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## Insurance Telematics

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### **Abstract:**

*Telematics is one of the upcoming tools to reduce the ever inflating auto insurance premiums and presented itself as an attractive opportunity for Indian Insurance Industry. This paper will help readers understand insurance telematics, its utility and hurdles in implementing telematics. The paper will also discuss the benefits and limitations of the same. While telematics insurance is already in use in some developed countries, we will also discuss its relevance with reference to Indian Insurance market and its future in India.*

**Keywords:** Insurance Telematics, Pay as you Drive, Pay how you Drive, black box

### **1. Telematics Insurance**

All of us are quite familiar with telecommunications, global positioning systems (GPS) telecom, etc. But, in recent past, something interesting like ‘Telematics’ has attracted us. Let’s see what the study of telematics is about.

The word “telematics” stems from the combination of telecommunications and informatics, and it was the joining of these two that resulted in the field of telematics.

Telematics includes anything from GPS systems to navigation systems. It is responsible for many features in vehicles from On Star to hands free mobile calling.

Motor Telematics is the integrated use of telecommunications and information technology for vehicles. It is widely used for providing services such as real-time navigation, roadside assistance, vehicle tracking and recently, motor insurance.

Insurance telematics is the use of telematics by motor insurers with an objective to have better segmentation of customers and pricing to reflect to the actual risk for a customer.

### **2. Research Methodology**

The paper is based on an exploratory study. The topic has not been widely studied with the scope and application still in its nascent stage. An attempt has been made to understand the concept and its application in India. The scope of the study is limited to the basic concepts. Geographically the scope is limited to study of various countries following the concept and identify opportunities relevant to the Indian market.

Insurers are increasingly turning to driver monitoring technology, better known as telematics, to identify safe drivers and reward them with reduced car insurance prices.

Telematics allows real time recording of driver behaviour, driving patterns, miles travelled and other such aspects through communication between a satellite device such as a GPS and a specialized device fitted in the insured vehicle (commonly known as the black box technology – discussed later).

### **3. Objective**

To understand the concept of insurance telematics, its utility and hurdles in implementing telematics in car insurance in India.

#### *3.1. Telematics Encompasses Quite A Few Different Pieces*

- Web
- Content
- Software & Applications
- Services
- Communication

- Hardware

### 3.2. Car Insurance

Telematics insurance is enabling drivers to experience substantial savings on their car insurance by paying premiums solely based on how well they drive. It looks for many different signs of bad behaviour like sharp turns, tailgating, sudden stops, speeding, lane driving, hard braking, etc.

Telematics can serve as the platform for usage-based insurance, pay-per-use insurance, pay as you drive (PAYD) insurance, pay how you drive (PHYD) programs for fleet insurance.

#### 3.2.1. Pay as you Drive (also called Distance-Based, Usage-based, and Mileage-Based)

Pay as You Drive (PAYD) product is a usage based product in which premium depends on how much vehicle is driven over a specified period. In some insurance products, the area and the time of day in which vehicle is driven etc. are also considered for calculation of premium. Pay-As-You-Drive pricing requires verified mileage data. This can be collected in various ways. For example, brokers or vehicle owners can report odometer readings, by email or mail, with random verification spot checks. More sophisticated systems use electronic devices (black box technology) which automatically send mileage data, or even track when and where a vehicle is driven. The cost of automated data collection is declining since most new cars have odometer data recorded in the engine computer, and many have wireless communication systems or GPS

#### 3.2.2. Pay How You Drive

Pay How You Drive (PHYD) product is a user behavior based product in which premium depends on how safely a vehicle is driven. 'Pay how you drive' policies use GPS technology to measure how a vehicle is being driven – insurers then use this information to make judgments about driving performance. Driving performance is quantified as 'Driving Score' which is defined in terms of speed, road used, time of driving, braking, cornering etc. Driving Score influences final premium charged which may be revised regularly at predetermined intervals. 'Safe' drivers will usually benefit from lower premiums than 'less safe' drivers. PHYD system provides a genuine opportunity for users to improve their driving safety and reduce the cost of their cover by proving themselves to be responsible drivers.

## 4. Black Box Technology

A small device - commonly known as a 'black box' is fitted in the car. It records speed patterns and distance travelled as well as the type of roads the driver is using, and when. It transmits data in real time back to an organization (insurance company - in case of insurance telematics).

The technology can also monitor braking and cornering to build up a picture of one's driving style. Insurers then use this data to calculate the cost of the insurance and adjust the premium accordingly, with each aspect having an effect on the price that the customer pays.

For instance, not only will the customer be charged for the total number of miles covered, he will also incur higher policy prices for driving during peak hours, when there is an increased statistical likelihood of an accident occurring.

The insurer will normally charge an up-front fee, which includes the cost of the device and its installation, and then quote a price for your annual premium which can decrease or increase month on month, depending upon the driving performance.

### 4.1. Substitute for Black Box Technology

Tata Consultancy Services (TCS) has launched TCS Insurance Telematics Solution, a mobile application that turns consumers' Smartphones into mobile telematics devices. Facilitating Usage-based Insurance (UBI) practices that more closely align consumer driving patterns and habits with auto insurance premiums, the TCS Insurance Telematics Solution minimizes the need for a separate, potentially expensive, telematics device provided by the insurer. Now, auto insurance companies can leverage a customized version of the TCS Insurance Telematics application available for iOS and Android devices. Consumers will be able to track driving habits and adopt safe behaviours that save them money. By leveraging telematics data for underwriting and actuarial processes, insurers can segment customers based on risk score, perform life-time value analysis and, ultimately, improve product pricing and strategy<sup>1</sup>.

#### 4.1.1. Fleet Telematics

Fleet Telematics is a way of monitoring the location, movements, status and behavior of a vehicle or fleet of vehicles. This is achieved through a combination of a GPS receiver and an electronic GSM device installed in each vehicle, which then communicates with the user and web-based software. In addition to location data, a fleet telematics system provides a list of your vehicles showing the status of each. You'll know when a vehicle is started up and shut down, as well as its idling status, location and speed. This information gives you complete, up-to-the-minute knowledge of your fleet activities in one centralized, web-based interface.

5. Telematics – Sample Data<sup>2</sup>






Obs	1 Date	2 UTC (Coordinated Universal Time)	3 Degrees Latitude	4 Degrees Longitude	5 Minutes	6 Miles	7 Fuel Consumption	8 Miles per hour	9 g-force
1	04/08/12	14:45:30	-27.117	-109.367	0:00:00	0.000	0.000	0	0.000
2	04/08/12	14:46:30	-27.118	-109.364	0:01:00	0.000	0.050	0	0.000
3	04/08/12	14:47:30	-27.117	-109.371	0:02:00	0.080	0.055	20	0.030
4	04/08/12	14:48:30	-27.150	-109.379	0:03:00	0.552	0.060	50	0.060
5	04/08/12	14:49:30	-27.109	-109.388	0:04:00	1.499	0.078	65	-0.100
6	04/08/12	14:50:30	-27.098	-109.398	0:05:00	2.538	0.091	59	0.010
7	04/08/12	14:51:30	-27.093	-109.410	0:06:00	3.234	0.105	40	-0.070
8	04/08/12	14:52:30	-27.084	-109.409	0:07:00	3.916	0.124	35	-0.015
9	04/08/12	14:53:30	-27.076	-109.409	0:08:00	4.445	0.143	0	0.000

Table 1

Note:

- Data elements are recorded at sixty-second intervals beginning and ending when the ignition is switched on and off, respectively.
- GPS coordinates in the third and fourth columns indicate location
- Columns five, six, and seven show that the driver's cumulative time, mileage, and fuel consumption, respectively, increase with each observation.
- The speeds and accelerations (or deceleration) in columns eight and nine at each observation

6. Some of the Telematics Products Are Mentioned Below<sup>3-4-5-6-7-8</sup>

Telematics Product Examples						
Product Features						
Product Name	Drive Save	Aviva Drive	Snapshot	OnStar/In Drive/SYN C	Clear Box	Drive Safe
Geography	Ireland	UK	US	US	Italy	UK
Driving Score Range	1 - 100	0 – 10 (10 safest)	Not Mentioned	Not Mentioned	Not Mentioned	0 - 100
Driving Parameters	Geographic position, travelling speed, acceleration and braking severity	Acceleration, Braking and Cornering	Braking, Miles driven, driving between midnight to 4AM,	Miles driven, driving characteristics	Miles driven	Time of day, Speeding, Cornering speed, Braking, Acceleration
Technology	Smart Phone	Smart Phone	OBD II Dongle	Black Box	Black Box	Black Box
Maximum Discount	Upto 30%	10% for premium b/w GBP 200 - 400; 20% for premium > GBP 400	Information not available	Upto 50%	Upto 18% of TP and upto 15% on Comprehensive	Not Mentioned
Real Time Location Access	Yes	No	No	Yes	Yes	Yes
Any Loading due to low Driving Score	No	No	No	No; could be basis miles driven(at renewal)	Not mentioned	Yes
Premium	4 months	No	6 months	6 months	No Information	3 months

Change interval		Information				
GPS Signal Required	Yes	Yes	No	Yes	Yes	Yes

Table 2

### 7. Road Casualties in India

According to a recent World Health Organization report, India has the highest number of road deaths in the world: 105,725 died last year on its roads, followed by China (96,611), the US (42,642) and Russia (35,972). The United Kingdom had 3,298 recorded road deaths. Worldwide, 1.3 million lives were lost.<sup>9</sup>

Driver's fault accounted for a whopping 77.5% of the total road accidents while pedestrian and cyclist's fault accounted for a mere 3.7%.

Among the states, Maharashtra topped the list with the highest number of road accidents at 68,438 followed by Tamil Nadu (65,873), Madhya Pradesh (49,406), Karnataka (44,731) and Andhra Pradesh (44,165). Mumbai topped the list of cities with 25,471 road accidents, Delhi came second with 7281 road accidents followed by Bangalore (6031), Indore (4995) and Bhopal (3459).

The report says that only 28 countries, representing 449 million people (7% of the world's population), have adequate laws that address all the five risk factors – which is speed, drunk-driving, helmets, seat-belts and child restraints. As compared against other countries, India has a dismal record on all the five fronts. There exists tremendous improvements that need to be made to ensure road safety. Telematics insurance could be one of the important incentives to reduce such bad driving practices and improve outcomes..

Many people anticipate that as telematics becomes more popular, we will see a reduction in dangerous driving behaviour. We will see many drivers changing their behaviours as they get better feedback and become more accountable for how they drive on a daily basis. Rather than just whether or not they get into an accident. This will reward people for engaging in good driver behaviour that prevents accidents instead of just avoiding them.

While the monitoring of driver behaviour in this way may sound quite Orwellian, it should lead to a fairer pricing system that is based upon the individual rather than a generic set of statistically-based assumptions.

And, above all else, if the use of telematics technology encourages safer and more considerate driving, this should ultimately lead to safer roads for all of us.

### 8. Benefits and Costs of Telematics Insurance

- Consumer savings: The average motorist will be saving in insurance premium charges.
- Increased fairness: The premium based on telematics insurance will be fairer as it will fairly charge motorists who drive less than average and motorists who drive more than average will not be undercharged in this system.
- Increased affordability: Pay-As-You-Drive pricing vehicle insurance more affordable. It allows more lower-income households to insure a vehicle, and makes it more cost effective for households of any income class.
- Reduced Uninsured Driving: At most of the places (like India), a significant portion of vehicles is uninsured because of high premium costs, and because owners do not consider it cost effective to insure a low annual mileage vehicle. PAYD pricing makes insurance more affordable, which can help reduce this problem.
- Reduced vehicle travel: Pay-As-You-Drive Insurance encourages motorists to save on insurance costs by driving less. As a result, it reduces traffic congestion, parking facility costs, and energy consumption and pollution emissions.

### 9. Hurdles in Implementation of Insurance Telematics

- Velocity: Telematics devices can generate data in sub second intervals. Higher-frequency data capturing is required for more precise driving analysis.
- Volume and interpretation of data: Telematics data sets can represent approximately 5-15 MB of data annually, per customer. With a customer base of 1,00,000 vehicles, this represents more than 1 terabyte of data per year. New tools are required to handle this big volume of data and transform them to meaningful information
- Complexity: Telematics data can vary by vehicle, tracking device, and mode of capture. It can even vary by the year a vehicle was manufactured. Currently in the absence of any standards for those parameters, this complexity is likely to continue across automobile manufacturer.
- Cost: Traditionally, cost of device is high in proportion to the premium, and discount on lower side; therefore the proposition is less appealing

### 10. Insurance Telematics in Indian Scenario

Indian driving is something meant for only experts as it is an invitation to mayhem. There are cars and trucks, cows and sheep, taxis and rickshaws. Some are headed in the proper direction; others create a perfect situation for accidents, traffic jams, etc. There is a general disregard for lane dividers, traffic lights and stop signs.

In such a scenario, telematics would be very much appealing as it would help the drivers in many ways like

- Navigating from point A to B and avoid traffic jams
- Locate local businesses
- Save fuel
- Connect with people

However, due to cultural differences, sensitivity to price, poor infrastructure and a lack of digital content present challenges. Many places are off the grid in digital maps. India has poor network connectivity compared to developed market which is a key to record Telematics data

India represents the world's second largest mobile phone market and the world's third largest mass of internet users. Rates for data and talk time are the cheapest in the world, further increasing mobile use. Integrating car services with mobile is therefore an opportunity. On a more granular level, other than the growth of auto consumers in India, safety and security was noted as the crux of potential telematics growth in India as well as insurance. It is a great opportunity for hardware and software suppliers to enter the market.

Suitability to Indian market? There are other issues that may prevent consumers from adopting such technology. For example while in developed countries an individual (and the spouse) may be the only ones driving the car, in countries like India with joint family system, there may be many folks within a family that could be driving the car. Everyone in the family may not be a safe driver. If the system is car based, (e.g black box technology) this may not be optimal, though on the plus side it may force everyone driving the car to do so safely.

As a result, India falls on both ends of the telematics spectrum—a place to target and a place to avoid. Location-based products and services in India are growing at a rate faster than most markets around the world. The car market has exhibited steady growth in recent years, with India now producing more than two million passenger vehicles a year. That puts India in the top 10 of largest car producers in the world, and places it fourth for Asian auto exporters.

All these challenges make India a very difficult market to predict.

Now seems the apt time for implementation of the next phase in the telematics value chain—the power to gain new insights that can translate into customer wins, competitive advantage, and operational efficiency. The insurance carrier that is able to effectively and economically harness telematics efficiently with big data will be the new leader and innovator in a marketplace that is changing fast. While monetary benefits for safe driving await you in future until telematics becomes a norm, obeying traffic rules and safe driving now can help you live to see that future day.

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