A WEB SERVICE ENABLED E-CHALLAN PAYMENT SYSTEM TO ENSURE LATE PAYMENT AND MONITORING FOR TRAFFIC VIOLATION

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ABSTRACT

In today’s world, transports are playing a very important role in economic growth, supports mobility of human beings and goods. Hence, massive number of divers involved into drive the motors. The government enforced traffic rules, regulation and acts for motorist for safe driving without any accident and avoid road traffic. The violations of traffic are governed and monitored by traffic police manually or using Closed Circuit Television (CCTV) camera. If any offences made by motorist, penalties with or without punishment will be charged by traffic police. In India, the fine collection done manually earlier and computerized with online payment later. The online payment system reduces allegations of bribery and misbehaviour. The offenders have found it difficult to pay penalty on the spot for manual and online system, if the offender does not have sufficient money. The government allows the offender to pay penalties later via manual or online. It is possible to escape paying the fine for a long time until the offender caught in the next offence. To avoid the escape paying fine, a web service enabled e-challan payment system is developed to ensure the late payment and monitoring. The system provides adequate time to pay the penalty for the offender. The traffic police can monitor and take further steps to ensure the late payment by sending warning message, legal notice and arrest warrant to the verified mobile number.

Keywords - e-challan, traffic violation, late payment, vehicle, traffic police

[1] INTRODUCTION

The Indian government enforced the “Motor Vehicles Act, 1998” to legalizes all aspects of road vehicles [1]. It replaced the earlier motor vehicle act 1939 which replaced the 1914 act. The 1998 act has fourteen chapters and 217 sections provides regulations and rules for licensing, vehicle permits and registration, traffic regulations, government undertakings, insurance, offences and penalties [2]. The government of India made Central Motor Vehicles Rules 1989 to exercise the 1988 act. An upgrade in the act is made in 2017 as “Indian Motor Vehicles Act, 2017” to reduce the accident rates.
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Earlier, the traffic police collect penalties through spot payment system with cash. Many motorists, who is driving the vehicle, found difficult to pay the fine offered by the traffic police while violating the traffic rules on the spot. The motorist may not have enough money to pay the fine. The traffic police may misbehave the motorist by asking heavy fine without providing the fine sheet. It leads the problem to the motorist and government. Hence, the state governments of India implement electronic penalty system to put an end to allegations of bribery and misbehaviour. The electronic penalty system was implemented on 10th May 2018 by Tamil Nadu state government. The offences and are caught by traffic police manually at the road or by watching CCTV. A motorist, if caught for a traffic violation, will be provided with an electronic challan called as e-challan by traffic police. The e-challan was sent electronically to the offender via Short Message Service (SMS) to the registered mobile. The e-challan replaced the physical piece of paper.

The offender can pay the penalty through card, online payment with SBI, Paytm, Chennai Corporation E-Seva centres, post offices or at the court at later stage. In this paper, the offence and penalty section is considered for ensuring complete payment system. The offenders, a motorist violate the traffic rules, need to pay the penalty varying from rupees 100 to rupees 5000 as per act and imprisonment from 3 moths to 6 months depends on the offence [3]. “The ‘One State, One e-challan’ project was initiated by Mumbai, Navi Mumbai, Thane, Pune, and Pimpri Chinchwad Commissionerate. If any offender violate traffic rules, they cannot easily escape from the crime even there is not traffic police on the spot. While the e-challan system has proven effective in restricting the number of traffic violations in the city, still traffic police are struggling to recover the penalties. By the end of 2018, close to 20 lakh e-challans total of rupees 101 crore in fines were still unpaid [4].

The current e-challan system enables the additional penalty for not paying the penalty in the specified time and subsequently block the license of the offender [5]. It does not work out the unlicensed offender. To monitor and ensure the 100% payment of penalty in e-challan system, a web service enabled application is developed. This application provides interfaces to insert e-challan details, monitor the status of the payment by the offender. If not paid in the stipulated time, the further steps are initiated such as sending warning message to the registered mobile, legal notices and finally issue arrest warrant. The detailed methodology is explained in chapter 3 and 4.

[2] RELATED WORK

Traffic violation is considered as a crime in India. The Indian government initiated motor vehicle 1988 and implemented with the help of state governments’ traffic police. The traffic police using e-challan system as electronic penalty payment system. The e-challan is generated by collecting offender license number or vehicle number with registered mobile number. The e-challan contain a challan number.

In order to recover the due amount levied on 27,473 offenders through e-challan system for violating the traffic and safety regulations, the traffic authority are adopted speed postal service to recover the penalty. As per the data issued by the Traffic Police from 2nd January, 2018 to 24th August, 2018 more than 2.40 crore rupees penalty is yet to be recovered by the traffic police from the violators after the introduction of e-challan system in Ranchi. According to the rules, within 15 days, the offenders have to clear the penalty dues after received the notice from the traffic police. Meanwhile, the traffic Superintendent of Police (SP), Mr. Sanjay Ranjan Singh, stated that the compliance of e-challan payment is in the ratio of 60:40. “We are attempting hard to recover the penalty amount. Over 60 per cent defaulters have cleared their dues. Remaining 40 per cent defaulters will soon have to clear the penalty.
amount as we have adopted the speed post means, therefore, no defaulter can escape without paying fine”, said the traffic SP [6].

Automated traffic violation detection and challan generation system was introduced to detect the traffic violation such as speed violation and seat belt detection. Initially, the system issued a warning message for that offence is generated and flashed inside the vehicle. Even the driver violates the rules, the challan for that offence is generated; details of the vehicle and type of offence is uploaded to police database [7].

Priyanka Bansod et al [8] developed a E-Challan System using QR-Code called as Trans-Seva for regulating traffic rules by assigning Quick Response(QR) code to all type of road transport vehicles, creating database for all vehicles and develop an android app to monitor. The system also used to traffic offences and discipline. An Automatic E-Challan Generation for Traffic Violation system developed by Avinash Shinde et al [9] to control the traffic violations by accurately penalizing the traffic violators. This system used a programmable logic controller (PLC) and Radio-Frequency Identification (RFID). The RFID is connected to PLC. All vehicles installed with RFID tag and the PLC is connected with RFID scanner. The PLC could handle one lakh tags. Hence, the motorist knows that there is a constant check on their driving, they will automatically start obeying traffic rules.

Priyanka Maity et al [10] developed a web application for managing traffic violation online tracking for fine payment. The system provided the facility for tracking of vehicle, online fine payment through application and monitor the violation done by the motorist. The authors facilitated to seize the vehicle when the offense was made by the motorist and due in payment of penalty. A web application was developed by Manjeet Marodkar et al [11] for vehicle document verification and challan generation. It helped for Regional Transport office/Authority (RTO) to verify the document’s like Driving License (DL) and Vehicle Registration Certificate (VRC). if a challan was generated on offender’s name, he/she had to pay the fine or get their credentials blocked. This system enforced people to follow traffic rules instead of breaking the law and paying a hefty amount of fine.

An IOT based E-Challan automation for RTO using RFID system was developed by Siddhant Shivam et al [12] to ensure proper collection of penalties and enabled corruption free environment. This system supports only for the vehicles which has attached with RFID tag. If any vehicle crosses the traffic signal, the system generates the e-challan and sent to the offender.

All papers described the system to generate e-challans and sent to the offender. The authors are not clearly specifying the method to collect the due in penalty for delivery of e-challan. The traffic police of Mumbai used speed post to collect the penalty or block the license and vehicle renewal. Still, the traffic authorities finding the method to collect the penalty. By viewing the aforesaid drawbacks in the e-challan penalty collection, a web service enabled system is developed to ensure 100% payment of penalty.

[3] System Model and Implementation

Collecting non-payment of penalty of delivered e-challan for traffic offense is a tedious task of traffic authorities. The offender is allowed to pay the penalty on the spot or later through online or offline mode. The online mode is allowed to pay the penalty directly by the offender through any one of the online modes such as Paytm, the concern state government’s transport website, or traffic police website. The offline is offered through cash payment via nearest traffic police station.

Workflow model
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The proposed system model provides the interface to the traffic authorities to generate e-challan to the offender and can be send to the registered mobile number. The authority has to verify the message delivery to the offender. This verification is used to avoid the misbehaviour of offender to escape from the non-payment. Through the registered mobile, the traffic authority can collect the Aadhar details of the offender to ensure the correct identity of the offender. The figure 1 describes the work flow model of e-challan payment system.

Figure 1. Work Flow diagram of non-payment period levels and operations
Level of Non-Payment Status

The system allows the offender to pay the penalty later and maintains a status of non-payment. The non-payment period is classified into four levels as follows:

1. **Level 1** – Pay the penalty within the allowed number of days (fixed as 7 days).
2. **Level 2** – after one-week time is expired, a warning message is issued to the offender for additional 15 days extension of payment with 10 rupees fine per day.
3. **Level 3** – after level2 time is expired, a legal notice is issued to pay the penalty with extra 500 rupees fine within 30 days of notice delivery and block the driving license and vehicle permit.
4. After level3 time is expired, arrest warrant is issued to the offender with additional 7 days to pay the penalty with fine of rupees 1000. The arrest warrant should be obtained proper approval from the higher authorities.

All the levels are intimated as message to the mobile phone of the offender. The level 3 and level 4 notices will be delivered via postal service to the offender’s address. The time limit of level4 expires the arrest can be initiated from the authorities, license and vehicle permit can be blocked.

[4] **Result**

The proposed web service is developed using ASP.Net as front end and framework and MySQL as back end server. The webservice is suitable to run in any smartphone. The interface is designed user friendly which reduces the keyboard input entry. The traffic authorities have the functionality to monitor the status of the penalty payment. The system provides complete list of offenders not paid the penalty and what is current status of the level of non-payment. The application has many interfaces for traffic police authority and offender. Here, we have provided the important interfaces used for the payment of penalty due.

**Traffic Authority Dashboard**

The system provides to login for admin and user. The admin is the authority of the traffic police and user is the person who made the traffic offense. The admin interface provides the facility for generate e-challan, monitor the payment status, generate the messages for further levels of non-payment, help to pay the penalty through offender. The offender can view the status of penalty payment, time limit, current status, and interface to pay the penalty through online. Figure 2 shows the dashboard of admin which contains admin registration, motorist details, fine registration and fine status.
Figure 2. Traffic Authority Dashboard

The admin registration is used to register the new traffic authority who is generating and monitoring the e-challan. The motorist detail is used register the offender details. The fine registration is used to register the fine for the offense and generate the e-challan. The message to the offender mobile is sent with information such as type of offense, data of registration, e-challan slip number, penalty amount, last date of payment. The fine status is used to view the level of the non-payment and provide the interface to the next level of non-payment.

**Fine or Penalty Registration**

Figure 3 provides to generate the e-challan for the offense made by the offender. It has the option to register the vehicle number and license number of the offender. The offender is identified suing the motorist-id. The fine type is used for specify the type of offense made, the status is initially set to pending and mobile number is used to send the messages for all four levels. The traffic authority has to verify the delivery of message for manual caught.

Figure 3. Fine Registration
Status Monitoring of Non-Payment

The figure 4 provides the interface to monitor the non-payment status and generate further action such as sending warning message, legal notices and arrest warrant to the offender. The successive actions are store as separate entry in the database. Hence, the traffic authority can track the status of each level of non-payment.

![Figure 4. Fine Status Update](image)

[5] SUMMARY

In this paper, we have provided a web-based interface to generate e-challan and monitor the status of the non-payment of penalty for violate of traffic rules by an offender. The system provides easy interface to authorities and offender to track the non-payment status and current level of non-payment. Through this system, the offender is getting aware about that there may be chance to get arrest warrant against non-payment of penalty. The offender could get guilty to avoid the penalty payment. Hence, the system can ensure to make the maximum collection of non-payments of penalty. The offender cannot escape from the pay the penalty. In future, the system can be adopted with Aadhar-linked mobile verification and track the Aadhar number from the vehicle number when the motorist caught by CCTV monitoring.
REFERENCES


