The brave new world of Automotive Telematics: What will it mean for Managers and Marketers?

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Abstract

This discussion paper looks at possible ramifications of Automotive Telematics for Business. Because of advances in GPS, communications and computer technology the car is developing into a vital marketing, advertising, marketing research and communications channel and Managers need to be aware of the advantages and challenges this represents. Additionally, vehicle use monitoring and recording demands new approaches to managing the associated legal risk, HRM and other considerations. Finally, the investment in a car can realise greater returns if it is considered part of the work environment and if the stress of driving can be taken from the occupant.

Automotive Telematics raises questions on car ownership and use, data collection and privacy.

It also represents significant opportunities for academic research.

Keywords: Marketing Channels, Innovation Adoption, Marketing Research, Strategic Marketing, Direct Marketing, Consumer Behaviour

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Abstract

This discussion paper looks at possible ramifications of advances in Automotive Telematics for Marketing and Managers. Because of advances in GPS, communications and computer technology the car itself is developing into a vital marketing, advertising, marketing research e-commerce and communications channel and Managers need to be aware of the advantages and challenges this represents. Additionally, the vehicular environment is becoming so highly monitored and that monitoring so closely recorded that more than ever before it must be managed for legal risk, HRM considerations and other reasons. Finally, a car represents an investment for an organisation. This investment can realise greater returns if the car is considered part of the work environment and if the stress of driving can be taken from the occupant.

The maturing of the Automotive Telematics field also raises significant questions on car ownership and use, on data collection and privacy.

This is a discussion paper suggesting that Marketers and Managers need to react to Automotive Telematics now, suggesting that the field needs to be included in strategic planning for every business, both large and small, and further suggesting that Automotive Telematics will grow in importance to the corporate world with developments in the field.

Research opportunities exist in this area in the use of the car as an e-commerce and communications channel and for its use as a work environment. The development of the new telematics channel could be compared to the development of the PC-based internet in order to assess its possible impact on commerce, work practices and social and lifestyle changes.

Keywords

Marketing Channels, Innovation Adoption, Marketing Research, Strategic Marketing, Direct Marketing, Consumer Behaviour
Introduction

This concept paper looks at possible ramifications of advances in Automotive Telematics for Marketing and Managers. Because of advances in GPS, communications and computer technology the car itself is developing into a vital marketing, advertising, marketing research e-commerce and communications channel and Managers need to be aware of the advantages and challenges this represents. Additionally, the vehicular environment is becoming so highly monitored and that monitoring so closely recorded that more than ever before it must be managed for legal risk, HRM considerations and other reasons. Again, a car represents an investment for an organisation. This investment can realise greater returns if the car is considered part of the work environment and if the stress of driving can be taken from the occupant.

There are any number of avenues available to academic researchers wanting to contribute on this subject to the marketing and management fields, and comparative studies are possible with the introduction of previous technologies such as the PC-based internet or the mobile-based internet.

Introduction to the development of the automotive industry

Typical of a brownfields industry, the automotive world has changed only very slowly over the past one hundred years. We still largely use the same inefficient internal combustion engines invented by Nikolaus Otto in 1876 (Fletcher, 2011), the same pneumatic tyre design based on Dunlop’s design of 1887 (Dunlop, 2008) and the automatic transmissions introduced in 1939 (Priddle, 1999). We also still use the same portable power source – petrol – we have always used and while it can be argued that petrol prices significantly contribute to the rising rates of inflation (Valadkhani, 2010) in Australia and there is disparity in spend on fuel for different sections of the Australian community (Mitchell, 2000) and the price of petrol is generally rising it is not so important in cpi terms as it has been (Murphy, 2005), making the car more popular than ever. That said, it is notable that the relative use of transport fuel is dropping per household (ABS, 2012) for various reasons.
On the other hand, cars have been in a constant state of refinement in all that time. They are now more reliable, perhaps more gentle on the environment and with more attention to user safety than ever before. They are also more of a status symbol for the common man, and he or she demands features that would have only been pipe dreams a single generation ago.

There are also a lot more cars on the world’s roads than ever before and more and larger automotive manufacturers compete with each other to in one of the world’s largest industries (Rubenstein, 2014). There are also ongoing increases in infrastructure like roads, bridges and traffic light systems (OECD/ITF, 2008).

The industry has also seen big increases in government regulation and major shifts in ownership and inter-ownership of manufacturers.

Whether these changes are a good thing or not is a moot point, but they have all contributed to the commoditisation of the product. Cars now are strikingly similar in design, safety and performance and with very similar standard features despite the number of competitors at any particular price point in the market. Brand engineering is also rife, to the point where it is often difficult to understand why a manufacturer seems so intent on competing with itself.

One of the difficulties suppliers face with commoditisation is the reduction in profit margin. When profit is reduced the most obvious reaction is to increase volume. The next most obvious reaction is to find augmented products that can increase the return on investment, or to control more areas of the supply chain, or both.

In the automotive industry manufacturers are seeking to take control of maintenance and repairs of their cars. A legal and moral debate has been raging for some time in the United States over what is known as the ‘right to repair’. Since the first bill was introduced to the U.S. Congress in 2006 manufacturers have argued they should not have to provide spare parts, knowledge or tools to non-manufacture customer service centres. They also argue they should not have to provide a warranty for cars that are not serviced to their specifications and at their service outlets (Barlas, 2008).
So far, the right to (exclusive) repair has not been awarded to manufacturers, but it is so obviously a profit centre in a time of fierce competition that the argument is unlikely to go away anytime soon (Allbright, 2014).

Introduction to Automotive Telematics

Another (related) issue in the car industry is Automotive Telematics.

Telematics is a portmanteau term (telecommunication + informatics). Broadly, it refers to communicating at a distance using computers (Chandler, 2011).

According to Motorola, the company who coined the term, it is "an emerging automotive communications technology that combines wireless voice and data to provide location-specific security, information, productivity and in-vehicle entertainment services to drivers and their passengers" (www.aa1car.com). Potential applications for Telematics may best be described graphically, as in Figure Two, below:

However, if this term is applied to cars that can be remotely connected for monitoring and control purposes then a more precise term should be used. This author prefers to use term Automotive Telematics and offers the following explanation of same: “Automotive Telematics is the integration, monitoring and recording of ‘automotive events’ by an automotive product for immediate or later analysis, decision making and control. That analysis, decision making and control can be human-centred or automatic and can be within a vehicle’s confines or carried out remotely”.

This definition then requires a definition of ‘automotive events’: ‘Automotive events are those significant, discreet and recordable occurrences associated with the control and use of any automotive system or remote interconnection. Automotive systems include but are not limited to entertainment
systems, mechanical operation systems, safety systems, security systems and communications systems’.

Note: Whilst the data - and its use - generated by Telematics relate directly to the ‘right to repair argument’, it has far greater implications for marketers and managers than just that.

**Background to Automotive Telematics**

In order to understand Automotive Telematics a little background is necessary:

Not so long ago cars were essentially mechanical devices and used electricity for mundane functions like providing a spark for combustion, to start the engine and to run headlights. In the early 1970s perhaps the most sophisticated electrical device in a car was capacitor discharge ignition.

By the 1990s all this had changed. A car was expected to have electric windows, airconditioning, a stereo radio, central locking, airbags and a trip computer.

Today, things have changed again. Now we have GPS, entertainment systems involving sight and sound, internet connections and remote, keyless control of everything from vehicle entry to seat position. As far back as 2006 there were already up to twenty five computers (Reardon, 2006) in a single car, helping control braking, fuel economy, proximity to other road users and a myriad of other functions. We are also seeing increasing use of rear and front view cameras.

It is a brave new world and only set to get braver: Chevrolet, for example, has announced its 2015 ‘Stingray’ model will have an industry first performance data recorder as standard equipment, according to Fleming (2014). Still, we are probably all better drivers as a result of this progress and refinement. Probably.

Perhaps the most important change though is not the improvements in individual systems, but the integration, monitoring and reporting capabilities of individual systems. Just as your mobile phone can now talk to your iPad and your home entertainment system, taking advantage of the move to Digital functionality and Open Systems Interconnection (Daintith, 2008) so too can all the individual
electronic components of the car carry on a conversation, work together, and record what has been said - and done.

Cars now record where we go, what speed we travel in getting there and how often an ‘event’ occurs. Events in Telematics parlance include items like braking, acceleration and steering, and the magnitude or severity of these items. Some of this information has been recorded for use by service technicians as far back as 1994 for diagnostics and service purposes but today there is a lot more of this information available, and thanks to the telemetry provided by mobile internet or satellite connections it can now be viewed and analysed remotely, and in real time. Video recording is also being added to the mix. It will even be possible very soon to record the radio station drivers listen to, how often and for how long.

Amazingly, cars are starting to talk to each other too. Giovanni Pau at the University of California argues that connected vehicles will soon access each other’s sensors producing a more efficient, greener and safer transport system (Pau, 2013).

Implications

The implications of Automotive Telematics are clearly huge, particularly when the amount of money spent on cars, the amount of time spent in cars and the psychological effects of car ownership are taken into account. In its Survey of Motor Vehicle use for the twelve months ended 30 June 2012 for example, the Australian Bureau of Statistics found that of the 16.6 million vehicles registered at that time in Australia, passenger vehicles travelled an average of 14000km with nearly 53% of that travel for personal use and more than 27% for commuting to and from work. By contrast, semi-trailers travelled an average of 83,000km in that year (Australian Bureau of Statistics, 2013).

These figures represent a lot of time and money – and a lot of opportunity.

An analysis of the capabilities of the new technology leads to many possible implications, uses and risks, and research needs to be done in this area. There are some considerable technological challenges however. Manzoni, Gitlin, Toh, Zhang and Obana argue that the new era of Telematics
requires a new type of communications architecture and a new group of communications protocols. They argue that V2V (vehicle to vehicle) and V2I (vehicle to infrastructure) are challenging all areas of the communication system and the applications used because of the mobility of the sending and receiving stations. Nevertheless, they see opportunities they have broadly categorised into four classifications: Performance Evaluation, Security and Privacy, Services and Mobility Management (2013).

But what does it really mean for Managers and Marketers? In order to understand possible implications it may be useful to consider what happened when the PC-based internet was commercialised in the 1990s. Of course, the internet had been around for about forty years previous to that but it was the introduction of a viable web browser that really saw the internet take off as an ecommerce and a communications channel. Or so we thought! At the time, many Marketing researchers were predicting that the rise of the internet would mean the death of shopping centres. They argued that there would be no more cinemas, no specialty shops and certainly no more big retail chains. The predictions at the time even extended to the end of radio and television advertising. These predictions have proven to be incorrect and perhaps one reason why they were so poor is because they were often based on poor or wildly fluctuating data, even in very digitised economies like USA and Britain (Brousseau, 2001). In any case, the total value of ecommerce sales in the USA is about the same as catalogue sales in the same country: in third quarter, 2010 ecommerce retail sales were valued at $41,525 million but this only represented about 4.2% of total retail sales (Ramcharran, 2013).

Arguments about revolutionary change as a result of the internet were extended into the Management realm too. Management researchers crowed about how the internet was enabling telecommuting which in turn was completely changing how people were managed, insured, protected and remunerated and how even the face of our cities would change (Chevron and Primeau, 1996). Some management researchers even extended their predictions to include the end of traffic jams.

History tells us these predictions didn’t come to pass of course, or at least not to the extent predicted. However, the rise of the internet did have an impact – and continues to have an impact on these two
closely related fields. Using that experience as a guide, and allowing for the fact that consumers – and employees – spend so much time in their cars each day simply getting to work (it is reasonable to conclude that telematics will have at least as much impact on the Management and Marketing fields as did the PC-based internet.

Here is a selection of possible impacts that managers and marketers need to consider in their planning. It is up to researchers to determine just how much impact we can expect:

**Insurance – Premiums and Excess**

Insurance companies are in the business of assessing risk. If that risk assessment can include the condition of the car and the driver’s usual driving habits then the risk is more closely identified. This would obviously impact on premiums and excess.

**Blame for accidents**

A driver’s ‘usual’ driving habits and his or her driving behaviour immediately prior to an accident are just some of the monitoring and recording capabilities of Automotive Telematics. Access to this information may significantly change the apportioning of blame for any given accident. Clearly this will require changes to law.

**Contribution to costs**

Should employees contribute to the cost of car maintenance or insurance if their driving habits are below par? Should firms be responsible for monitoring the operation of their vehicles online?

Interestingly, the US Patents and Trademarks office issued the trademark ‘Behaviour based GPS Telematics in August 2014. It relates to a website that enables users to monitor fleet vehicles for safety purposes (US Federal News Service, 2014).

**Location marketing**

The humble mobile phone has GPS capabilities, as does the car itself. Mapping movements of a car – and therefore its occupants – using GPS technology at any given time or for any travel routine gives
rise to some very attractive marketing possibilities. It may be the single most lucrative application of Automotive Telematics to business. For example, imagine driving home at 6PM on a Friday night and your car asking you if you would like to ‘Take the next left. You can surprise the family by taking home free coffee and a special on pizza. Press ‘Enter’ and the cost will be automatically deducted from your credit card and the pizza and coffee will be hot and ready for you when you arrive’.

Don’t like pizza? Well what about banking services, shopping or new tyres?

Need for / forced servicing

Your car can remind you that it needs servicing. It is also possible that the service company (or the car manufacturer) can remind you externally. Is this a good thing? It can be profitable for companies and convenient for consumers, but does it give you a choice and does your decision have legal ramifications? Is a ‘non-serviced’ car a reason for a police fine, or a contributing factor in a traffic accident?

Tracking of cars including emergency location

A stolen car – or one being driven by teenage children – can be tracked. This is an enticing prospect, assuming you are not a criminal or a teenage driver! Locating a vehicle in an emergency situation is another exciting possibility.

Remote speeding fines

The sight of the police radar gun or speed trap always leaves drivers with a sense of dread, but of course it is an important way of keeping us safe and reminding us of our obligations. If the Police had access to our Automotive Telematics they would be in a position to fine us for poor driving habits such as speeding, without physical intervention. Could you be fined for speeding six months ago?

Driver training and retraining
The measurement, recording and analysis of driving habits may lead to compulsory training or retraining, or at least the suggestion that retraining might be in order! New drivers may benefit from the unemotional analysis of their expertise too.

**Disabling of vehicles by emergency services**

Already practiced by some police services on some vehicles, the ability for emergency services to disable a vehicle has obvious advantages. Perhaps police chases will be a thing of the past? Turning off a car’s ignition remotely to prevent a fire is another obvious application of this technology, as are the use of digital breathalysers.

**Advertising and the refinement of advertising targeting for cars, drivers and occupants, particularly whilst enroute**

The car represents a completely new advertising channel. It is equipped with a large screen or a H.U.D. (Heads up display) and often a sophisticated sound system. This makes it an ideal as an advertising channel. What is particularly attractive is the ability to refine the targeting to consumers who are very likely to buy a product based on their location, their routines, the number and age of occupants, the type of car they drive or their driving habits.

**Ownership and use of the information**

This is a difficult area. The use of the data is easily understood, but the answer to who is the owner of the data is a little more difficult to know. Another problem is when, how and why the data should be used. The privacy issue is at loggerheads with the law and the application.

**The criminal element: routines / routes**

Inevitably, the criminal element will take advantage of the new technology and the wealth of new information. This represents a real threat that will have to be closely considered. Knowing your whereabouts makes it a lot easier for your home to be burgled, for example.

**Protection of workers during in-vehicle times**
In Australia, as reported by Harrison, Mandryk and Frommer in 1993, 39% of work related fatalities were road vehicle accidents, of which 24% occurred during work hour and 15% happened on the way to or from work. Nearly twenty years later, injuries from work-related vehicle incidents are the leading cause of fatalities (Macdonald, Driscoll, Stuckey, Oakman, 2012).

This means the vehicle environment, particularly as it becomes more and more integrated into the work environment for employees not specifically employed to drive, must become a vital focus for managers and OH&S practitioners.

**Remote unlocking of vehicles (already in use in some cars in some locations)**

As the national car fleet grows, and grows younger, the reason motorists need roadside assistance changes. One perennial problem is the loss of keys. This problem can be solved in a number of ways. One way is for roadside assistance organisations, or emergency services to remotely unlock a car. It is faster for the motorist – and cheaper for the organisation.

**Automatic accident reporting (operation of airbags)**

If an accident has occurred the chance of survival is greatly increased by the timely arrival of medical help. The operation of airbags or impact with the bumper bar are two ways the Telematics system can recognise an accident has occurred. The system can then automatically call for help, giving location, time of accident, number of occupants and any other relevant details, or it can allow for one button emergency assistance calls by occupants.

Automatic accident reporting is part of existing offerings by General Motors. Their Onstar service, launched in 1996, is the largest telematics provider in North America with ATX Technologies Teleaid and ASSIST brands second (Ball, 2006).

**Driver Distraction**

Drivers get distracted, often. Automotive Telematics can be used for refocusing driver attention on the task at hand.
**Downloading of data music and video**

The Telematics system is essentially microprocessor driven. Combine that with communications, an online account and a digital storage mechanism and anything can be downloaded from the internet. Music and video are two obvious advantages.

**Driverless cars**

At current indications, it is reasonable to conclude that Automotive Telematics is going to culminate in the driverless car. This might be disappointing for diehard purist fans of the horseless carriage, but on the other hand it means that all occupants are probably safer. The transport time can also be used for other purposes – such as work! Perhaps one day cars will have beds…

**Parking**

Sick of paying for parking? Automotive Telematics can easily signal your car’s location and your parking – or your parking fine – can be automatically deducted from your account.

**So what does all this mean for Managers and Marketers?**

Opportunities to profit abound. They stem from the ability to target a market or market segment perhaps more specifically than ever before. For perhaps the first time companies will be aware of the type of car a person drives, the route travelled, the type of personality they display (based on car purchase and use, driving habits, entertainment preferences and many other areas of recorded data). Marketers will be able to promote (advertise) specifically to that consumer, because of the clear advantage of the metrics gathered by Automotive Telematics.

Scholars of the Marketing Mix – that concept by McCarthy in 1960 and variously redefined, especially by Kotler in 1972 - will recognise the ‘Place’ and Promotion advantage of the information provided by Automotive Telematics

Automotive Telematics generated information is also particularly relevant when viewed through the lens of the Services Marketing Extended Marketing Mix of Booms and Bitner (1981).
Scholars of Consumer Behaviour will see implications of using this knowledge to predict purchase behaviour.

Marketing opportunities aside, management responsibilities for driver and passenger behaviour and safety are clear. Managers will need to react to driving habits where it impacts on safety, insurance premiums and image. There will also need to be consideration of the safety of the information itself; preventing the use of the information by criminal elements may become the responsibility of corporate managers.

Managers also need to rethink the use of the car as an extension of the work environment. It may make employees more productive than ever before, but organisations more responsible for their safety than ever before.

There are also privacy issues to consider.

**Opportunities for academic research**

Research opportunities exist in this area in the use of the car as a marketing and communications channel and the advantages of being able to target the market so specifically.

Research on the use and implications of use of the car as a work environment is also an obvious area for the management discipline.

However, perhaps the most enticing opportunity might be the chance to compare the impact of the PC-based internet of the 1990s with the possible impact of automotive telematics because PC based internet data (for example, ecommerce growth) is already available. This research might also offer the opportunity to avoid the inaccurate predictions of the past when new communications and commerce channels have been introduced.

Another opportunity might be a comparison of the impact of automotive telematics with that of the developing mobile based internet: in 2009 just 0.9% of online sales were via a mobile but by the first
quarter of 2013 mobile phone based sales accounted for 20.2% of overall online sales (Retail Week, 2013).

For the not feint at heart an even more interesting opportunity might be to compare automotive telematics with the impact of the soon to be released interactive television technology.

It might also be attractive to consider research into another stage in the development of customer service: The location marketing opportunities of Automotive Telematics combined with the transport available by the car itself means that customers may actually be solving one of the great bugbears of the ‘last mile’ of ecommerce: Delivery!

Other possible research areas include

- Driver habits and contribution to accidents
- Insurance actuarial
- Methods of marketing and targeting
- New uses for internet technology
- Impact of driving and transport on human resources
- Risk management, Human Resource Management and Managerial responsibility
- Impact on emergency services, location, successful medical intervention
- Improvements in work productivity
- Transport planning
- City planning
- Environmental
- Vehicular (Mobility) Communications protocol standardisation
Conclusions

The march of technological progress in the automotive telematics world continues unabated. It is up to Marketers and Managers to capitalise on the opportunities this represents and for business generally to prepare for the legal ramifications and to protect itself from the associated risks.

Currently not enough is known about the implications of this field to business and consumers alike, and this represents multiple opportunities for research. In any case it is not a field that can be ignored.

Appendix

Figure One: Net Household Transport Fuel Use. Source: ABS, Energy Account Australia, 2002-03 to 2011-12
Figure 2 A tame look at possible Automotive Telematics applications (www.aalcar.com)

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