

Web-Based Rail Reservation (Internet Ticketing)*

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ABSTRACT

Indian Railway has set up a public sector company, Indian Railway Catering and Tourism Corporation Limited (IRCTC), owned by the Ministry of Railways. This company has been formed to function as an extended arm of the Indian Railways to implement, upgrade and professionalize the rail reservation system besides managing the catering and hospitality services of Indian Railway. IRCTC launched its official website <http://www.irctc.co.in> on 3 August 2002 for the purpose of railway ticket booking through Internet. Since its inception it has emerged as one of the largest online payment Internet site in India with annual growth of more than 300%, touched a daily high of 57,000 tickets (turnover of Rs. 9 crores) and crossed 10 lakhs in ticket sales per month during several months this year. Even the average number of tickets sold through IRCTC's website in a day is more than 40,000.

IRCTC provides tickets to the public in the comforts of their home/residence and save them from hassles to visit "Railway Reservation Centres." The delivery of tickets is made either through the courier or a person can himself take out the print out for traveling. By doing this IRCTC is not only saving time of public but also saving their cost of traveling/parking to these centres. For Railways it is saving on their infrastructure, i.e., buildings, air-conditioning, electricity, furniture, staff, etc. The spirit behind the project was to avoid the customer going to Passenger Reservation System (PRS) and instead bring PRS to the customer.

IRCTC has the highest *success rate of online booking and payment*. For the convenience of customers cancellation of ticket is also permitted online with easy refund process. Transactions carried out on the site are secure; since the site is certified and financial data is transferred across the Internet in encrypted mode (128 bit encryption). The ticket can be booked using any VISA/MASTER/AMEX/Diners credit card, Internet banking account of 27 banks or 3 cash cards. Tatkal tickets can be booked in 5 days advance (excluding the date of journey) through our site. For supporting the Customer 24 × 7 telephone/email support has been provided. For the last two years a Loyalty Program called "Scheme for Frequent Travelers (SOFT)" has also been launched. At present huge number of passengers plan their journey through IRCTC. Total number of registered user with IRCTC is more than 40 lakhs.

Booking facility was extended to railway agents (RTSA's) during 2006. Later, this facility was extended to IATA/TAAI/TAFI agents also. Until now more than 10,000 agents are enrolled for this e-ticketing facility and on an

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average basis they book more than 2 lakhs tickets every month. IRCTC is in the process of setting up of ATM-based Internet tickets kiosk with various banks for which the integration is almost completed. The steady growth of IRCTC project emphasizes an increasing acceptance of the Internet ticketing system over time.

1. Introduction

The Indian government is using IT to facilitate governance. The last couple of years have seen e-Governance drop roots in India. The effective use of IT services in government administration has greatly enhanced existing efficiencies, driven down communication costs, and increased transparency in the functioning of various departments. The Indian Railways is Asia's largest and the world's second largest rail network that has adopted e-Governance in right earnest to reap the benefit of IT explosion. Indian Railways entrusted IRCTC with the task of conceptualizing, developing and implementing the software and the infrastructure for this project. The issues of flexibility, scalability and provision of totally self help arrangement (as different from the assisted process at the Reservation Counters) had to be permitted to the internet users. Further a variety of online payment mechanisms (like Credit Cards, Internet Banking, Cash Cards, etc.) were to be integrated with for convenience of millions of users. IRCTC has also developed and published Web services to enable access to the basic internet service using other media like phones. All this and more has been done by IRCTC since its inception. The entire Internet ticketing concept was conceived, formulated and implemented by IRCTC within a record time span of less than 9 months.

Internet ticketing

Internet ticketing operations of IRCTC were launched on 3 August 2002 in collaboration with CRIS, the Centre for Railway Information Systems. Tickets for Rail journeys in India can be booked including Tatkal tickets on the Internet on the web site www.irctc.co.in, by any user after registering at the site (Registration is free).

Payments for tickets are made by use of Master/Visa/Diners Club/American Express Credit Cards, Citibank Debit Cards and also through Direct Debits to the users' bank accounts; this is available to users who have their accounts in the 27 banks having Internet Banking facility like ICICI, HDFC, Citibank, IDBI, Bank of Punjab, UTI Bank, State Bank of India, Centurion Bank, Punjab National Bank, ABN Amro, Corporation Bank, Federal Bank, Union Bank of India, Oriental Bank of Commerce, Syndicate Bank, Indian Bank etc. and others which are being integrated shortly. There is also a cash card payment options from ITZ Cash Cards, Icashcard and Done Cash Cards. I-Tickets get delivered to the users' homes/offices or any other address of their choice in over 220 cities of India within 48/72 hours.

The service charges per I-ticket are very nominal, i.e., Rs 40 per ticket (Not per head) for Sleeper Class Tickets and Rs. 60 per ticket (Not per head) for AC Class/First Class Tickets.

From daily average sales of about 112 tickets in August 2002, the site today books more than 40,000 tickets daily. Though handling only a very small percentage of the tickets booked by the Indian Railways Passenger Reservation System, which book about 7 lakhs tickets daily, this website has today over 35 million registered users.

Besides delivery of the tickets, IRCTC also makes several value additions such as 24-hour helpline to assist customers, on line answering of email round the clock, facilities for time table enquiries on train timings and other particulars, email alerts to Customers regarding the status of confirmation of their accommodations and an Online Consignment Tracking System to know the status of delivery of their tickets at any time.

The I-ticket can be cancelled at any Computerized Reservation Counter across the country by submitting cancellation requisition along with the ticket. No cash is paid to the Customer at the time of cancellation. The amount is credited back to the Credit Card Account/Bank Account of the User. Other facilities like change of name, change of boarding point, etc., are also available only across counters

Reservation timings are from 05.00 hrs to 23.30 hrs from Monday to Sunday. Customers should ensure that, depending on the place of delivery required by them, they allow a minimum of 2/3 clear days (excluding the date of journey and date of booking) before the date of journey to ensure hassle free delivery of the ticket, as mentioned in the above Table.

e-Ticketing

On 12 August 2005 we have launched the e-Ticketing services. This scheme was initially introduced in only two Shahabad's. Now from 01-01-06 onwards, it covered all Rajdhani, Shatabdi, Jan Shatabdi and Super-fast trains and on 24-02-2006, e-ticketing services were launched to all trains. The user need not have to have a physical ticket with him; he can take print out the Electronic Reservation Slip (ERS) in the specified performa and travel. While traveling, the user has to carry the ERS along with the relevant Government issued Photo Identity Card, which together constitute the travel authority. To avail this service, the user can log on to www.irctc.co.in and book his ticket on the Internet just like any normal booking, and selecting 'e-Ticket' in the Plan My Travel page. The user has to give the photo identity card details of any one of the passengers, while booking the ticket. On confirmation of his booking, the user can take a print of the Electronic Reservation Slip (ERS) and can perform the journey with the ERS and the photo identity card.

- At present only confirmed/RAC tickets can be booked through e-Reservation, while WL tickets can also be booked in the normal Internet Tickets.

- The following photo identity cards are considered valid.
 - o Voter Identity Card
 - o Passport
 - o PAN card
 - o Driving License
 - o Central/State Govt. issued Photo ID card.
- Payments for e-Tickets can be made by Credit Cards (Master/Visa), Direct Debit or Cash Card

IRCTC levies a service charge of Rs.15/- (Second/Sleeper) and Rs.20/- (Higher Class) for the first passenger and an additional Rs.5/- for every subsequent passenger up to a maximum of Rs.25/- (Second/Sleeper) and Rs.40/- (Higher Class)

Cancellation of e-Ticket is permitted on the website (www.irctc.co.in) up to chart preparation. No cancellation is possible at Counters. Part/Complete cancellation is possible online, but if the passenger whose ID is recorded originally wants to cancel his journey alone, the entire ticket for the group has to be cancelled and fresh booking is to be done. In case person fails to carry ERS during the journey a penalty of Rs. 50/- is imposed. However, if a person fails to carry Photo Identity Card, then he is treated as without ticket.

2. Objectives

The objective of this project is to provide tickets to public in the comforts to their home/residence and to save them from hassles to visit 'Railway Reservation Centres.' By doing this, we are not only saving time of public but also saving their cost of traveling/parking to these centres. For Railways it is saving on their infrastructure i.e. Buildings, Air-Conditioning, Electricity, Furniture, Staff etc.

3. Stakeholder

The most important stakeholders of the project are the Centre for Railway Information Systems (CRIS) which manages Railway Backend Software i.e. PRS (Passenger Reservation System), Broad Vision manages e-commerce application, HCL for network and security, 23 banks for online payment through Direct Debit facility, 04 Payment Gateways for Credit Card Payment, 03 Cash Card for online payment, Overnite Express for Courier Delivery.

Government-to-Citizen Services (G2C)

Through the e-Ticketing project of IRCTC, citizens (Urban and Rural) are benefited by booking the rail tickets in the comforts of their home/residence and escape from the hassles of visiting 'Rail Reservation Centres.'

Sustainability

The project is self sustainable through various means. Selling Railway Ticketing Products (I-ticket, e-ticket, SOFT, and Agent Model), Sale of Advertising Space in Portal, Using IT Infrastructure resources, and (Promotional mail to captive customers.)

4. Technology Architecture

Three-tier architecture

- Presentation Layer—IIS 6.0 on Windows 2003 R2 Enterprise Edition at Web Servers Layer (6 servers) with 128 bit SSL GSID Certificate for secure transmission.
- Application Layer—Broad Vision Enterprise on Windows 2000 Advanced Server (40 Servers)
- Database Layer—Oracle 10g Enterprise Edition on Windows 2000 Advanced Server

IRCTC architecture

- Web services layer on Apache + Tomcat on Broad Vision providing XML based interface to our services to the interested technology partners who develop their front end e.g. on mobile devices with 128 bit SSL GSID Certificate for secure transmission.
- Protected by checkpoint firewalls at the perimeter and rear (Connectivity with internet and PRS/STEAM respectively)
- Protected by Trend Micro Interscan Messaging Security and Web security for internet access and mail access and CA and Symantec Antivirus systems for servers and desktops.

Connectivity

- 72 Mbps outgoing and 18 Mbps incoming served by MTNL for internet access and Website hosting.
- OFC link with PRS, New Delhi.
- 64 kbps leased line served by MTNL for connectivity to Mumbai Print Centre.
- 64 kbps leased line served by MTNL and 64 kbps RFC connectivity served by Sify as backup for connectivity with STEAM servers at Mumbai for MSST.
- 100 Mbps Ethernet Wired LAN.

5. Project Reach

Mobile Reservation Service: Covering four mobile operators currently posed to cover all major mobile and landline operators in the country making the system even more convenient by obviating the need for Internet access.

PNR Alert Service: An SMS based service through which the customer is kept apprised of the ticket status as it moves from Waitlist to Confirmed, before the journey.

SMS Booking: The simplest version of Mobile ticketing wherein the ticket can be booked using just 2 SMS.

Tatkal Booking: Tatkal Tickets can be booked through the site which is available in advance of 5 days excluding date of journey.

Scheme of Frequent Traveler (SOFT): A unique loyalty program for upper class railway customers whereby they accrue loyalty points for each railway journeys performed by them. These points can be redeemed for complimentary tickets. Total register customer – 33000 (IRCTC and SBI includes). Net Earning – Rs 1.2 Cr. Total tickets redeemed online – around 650 tickets.

Mumbai Suburban Season Tickets (MSST)

- IRCTC has launched a new service for the convenience of Mumbai suburban season ticket passengers.
- Registered user of www.irctc.co.in can book his/her Mumbai suburban season ticket through Internet.
- MSST cannot be renewed through Internet.
- User can purchase a fresh season ticket valid from 2 days up to 10 days from the date of booking.
- NO SERVICE CHARGES.

6. Scheme for Frequent Travelers (SOFT)

On 20 February 2006, a Scheme for Frequent Travelers (SOFT) was launched which offers generous reward points to loyal customers and these points can be redeemed for free Railway Tickets. Apart from SOFT, SBI Credit Cards in collaboration with IRCTC has launched a Co-branded Rail Credit Card.

- To earn the benefits of this scheme a customer necessarily must be one of the passengers on the ticket and he earns railway points for his individual fare only. Railway points shall accrue to his account only 5 days after the date of your journey provided his ticket has not been cancelled.
- First Year Membership Fee Rs. 500; Annual Renewal Fee Rs.300 (taxes and transaction charges extra, as applicable).

- Express Rewards Super-Fast Rewards; 4 Railway Points for every Rs. 100 spent; 10 Railway Points for every Rs. 100 spent (Valid on tickets with Date of Travel between April 1 – July 14 and September 16 – January 14) (Valid on tickets with Date of Travel between January 15 – March 31 and July 15 – September 15)
- Railway Points will be valid for a period of 3 years from the date of member's registration. However, irrespective of the 3-year validity period, Railway Points lapse if membership is not renewed.

Performance of SOFT

- Total registered customer: 33,000 (IRCTC and SBI Includes)
- Approximate earnings: Rs. 1.2 crores
- Total tickets redeemed online: 600 Tickets

To cater to the needs of the common man who have no knowledge about Internet. IRCTC is also giving e-Ticketing facility to IATA Agents, TAAI, Petrol Pumps, ATMs and Sify I-way, RTSA, and all Govt. bodies.

Mumbai Suburban Season Tickets (MSST)

- IRCTC has launched a new service for the convenience of Mumbai suburban season ticket passengers.
- Registered user of www.irctc.co.in can book his/her Mumbai suburban season ticket through Internet.
- MSST cannot be renewed through Internet.
- Users can purchase a fresh season ticket valid from 2 days up to 10 days from the date of booking.
- NO SERVICE CHARGES

Agents: e-ticketing facility was extended to Railway agents (RTSA's) during 2006. Later, this facility was extended to IATA/TAAI/TAFI agents also. Under the internet café scheme, major organizations like Sify, Done Card, ITZ Cash Card, Hughes communication etc. are registered for e-ticketing facility. Like wise various state Government's like Andhra Pradesh (e-Seva), Rajasthan (e-Mitra), UP (e-Suvidha), Kerala (Akshaya Project), Karnataka (Bangalore One) etc. are registered. Until now more than 10,000 agents are enrolled for this E-ticketing facility and on an average basis they booked more than 2 lakhs tickets every day which is a tremendous achievement. Also, GSA's of Indian Railways belonging to Nepal and Sharjah are registered.

Customer support

Customer Support is the backbone of any organization. We at IRCTC offer excellent customer support on a 24 × 7 bases at the following numbers/e-mail.

011-23345500, 011-23344787, 011-23344773, 011-23345800, 011-23348539, 011-23348543

For Railway tickets booked through IRCTC

General Information I-tickets/e-tickets: care@irctc.co.in

For problem in online cancellation of e-tickets: etickets@irctc.co.in

For Shubhyatra users shubhyatra@irctc.co.in

For Mumbai Suburban Season tickets seasontickets@irctcc.co.in

*Specific achievements***Table 1**

Financial year	Tickets booked on website
2004–2005	1,281,033
2005–2006	2,573,612
2006–2007	6,823,481

Increase in number of e-tickets since its initiation in August-05

Table 2

Period	e-Tickets booked On website
August 2005 – March 2006	188,473
April 2006 – March 2007	3,940,422

7. Conclusion

The steady growth of IRCTC's internet ticketing project emphasizes an increasing acceptance of the Internet ticketing system over time. In general, the conclusion is that if online ticketing initiatives fulfill a perceived consumer need, they are acceptable to a wide range and increasing number of customers.