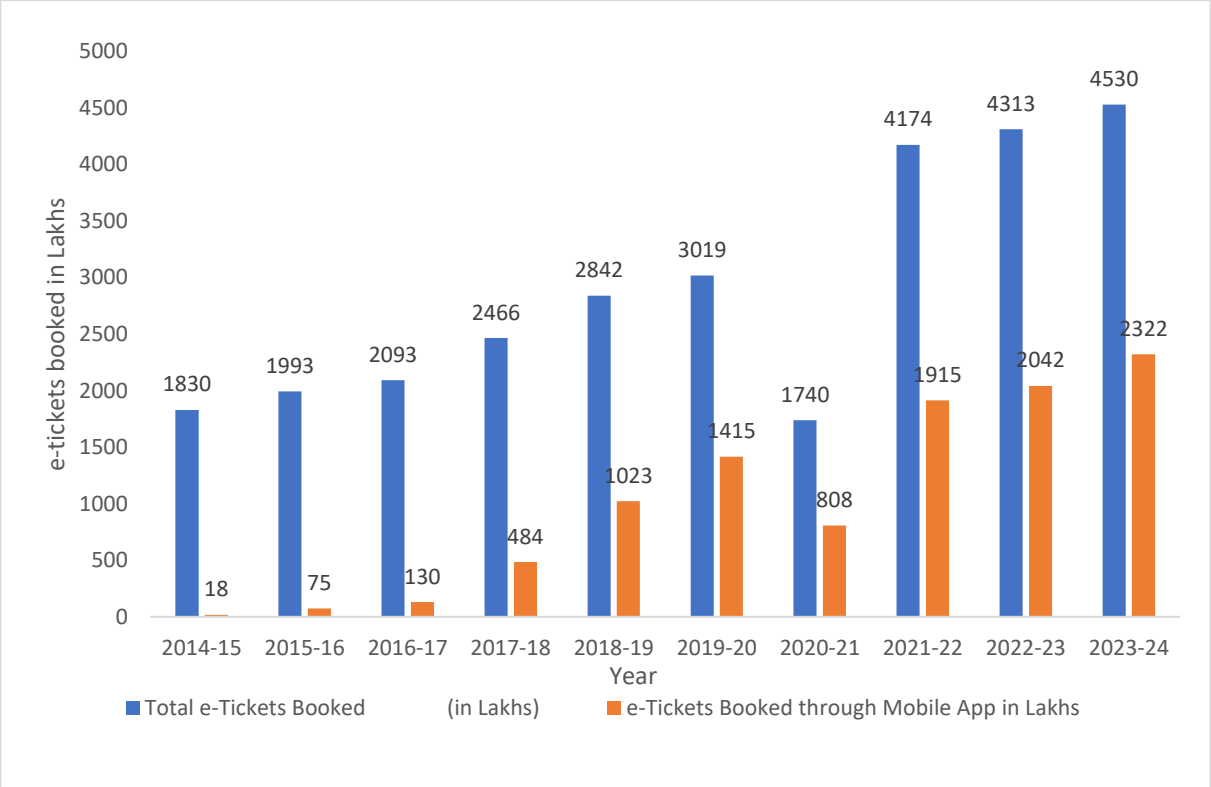
(Source: IRCTC Annual Reports)

Table 1 presents the year-wise details of e-tickets booked through the IRCTC platform from 2014-15 to 2023-24. The total number of e-tickets booked was 1,830 lakhs in 2014-15 and steadily increased to 3,019 lakhs in 2019-20. It dropped sharply to 1,740 lakhs in 2020-21 due to COVID-19-related travel restrictions. Later, it was recovered and finally reached 4,530 lakhs in 2023-24. Overall, it is increased with the **CAGR of 9.49%.** The number of e-tickets booked through the mobile app was 18 lakhs in 2014-15 and increased to 2,322 lakhs in 2023-24 with the **CAGR of 62.58%** in the period.

The percentage of e-tickets booked through the mobile app was 0.98% in 2014-15 and steadily increased to 51.26% in 2023-24. It reflects the growing preference of the passenger for mobile app-based ticket booking.

The Chart 1 depicts the number of e-tickets booked through IRCTC platform for the period from 2014-15 to 2023-24.

Chart 1 : Year Wise e-tickets Booked through IRCTC Platform (in Lakhs)



(Source: IRCTC Annual Reports)

Table 2: Year Wise e-ticketing Fare Collected (in Crores)

Year	e- ticketing Fare Collected (Rs. In Crores)	Yearly Growth (%)
2014-15	20,621	
2015-16	23,395	13.45
2016-17	24,485	4.66
2017-18	28,475	16.30
2018-19	32,070	12.63
2019-20	34,055	6.19
2020-21	17,762	-47.84
2021-22	38,178	114.94
2022-23	54,313	42.26
2023-24	61,737	13.67
CAGR		**11.59**

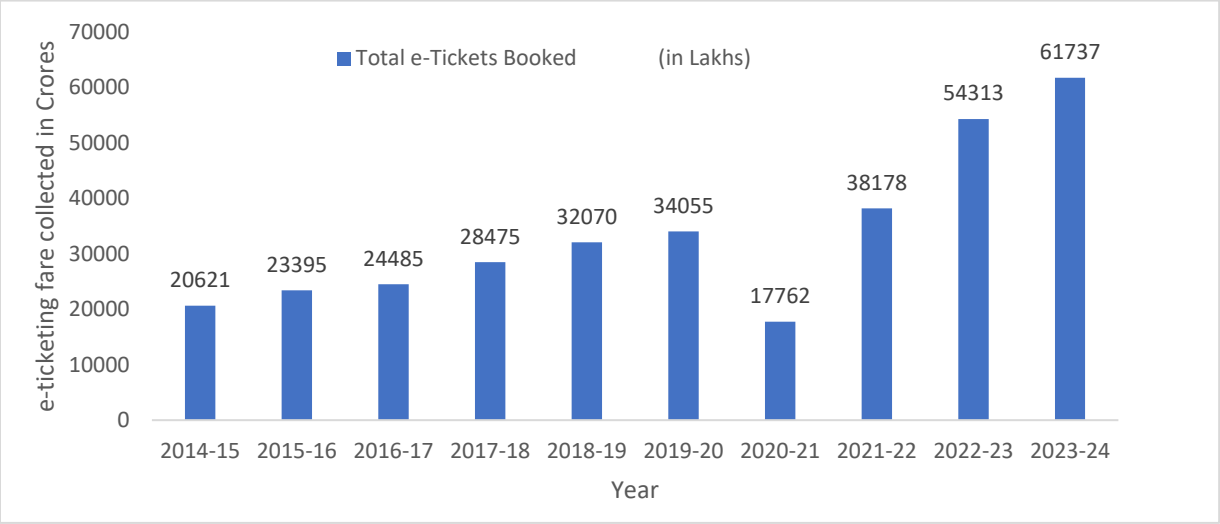
(Source: IRCTC Annual Reports)

Table 2 presents the year-wise details of e-ticketing fare collected through IRCTC platform from 2014-15 to 2023-24. The total e-ticketing fare collected was ₹ 20,621 crores in 2014-15 and it is gradually increased to ₹ 34,055 crores in 2019-20. It dropped sharply to

₹17,762 crores in 2020-21 due to pandemic. Later, it was recovered and finally the e-ticketing fare collected amount is ₹ 61,737 crores in the year 2023-24. Overall, it is increased with the **CAGR of 11.59%** from 2014-15 to 2023-24.

The Chart 2 depicts the amount of e-ticketing fare collected through IRCTC platform for the period from 2014-15 to 2023-24.

Chart 2: Year Wise e-ticketing Fare Collected (in Crores)



(Source: IRCTC Annual Reports)

Table 3: Year Wise details of IRCTC i- Pay Transactions (in Volume and Value)

Year	Transactions (in Lakhs)	Yearly Growth (%)	I-Pay Revenue (in Crores)	Yearly Growth (%)
2018-19	10.43		2.57	
2019-20	310.96	2881.40	35.49	1280.93
2020-21	209.87	-32.51	21.39	-39.73
2021-22	397.02	89.17	52.88	147.22
2022-23	472.62	19.04	95.99	81.52
2023-24	713.74	51.02	114.54	19.32
CAGR		**102.24**		**88.29**

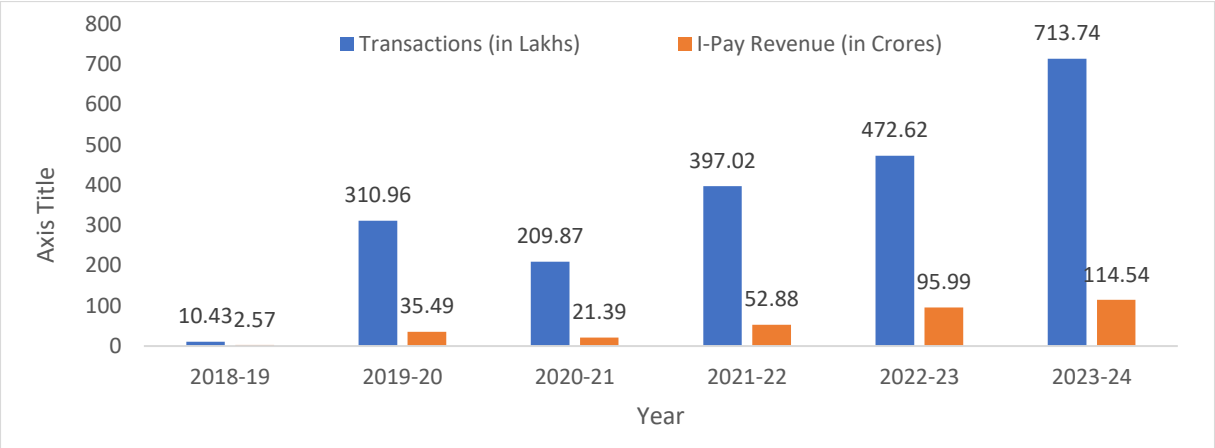
(Source: IRCTC Annual Reports)

Table 3 presents the year-wise details of IRCTC i-Pay transactions from 2018-19 to 2023-24. The total number of transactions was 10.43 lakhs in 2018-19 and increased sharply to 310.96 lakhs in 2019-20. It declined to 209.87 lakhs in 2020-21 due to COVID-19. Later, it recovered and the number of transactions is increased to 713.74 lakhs in 2023-24. Overall, it is increased with the **CAGR of 102.24%** from 2018-19 to 2023-24.

The i-Pay revenue was ₹2.57 crores in 2018-19 and increased to ₹35.49 crores in 2019-20. It is decreased to ₹21.39 crores in 2020-21 due to the pandemic. But later, it was recovered and increased to ₹114.54 crores in 2023-24. Overall, it is increased with the **CAGR of 88.29%** for the period.

The Chart 3.3depicts the details of volume and value of IRCTC i- Pay transactions for the period from 2018-19 to 2023-24.

Chart 3: Year Wise details of IRCTC i- Pay Transactions (in Volume and Value)



(Source: IRCTC Annual Reports)

FINDINGS OF THE STUDY

1. Total e-ticket bookings through the IRCTC platform increased from 1,830 lakhs in 2014 – 15 to 4,530 lakhs in 2023–24**,** registering a compound annual growth rate of 9.49 percent**,** indicating sustained long-term expansion of digital ticketing. The sharp decline in e-ticket bookings during 2020–21 (–42.37 percent) confirms the severe impact of COVID-19 on passenger mobility. However, the post-pandemic rebound in 2021–22 (139.89 percent growth) reflects strong latent demand and rapid restoration of passenger confidence in digital systems.
2. Mobile app-based ticket bookings recorded extraordinary growth from 18 lakhs to 2,322 lakhs during the study period, with a CAGR of 62.58 percent, establishing mobile platforms as the dominant access channel for railway ticketing.
3. The share of mobile app bookings increased from 0.98 percent in 2014–15 to 51.26 percent in 2023–24, indicating a structural shift from web-based booking to smartphone-led digital banking usage.

4. E-ticketing fare collection increased from ₹20,621 crores to ₹61,737 crores, with a CAGR of 11.59 percent, demonstrating that growth in digital ticket volumes directly translated into higher revenue realization for Indian Railways.
5. IRCTC i-Pay transactions expanded rapidly from 10.43 lakhs in 2018–19 to 713.74 lakhs in 2023–24**,** recording a CAGR of 102.24 percent, reflecting increasing passenger trust in IRCTC's in-house payment gateway. i-Pay revenue increased from ₹2.57 crores to ₹114.54 crores, with a CAGR of 88.29 percent**,** indicating its growing contribution to non-ticketing income and payment cost optimization.
6. The consistent increase in i-Pay usage suggests reduced dependence on third-party payment aggregators and improved control over transaction security and settlement processes.

Suggestions

Based on the findings of the study, the following suggestions are proposed to further strengthen the linkage of digital banking in the operations of IRCTC.

1. Strengthen mobile application operations by enhancing server capacity and load management, especially during Tatkal booking hours, festive seasons, and peak travel periods.
2. Improve digital inclusion initiatives by providing simplified booking interfaces, multilingual support, and assisted booking kiosks for senior citizens, rural passengers, and first-time digital users.
3. Enhance cybersecurity architecture through regular third-party security audits, public disclosure of compliance standards, and real-time fraud detection mechanisms to maintain passenger trust.
4. Strengthen grievance redressal mechanisms by integrating faster dispute resolution workflows for failed payments, delayed refunds, and transaction errors, with defined service-level timelines.
5. Promote digital awareness campaigns through railway stations, social media, and travel portals to educate passengers on safe digital banking practices and official IRCTC payment channels.

CONCLUSION

The study concludes that digital banking has played a decisive and transformative role in strengthening IRCTC's e-ticketing and payment systems in India. The consistent growth in ticket volumes, the increasing dominance of mobile application bookings, the rise in fare collections, and the strong performance of the i-Pay payment gateway collectively reflect the effectiveness of digital integration. These developments indicate that digital banking has enhanced transaction speed, reliability, and customer convenience, thereby improving the overall efficiency of the ticketing process. Even during the pandemic period, when railway operations faced significant disruptions, IRCTC's digital ecosystem demonstrated resilience and recovered quickly, achieving higher levels of growth in subsequent years. The adoption of multiple digital payment options, including UPI, net banking, cards, and wallets, has further strengthened the platform's accessibility and user trust. Overall, the study confirms that digital banking has become an indispensable pillar of IRCTC's operational efficiency, customer service enhancement, and revenue generation, playing a critical role in the modernization of railway ticketing services in India.

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