Comparative study of ticket booking system

Vikas J Rathod, Prof. Shital Patil, Gayatri Shelar
CSE Dept. SRTTC College of Engineering, kamshet,
Pune, India

***Abstract* - India is a country which has the world's largest railway network. The common problems faced by the passengers is that they have to stand in longs Queues for booking the tickets for suburban railway. Though the technology is advancing still the problem exist we can consider an example of Dadar station it's one of the busiest station where these long queues can be seen Frequently. To overcome this Queues, different methodologies are used like ATVM (Automatic Ticket Vending Machines) machines are introduced which is linked with smart card and now at present its also linked with UTS Application. This smartcard used can be purchased and recharged at ticket counter. The UTS application build is with android platform since android has major hold of the market, considering the present scenario. The ticket can be booked using the application(Softcopy). Later on, CO-ATVM machines were introduces which is an extension of ATVM machine which involves payment through Notes/Coins. There is also other method which involves use of GPS technology, where the user has to enable GPS through UTS application. Also, the other proposed method is the use of ZigBee and RFID technology linked with ATVM machine, the ticket generated with RFID is to be shown on the doors, then door opens automatically closes back in sometime. The main focus of this study is to identify the ATVM machine usage as ignored facility. Suggestions for future prospects of totally eliminating queues are also addressed.**

***Keywords* – ATVM, E-Ticket, GPS, RFID**

I. Introduction

India is second most popular country in this world. In India ,30 millions of people travels in Indian Railways daily and about 7.5 million people travel on Mumbai locals every day. Indian Railways has 1.4 million employees. Considering all the scenarios some of the technologies has been introduced now a day. Use of internet, messages, different websites, GPS system has been used for multiple purpose. This all can make man's life easier and simple. Now coming to the travelling scenario. We all know for Local trains, Express trains, Metros, Buses there is rush. People mostly prefer ticketing either going towards a counter and buy tickets or else now a day's different online applications have been introduced. There are long queues at the ticket Windows for traveling one place to another. Even things may happen that there may be cash exchange problems while giving tickets even problems arises like wastage of papers or even can be power failure problems, so to reduce such problems one system was introduced with the implementations of TVM.

TVM is nothing but ticket vending machine. The transaction consists of a user using the display or user interface to select the type of the tickets and quantity of tickets and then choosing a payment method of either cash, credit/debit card or smartcard. The tickets are printed and provided to the user [12]. Next system was introduced with help of ATVM this nothing but the automatic ticket vending machine which are touch screen and can be used using smart cards. One can purchase and recharge the smart cards from ticket counters. The smart cards have to be placed on the ATVM machine slot and then we have to select the route that is source and destination the one wants to go. After the process we get the ticket in printed format and then delivered. Once the ticket has been issued the cash gets debited from the cards [8]. But the problem with this machine is it do not except cash the tickets is only issued with the help of smart cards. There was another system arrived named as COTVM machine this means cash/smart cards ticket vending machine. The main focus of this machine is that it accepts issuing tickets from smart cards as well as cash. Some of the applications are based on RFID. RFID is an electromagnetic field which is used to identify and track the tags of the objects. Here smart card is provided which is linked with the ATVM machine. The user gives the input on the ATVM machine and the ticket is generated then using this RFID technology ticket is verified at the doors, if the verification is successful the door automatically opens and closes after some predefined times [3].

But all this system does not totally eliminate the problems discussed before. So, for eliminating the issues there was system which implements with the application. We can say it as android application. Android application minimizes use of ticket counter, one can use application and book their tickets on their own. It allows the customer to pay for ticket from mobile itself. In this project, with use of android application we need large number data to be stored for this purpose SQLite Database has been used. It stores the large data. Basically, the system works like first we need to register the fields provided next as per we need to select the route and destination. After selection the question arises for the payment in this application. The main focus is on wallet system customer can easily add money in their wallet so that whenever customer buys ticket it can use it for payment purpose. This can make all the transactions easy.

II. Literature survey

A) The system depicts the use of GPS technology and Android Application. The GPS of the mobile phone is to be enabled through the application which will help to validate and delete the ticket based on the location tracked from source to destination. All the information about the ticket and the user is stored in cloud database for better security. [1]
The technologies used here are: -

1)Android application: - The main purpose to choose android is because it holds maximum market share. There is large no of developers in android and also it has extended functionality of devices. It is user friendly and an open source

2)Database: - For database SQLite and MYSQL is used. SQLite is a relational database management system contained in a C programming library. It implements most of the SQL standard

3)Cloud: - C2DM service is used to send the data from server to the applications on android devices. The C2DM server sends the message to the device the message will be delivered once the device is available. Once the message is received, an Broadcast Intent is created.

4)QR CODE: - After the Ticket is booked the QR Code generated is sent to user, which is later verified by ticket checker

The drawback of this system is the GPS can be misused to violate the privacy of users, one can use this information and sell this information.

B) Another system consists of microcontroller and smart card. Here the smart cards are the types of ATM cards, through which one can travel from one place to another by simply scratching the card in the drive machine. It verifies the code and prints the ticket. This system is constructed with the help of PIC, which is peripheral interface controller which is secure and used worldwide, also it consist of RISC CPU which is used for high performance. Core features are operating speed, interrupt capability, different addressing modes, timers etc. With the help all this the system is proposed and can issue the ticket. But the system does not eliminate all the problems [3].

Drawbacks of the system is that it does not completely reduces the queue. Also as the system is linked with the different banks so at the same time when person is buying ticket it will arise the problem like multiple transactions on the same time.

C)The other system consists of android application. Android application is one of the developing platform and its applications are more beneficial that this application can carried with us anywhere and can book tickets as per our comfort. Now for reservation purpose, this provides E-ticketing which is done with the help of wallet system. If user wants to use this application, one must first register into the application and submit the details required then one can select the route and destination and then ticket is printed and available for use.

The Scope of this to minimize the booking time at ticket counters/windows so that the android application allows the customers to pay from mobile phones itself. This application can be used widely to enhance the quick booking of tickets using wallet [2].

1) Android

The Android operating system (OS) is based on the open Linux kernel. Unlike the iPhone OS, Android is open source, meaning developers can modify and customize the OS for each phone. Therefore, different Android-based phones may have different graphical user interfaces GUIs even though they use the same OS.

2) SQLITE

SQLite is a powerful language. SQLite is a relational database contained in the C programming library. It is the popular choice for storing the user information within the application and it is stored in the client side. It is the most widely used database. Database created can be accessed by name to any class in the application and it cannot be done outside the application or any other application. It helps the developers in handling data in a simple way with the use of database features. An important feature of SQLite is that it is non-procedural language.

For example, suppose a person wants to reserve a railway ticket. For this we have to follow procedural way i.e. he has to complete step wise instruction which is follows

- Go to railway station.
- Fill reservation form.
- Make the reservation ticket.
- Back to home.

In this case we have to specify a complete set of instructions. But in non-procedural language we just have to specify the requirements of the person i.e. make a reservation ticket [9].

3) Development Tool

Basically, development tool is a part of computer program that software developers use for creating, debugging, maintain etc. also supports the other programs and the applications. Eclipse and Android SDK Tools are integrated development environment (IDE) for designing and developing the Java based applications.

D) Our System:
Now to overcome all the above drawback we have proposed a system which will provide facility and flexibility to book ticket using restricted Wi-Fi zones available on platforms. Provided Android application can be only accessed through those Wi-Fi zones. After ticket booking, tickets will be downloaded directly on smart phones. User can directly carry E-ticket provided verification box on it.

III. Comparison

Parameters	Previous system	Our System
Queue	Reduced	Completely eliminated
GPS	Proposed use of GPS may violate security of person	No such use of GPS.
Cost	Cost of ATVM is high	WIFI Router used has lower cost than ATVM
Paper usage	Paper used thus more paper waste generated.	Complete paperless work.
Proof	Paper ticket once lost, there is no proof to be show to TC	E-ticket on phone can be shown to TC and if battery down or phone lost TC can verify from App provided
Booking area	Android application supports booking ticket from any place. This lead to misusage of the application.	No misuse of application as ticket can be booked only at stations within some restricted area.
Payment	Wallet system.	Wallet system with net banking.
Database or cloud	SQLite, MYSQL	Firebase used.
Smartcard	Need to be carried at every place.	No usage.

IV. Conclusion

The main aim of this review paper is to learn and analyze the present ticket booking system. Whether the current system is user-friendly and efficiently used or not, finding the drawback of the current system which will help to develop an efficient system. The project greatly helped in understanding the working of ATVM, COATVM, usage of android application, payment using wallet and an exposure to database MYSQL and SQLite.

References

[1] Karthick. S and Velmurugan. A (2012), "Android Suburban Railway Ticketing with GPS as Ticket Checker" -IEEE International Conference on Advanced communication control and computing Technologies.
[2] N.M Girinivas*, P. Hemanand*, K.P. Chetan, S.R. Janani (2015), "Local Train E-Ticket Reservation system using wallet system" -IJCSMC, Vol. 4, Issue. 3, March 2015, pg.201-207.
[3] J. Nagalakshmi, J.V.V. Priya darsini (2014), "RFID based railway ticket booking system with mobile based architecture" -IJAER 2014, Vol No. 8, Issue No. III, Sep.
[4] Mazhar Abbas, "Challenges in implementation of TVM (Ticket vending machine) in developing countries for mass transport system: A study of human behavior while Interacting with Ticket vending machine-TVM".
[5] Mark Murphy's (2011) "Beginner Android 3" -Apress Publications.
[6]http://en.wikipedia.org/wiki/Android_(operating_system).
[7] Ben Ammar Hatem Hamm Habib, "Bus management system using RFID in WSN", European and Mediterranean conference on Information Systems 2010(EMCIS 2010) April 123 2009, Abu Dhabi, UAE
[8] "Local train ticket booking App- new gift from railway to Mumbaikars", http://indiatoday.intoday.in/story/local-train-ticket-booking-app-new-gift-from-railway-to-mumbaikars/1/411274.html.
[9]http://developer.android.com/reference/android/database/sqlite/SQLiteDatabase.html.
[10]https://www.services.irctc.co.in/beta_htmls/IRCTC_andriod_App.html
[12] Sharmila, A. Ponmalar, Skanda Gurunathan, "Buss pass and ticket automation system", IJCERT Volume 3, Issue 8, August-2016, pp. 389-393.