

SIGNIFICANCE OF RADIO FREQUENCY IDENTIFICATION DEVICE (RFID) IN THE TRANSIT SECTOR

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ABSTRACT

Growing urbanisation has put tremendous pressure on the country's infrastructure. However, it has also presented very lucrative and effective alternatives. For instance, the increasing issue of reliance of roadways has been streamlined with the implementation of public transport. But there are still many commuters would prefer to take the road for running their day-to-day errands. For such instances and commuters, FASTag or any RFID-based solution helps in saving time, money and helps lend an enhanced consumer experience. This paper highlights the Government of India's successful project NETC FASTag and the technology behind it. This technology helps in reducing wait time, improving fuel efficiency, and keeps track of commuting expenses.

Keywords: Radio Frequency Identification Device (RFID) Technology, National Electronic Toll Collection (NETC) FASTag, Transit Sector.

INTRODUCTION

Increasing urbanization has made us realize that there are few technologies that address the growing concerns. RFID i.e. Radio Frequency Identification (RFID) technology happens to one of them. This technology integrates payments to automation of toll collections and fuelling in the future. As a result, the commuting business as we know it demonstrates the potential to, as a result, the "National Payments Corporation of India (NPCI)". A toll payment solution adequately incorporating settlement system services for direct payment and grievance management is available through FASTag. It allows a consumer to use their FASTag as a payment method on any toll plaza, regardless of who possesses it. (National Payments Corporation of India, 2021). While the globe is advancing toward technology 5.0, SMEs have been unable to effectively use technology 2.0. The COVID-19 epidemic has taught the globe the value of technology in enabling effective remote labour. (Asmat, et al., 2021).

India is one of the fastest growing economies in the world. India has traditionally been an agrarian economy. However, with the implementation of LPG i.e. Liberalization, Privatisation and Globalisation, many Indians have left their ancestral homes to settle in urban or semi-urban areas.

This huge population has moved to the city for better job prospects and improved standard of living. According to an industry report, with specific reference to 2011, India's population is predicted to expand by 25% to 1.52 billion by 2036. Furthermore, this analysis predicts metropolitan areas will account for 70% of the rise. The urban population of India would grow by 57% from 377 million in 2011 to 594 million in 2036. So, while 31 considered percent of Indians lived in cities in 2011, that figure is reasonably expected to rise

to 39 percent by 2036. (welfare, National Commission on Population of Health and family, 2019).

The movement of so many people from rural to urban areas will lead to an insurmountable pressure on the urban infrastructure – especially the transit sector. Most likely, many citizens will look for private vehicles or carpooling options. The main reason for this is the convenience of travelling long distances and improved purchasing power. Additionally, owing a car still is a status symbol for many Indians. According to a report published, in fiscal year 2019, there were 295.8 million cars. Covid-19 specific factors like closure of public transport such as local trains and metro has further pushed people to take the roadways. The same report states that there were 60% respondents who commuted by private or shared car. (Statista, 2021)

These statistics clearly indicate commuters' willingness to take the road for reaching their destinations. Hence, it becomes imperative for technology providers and regulatory authorities to come up with solutions that ease commuting. A crucial link to the entire commute process is toll payments. Toll payments are the live-wire of the highways. To integrate digitization to this manual process, the Government has introduced RFID based payments by the means of FASTag.

Functioning of RFID

The use of RFID in transportation is not alien to the world. Traditionally, commercial vehicles were affixed with an RFID tag for ease of identification. With these tags, vehicle owners could track their consignments and trace back a product or item to a particular vehicle.

Radio Frequency Identification Device (RFID) basically functions on data-capturing model. It uses an electronic chip for its basic functioning. Additionally, it uses EPC (Electronic Produce Code) through which vehicles are identifies. RFID tags can be simply scanned from a distance unlike bar codes which have to be extremely close to the reader. Hence, these tags can be read without having to stop as well.

RFID in Transit

Over the years, India has seen a major shift towards digitisation, especially with respect to payments. It comes as no surprise that commuters are looking to pay digitally on-the-go. To address this, the National Payment Corporation of India (NPCI) decided to make toll payments simpler by the means of an RFID sticker.

NPCI developed NETC (National Electronic Toll Collection) solution to integrate payments into RFID. It came up with a device called FASTag that could help in identification, toll payments and even fuelling.

What is FASTag?

As explained by National Payment Corporation of India, adopting Radio Frequency Identification (RFID) technology, the FASTag gadget allows drivers to pay for tolls while driving. If you maintain a vehicle with a FASTag (RFID Tag), you can pay tolls straight from your associated account.

This step has been viewed as a welcome step. It mitigates the hassle of carrying cash and streamlines the entire toll collection process. FASTag has been made mandatory to

ensure a truly digitized experience. As per data released by NPCI, FASTag recorded 192.33 million transactions amounting to 2976.39 crores in July 2021.¹

The slew of measures that the Government has taken seems to work wonders.

How does RFID-based FASTag work?

1. The commuter should take the vehicle to dedicated FASTag lanes of National Highways.
2. Once the vehicle enters the designated spot, the reader at the barriers read this RFID tag on the windshield
3. The tag is scanned to recognize the registered number, vehicle, and owner
4. The amount is debited from the account

Benefits of NETC Solution/FASTag

1. Creates an interoperable ecosystem
All participating toll plazas accept tags issued by any member bank in an appropriate and secure manner.
2. Cost-efficient and environment-friendly
The RFID Device i.e., FASTag is scanned while the vehicle is in motion and the amount is debited instantly. This solution reduces the congestion at the toll plazas thereby ensuring reduced fuel consumption.
3. Streamlines toll collection process
This solution reduces time and resources deployed towards handling cash at toll plazas as all transaction are processed digitally. The entire toll collection process is transparent, swifter and more efficient. Additionally, all transaction reports can be accessed for reconciliation process.

Future of RFID In Commute

Realizing the true potential of this technology, NPCI has explored fuel payments with FASTag. According to this technology solution, the user can drive his/her car at any fuel retail outlet and refuel using this RFID sticker. This solution has the potential to integrate fuelling and toll payments to lend the user a truly digital experience.

Currently, FASTag has collaborated with Indian Oil for extending fuel payments via FASTag. This will reduce the time spent at any fuelling station. Moreover, it will make users more aware of their overall spending on commute. This will bring manual intervention, thus reducing chances of pilferage.

Integration Of Smart Technologies

RFID technology can be blended with smart technologies such as predictive AI to understand consumer behaviour. For instance, if a commuter takes a particular route frequently, the toll plaza can run a discounted rate. The same goes for fuel payments, if a user is refuelling at the same fuel station at frequent intervals, the data can be tracked at backend and the same can be used to analyse his behaviour (National Payments Corporation of India, 2021).

All in all, RFID has the potential to integrate various crucial elements such as payments to streamline complex processes. The combination of RFID and Smart Tech can potentially transform commute as we know it.

CONCLUSION

FASTag is on its way to becoming every commuter's favourite solution as it mitigates hassles, reduces travel times and helps keep a track of the overall expenses. Moreover, commercial vehicle owners will always be aware of the driver's whereabouts as FASTag deductions reflect real-time on mobile wallets, statements and SMS.

On a macro-economic level, the Government has saved approximately INR 27,000 crore by the means of fuelling cost and wait time. (Statista, 2021). Technologies like this not only improve consumer experience but also result in financial inclusion across the length and breadth of the country.

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