

FASTag: A New Innovation Achievement in Reform of Toll Tax Mechanism in India

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Abstract:

FASTag is a (the) new technological solution for the great contribution of Indian toll tax collection. It is the user friendly and economic viable for the every user of motor vehicle in Indian part. Fastag (It) is a() simple to use, reloadable tag in which is automatic deduction of toll charges and passes through the toll plaza without stopping for the cash transation.Over 70 lakh FASTag(s) have been issued till November 27, 2019with the highest perday issuance of 1, 35, 583 tags on 26 the November 2019. As the prevalence and acceptance of this system increases not only will vehicle owners' **experiences** at toll plazas become smooth, it will also lead to plugging of revenue leakages at toll plazas.

JEL Code: FASTag, RFID Mechanism, Growth rate, Toll Collection

Introduction:

FASTag is a (the) very innovative electronic toll collection system in India, operated by the National Highway Authority of India (NHAI). India's third major experiment for the road sector in less than three years has just begun this December. It **including**(includes) passenger and commercial vehicles, in Asia's third largest economy grew 9.5%, the fastest among major global markets, last year to more than 4 million units, outpacing Germany's 3.8-million vehicle sales, which rose by a modest 2.8% in the same period. It employs Radio Frequency Identification (RFID) technology for making toll payments directly from the prepaid or savings account linked to it or directly toll owner. It is affixed on the windscreen of the vehicle and enables to drive through toll plazas without **stopping (Halt)** for transactions. The tag can be purchased from official Tag issuers or participating Banks and if it is linked to a prepaid account, then recharging or top-up can be as per requirement. As per NHAI, FASTag has unlimited validity. 7.5% cashback offers were also provided to promote the use of FASTag. Dedicated Lanes at some Toll plazas have been built for FASTag. The government's thrust on infrastructure, stricter tabs overloading ban, macroeconomic environment buoyancyexpected to keep the momentum strong in 2018.

In January 2019, state-run oil marketing companies IOC, BPCL and HPCL have signed MoUs enabling the use of FASTag to make purchases at petrol pumps.

As of September 2019, FASTag lanes are available on over 500 national and state highways and over 54.6 lakh (5.46 million) cars are enabled with FASTag. It is the plan to make every vehicle that uses national highways pay tolls electronically. A year ago, India **had** (have) moved from a single-year insurance policy for vehicles to a multi-year policy.

And, from next year April (onwards), any **new vehicle sold** will have to operate under the stringent BS VI emission norms. There **have been** other tweaks in between, like making driving licence rules stiffer and a massive jump in fines for traffic offences.

Review of literature:

There is no such research paper in this regard but the collection of ideas from the various newspapers **for the Indian parts** as well as international paper.

B. Joshi et.al (Nov. 2017) suggested that conventional Toll collection and automatic Toll collection systems by the use of FASTag with RFID technology and Automated Toll collection system which is attached with more than two wheelers with minimum used of cash and payment through android app and mobile detected smart devices near to the toll plaza. The paper analysed that the system which is reduced Air Pollution, eradicate the congestion, reduced the human labour force and increase the speed of collection of toll tax in India. They have used the techniques such as RFID, FASTag and BookMyToll for comparing with old Conventional system **with** (which) **observed** (observes) the advantage of online toll collection system. They found out that the online toll collection is far better than the previous conventional method. The previous method of collection was so much manually and time consuming. The motor vehicle owners or drivers have to stop at the front of toll centre and then pay the amount to the toll collector to the tollbooth, which **is seems to** be the sudden breaks, results in wastage of precious fuel, congestion is higher, handle the cash even getting the change that required the time, so that's why the corruption is higher, collection is less, attention the time will come for payment and lengthy process occurred at that time.

S.Nandhini et.al (2014) used the scientific method for fast and safe environment and to control the vehicle movements at the tollbooth, the capacitive Sensor through the IR sensor to detect the vehicle size and Gate Model which is closed to the enter and exit toll tax unit and the RFID which helped the Tag of the vehicles and information is stored in the microcontroller based on the tag numbers. The amount of tax for that vehicle is automatically transferred to the toll gate account and the information about tax through the GSM mobile phone of the owner. So the status of the vehicle will be displayed in the LCD through the system of IR technology which is making the very vulnerable cost bearing with the tag in existing all the roads.

The Business today (2020, Jan 2) FASTag is set to become mandatory for all motorist using the national highways from 15 January, 2020. The issuer bank and agency will charge one time joining fee if they pass through FASTag lanes. **The Hindustan times (2020, Jan 17)** reported that the FASTag has yet **to moved** the data mainly highlights teething troubles in the digital payment method across national highways. Digital toll payments through FASTag across national highways increased to at least 60% of total toll collection from December 2019 to January 2020 the average waiting time of vehicles at toll plaza **wents up** by 29%. the estimated data that around 6 million vehicles cross the toll booths across india everyday, according to the Central toll plaza traffic Monitoring system estimation, there is **a**Rs. 12,000 crore loss due to fuel wastage at toll plazas.

The **Hindustan times (2020, Jan 4)** reported that, as per the monthly analysis done by the monitoring system, Uttarpradesh, Tamilnadu, Haryana and Rajasthan are the states with the most congested toll plazas leading to an increase in the average waiting time while Maharashtra, West Bengal, Karnataka, Telangana and Andhra Pradesh are among the states that have shown the most improvement in this respect.

The Economic times(2020, Jan 15) reported around 23 certified banks through various channels such as point of sale at national highways toll plazas and select bank branches. They are also available on e-commerce platforms such as Amazon, Paytm and different private agencies. There are 65 identified toll plazas in the country around 535 toll plazas under NHAI have been equipped with infrastructure.

Objectives of study:

The main objectives of the study are as follows:

- 1) To the initial study of the FASTag in India.
- 2) To examine mechanical concept of FASTag in different states toll plaza.
- 3) To analyse the economical viable nature of FASTag in India.

Research Methodology:

The study is basically based on secondary data in respect of collection of data from various sources like MORTH (Ministry of Road transport and Highways), NPCI (National Payment Corporation of India), NHAI (National Highway Authority of India), different journals, magazines, newspaper, using social network and related article on this. Follow some statistical tools (weekly average growth rate in simple calculation in this topic, figures, tables is used for more clearance of data related in month wise like August, 2018 to January 2019 in around the 10 state of India. The different agencies that mostly provide the service of FASTag in our country and their coordination of bank.

Scope of the study:

The study will more fruitful in near future as well as for ever because the vehicular of India is increasing day by day, which will increase the congestion and create pollution in air in our country. The payment in cash in toll plaza is very much consecutive in nature, so the Govt. takes the initiative and innovative in machinery collection in of payment system as well as reduces the fuel, less wastage of time, more speedy with a use of simple and easy payment in nature. The study will be favourable not only the departmental but also **the people s like us**, research scholar for innovation of technology and economic point of view.

Limitation of the study:

This study is based on theoretical perspective because the achievement of this FASTag system is not fully used in all the state in promptly, data is not **sufficient(ly)** fit for study to enhance further. So less use of statistical techniques used in this concept so that the topic will further improve according to the data in different department of GOI.

Initiation of different year of FASTag in India

- ❖ The system was initially set up as a pilot project in 2014 on the stretch of the Golden Quadrilateral between Ahmedabad and Mumbai.
- ❖ The system was implemented on the Delhi - Mumbai arm of the Quadrilateral on 4 November 2014.

- ❖ In July 2015, toll plazas on the Chennai - Bangalore stretch of the Golden Quadrilateral started accepting FASTag payments.
- ❖ By on national highways across India, representing 70% of all toll plazas in the country at the time.
- ❖ By 23 November 2016, 347 fee plazas out of 366 on national highways across the country accept FASTag payments.
- ❖ On 1 October 2017, the NHAI launched a FASTag lane in all 370 toll plazas under its ambit.
- ❖ On 8 November 2017, it was followed up by making FASTag mandatory on all new vehicles sold in India after December 2017.
- ❖ On 19 October 2019, it was announced that FASTag will be mandatory on all National Highways from 1st of December 2019 and non-FASTag users will be charged double the toll.
- ❖ During November, Hyderabad airport launches FASTag Car Park facility.
- ❖ On 15 December 2019, FASTag became mandatory throughout India.
- ❖ 600+ Toll Plazas are now connected with FASTag. Many more are in queue to connect very soon.

Ranking of top ten countries in Auto market growth in the world in 2017:

Rank	Name of Countries	Unit Sold (in millions)	% Change over 2016
1	China	29.12	3.9
2	United States	17.58	(1.6)
3	Japan	5.24	5.4
4	India	4.02	9.5
5	Germany	3.81	2.8
6	UK	2.96	(5.4)
7	France	2.60	5.1
8	Brazil	2.24	9.2
9	Italy	2.19	6.8
10	Canada	2.08	4.7

[Source: International Monetary Fund]

- ❖ India is having forth highest automobile market in the world which sold 4.02 million unit in in the year 2017 compare to 2016 there was drastically change in the growth of 9.5% which highest among all countries.

NATIONAL PAYMENT CORPRATION OF INDIA:

NPCI has developed the NETC (National Electronics Toll Collection) programme to meet the electronic tolling requirement of the Indian market. It offers an interpole nationwide toll payment solution including clearing house services for settlement and dispute management. Interoperability as it applies to NETC system encompasses acommon set of processors, business rules and technical specification which enables acustomer to use their FasTag as payment mode on any of the toll plazas irrespective of who has occurred the toll plaza. FASTag offers the convenience of as less payment along with benefits like, saving on fuel and time as the customer doesn'thas to stop at the toll plaza.

Objective of NETC:

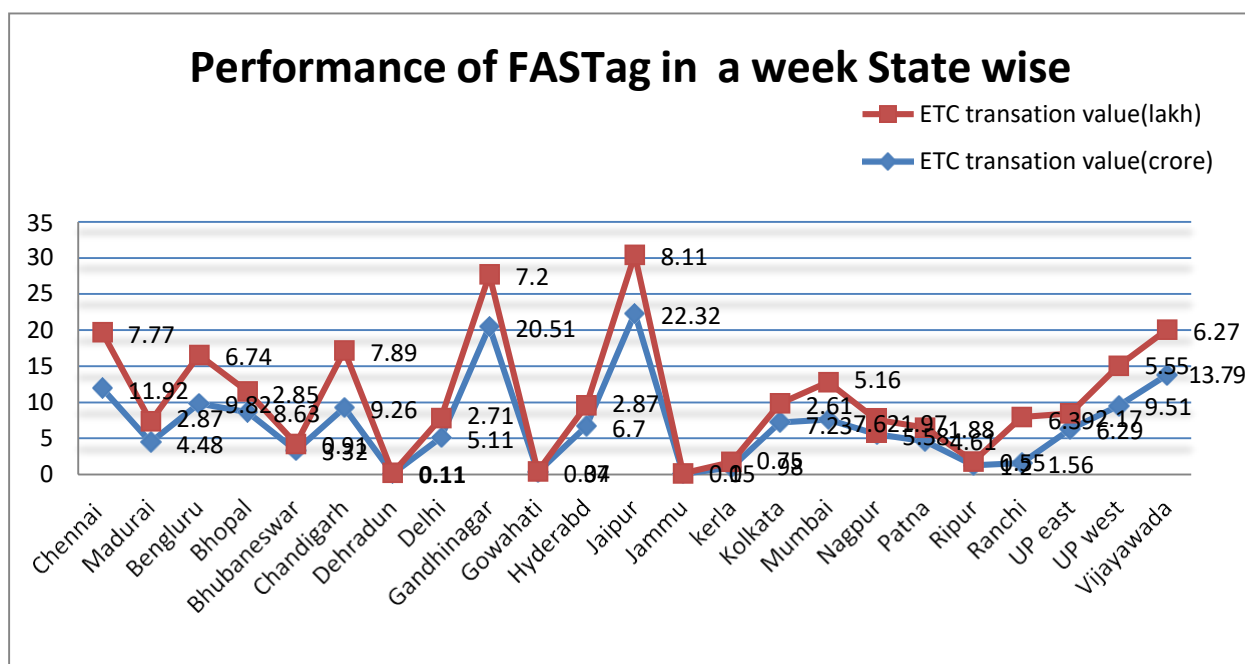
- ❖ To create a composite interoperable ecosystem: it means secure frame work capable of use across the country.
- ❖ Simple and robust framework: it increases transparency efficiencies in processing transaction.
- ❖ To serve the sub-goal of government of India: it means reduce air pollution by reducing the congestion around the tollplaza.
- ❖ To reduce fuel consumption.
- ❖ Reduce cash handling.
- ❖ Enhance audit control by centralising user account.
- ❖ Electrification of retail payment.
- ❖ Reduce the illegal activities /black marketing etc...

Economics of FASTag:

- ❖ NHAI recorded highest 86.2 crore daily collection in 2020. A single day in January recorded 50 crore as compared to 23 crore in Nov 2019.
- ❖ FASTag have also raised around 30 lakh perday in January 2020 from 8 lakh in July 2019.
- ❖ Jodhpur plaza in Jaipur region has outperformed others in around 91percent of toll collection.
- ❖ Bhopal and Gandhinagar as of December 2019 over 1crore
- ❖ FASTag have been issued with over 30 lakh fASTag issued in November and December following daily basis of 1.5-2 lakh FasTag.
- ❖ FASTag based electronic toll collection mechanism from 15 crores all toll plazas of the NHAI.
- ❖ It has been rolled out over 527 National Highways.
- ❖ The growing use of FASTag devices, which enable automatic electronic collections at toll plazas along national highways, has led to a 24% increase in electronic toll revenue, ministry of road transport and highways secretary (Yudhvir Singh Malik said).
- ❖ The number of FASTag users from December 2016 to September 2018 has gone up to three million.
- ❖ From about 3,133 FASTag units being sold in May 2016, the number went up to 178,266 in December 2016. Correspondingly, the fees collected rose from Rs 71 lakh in May 2016 to Rs 47.02 crore in December 2016, according to the year-end review issued by the ministry in December 2016.
- ❖ Till December 2017, a total of 770,000 FASTag units were being used by road users. There was also a significant growth in user fees collected through FASTags, according to the ministry from Rs 179.1 crore with 11.2% penetration in January 2017, to Rs 285.3 crore with 18.5% penetration in November 2017.
- ❖ According to the latest ministry data available for September 2018, electronic toll generates Rs 15.44 crore per day at toll plazas. About Rs 60 crore is generated per day through non-electronic payments.
- ❖ India's total highway network covers 115,435km, according to a ministry reply in the Lok Sabha in July 2017 and constitutes only about 2% of the total road network and carries about 40% of the total road traffic.

- ❖ A ministry statement issued in December 2016 said e-tolling was facilitated in a big way by demonetisation. From about 5% in October-November 2016, electronic collection of fees rose to about 11% by mid-December 2016.
- ❖ FASTags provide good incentives such as 5-10% cash back. They are also being sold at 21 banks.
- ❖ The transport ministry had rolled out the electronic toll collection (ETC) program under the FASTag brand name in 2014.
- ❖ In order to remove bottlenecks, ensure seamless movement of traffic and collection of user fee, Electronic Toll Collection has been implemented on a pan India basis, using Radio Frequency Identification (RFID) technology.
- ❖ To support the surge in sales, NHAI is also working towards converting all lanes as ETC enabled lanes. Further, all Toll plazas are being upgraded to ensure one dedicated lane at all Plazas.
- ❖ NHAI is also in the process of launching Integrated Toll Management System (ITMS) being developed for quick & real-time settlement of transactions at Toll Plazas. NHAI has launched a mobile application for tag purchase and top-up of FASTags named as My FASTag, and also initiated a public awareness drive for increasing the FASTag sales.
- ❖ NHAI has also tied up with CSC for offline Tag sales. Rapid growth has taken place in FASTag penetration; it has crossed 1.5 million new users in a short span of 1 year.
- ❖ The ETC transactions have increased by 1500% from 83 lakhs/day to 14 to 15 crores/day.
- ❖ Advantages of the program .Enables cashless payments across toll plazas. Dedicated lanes at toll plazas to enable seamless vehicle movement. Cashback of 7.5% for FY - 2017-18, and 5% for 2018-19.
- ❖ The total 1.4 lakh km highways under NHAI, 24,996 km of highways currently are under the toll ambit and the length will swell to 27,000 km by the year end. It is operational at over 480 tollplazas along the national highways and select state toll plazas. Till date more than 4.3 million FASTag have been issued.
- ❖ The average issuance of FASTag has increased by 330 percent from 8,000 in July to 35,000 tags sold in November 2019. After the announcement of the waiver of tag cost from 21st November, there has been a growth in FASTag issuance of over 130percent. Fastag is accepted on 560+ tollplazas and a number of plazas are getting added on daily basis.

FIGURE NO:1



In the above figure of the overall performance of the FASTag is growing daily basis or weekly basis in the different state. Here the scope of this innovation leads to success in near future because it tends so faster in Jaipur city Almost all the transactions. The awareness is must be favourable impact on the achievement of goal in short span of time.

TABLE -1 top performance of toll plaza for collection of FASTag and no. of plaza allotted

Top performing in Ros			
Sr.no.	Name of the Ros	Weekly Average % growth in ETC transaction Value	No. of toll pLaza
1	GUWHATI	95.89	3
2	KOLKATA	46.75	21
3	GANDHINAGAR	34.54	38
4	JAIPUR	26.95	75
5	NAGPUR	26.83	18

In the above table shows that ETC transaction is highest of Guwahati (Assam) (95.89percent with minimum number of toll plaza like just 3); it means the infrastructure of the toll plaza is fully fledged for FASTag collection in India. Some of the state city national highway is also perform so well. The achievement of the FASTag in India is increasing day by day.

TABLE -2 Low performance of toll plaza for collection of FSATag and no. of plaza allotted

Low performing in Ros			
Sr.no.	Name of the Ros	Weekly Average % growth in ETC transaction Value	No.of toll Plaza
1	JAMMU	-18.52	3
2	BHUBANESWAR	-3.98	12
3	HYDERABAD	1.44	20
4	RANCHI	2.05	6
5	VIJAYAWADA	3.79	39

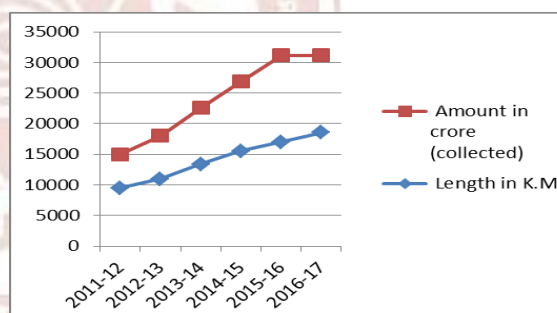
In the above table shows that there is lowest performer in FASTag collection in just the use of few days back because they are not fully infrastructure is ready to take the collection in a better way, so it will take some time to complete this work.

Month from August 2018 to January 2019 data of toll plaza in different state(10 state)and percentage of achievement and the agencies which is progressing the ETC in FASTag and also participate of the acquirer bank.

FASTag will be issued to by honorable minister for seamless movement along with the National Highways.

TABLE -3The tollable length & fee collected in year wise is given below:

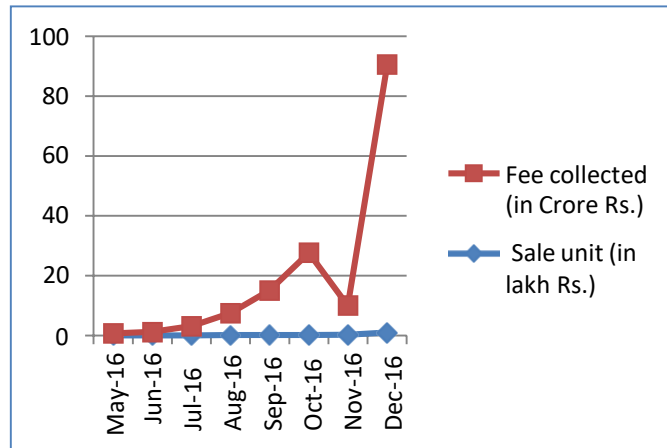
Year	Length (in K.M)	Amount collected (in Crore)
2011-12	9520	5448
2012-13	10996	7033
2013-14	13358	9222
2014-15	15507	11387
2015-16	16988	14171
2016-17	18571	12568



Source: (MoRTH Annual report)

FASTag sales and fee collected in 2016-17 in month wise is given below:

Month wise	Sale unit in (lakh)	Fee collected in (Crore)
May - 16	0.03	0.71
June- 16	0.10	1.12
July-16	0.13	3.03
Aug-16	0.18	7.34
Sept- 16	0.19	14.93
Oct-16	0.19	27.49
Nov-16	0.25	9.81
Dec-16	1.01	89.57



Source: MoRTH Annual Report

Progress of FASTag issuance and percentage of user fees collected from month-to-month.(2017-18 & 2018-19)

Month wise	Issuance is lakh(2017-18)	Percentage of user fees collected through FASTag(%)(2017-18)	Issuance is lakh(2018-19)	Percentage of user fees collected through FASTag(2018-19)
Jan	2.85	11.20	11.47	16.3
Feb	3.49	11.52	13.66	18.7
Mar	4.19	13.09	16.34	19.4
Apr	4.63	13.16	18.83	20.0
May	4.99	14.09	21.39	20.6
June	5.29	14.12	23.96	21.3
July	5.7	14.64	26.39	21.9
Aug	6.25	16.12	28.80	22.9
Sept	6.93	17.38	31.03	24.8
Oct	7.27	16.42	33.49	22.9
Nov	7.69	18.43	35.84	23.3
Dec	9.15	20.00	38.22	5.3
Jan	---	--	40.88	25.2
Feb	--	--	43.15	27.0
Mar	--	--	45.55	28.7

Table: 3Last five months Average performance of FASTag Service Level

Adherence (SLA) in India:

Month & Year	No. of Tollbooths	Average SLA
August 2018	10	99.1%
September 2018	10	97.8%
October 2018	10	97.6%
November 2018	10	98.2%
December 2018	NA	NA
January 2019	10	96.1%
Average Overall performance		97.74%

Conclusion and policy implication:

The ETC in India takes a pivotal role in the contribution of GDP and simplification and scientific methods of collection in FASTag which is about 6.4 crore transactions worth Rs. 1256 crore was processed December 2019 against 3.4 crore transaction worth Rs. 774 crore in November according to the data of NPCI. This is a massive achievement in the modelling of toll collection. So the RBI of India allowed to customers to link their FASTag accounts with all authorised modes of payments. So it will remove the congestion, assessment of highways, reduce the fuel and more easy process of payment system.

Policy Implication

- Reduce the local doubling tax by registering vehicle number directly with barcode number provided by FASTag agencies which is excluded in the existing FASTag mechanism.
- Coordination among the FASTag agencies and the Bank which is must be performed in related the system.
- There should be available of online registration system for registering local vehicles which facility is not available in existing mechanism.
- Reduction of GST in FASTag those who enable the services in present as well as future.
- The entire toll plaza in India, it may be in state highways and national highways should adopt this technology which was manually operated toll plaza in present context that should be modified.

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