Transport Industry Adapting to Change: An Australian Case Study

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ABSTRACT

Growing governmental reluctance to fund local bus services is leading to increased interest in demand responsive transport (DRT). At the same time, the use of technology to facilitate access to DRT is creating circumstances for significant disruption of the way bus services are planned, contracted, delivered and regulated. This disruption creates uncertainty for bus operators but also presents an opportunity for operators to proactively adapt to better meet passenger needs and capture more of the market. This could involve diversifying their businesses, becoming total local transport providers and/or brokers, along Mobility-as-a-Service (MaaS) type lines, where the passenger is of central importance, rather than the mode of transport. The paper presents a Victorian case study that explores how the bus industry's voluntary professional association is working with its members to augment their capabilities and deliver DRT services, against the background of a changing contractual environment for delivery of services. The provision of a new transport business model, and the technological platform that supports it via their voluntary professional association, will enable bus operators to compete in the growing DRT realm and passenger services levels to improve, also supporting better social and environmental outcomes.

Keywords: Public transport, disruption, demand responsive transport, integrated governance

INTRODUCTION

Transport is likely to undergo considerable change in the next few decades. The public transport sector will be caught up with these changes and, unless it is able to adjust and be responsive and innovative, risks becoming less relevant. This paper offers an overview of how Bus Association Victoria (BAV), a voluntary professional association (VPA) for bus operators in Australia, is responding to these changes on behalf of bus operators, to assist them take up new market opportunities and lead the direction of change to offer a high quality passenger service that is responsive to achieving good social and environmental outcomes.

The next section describes the Victorian bus industry, the varying nature of the different types of bus operator governance models, the types of services operators offer, and the stakeholders involved. This is followed by a discussion on the disruption and uncertainty that is occurring around public transport and the need for the industry to change. The market opportunities that arise from this disruption are described, followed by a description of a pilot of this new approach that has been successfully trialled over a number of years in regional Victoria. The project's methodology is outlined as are two theories that underscore the VPA's role in delivering on that methodology, being agency theory and social capital linkage. The role the VPA for bus operators plays in facilitating the diversification of operators' business is discussed, followed by the conclusions that can be drawn from the approach outlined in this case study paper.

BACKGROUND

Types of Bus Operator Governance Models

Until the early 2000s, almost all of Victoria's bus operators were either small, medium or large *family businesses*, which with the exception of a handful of operators, traded only in Victoria. Today, the overwhelming majority of family firm bus operators in Victoria are small, trans-generational mixed businesses, meaning the bus business is not their only business interest. Small regional and rural school bus businesses are often supplementary to other commercial interests, such as farming, freight and haulage. Medium and large bus operators appear to have a lesser involvement in other business interests (Lowe, 2016). One multinational enterprise (MNE) operator entered Victoria to deliver fixed route bus and rail services in the late 1990's, withdrew in 2003 after determining the operation to be unviable, then another MNE entered Victoria in 2009 by acquiring a large family business. At time of writing, of the 13 operator consortiums contracted to the State Government to provide fixed route bus services in metropolitan Melbourne, only two are MNE operators.

The long-term nature of family firm bus operators is one of their key characteristics, as they tend to have lengthy tenures and anticipate long careers, not only for themselves but also for their children. This long-term orientation means the topic of succession receives a significant degree of attention by family firm bus operators, their industry representative body (or VPA) and the family business associations to which most of them also belong. The extent of interdependence among family firm bus operators is another key feature of this governance model. Many firms work with other operators that are either nearby or part of the network of members of the same VPA. Knowledge is shared and exchanged between these firms, although this is often tacit (Lowe, 2016).

Types of Services on Offer

In Victoria, route bus operators are contracted by the state government to provide bus services that operate on a pre-determined, fixed route at scheduled times. Operators are contracted to provide either: local services that serve primarily a social transit task and convey people around a community, including to/from major community activity centres such as schools, shopping centres, medical centres, sporting venues and other modal (tram/train/bus) interchanges, or; trunk bus services that mainly serve a mass-transit task and operate at a high frequency (for example, every 15 minutes or better at peak times) over a broad span of hours and carry passengers in and out of a neighbourhood.

School bus operators are typically located in regional and rural areas and are contracted by the state government to convey eligible and approved students to and from school. Many of Australia's school bus services started on the back of a farm business.

Special school bus services for students with a disability who attend specialist schools are procured and managed by the Education Department of the State Government, not the transport department. Operators have a service contract with the

government to pick these children up at a designated point and take them to their special school in the morning, then pick them up from school and return them to the designated point in the afternoon.

Community transport (mainly small buses, but also larger buses and cars) is available for selected people and activities, commonly for those with a disability and older persons, usually to travel to and from a specific agency service or activity at a set day and time. Funding is often provided by charitable donation, or federal and/or state government grants from the Department of Health and/or Community Services. Community transport assets are owned by local welfare organisations, community groups, councils and/or local businesses, and drivers are volunteers or employed staff (Lowe, 2016). Community transport is not regulated like the formal 'legacy' public transport network, which is one reason why it is often referred to as the 'informal', 'registered' or 'para-transit' (or parallel) sector in other parts of the world. It has little connectedness with the state government department or agency responsible for transport and its services tend to be invisible to the travelling public. It could be described as an exclusionary transport network predicated on eligibility (Lowe, 2016.)

Traditional taxis and point to point, car sharing and ride-sharing services (like Uber) also operate in Victoria. Demand Responsive Transport (DRT) in the public transport environment at present consists of services that are often provided through low capacity vehicles such as small buses, minibuses or 'maxi taxis', although this service is offered by some route bus operators. They offer flexible routing and scheduling and can be operated in shared-ride mode between pick-up and drop-off locations according to passenger needs. Fares are flexible and are based on passenger journey requirements allowing operators to charge higher rates than standard public transport fares resulting in improved cost recovery for the service provided.

DRT has been implemented within some metropolitan fringe and regional settings in Victoria, in a small number of areas where fixed route bus services would typically operate but where patronage demand does not, in the view of Public Transport Victoria (PTV), justify investment in the procurement of standard fixed route bus services. TeleBus, which operates in Melbourne's outer eastern suburbs was the first modern DRT system in the state, being developed and implemented by the local bus operator, Invicta, in 1978. The Telebus service operates small buses within a defined area and along a number of fixed intermediate stops. Telebus commences from a defined origin and picks up/ drops off customers either at the intermediate stops or at customer requested locations. Pickups from locations other than the intermediate stops must be arranged by phone booking prior to bus departure. A surcharge is payable for travel to or from locations other than Telebus stops. Due to the route's flexibility to service customers, the timing for pick up/ drop off at intermediate stops can vary by +/- 5 minutes from the allocated times. If no customers arrange a pick-up, Telebus still operates along a route that services the intermediate stops at the programmed frequency. During peak morning and evening peak periods, TeleBus operates as a route bus to provide a direct service to and from activity hubs (including train stations).

Regionally, PTV has procured a mix of taxis and minibus vehicles (up to 15 passenger capacity) to provide low frequency, low capacity, low coverage DRT services within the public transport fare structure (that is, there is no fare surcharge). Locations where these services currently operate include fringe suburbs to Melbourne, under the "FlexiRide" banner. Unlike TeleBus which will run the route if there are not any prior bookings, regional DRT service will only operate if booked by the customer or, if it is hailed at its origin point at the start of the route.

There is considerable variability between the types and costs of public transport on offer in Victoria but the transport system is uncoordinated, under-utilises capital assets, particularly in regional areas, and leaves many people without a transport service (Stanley and Stanley 2012). In a regional town of 32,000 residents, it was estimated that there is a potential market of unmet trips amounting to perhaps 150,000 trips per year. The people who have foregone these trips are largely those who are unable to drive, children, seniors, those on a low income and those with a disability.

Stakeholders

The lack of coordination of transport services or of an integrated transport system, is reflected in the government agencies overseeing transport. There are presently thirteen authorities or agencies of the State Government that are involved in regulating the Victorian public transport network. However, the Government has signalled its intention to consolidate most of these to ‘operationalise the Transport Integration Act’.

The Transport Workers Union (TWU) is the general representative for workers in the transport and logistics industry, including roads, ports, warehousing and aviation. It is the union with which VPA's engage regularly to discuss matters such as workplace agreements, awards, health and safety, and equal opportunity. Suppliers are the bus manufacturers and other providers that have a product or service that assists an operator in delivering its bus service, such as air conditioning, seats, global positioning systems, fuel and oil lubricants, as well as management consultants who provide legal, commercial and other professional services.

VPA’s represent their members’ best interests to the State Government and the wider community on matters including service contract negotiation, state-based industrial relations, legislative and regulatory compliance, education (conferences, publications, exhibitions and seminars), public safety and transport infrastructure. VPA’s also offer their members products or services such as purchasing incentives on items like fuel, insurance and finance, to varying extents.

Passengers of buses are not a part of the bus industry, but they are the most important stakeholder in the public transport operating environment. The safe, reliable and efficient carriage of passengers is the prime task of all bus (and other public transport) operators.

FACTORS CONTRIBUTING TO THE NEED TO CHANGE

This section discusses the factors that are directly and indirectly causing operators and their VPA to change.

Uncertainty and the Sharing Economy

Uncertainty is a key characteristic that envelopes any discussion of how future transport systems will emerge, following many decades in which change has generally been slow. These uncertainties relate, for example, to matters such as how, and how quickly, technologies develop, the way they will be received by consumers, how governments decide to react (or not) and the range of matters that bear on these questions (Stanley, Hensher & Wong, 2019).

While a wide range of subjects could be considered, there are a small number of issues that may be game changers in terms of future land passenger mobility opportunities and impacts. These are (Stanley et al. 2019):

- Smartphone based apps and shared business models that depend thereon, including mobility as a service (MaaS). This area is having an impact already, but that impact could grow exponentially under the added impact of the following three areas of technological change;
- Autonomous vehicles (AVs), with potentially huge long-term benefits in store, or costs, depending on the development pathway;
- Electric vehicles (EVs), which are a reality already but at small scale. Adding this element to AVs presents opportunities for much bigger impacts within the transport sector and adds opportunities for synergies that extend beyond transport, into matters such as distributed energy systems;
- Shared vehicles are blurring the boundary between private and public transport and thus the traditional model of the route bus service.

Until recently, travellers were choosing between driving, taxis, fixed timetabled public transport modes such as buses, trains, trams and ferries and cycling and walking. Now, due to the rise of consumer technologies like smart phones, commuters' expectations have changed, and they can increasingly choose to travel by demand responsive modes like demand responsive buses, car share and point to point bike-sharing schemes. Public transport customers are ordering their transport options from the same device they are ordering their coffee, buying their car, furnishing their house and stocking the pantry with items delivered to their door.

Legacy fixed bus routes and printed timetables tied to permanent bus stops and rail stations are not as attractive or viable to commuters as they were in the past. This increasing preference for 'need it now' transport options is, anecdotally, in part responsible for recent bus patronage (ridership) decline. Patronage decline results in lesser contract payments to operators and lesser government funding to regulators for services. The prospect of receiving less income due to carrying less people can stifle operators' growth endeavours. This causes operators to look elsewhere for market opportunities to increase revenue. It also reduces the travel options for those who lack transport alternatives, including many at risk of social exclusion.

There are also other reasons causing bus operators, regulators (agencies) and VPA's to change, which are now discussed.

Operator Uncertainty

Most bus operators in Victoria have been awarded exclusive operating rights by the State, by virtue of a service contract that is negotiated, subject to meeting certain conditions, every ten years or so (Stanley & Hensher, 2008; Lowe, 2016). The degree of trust between bus operators, their VPA and Victorian State Government has diminished significantly in 2018, due to an attempt by the Government to oblige operators to transfer to the Government, or their nominee, the operators' assets (depots, buses, staff and intellectual property) at the end of the new contract term. In early 2018, operators mounted a campaign to get the Government to take the asset requirements out of the service contract and succeeded. However, the campaign has resulted in the need for the trust between government and operators to be rebuilt. Operators fear the State will eventually tender their new, non-exclusive service contract – a service contract that has been in the family in most cases for generations. Hence, many operators have elected to sell their business (or exit on their own terms), rather than face the risk of having their bus service contract terminated by the State Government. In turn, some operators are looking to mitigate this risk by applying their skills, knowledge, interests and values to new transport sector opportunities and diversify their commercial interests.

A further concern arises with increasing government interest in person-centred subsidies in low density settings where fragmented service offerings exist. Local social transit services are less likely to generate agglomeration economies than mass transit services and, as such, these will face increased competition from expanded personal travel opportunities, such as through Mobility-as-a-Service (MaaS) options. This reduces the likelihood of a viable base level of local social transit (bus) service being available to people at risk of mobility-related social exclusion. Stanley et al. (2019) suggest only areawide shared mobility contracts for some base service level, which includes flexible demand responsive transport, can deal with these concerns. This introduces the concept of a subsidised shared mobility contract – a minimum service level approach to shared mobility service which supports individual capability and allows people to self-select on use for service, not modes per se. These could be area-base contracts to provide sufficient scale to achieve some service economies.

The diversification of commercial interests by operators has repercussions for their VPA. Member operators of the VPA have historically looked to their VPA to undertake contract negotiations on their behalf. The VPA has also represented them on industrial relations, legal and commercial matters, to the extent where the VPA has been involved and worked alongside the operator in most business transactions. This has created a very high degree of reciprocal dependence between the VPA and the operator.

Government Inaction

The increased degree of commuter choice in transport modes causes governments to consider what is and what isn't 'public transport'. The Victorian Government continues to fund and regulate (through PTV) traditional (or legacy) modes of public transport (train, tram, bus, ferry) and is also funding several trials of demand responsive taxi

buses in regional centres, but this is the extent of their innovation and adoption of other modes under the public transport umbrella. Taxis and car share options (such as Uber) are regulated by a separate Government agency, the Taxi Services Commission (TSC).

In North America and Europe, public transport agencies are increasingly transitioning to become mobility integrators, that is, to coordinate public transport operations along with taxis, other ridesharing modes and bike-sourcing. This sees the agency diversify its remit and transform into a mobility manager, with responsibilities that go beyond being exclusively a public transport provider. Agencies are endeavouring to link the full array of mobility services into an integrated system and bring community mobility to a new level. At time of writing, however, there is no offering of demand responsive buses, ridesharing or other demand responsive modes of transport referred to on any Australian public transport agency website. So, no State Government in Australia is currently offering an integrated transport solution to the public.

Government reluctance to provide a broader scope of services, including demand responsive services, centres on a policy narrative that is yet to occur: to what extent, if any, should the new demand responsive trips be payable or subsidised by the State's ticketing systems and what are the ramifications of such a decision? Also contributing to the inertia associated with an evolving public transport structure is the fact that the regulatory environment in Victoria is not integrated. As noted earlier, there were thirteen transport regulatory agencies in Victoria, all with differing objectives. Although there has been some consolidation of agencies in Victoria in 2019/20, it is the authors' observation that strategy development and implementation is still 'silo-like'. This is hampering a fully integrated, holistic transport system and a transformation will be required for the public sector to realise an integrated transport system.

Government reluctance to provide a broader suite of demand responsive services presents an opportunity for the private sector to lead, which is discussed in the next section.

Role and Theories Associated with the VPA

The Victorian VPA is acknowledged as unique in the Australian bus representative environment. It has the resources to research and implement such a project on behalf its members. The vast majority of the members of the VPA are relatively small mixed family businesses where the owner and administrator of the business is also the driver of the bus. There is a strong degree of dependence and loyalty between the operators and their VPA and operators have looked to the VPA over many generations, to steward them through any sort of change: contractual, regulatory or operational. For instance, when the State Government introduced a new accreditation regime between 2009 and 2015, which all operators had to comply with, the VPA developed *help kits* and recruited a resource to personally steward each member through a new Diploma level course at a learning institution, and change their record keeping systems to be

compliant to new management and information systems, as established by the state, in order to pass government audits to have their accreditation renewed.

The state government has also contracted the VPA over the years as its agent to deliver on some of its objectives, such as fare evasion reduction and ticketing system implementation, and is presently working with government to implement rail replacement bus services, improve on-board customer information and technology on the metropolitan route bus network and placing bicycle racks on route buses, to improve inter-modality and customer satisfaction, to illustrate some examples.

The principal task of the VPA is to negotiate a template bus service contract with the government and commend it to its members every 10 years or so and it is this task that binds the operators to the association – the VPA plays a fundamental role in the ongoing viability of its members business and in the quality of services to passengers.

Agency theory explains the dynamic between the bus operator and the VPA. The bus operator, as the principal, delegates authority—in terms of control and decision-making about certain tasks—to the VPA as the agent. When an agent is acting for the principal, it adopts behaviours such as performing for the benefit of the principal or acting as the principal's representative (Fayezi et al., 2012). Lowe (2016) discusses the concept of an agent representing and negotiating with two principals (operators and government in that scenario) that still applies to this case study.

The interaction between the VPA and operator members was found to be an important tool to address the uncertainty issues previously outlined: uncertainty in the future of transport, operator uncertainty and government inaction. A theoretical base for this exchange can be found in the work on social capital. Early perspectives on social capital came from Bourdieu (1986), Coleman (1988), Putnam (1995) and Portes (1998). While definitions of social capital vary, common aspects usually include social networks, trust and reciprocity. Social capital is often viewed according to three subcategories: bonding or a network comprising close family and neighbours; bridging, or a network that makes connections with community and work groups; and linking, where networks reach to more formal or institutionalized power and authority gradients.

Linking social capital was found to describe the nature of the interactions between bus operators and their VPA, and their propensity to interact with their community. Social capital linkage describes connections with people in positions of power and is characterised by relations between those within a hierarchy where there are differing levels of power; it is good for accessing support from formal institutions. It is different from bonding or bridging social capital in that it is concerned with relations between people who are not quite on an equal power footing, like an operator's VPA whose remit is to maintain clear, open and frequent dialogue with the authority. In Australia, many operators would request their VPA to represent their interests to the state government authority. In this circumstance, linking social capital reflects the dynamic between the operator and the VPA and the VPA and the authority to achieve an outcome with the authority.

Thus, the uncertainty operators are experiencing in relation to their business viability and desire for continuance causes their VPA to help chart a course for reduced uncertainty for them, develop and commend a strategy to guide them through the changing nature of customer preferences and the regulatory environment and improve the chances of the continuance of their business. In implementing these strategic objectives, the VPA needs to procure the skills, knowledge and interest in helping its members diversify their businesses and enter into the demand responsive representation sphere, including understanding the regulatory and operating environment of taxis and the ride sharing sectors. This is a diversification task for the VPA itself, one that will require VPA constitutional and governance change as its remit is no longer solely about bus. The VPA's remit has evolved to centre on moving people.

The Victorian bus VPA is determined for it and its members' fates to not resemble that of the Victorian taxi industry. Many Victorian taxi operators have suffered a massive devaluation in capital value of their taxi business, due to a government policy change which saw the price of taxi licenses dramatically reduced. The State is now incurring significant new liabilities as a result of the policy change, as taxi operators are claiming compensation for this devaluation. Taxi operators in four states have also commenced a class action against Uber. Further, significant social (or external) costs are being incurred, particularly in the mental health of operators as a result of this policy change. Lastly, the Victoria taxi VPA has all but closed, because the taxi industry arguably did not see the extent of change required to respond to the advent of technology that has ushered in more demand responsive transport choices.

Market opportunity and response to the community

In an economic environment where governments are seeking ways to reduce operational expenditure on low patronage public transport services or expand the level of service for the same level of expenditure, the bus industry (as noted) is experiencing challenges from a number of fronts. Within the Victorian government, the policy informing the concept of DRT has evolved from the government providing low frequency, flexible public transport services delivered by small multi passenger vehicles to support social and accessibility obligations, to one that advocates the use of commercial ride sourcing apps such as Uber. With no formal policy guiding how DRT services should operate and meet the government's community service obligations, there is potential for uncoordinated, profit driven corporations to influence high level government policy in a manner which will particularly disadvantage low accessibility and socially isolated Victorians (see for example, Stanley & Stanley, 2017). Worse, the potential exists for 'registered'[1] operators to deliver demand responsive commercial services, including through the National Disability Insurance

[1] Registered bus operators are firms or individuals that operate buses for non-commercial or philanthropic reasons and do not have the same level of safety obligations as accredited operator.

Scheme (NDIS)[2], where access to transport would be delivered by unaccredited transport operators, sold on a per seat basis to families of the traveller, which they would partly pay for with funding received from a federal government agency. These operators do not have to adhere to rigorous safety regimes, which centre on the vehicle, the driver and the owner/operator, as bus operators do. This has ramifications for public safety.

Recognising that the DRT transport system needs efficiency, service and safety improvements, an opportunity exists for the Victorian VPA to demonstrate system improvements while at the same time providing its members with an opportunity to take advantage of commercial opportunities, building on their existing business practices, to provide integrated public and personal transport services to the community. In other words, become total local transport providers rather than only providing one transport mode.

Considering the concept of DRT as a broader personal transit enabler, a commercial opportunity exists to develop an integrated transport network and linked booking system that provides a whole of journey solution to meet the access needs of all Victorians. This evolves the thinking of DRT from a service that fills in the low patronage gaps to one that is an enabler for an integrated personal transit network across all modes of transport, including public transport, taxis, ride sourcing, community transport, school transport and health care transport (excluding high care patients). While the flexible operational and pricing structure of DRT offers a commercial opportunity for bus operators to provide tailored services to meet the access needs of the broader, it also supplies travel options for those at risk of social exclusion.

Such an approach draws on two theoretical models: Sense of Community Responsibility (SOCR) (Lowe and Stanley, 2016, Nowell and Boyd, 2014), and enabling the development of bridging social capital to those at risk of social exclusion in the community. The surveying results found that many bus operators were taking heed of their responsibility as a community leader, consistent with the definition of SOCR: a feeling of personal responsibility for the individual and collective wellbeing of a community not directly rooted in an expectation of personal gain. This offered those at risk of social exclusion an opportunity to connect with other parts of the community, such as local groups and work associations, to enable such networks to increase, shown to be important to reducing their social exclusion and improve their wellbeing (Stanley et al., 2010, Vella-Brodrick & Stanley, 2013).

The opportunities include:

- rural and regional areas where there are no services or very infrequent services;

[2] The NDIS is a new scheme being progressively rolled out across Australia since July 2016. It plans to provide all Australians under 65 who have a severe disability with reasonable and necessary supports.

- outer fringes of metropolitan areas where density is low and route bus services are absent or infrequent;
- customers with low mobility (those with a disability, seniors, families with prams) who find it difficult to use/access the route bus service;
- filling the gaps in outer/fringe metropolitan areas where bus routes are made more 'direct' to form strategic transport corridors;
- shuttle services between key activity / destination nodes;
- surge capacity along peak public transport corridors;
- new growth areas where current demographics do not currently support a full bus service;
- providing an integrated community transport services on behalf of councils and not-for-profits;
- social services (playgroup bus, library bus, mobile community centre) to areas with poor public transport accessibility (with additional subsidies from government);
- National Disability Insurance Scheme transport provider (NDIS);
- health and patient transport services; and
- encouraging drivers, more broadly, to shift to an alternative mode.

Variable pricing offers the opportunity for operators to tailor services to meet different market segments at different times of the day to increase asset utilisation and reduce operating costs. Integration of transport services should enable the operator to establish a pricing structure which incorporates existing state or federal government subsidies, to cover the cost of operations whilst delivering a cost effective and enhanced community transit service across a variety of transport sectors at a reduced rate. To provide an integrated transport network within the DRT environment, it will be necessary to adopt an IT platform that is able to integrate customers with multiple service providers across multiple modes, whilst offering easy to use routing, booking and payment systems. This technology package, or solution, is being developed, funded and delivered centrally by the Victorian VPA on behalf of its members. This solution will be a tool that bus operator members of the VPA will use to diversify their business and offer more than bus services to the communities in which they operate.

PILOTING THE APPROACH: CONNECTU

Growth of a concept

Concerns are being expressed internationally about the fragmentation of transport services including a lack of leadership and monitoring of services, with poor data on costs and activities and the best use of resources (Auditor General for Scotland and the Accounts Commission, 2011). In response to this, there is increasing interest in the UK, Europe and in Canada in the better coordination of local transport through a localised central hub. A report from Ontario, Canada, recommends coordination between conventional and specialised public transport agencies, including:

Long-term care agencies; social service agencies; hospitals, ambulance and patient transfer operators; school boards and school bus companies; intercity bus companies; taxi operators; and volunteer groups (Ontario Ministry of Transportation 2012, p.105).

The report talks about the:
sharing of resources, the opportunities associated with excess capacity and a centralised service for dispatch of services, …with harmonized hours, routes, transfer points and timing (Ontario Ministry of Transportation 2012, p.105).

The report recommends the central hub should develop a coordinated, agency-wide technology plan encompassing all aspects of transport, such as vehicle location identification, transfer information, maintenance tracking, electronic fares, passenger counters and security. There should also be centralised asset management targeted to meet service quality and passenger growth targets while maximising returns on investments. The central hub would provide information and detailed wayfinding on all transport routes and stops, as well as connections to other modes of transport, including bike paths and walking paths. This inclusive coordination is again echoed in the UK (pteg, 2014).

There have been a few partial steps taken to promote transport coordination in Australia. For example, the Western Australian Planning Commission (2012) has produced guidelines for integrating transport plans to achieve social inclusion, safety, air quality, to address greenhouse gas emissions, achieve effectiveness and robustness and cost efficiency.

In 2006, the Victorian government implemented the *Transport Connections Program*. This program aimed to improve access to services and facilities for the young, elderly and those with a disability living in regional Victoria, as well as improving coordination and sustainability of community transport, and the skills and independence of isolated people. The program ran for three years before being closed, having failed to address issues of transport coordination, costs and the sustainability of transport and the needs of local people not associated with a welfare agency (Victorian Auditor-General's Report 2011). Submissions by the bus industry to government over a number of years, in relation to improving local transport opportunities, have failed to establish a coordinated response. This is why industry is leading the change.

About ConnectU

Seeing the need for such a transport system, the VPA and a major regional bus operator established a trial of an integrated place-based local transport system in Warrnambool, Victoria. ConnectU commenced in August 2012, with a planning and operational side, aiming to provide transport services to those without an alternative means of travelling. A Regional Accessibility Committee representing all transport modes, government, welfare organisations and other interested parties, provides a

planning and coordinating role for the region, and oversees the operational side of ConnectU. ConnectU aims to:

- better integrate the range of existing regional mobility opportunities and leverage community development more broadly in the process, to improve social capital and sense of community, reduce social isolation and improve wellbeing, make better use of existing community mobility resources (e.g. vehicles, drivers, volunteers), capturing synergies across agencies and increasing specialisation and coordination in service planning and delivery, resulting in more efficient and effective client service
- provide more transport options and transport opportunities to a wider range of people, particularly those at risk of social exclusion from mobility origins.
- Improve the integration of land use planning and local accessibility to services and activities.

ConnectU presently organises volunteer drivers to provide door-to-door transport, with additional support as needed, such as assisting people to locate their hospital appointment. Other services available include familiarisation with other transport options, such as travelling on a bus with a person and providing transport information. A small fare is charged for each local trip, the manager's cost being met by the local bus operator. Scheduling, booking and fares are shortly to be run centrally, covering all developing regional systems in Victoria and South Australia.

The new information platform (app) being developed by the VPA will be trialled in Warrnambool to replace ConnectU's present manual booking system. If successful, members of the VPA will be able to offer more than just bus services to the travelling public (thereby diversifying their businesses), further embedding their businesses into the communities in which they have operated for generations, providing more transport offerings to those communities. The app will see fares quoted and paid by customers based on both time and distance variables: labour based on bus industry pay rates and distance variable costs, as published by a reputable automotive organisation, plus a margin. Another consequence of moving from a manual to a digital system will be the need for operators to employ and retrain drivers that were previously volunteers.

METHODOLOGY

This section details how the VPA is developing and delivering an integrated technological solution to enable VPA members to diversify their business and offer more transport services to residents and visitors in the communities in which they operate.

Initially, a Steering Committee was established, with a nominated Project Director to lead the project and the project's aspirations and objectives were established and documented. These were ratified by the Committee as follows:

> *Establish a business opportunity for BusVic members that will provide members with a cost effective opportunity to diversify and grow their business, adapt to a*

changing commercial and regulatory environment, strengthen the relationship between members and customers through an enhanced service offering.

The project's objectives were ratified by the Committee as sixfold:

1. *To establish an agreed commercial strategy to support industry led implementation and operation for DRT services in Victoria;*
2. *Identify a preferred DRT business platform for BusVic members to use;*
3. *Establish a commercial oriented social enterprise business model to develop and implement a DRT platform;*
4. *Identify and secure an IT partner to deliver integrated public and personal transport services to the customer;*
5. *Implement a trial DRT service in Victoria that includes regional and metropolitan localities;*
6. *Prepare a policy and strategy paper on DRT for the Victorian Government.*

The Committee defined the scope of Stage One of the project including: commercial modelling; development of a business strategy; identification of any state and federal funding possibilities; reviewing existing contractual obligations and identify necessary changes to existing contracts to inform next wave of metropolitan and regional contract negotiations, in order to allow the services to operate; assess the current market of providers, including potential technology providers; procure an Information Technology (IT) partner (preferably a local one); identify market opportunities including potential revenue streams, system capital and operating costs; review the regulations and legislation pursuant to the product and establish any potential changes required to regulations; identify the IT needs; scheduling/routing, payment systems; necessary hardware; partner opportunities; secure drivers; develop a stakeholder engagement strategy; develop parameters for a trial in a regional location to test the software for a broader rollout; develop commercial agreements and establish a governance model; and bring the project to trial (Stage Two). Excluded from the project's scope in the trial and development stage was negotiation with government for inclusion in the home state and other inter-state ticketing systems, although this is slated for Stage Three.

As at time of writing, most of the abovementioned tasks have been undertaken and the Committee has selected an IT partner who has developed the software and trialling of the software is now underway. A formal launch of the application will occur in 2020/21.

DISCUSSION AND CONCLUSION

This paper looks at aspects of the changing face of public transport in Australia and how growing passengers' preferences for DRT and the use of technology to access DRT is creating circumstances for significant disruption of the way bus services are planned, contracted, delivered and regulated. This technological advancement

enables passengers to have more control over when and how they travel and being less dependent upon legacy public transport modes timetables. The shifting passenger preferences present an opportunity for operators to proactively adapt to better meet passenger needs by diversifying their businesses and becoming total local transport providers, with the VPA and associated operators taking the opportunity to proactively tackle this opportunity for change in Victoria.

The innovative approach currently being rolled out, can be seen as a win/win situation. While extending the business opportunities for the bus industry in Victoria, it also responds to a considerable identified need, as there is a high risk that the current transport changes will further disadvantage those at risk of social exclusion, as well as a large unmet need for mobility. A reduction of traditional bus services will leave many people with reduced travel options, thus at risk of increasing their exclusion from mainstream society and reducing their wellbeing (Stanley, Stanley, & Hensher 2012). Recent work has also shown that the lack of transport options for youth and those on a low income is likely to be creating additional societal costs in the form of risk of mental health problems and reduced regional productivity as access to employment opportunities diminishes (Stanley et al., 2018). Plan Melbourne, the Victorian government's Plan for Melbourne to 2050 includes a policy of 20-minute neighbourhoods, where most people can reach most services within a 20-minute public transport ride or by active transport (Victorian Government 2017). The transport model outlined in this paper is ideal for such a neighbourhood approach and the coordinated transport model will be extended to major urban environments once regional models are established.

This paper reports on initiatives taken by the bus industry where the government has failed (to date) to adequately respond to both changing circumstances and unmet transport needs, particularly at the local level. It offers a model for transport that places the passenger in the centre, coordinating all local travel, whatever mode, utilising the spare capacity of capital assets that have been identified as present in most regions in Victoria. The model has been shown to have favourable benefit/costs, with this only improving as the administrative costs around matching demand and supply are managed centrally and thus achieving economies of scale. Maturity of the model will hopefully encourage the government to discontinue the disaggregated and wasteful funding of local transport that relies on assessment of a person's characteristics, such as age and disability, to decide if they can use a particular form of transport or not, given that this option is even available. Indeed, with the extensive transport disruptions evolving, it is possible that such a model as described in this paper could move to a more central position in urban areas in terms of transport, absorbing a certain level of current transport in private vehicles. This move is likely to also address some environmental concerns about use of cars, potentially reducing the level of greenhouse gas emissions and also with less vehicles, creating more opportunities for, and safer, active travel (Stanley et al., 2019).

A forecast decline in local social transit services in low demand settings, despite having valuable social inclusion benefits and associated societal benefits, and the rise of demand responsive personal transport offerings via smartphone applications, will

have implications for funding. As much as subsidies in the public transport realm will continue, they will probably only continue to fund established modes and scale of services – train, tram, local and regional bus rather than a wider range of services and the total subsidy will probably remain constant in real terms due to no increases in budgeted expenditure. We assert subsidising demand responsive services will not be sustainable in the long term without changing funding models.

Public transport service subsidies are currently justified because road users do not meet the societal costs attributable to their travel choice, including congestion, air pollution, GHG emissions etc. The erosion of fuel tax revenues as the market share of electric vehicles increases will force government to confront this issue of external costs in the medium term, with mass, distance, location based pricing probably the most efficient solution (Stanley et al., 2018). Road user charges will need to more closely reflect the societal costs attributable to road use and demand responsive public transport fares will also need to be more cost reflective in response.

This paper contributes to knowledge in two areas: how social capital linkage, or the reciprocity between a firm and their VPA can sustain a firm's operation and foster innovation by improving service levels for the firm's customers, and; how agency theory can be used to support change.

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AUTHORS CONTRIBUTION STATEMENT

The authors, Christopher Lowe, Janet Stanley and John Stanley, confirm they have contributed equally to this paper as follows: study conception and design; data collection; analysis and interpretation of results; draft manuscript preparation; reviewed results and approved the final version of the manuscript.