Real Time Reporting of Inventory: An Innovation in Inventory Management

Nikhil A. Sethi, Shubham N. Karnawat

Department of Mechanical Engineering, Pune Vidhyarthi Griha's College of Engineering, University of Pune-411009, Maharashtra, India

nikhil9870@yahoo.com

Abstract. The cost of a model not solely depends on the kind of options however also depends on the easiness of the method and time taken to run it. In India, inventory is very important as many world class industries operate in this country. The price and options of the present model of GPS tracker are analyzed; the authors propose a brand-new cost-efficient model and with vital options. The optimum resolution is putting in a Mobile handset Module within the vehicle being transported. A vigorous mobile module is often simply tracked by a service known as "General Packet Radio Service (GPRS)". This new model caters to the necessity of the company and other people and also offers a reduced worth of coverage real-time inventory. This model could be helpful to the corporate industries to management inventory effectively compare to before.

Keywords: Inventory Management, Mobile Handset Module, GPS Tracker, GPRS, India

1. Introduction

The availability-demand of geo-positioning devices has grown tremendously within the last decade and continues to be increasing. A GPS tracking unit may be a device that uses the world positioning system to trace the situation of an object moving or stationary (McLean & Anderson, 2010). GPS has the potential of scheming position, time and speed from any GPS receiver. the

objective of this paper is to introduce a brand new plan of GPS tracking by corporations or personnel which is able to be efficient than the present models by employing a mobile phone module commutation the high-cost current GPS tracking system (Kupferman & Hardonag, 2011). Mobile telephone module includes GPRS Quadband module for Arduino, SIM900 communication module that is finally interfaced with the SAP/ERP system (Zaghloul, 2014).

Fig. 1: GPRS Quadband module with SIM900 using Arduino

The above said mobile handset module system will have the following features:

- Tracks of vehicles on the map: We can display the track currently being travelled by a vehicle, or any track taken by the vehicles in the past by selecting the dates which concern us.

- Detailed and proper trip descriptions: The device will monitor the location of the vehicle and will generate comprehensive statistics on the trip just a few minutes after it is completed. This includes the

departure and arrival addresses, the distance travelled, the time spent travelling and stationary, and average speeds. The information then can be stored in servers (Dekker, Fleischmann, Inderfurth, & van Wassenhove, 2013).

- Integration with other information systems: It can automatically transfer the entire information provided by the reports module to our own information system (Raviv & Kolka, 2013). The users log can log into SAP system to view all of the activities of the vehicles.

- Geo-fencing: The device will allow an area to be geo-fenced – marked on a map – and for an instruction to be added which triggers an alert in the events module whenever the vehicle leaves the marked area.

- Be the first to know: The module will notify you of any events that interest you via e-mail or SMS in a few seconds with an instant message.
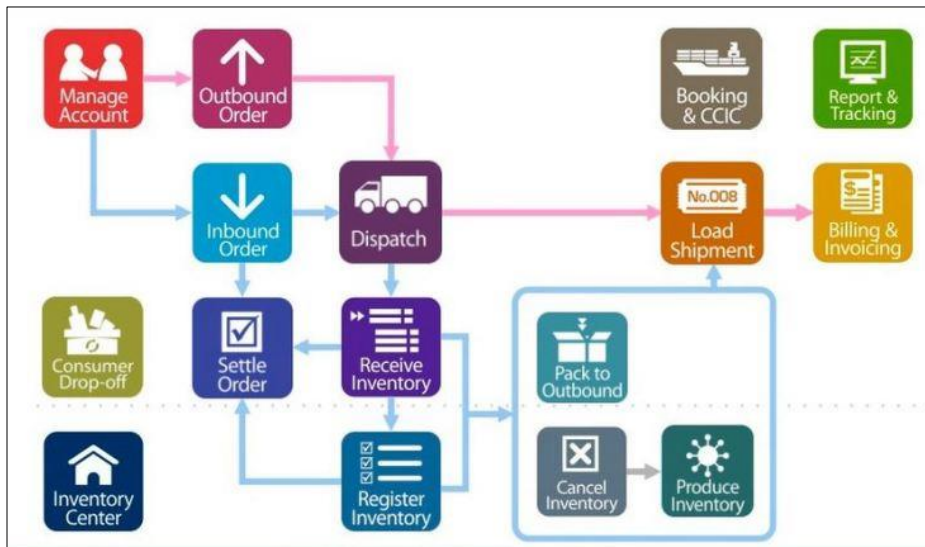

Fig. 2: A typical inventory management process (Wild, 2017)

2. Discussion

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Our business manages an excellent deal of inventory, which frequently signifies a high proportion of the cost of products sold-out. So as to stay organized and effective, you need to understand the location of inventory. Using the geo-fence feature, sequential reports on this information will extract intelligence counsel patterns wherever method improvement may be a decent plan to assist reduce stealing (Balcik, Bozkir, & Kundakcioglu, 2016; Feng, Li, McVay, & Skaife, 2014; Fichtinger, Ries, Grosse, & Baker, 2015; Lam et al., 2018).

With mobile phone module, dealers will find a vehicle in seconds. A number of the nation's largest used-car dealership teams use GPS technologies to lower recovery expenses and create the whole method easy and safe (Coelho & Laporte, 2014). However easy-to-use, palm-of-your-hand solutions create life easier for dealerships additionally capable of reporting real-time inventory effectively.

All mobile firms practice the geo-fencing facility for applying the roaming charges on mobile devices; equally, this could be directly applied for Geo-Fencing by allotting specific areas and alert notification with the assistance of mobile corporations (Henderson, Stephens, & Montgomery, 2018). This technique is charged by inserting a parallel electrical circuit with the battery which can embody voltage devices to envision the potential difference of the battery of mobile and also the switch operated by this sensor to charge the battery once necessary. The projected resolution of using a mobile phone is suitable to serve this purpose with GPRS feature pre-installed within the itinerant (Calmon & Graves, 2017; de Kok, 2018). The module are going to be placed within a tamper-proof box which can be placed within the bonnet of the vehicle or beneath the steering or any appropriate location. this technique

are going to be more reliable for tamper proofing if the corporate doesn't disclose this new installation to its customers and also the dealer.

3. Mobile Handset Module With Sap/ Erp System

Our model is predicated on SAP applications, designed around their latest R/3 system that provides the potential to manage monetary, asset, and cost accounting, production operations and materials, personnel, plants, and archived documents. The R/3 system runs on variety of platforms as well as Windows 2000 and uses the client/server model. The newest version of R/3 includes a comprehensive Internet-enabled package.

SAP/ERP system are integrated with our mobile phone module. The output of the module like SMS are the input given to the SAP/ERP system in order that the subsequent functions such as-

- vehicle tracking,
- Model wise inventory at the dealers finish &
- Sales created by the dealer

Are often integrated to the SAP/ERP system to induce the precise inventory to the management. The GSM module are removed by the dealer before the delivery of the vehicle and therefore the module are sent back to the corporate for more usage.
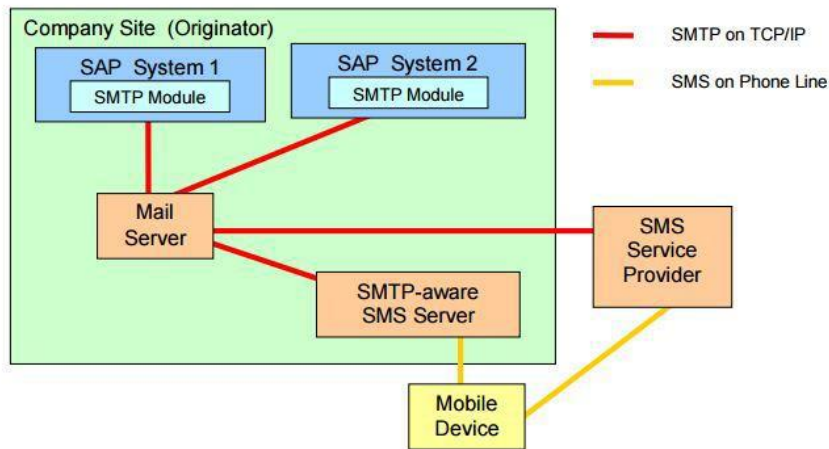
Fig. 3: Interfacing SAP with mobile handset module

3.1. Prototype

A model of the mobile handset module and software is developed to interface it with SAP/ERP system.

Geo-fencing and tracking: These operations will be interfaced with the SAP/ ERP system. The device will allow an area to be geo-fenced which will triggers an alert for any wrong path taken.

Some Geo-fence-Break Possibilities

- In case if vehicle moves out of the Geo-Fence area

Remedy: As soon as the vehicle moves out if the Geo-fenced area alert SMS will be sent to the company and the GPS position can be traced.

- In case of road blockage or diversions if the vehicle is supposed to move out of Geo-Fenced area and again it comes inside the Geo-fenced area

Remedy: As soon as the vehicle moves out or moves inside the Geo-fenced area alert SMS will be sent to the company and the GPS position can be traced.

Tamper-Proofing

The device will be fitted inside the vehicle and the power will be supplied from the battery of the vehicle using a voltage divider circuit to the device, in-order to ensure that the supply to the device is up-to the destination.

- Putting the device in an inaccessible (or hard to reach) location on the vehicle.
- Insuring the device casing is robust and difficult to access.

Some Tampering Possibilities

- A person can cut the supply of the device from vehicle battery.

Remedy: As soon as the wire is cut/ or the vehicle battery is stolen, the device will send alert SMS and GPS position of the vehicle. Even if the supply is cut, the device contains a self-battery which can run for few days and the information can be generated as per requirement.

- The device is stolen from the vehicle

Remedy: For stealing the device, as it has to be disconnected/ power cut from the vehicle battery, the alert SMS (as above) will be generated and sent to the company. In addition to this, as the device goes out of the set Geo-fenced area, again an alert SMS will be generated and the GPS position will be notified.

- Tampering with the device such as opening it.

Remedy: The sensors will detect any tampering made to the device and will send alert signal to the management.

4. Inventory Management

- As soon as the Tractor is created and also the quality dept. certifies that identical are often dispatched the GPS system are going to be put in within the said tractor. The distinctive number of the GPS system,

Engine number, chassis number, dealer name, invoice, transporter name, LR number are going to be updated within the ERP / SAP system and real-time Inventory can be monitored.

- The output of GPS system are going to be synchronized/integrated to ERP / SAP system through that Model wise inventory at Dealer's finish and at manufacturing plant, daily sales, the daily stock of vehicles in transit can be assessed.

- GPS System can facilitate lower insurance rates. In some cases, banks provide higher rates to dealers who use GPS System. A lot of significantly, inventory management will facilitate dealers improve client experiences and shut sales.

- Once the Tractor is sold the GPS System are going to be taken out by the dealer and challenge to the manufacturing plant for re-usage.

5. Conclusion

Thus the model and concept planned above relate to a GPS tracking system that is factory-made and put in at low value i.e. Rs 2200/-, has considerable options that cater to the profit for the companies whereby the inventory management is high.

Too much manual effort is spent on behind-the-scenes logistics. A reasonable approaching model will facilitate corporations maximize their bottom lines by eliminating inefficiencies, lowering in operation prices and saving time. The mobile answer helps the corporate to chop down on communication prices i.e. info between the workplace and workers is changed digitally. This additionally ends up in fewer phone calls and smaller bills. The staffs will not need to fill out journey logs on paper as all info is accessible in

a centralized location. This technology permits dealers to manage fuel prices further as keep vehicles within the absolute best condition. Sale-blocking embarrassments don't occur. This technology is especially useful to buy-here, pay-here dealers. Thus, inventory management will facilitate dealers improve client experiences and shut sales if the planned concept is brought into apply.

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