

How developments in communication technology are changing the taxi industry in Scotland

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1. INTRODUCTION

Taxi services have been making headlines. Start-up companies such as Uber and Get Taxi have been providing transport services to the public in new ways that have often proved popular with passengers but controversial with other stake holders in the field. Over the past three years Madrid, Paris and London have all witnessed taxi drivers' protest about the emergence of new ways of operating (PHTM, 2015). Regulators too have been forced to re-examine the sector and ask if models of operation borne out of the age of information can be governed by laws that were written before the internet had been thought of.

This paper looks behind the headlines to explain how developments in communication technology are changing the taxi sector. What it finds is that new technology has vastly improved communication between passengers, taxi drivers and booking operators. Special promotions such as cut price fares are now easy to advertise and administer and this has led to more competition amongst booking operators as they compete to gain passengers. There has been competition too in factor markets for the services of taxi drivers. All taxi drivers in Scotland must be licensed and so there are a limited number of people who can legitimately do the work. If a booking operator is to be successful it must be able to attract drivers as well as passengers and this has led some booking operators to offer new and attractive terms and conditions.

One final development has been the internationalisation of taxi and private hire markets. Until very recent times, providers to this market were made up of locally owned and controlled small to medium sized enterprises. With the changing technology, larger market players, providing on demand transportation services on an international scale, are now entering these markets.

To explore these issues further three seminars were arranged that brought industry stake-holders together to discuss the future of the taxi sector in Scotland. This paper tries to capture the discussion to enable those who were not present to get some insight into the views of industry experts. The main issues that came out of these seminars were that tight regulation of the taxi trade is important to prevent exploitation of a vulnerable public. However, this regulation should and does allow for innovation in practice as many of these developments are beneficial. For example, guaranteed payment of trips can encourage drivers to service parts of the community that have a poor record in fare dodging such as patrons of the night time economy. The taxi trade is already highly competitive and while new companies entering the trade will add to this they may also bring benefits. Increased advertising and special promotions may raise the profile of the entire taxi sector and so increase the number of overall trips taken.

2. BACKGROUND

The taxi sector plays an important role in the Scottish transport sector. The taxi is often the first and last link in a longer journey which helps with the smooth running of the whole system (Ciari, 2009). In addition, taxi services are particularly valuable to those who do not have access to private cars. Government figures on taxi and private hire car (PHC) usage across Great Britain indicated that on

average each person in Great Britain makes 11 taxi or PHC trips per year (Dept. for Transport, 2010). However, in 2012, people living in households without a car made nearly four times as many trips by taxi than households with a car (Dept for Transport 2013). In fact transport research across Great Britain has consistently shown that the people who use taxis most are females, younger people, those planning to consume alcohol and those from lower incomes – essentially people who do not have access to private cars (OFT,2003).

In Scotland taxis and PHCs perform similar functions in that both provide door to door transport in a car and the drivers of both must be properly licensed. However, there are important differences in the way that the two are licensed and regulated. PHCs can only pick up passengers via a private arrangement made in advance. Taxis are licensed for hire in a public place and can be hailed on the street or pick people up at ranks. This paper will focus only on the taxi market although much of the information presented is equally applicable to PHCs.

2.1 Regulation of the taxi sector in Scotland

The taxi sector provides a door to door service which makes it more responsive to individual customer demand than other transport modes. The demand led nature of the service means it is available at short notice and irregular hours and can accommodate last minute changes in plans which can be very useful if travelling alone or with a small group (Biggar, 2011). However, the nature of taxi journeys, where a lone driver may well offer a service to a lone passenger also means there is a risk of exploitation unless the sector is regulated (Law Commission, 2012). Indeed there have been instances where passengers have been over charged or physically attacked by taxi drivers. In the UK perhaps the most notorious example of such behaviour was the case of John Worboys who in 2009 was sentenced to life in prison for committing over 100 rapes. Worboys was a London taxi driver who used his black cab to meet lone females. He then drugged his victims and carried out sexual assault. Often the victims were unable to recollect the details of the event and Worboys was able to carry out these crimes over a six year period (Godden, 2011). Whilst the regulatory mechanism failed to prevent this from occurring, there is concern that without it such instances would become far more common.

In Scotland the taxi sector is governed by the Civic Government (Scotland) Act 1982. The purpose of the legislation is to ensure public safety through the regulation of quality of vehicles and drivers; as well as laying down the requirements with regard to the economic regulation of fares and quantity restrictions on taxis in a designated area. The legislation provides an overall framework but the detail of how rules should be applied is devolved down to local authority level. Local licensing boards receive guidance from the Scottish Government but local Councillors do have a lot of freedom to manage the taxi sector in a way that is most fitting for their area. This means that the regulations with which the taxi sector must adhere can be quite different even in neighbouring areas (OFT, 2003). For example, in Edinburgh there are restrictions on the numbers of taxis allowed to operate in the City (CEC, 2014). However, in neighbouring West Lothian no such restrictions apply (West Lothian, 2014).

In Scotland booking operators that arrange trips for four or more vehicles are also subject to regulation and must be licenced under The Civic Government (Scotland) Act 1982 (Licensing of Booking Offices) Order 2009 (Scottish Govt, 2012b). The purpose of this is to ensure proper financial control of the sector and only those of good character act as operators. It should be noted that it is the booking office premises that is licensed and so any booking operator that does not have physical premises is not subject to licence (Bremnar, 2014). This is currently under review and updates will be made via the Scottish Parliament.

2.2 Contracting competition in the taxi sector

Within the taxi sector there is a division between what is termed cash and contract work. 'Cash work' is where an individual undertakes a trip and pays the taxi driver directly. The term cash work initially referred to when a passenger hailed a taxi on the street and then paid the driver in cash at the end of the journey. In more modern times passengers can hire taxis via operators as well as hailing and often make payment by means other than cash. However, despite these changes the term used to describe this practice is still cash work.

'Contract work' is where a client engages a driver or booking operator to undertake transport services and is then invoiced at a later date. This contract work is a large industry and covers different types of agencies including businesses, education and social work. For example, in Scotland, Audit Scotland estimated that in Scotland in 2009/10 well over £93 million was spent providing transport to health and social care services (Audit Scotland, 2011).

There is considerable competition between different taxi companies for contract work. For example, City of Edinburgh Council has an annual budget of £4.75 million for pupil and student transport (CEC, 2013). To illustrate the service provided, City of Edinburgh Council took a snap shot 'of existing routes and contract prices as at 29 April 2013. This showed that 227 routes operated into 44 educational establishments and were being serviced by 32 contractors transporting 1,571 pupils' (CEC, 2013).

Such contracts provide a stable income for taxi firms and there is considerable competition amongst them to provide these services.

The proportion of cash work to contract work differs in different areas. Sensitivity around the topic means it is difficult to get an accurate picture on this. However, when undertaking interviews with taxi drivers in Scotland drivers were asked about the split between cash and contract work in their area with the following results:

Area	Proportion Contract Work	Proportion Cash Work
Dundee	60%	40%
Edinburgh	70%	30%
Glasgow	70%	30%
Aberdeen	60%	40%
Inverness	50%	50%
Breakdown between contract and cash taxi work in five Scottish cities		

Taxi booking operators were asked to comment on these figures and thought that the level of contract work was considerably less. It was suggested that contract made up about one third of the overall market. This means in each of the urban areas in Scotland at least 33% of the work undertaken by taxis contract work and it could well be considerably more than this. These figures become important when considering the effect of communication technology on the taxi market. As the paper will explain developments in communication technology has had the greatest impact on the cash work side of the

taxi sector. As this makes up less than 66% of the overall trade the developments are clearly important but perhaps not quite a revolution.

2.3 Competition in the cash sector

Until recently there was less room for competition in the cash market than the contract market and more risk that passengers may be exploited. Schaller (2007) argued this happened because the cash taxi market had no real competition. Tight regulatory control meant the service offered by individual taxis and booking operators were essentially the same in terms of quality and price, thereby removing the two main elements of competition. Even if an individual booking operator or driver had chosen to offer a reduced tariff it would have been very difficult to convey this to the public, hence removing any incentive to charge fares below the specified maximum. In some ways having such a homogenous product could be seen as good for competition. Furthermore, having a large number of small to medium sized operators combined with a large number of buyers results in conditions close to the economist's model of perfect competition. The net outcome therefore should produce economic efficiency. In other words, efficient market prices that reflect the service's 'true' value and cost minimising operators that earn normal profits, i.e. profits that reflect the risk and opportunity cost of being in business (as opposed to a monopolist, that earn 'abnormal' profits). However, in practice it was not possible for a potential passenger to negotiate on price between different taxi drivers as the first would not wait while the passenger negotiated with a second (Law Commission, 2012). Put in terms of perfect competition, imperfect information remained a major barrier.

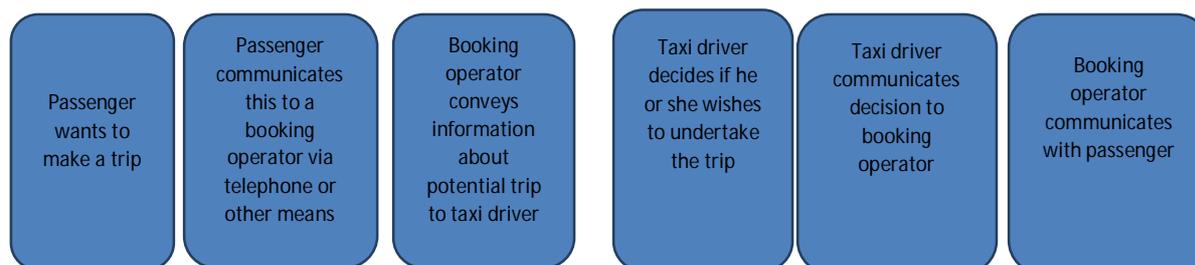
Until recently, this view that only limited competition was possible in the taxi cash market was widely accepted both by the taxi trade and the regulators. However, during the 2000s there were substantial developments in the communication technology used by taxi booking operators. The introduction of GPS systems, websites, social media and app technology meant that booking operators were able to communicate with both passengers and drivers far more quickly and easily.

This has led to increased competition amongst booking operators as they try to attract both passengers and drivers to their company. It has also led to new styles of booking operators setting up who have had an impact on a global scale.

2.4 The role of the booking operator

Booking operators act as an agent between passengers and taxi/ drivers. That is if a person wishes to pre-arrange a trip he or she can do so via a booking operator. Until very recently in Scotland most booking operators were small to medium size enterprises rooted in the community within which they operated. Indeed the booking operator was often organised and managed by local taxi drivers who came together to provide a service to their mutual benefit. From the start of 2015, new styles of operators have started to emerge which are larger and providing booking services on a national rather than local scale.

The model for both types of operator is the same and very simple.



Model of taxi booking operator communication for pre-arranged trips with individual members of the public

Taxis can be booked by passengers using the telephone, online or in person at a booking office. Since about 2010 it has also been possible to hire a taxi using an app which is a piece of software which can be downloaded onto a smart phone or tablet.

2.5 The impact of communication technology on pricing competition

Taxi apps are provided by many booking operators as a method of allowing passengers to organise their trip. To take advantage of the service a person registers with the relevant booking operator and then down loads software (the app) onto their mobile phone or tablet. As part of the registration process the person gives some personal information including their name, address and credit card details. When booking a trip the person inputs details using the app. Payment for any trip booked using the app can be paid directly to the booking operator using the credit card details supplied. Depending on the company involved the taxi driver (also registered with the booking operator) can either charge a cash fee per trip or automatically invoices the booking operator and receives payment for the trip in due course.

In many ways the taxi app could be seen as simply an extension of the different ways that passengers can organise taxi trips. However, the taxi app is part of a whole system of communication technology that is changing the way parts of the taxi sector operate. To explain, the advent of apps and other communication technology has not changed the model of communication it has vastly improve the rate of information flow between the three parties of passenger, booking operator and driver.

Communication technology is now so advanced that at any time a booking operator is able to see exactly how many of the taxis registered with the service are in operation and where they are located. The operator is also able to see the exact location of every potential passenger that gets in touch. This allows booking operators to match passengers with the closest available taxi driver and so lessens waiting time for passengers. It also reduces taxi driver costs by decreasing the amount of time and fuel spend going from trip to trip.

The advances in communication technology also mean that new services are now available. For example, it is possible to provide variable rates for taken at different times of day.

Levels of fares are set by local authority licensing boards and it is common for licensing boards to have different rates for day time and night time trips. Other charges such as for the carriage of luggage and additional passengers are also common place. However, these fares are maximums. It would be illegal for a taxi driver to charge more than these rates for a trip but it is perfectly legal for a driver to charge less. In previous times it made no sense for a taxi driver to use fare reduction as a method of attracting customers as the communication and negotiation involved was too difficult and time consuming to be worthwhile. However, with the advent of new technology it is easy to vary rates and communicate this to all parties. For example, if a Friday night was quiet, it would be possible for a booking operator to cut fares in a bid to encourage potential passengers to make a trip. This could be advertised immediately using social media so potential passengers knew of the cut price offer. If later

in the same evening the area became very busy it would be equally easy to raise fares in a bid to attract more drivers out.

This ability to use price elasticity to segment the market is new and a direct result of advances in communication technology including apps.

2.6 Relationship between booking operator and drivers

In Scotland, until recently it has been commonplace for individual taxi drivers to register with a booking operator and pay a weekly fee to gain access to information on potential trips. Contracting arrangements between individual drivers and booking operators vary but on the whole drivers were expected to pay a weekly fee. This fee was paid even if illness meant they were not able to work that week or trade was slow.

This system was the norm in Scotland and in other areas of the world. However, since about 2010 on the global stage and 2015 in Scotland new models of booking operator have emerged. These booking operators still act as a broker between passenger and driver but instead of charging a weekly fee they charge a percentage fee per trip. For individual drivers this has the advantage that they only get charged for trips made. So, if the driver has to take time off work or the booking operator fails to provide passengers then he or she is not charged.

Information on the level of fee charged by individual booking operators is commercially sensitive and they choose not to make this publically known. This means that it is not possible to gain accurate information on the levels of fees paid by drivers across Scotland. However some taxi drivers were willing to discuss these matters and in some urban areas the figures mentioned ranged from £75 to £150 per week.

The attractiveness of a trip percentage system to an individual driver depends on a number of factors. The first is the level of weekly fee he or she is expected to pay to a booking operator in comparison to the percentage trip rate. E.g. if one booking operator charge a flat fee of £100 per week for its service and a rival charged 15% per trip then the driver would need to make more than £667 ($\frac{100}{0.15} = 667$) for the flat fee to make economic sense.

However, the cost of booking operator is not the only factor a driver considers. The number and type of trips provided by the booking operator is also important. Most locally based booking operators insist that drivers enter into an exclusive relationship with them and so it is important for the driver to choose a booking operator that can provide high quality trips. The new style operators tend not to expect exclusivity from drivers but if working with them affects their relationship with other booking operators drivers may think twice before signing up. A cut rate booking operator fee is of no use if the operator does not broker sufficient trips.

Competition between different booking operators has increased in Scottish cities particularly Glasgow and Edinburgh. New operators are entering the market in 2015 and it will take time to see what effect this has in the long run.

3.0 Seminars

The issues outlined above have been of interest to stakeholders in the taxi industry in Scotland. To explore the issues further a series of three seminars was arranged where representatives from traditional taxi firms, new style booking operators, the police, community safety teams and regulators were all invited to voice their opinion on the effect of communication technology on the taxi market.

A consensus was not reached. Nevertheless, there were some points of agreement which will be outlined here.

The first point of agreement was that tight qualitative regulation of the taxi trade is important to prevent exploitation of a vulnerable public. Vehicles, driver and booking operators do need to be licensed and scrutinised as without this the risk of crime and exploitation is high. All the locally based booking operators were able to give examples of times when the regulator had prevented an unsuitable person from gaining a taxi licence and expressed support for the work of licensing boards in ensuring only suitable people were licensed. Amongst the representatives of the locally based booking operators there was some concern that new entrants to the market may not be aware of the importance of only using licensed drivers. However, one new style booking operator was clear that his firm only worked with properly licensed black cab drivers and were keen advocates of tight regulation in the taxi industry. Another concurred, stating that his company only worked with licensed private hire drivers and had no interest in working with any potential driver who was not licensed.

Although it was agreed that tight regulation of the taxi sector was important to ensure public safety it was also agreed this should not prevent innovation in practice. All the booking operators present had been using apps to facilitate passenger bookings for several years and had found this to be a useful addition to the many ways that passengers could communicate with booking operators. Apps were seen as convenient for the public to use and also had the potential to increase trust between drivers and passengers. One participant explained that their app included a facility whereby passengers could rate the service they had received and it was anticipated that those drivers with positive ratings would be more likely to gain future business. Drivers too were given the reassurance of knowing that trips would be paid for automatically. Those providing transport for the night time economy had often mentioned fare dodging by passengers as an issue so all help combating this was welcomed. There was some agreement that in essence booking a taxi via app was really no different to booking by telephone or any other traditional means. However, what was considered different was the way that the new technology had encouraged new entrants to the field. These new entrant often had large advertising budgets and were proving successful at publicising the use of apps and so engaging with the public in a new and different way. In some ways the locally based companies could see that having new entrants to the market brought fresh energy and ideas which could invigorate the industry. In fact it was considered quite possible that the increased advertising and special promotions that were a feature of new style booking operators may raise the profile of the entire taxi sector and so increase the number of overall trips taken. This would be beneficial to the trade as a whole and was not something that was feared although there was some acknowledgement that the locally based companies simply did not have the means to compete with global companies in terms of advertising and promotion.

The role and regulation of the booking operator was a source of much discussion and a certain amount of disagreement. New style booking operators were very clear that their primary client group was licensed black cab taxi drivers. In the past the public could only hail drivers by walking to a rank or raising their hand in the street. Now with the advent of new technology, new style operators believe third way of hailing had been devised. Thus, instead of hailing a taxi in the street a passenger could use the app to hail one from where ever they were. This was considered to be of great benefit to the public particularly on rainy nights where they may not want to venture outside to wait for a taxi to hail. Other booking operators present took a very different view suggesting that the booking operator was involved in the booking process and must take some responsibility if problems occur. This was perhaps the nub of the debate. Some present saw the role of the booking operator as simply facilitating communication between a person wishing a service and a self-employed, legitimate, trade's person wishing to provide that service. Others saw the role of the booking operator to be an

integral part of the transport system and having some responsibility for the work supplied. No consensus was reached on this matter.

Licensing arrangements for booking operators were also a source of debate. A show of hands around the room demonstrated that all the locally based taxi firms present had thought until recently that under The Civic Government (Scotland) Act 1982 (Licensing of Booking Offices) Order 2009 booking operators responsible for the operation of four or more cars were required to have a licensed premises in the area where they operated. Recent advice had contradicted this and the current understanding was that if a booking operator responsible for four or more cars has a premises that premises must be licensed by the local authority. However, if there are no physical premises then no licence is required (Bremnar, 2014). Following this advice a new style booking operator started operating in Glasgow and Edinburgh from a (licensed) booking office based in London. There was some discussion in the group about the purpose of regulating booking operators and the effect that location had on this. On the one hand it was agreed that advances in administrative technology meant that it was technologically possible to administer the processing of a taxi booking anywhere. Also, it was agreed that where trips were administered did not impact on the service provided to passengers or drivers. However, it was considered important to remember that licensing of booking offices had been introduced following repeated requests from the police. The police had made strong representations that access to information about trips booked was very important to them. First because it aided them in preventing criminality infiltrating the taxi trade and second because it assisted them gain information on incidents that happened on the streets. All those present agreed that they regularly assisted the police with their enquiries to the point where at times it felt burdensome. However, there was recognition that this was valuable work and that booking operators were in a unique position to protect the public by assisting with the solving of crime. Where there was some disagreement was whether or not this work required a booking office. Some local firms believed that having a booking office in an area made it easier for the police to make contact. Others felt the important thing was to have a named person responsible for liaising with the police. They argued that the location of that person was unimportant as all information would be administered electronically and so was available regardless of physical location. No consensus was reached on this matter.

4.0 CONCLUSION

This paper has presented the idea that developments in communication technology will greatly influence the future of the taxi industry in Scotland. Improving communication between taxi passengers, drivers and booking operators allows for a higher degree of customer service. Special offers such as variable fares, discount vouchers or loyalty points are all technologically possible now. Ease of booking has also been greatly increased which in turn may generate greater demand for taxi services and mean more trips are undertaken.

The new technology has encouraged new styles of booking operators to emerge. Traditionally taxi booking operators were owned and run by local taxi drivers for their mutual benefit. Now new companies are entering the market. These new companies' are often larger and provide booking services on a national or even international basis.

The pace of change has been fast and this has left regulators questioning their ability to keep up. Licensing officers and the police are regulating an industry that is at the cutting edge of new technology under the governance of an Act that was drawn up in the 1970s. There is a danger that the regulatory framework may become ineffective which is not in the public interest. Examples of criminal behaviour by both taxi drivers and booking operators clearly demonstrate the importance of ensuring that only those of fit and proper character are permitted to work in the taxi sector.

The improvements in customer service brought about by increased communication are likely to be popular with customers but the interest of public safety is such they must be properly regulated. If changes to the regulatory framework, adapting to new ways of working, are only considered after the event they may prove impossible to implement due to the unpopularity that such measures would entail for the vast majority of users.

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