



# A business model perspective to understand intra-firm transitions: From traditional to flexible public transport services

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## ABSTRACT

Socio technological transition with respect to innovations is a broader concept and generally is theorized as such. It is, therefore, unclear how at the micro level, the business firms within an industry is restructuring internally to accommodate the technological innovations. Insights of this process management is uniquely valuable to understand how local technological niches and larger socio-technological transformations are being accommodated in industrial reforms. A business model perspective could provide insights of these innovation process management, in this context the mobility transition from fixed to flexible public transport (FPT) systems. Taking business models as the unit of analysis, in this paper we provide a framework to map the transition process. The framework is applied to a case study of a traditional public transport firm in the Netherlands. We map the evolution of the business models taking the local external developments into account. We define three phases for the business model mapping here – pre FPT, during FPT and the future of FPT. Findings suggest a complete shift in client orientation of public transport authorities with geared up efforts in digitalization and value creation during these three phases of FPT transition. Perhaps the most striking – yet not completely unexpected – outcome for transit companies is to gradually assume a role of facilitator as opposed to a provider of public transit, which potentially will have a thorough reform of the industry. This initial trace of internal transition, however incomplete, provides useful insights of the overall product and process management and the emerging business model configurations and contributes to the learning trajectory of FPT service organizations.

## 1. Introduction

Contemporary transportation sector is witnessing a paradigm shift from fixed to flexible public transport (FPT) provisions. Rising population in cities and changing demand profiles with less scheduled and more flexible day to travel needs have made the transport providers and local authorities to overhaul their service provisions. The possibilities opened up with the age of internet and big data showed the way that a personalized on-demand transport offers are not impossible to achieve. The challenges lie however to make this transition smooth and safe to offer seamless service across urban regions. Beyond adding flexibility, understanding transitions is important now more than ever, given the pandemic caused by the Covid 19 outbreak, the evolution process of the organizational parameters would help strategize to respond to changing transit scenarios as well as demands. This study sheds light on such processes providing a practical and replicable analytical framework.

Among the FPT offers, simplest and perhaps most common forms are demand responsive transits (DRT) and paratransit to complex integrated forms, such as, Mobility as a Service (MaaS). Implementing FPTs essentially means adding third party ‘intermediaries’, often referred to as platform provider, within the traditional public transport system who would offer real time service alternatives to the end user. The end user will buy their services through the platform operator and would get flexible travel advice catered to personal preferences, including any adjustments caused by disruptions to allow seamless service provision.

One of the major motivations to move towards FPT systems is to address the gaps in both service delivery and market share, e.g. in solving the low-demand fixed transit line issue or offering last mile solutions. However, it is yet unknown how the advent of a new distribution channel (i.e. the platform provider) would affect the traditional public transit supply chains? How would the stakes and revenues be rearranged? General conjecture is that the public transport providers

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would be at the losing end of the bargain and end users would have to pay up – to what extent are these true? Insights on these questions related to the transition of traditional public transport system to these new forms of shared services have been largely missing. While transition theories lack bearing to study such firm dynamics, a business model perspective can be used as a source of this change and inertia to understand the socio-technological transition from within the transit providers (Bidmon & Knab, 2018; Sarasini & Linder, 2018; van Waes, Farla, Frenken, de Jong, & Raven, 2018). In this paper we attend to the business model perspective to offer some insights to these questions.

Essentially a business model is “the set of which activities a firm performs, how it performs them, and when it performs them as it uses its resources to perform activities, given its industry, to create superior customer value (low-cost or differentiated products) and put itself in a position to appropriate the value” (Afuah, 2005). By using business models to understand firm transitions one can track the diffusion of innovation and the progress of entrepreneurial experimentations providing an opportunity to refine before commercialization (Sarasini & Linder, 2018). Therefore, it is particularly advantageous at an early (pilot) stage. Another specific advantage of using this approach is that it can inform governance and the complexities of transitioning from a traditional to multi stakeholder shared system. As a tool to understand transition management, business model can be seen as an activity system based around our types of activities – strategic (collaborative processes), tactical (long-term visions), operational (management) and reflexive (monitoring and evaluation) (Sarasini & Linder, 2018; Zott & Amit, 2010). In this paper, we chose the business Canvas model as a basis for two reasons; first it consists of detailed classifications and terminologies that is well known to the public transport community in the Netherlands where this study is conducted and globally as well which facilitates the generalization of the findings and replication in other contexts in future and second in the particular case study this model had been adopted and therefore it was convenient to track the evolution. Therefore, the Canvas model can be used to understand the components of business models and thereby track the process change.

Following this approach, in this paper, we study the (planned) evolution of business models of public transport operators joining FPT pilots in the Netherlands. We focus on the transitional developments around operational and strategic responses of the transit provider in offering FPT solutions. Within the scope of this paper, we point out the relevance of these components in providing the transport services to the end user. We identify the differences and similarities among traditional and new business models in public transport regime. In doing so we shed light on the co-existence and co-evolving aspects of the FPT service provisions of traditional public transport network operators. The novelty of the approach is providing a universally replicable example of tracking the evolution of internal transition of companies, because one the framework is quite simple, and two the use of Canvas business model makes the terminologies understandable not only to the research community but more importantly to business practices, offering a valuable learning trajectory.

## 2. Conceptualization

Cities are constantly expanding in both area and population. Well known is the projection that more than 60% of global inhabitants will be living in the urban areas (UN-HABITAT, 2012). In many instances, boundaries of cities and thereby the service provisions are blurry and run beyond the cities to reach the suburban peripheries. This is not a new challenge for public transport providers. Now with increasing flexibilities in work and home arrangements facilitated by the age of internet and information and communication technologies, the demands are also shifting from being fixed peak hour commute to all round service requirements. Local and regional authorities therefore are more watchful in reading the demand profiles and service delivery. Contemporary service provisions are in an era of transition, where trying out

innovative flexible bargains and learning is paramount to set out the development trajectories.

In these transition phases the challenges lie in the organization and structure of FPT. Prominent among which are digitalization, privatization and alliance formation. Digitalization has enabled manifold opportunities in the transport sector, starting from one stop shop payment and control to real time information update, delay management and sequence alignment and so forth. It is however not free from its caveats posed by data security and privacy as well as making transport less accessible to elderly and socially vulnerable groups creating the so called digital divide (Graham, 2002; Norris, 2001). The greatest issue was noted to be ‘inevitable uncertainty about the direction of technological development and its impacts’ (Pangbourne, Stead, Mladenović, & Milakis, 2018, pp. 33–48).

Digitalization enables platform technologies which have revolutionized the service industry rapidly changing business models and network architectures all around the various industrial sectors (Parker, Van Alstyne, & Choudary, 2016; Reponen, 2017). The core principle behind the success of platform technologies is that it provides an opportunity for unique value creation by means of enabling a business ecosystem (Gawer & Cusumano, 2014). As opposed to traditional business models it generates scope for a diverse range of service counterparts (complementary and supplementary) to take part in the ecosystem and benefit from it (Tiwana, Konsynski, & Bush, 2010; Van Alstyne, Parker, & Choudary, 2016). This in essence leads to privatization of services which are a major breakthrough in public transport industry. Essentially it means that public transport authorities have now to form alliances with platform providers which brings its own challenges to the fold – from conflicting interests in ownership of data, payments, delay management and network share (Meurs, Sharmeen, Marchau, & van der Heijden, forthcoming). Alternatively, they can incorporate the platform technology development and data management elements within their own businesses.

Apart from the demand driven push the supply side is likewise spawning gaps in service networks and market share, caused by a combination of austerity measures from the central governments to local counterparts (Veeneman & van de Velde, 2014) and lack of affordable and quality transit alternatives (Cohen & Kietzmann, 2014). These gaps together with the boom in platform technologies have paved the way for various ridesharing services forming a shared market place, e.g. car sharing, bike sharing services etc. (Firmkorn & Müller, 2011) with a variety of business model structures (for an overview see Cohen & Kietzmann, 2014). Traditional public transit providers are now to compete with these shared mobility business case for market share and profit generation, also caused by the austerity measures. The internal restructuring is crucial for them to revolutionize their business models for innovative value creation.

All of the notions described above are internal to the business firms. Contemporary transition theories to understand socio-technological transitions fall short in capturing these internal development processes. Primarily because the perspective of the firm is difficult to address through a complex socio-technical transition approach (Farla, Markard, Raven, & Coenen, 2012). Transition theories, such as, multi level perspective (Geels, 2002) and strategic niche management (Kemp, Schot, & Hoogma, 1998) generally explain the diffusion of new artefactual technologies. The broader aspects of an industry as a whole can be analyzed as to how they interact and align interests with other stakeholders and what are the barriers and drivers; see Sharmeen and Meurs (2019) for an example. Likewise, the process of innovation and product management is difficult to assess as well.

Business models in this context has been increasingly recognized as a way to understand these firm dynamics towards socio-technological transitions (Bocken, Short, Rana, & Evans, 2014). It is an emerging ‘unit of analysis’ that provides a ‘system-level, holistic approach’ (Zott, Amit, & Massa, 2011) to understand the internal transitions to a) keep up with technological innovations to remain relevant, b) to take

advantage of the ‘window of opportunity’ created by socio-political landscape shifts (Geels & Schot, 2007), c) to reinvent the firm process management for value creation or d) to avert risks posed by external pressures and industrial uncertainties. Understanding the role of firms the reasoning and process management provides unique insight to the industrial adaptation and response to emerging technological innovation. Mapping the evolution of the business models provides the opportunity to understand the transitions, the challenges and strategies thereof, towards FPT within public transport companies (Fig. 1, left side). The external developments as discussed above are marked as creating pressure and opportunities from outside to make the transition happen (Fig. 1, right side).

Here, business model is conceptualized as an activity system, defined as “the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities” (Zott & Amit, 2010), build around the four activities - strategic (collaborative processes), tactical (long-term visions), operational (management) and reflexive (monitoring and evaluation) (Sarasini & Linder, 2018). The guiding queries for each of them are presented as follows –

Activities	Guiding questions
Strategic (collaborative processes)	Who are the allies? Who are the competitions? What are the stands on forming alliances? What are the criteria?
Operational (management)	What are the key resources, key processes, profit formulae, value creation, cost and revenue profile, user profile/market share, labor market integration, technological capacity, data management plan?
Tactical (long-term visions)	What are the visions of the company? How does it attend to corporate social responsibilities, equity and accessibility integration? What are the profit aims and competitive advantage points? How does it see itself to accommodate future of mobility transitions (Revenue driver, Cost driver, Risk driver or Market driver?)
Reflexive (monitoring & evaluation)	What are the monitoring frequency and mechanism, willingness to share users and to integrate multi-modalities, growth prospects and knowledge sharing strategy?

Linking to the theory of multi-level perspective of socio-technological transitions (Geels, 2002, 2012), three roles of business models and their respective impacts on transition dynamics have been identified by scholars (Bidmon & Knab, 2018), which we take as starting points to guide the transition pathways for public transport companies -

- (1) As part of the socio-technical regime, existing business models hamper transitions by reinforcing the current system’s stability,
- (2) as intermediates between the technological niche and the socio-technical regime, business models drive transitions by facilitating the stabilization process of technological innovation and its breakthrough from niche to regime level, and
- (3) as non-technological niche innovation, novel business models drive transitions by building up a substantial part of a new regime without relying on technological innovation.

### 3. Scope and methodology

Following the concept this study focusses on the first two aspects, i.e. strategic and operational, of the transition process. These two aspects are the first to be evolved to accommodate changing needs and would feed back to the applicability and reliability of new transit options. The reflexive part is ongoing and has been reported in our earlier studies from both the perspective of the users (demand side) and the governance of FPTs (Ali, 2017; Alonso-González, Liu, Cats, van Oort, & Hoo-gendoorn, 2018; Sharmeen & Meurs, 2019). The tactical aspects, although come across somewhat indirectly, needs more thought and knowledge of the FPT systems to be developed and communicated, as came across from the interviews conducted so far.

The definition of business models and its key components are manifold. For example, the business models for sustainable innovation scholars define four building blocks – value proposition, supply chain, customer interface and financial model (Boons & Lüdeke-Freund, 2013). A different set of four components were defined by others – value proposition, profit formulae, key resources and key process (Casade-sus-Masanell & Ricart, 2011; Johnson, Christensen, & Kagermann, 2008). In this research the components of the operational aspect is drawn from the structure of business models typically described in Canvas, as it provides a recognizable set of terminologies to organize and structure the operational and strategic plans for businesses (Osterwalder, 2004; Osterwalder & Pigneur, 2010). It also encompasses all of the components mentioned in other literature. The components of are defined based on literature review (Perboli, Ferrero, Musso, & Vesco, 2018), as follows -

- Key partnerships: these are the networks of partners and suppliers necessary to make the business model operate correctly. Through the creation of partnerships, companies can optimize the allocation of resources and achieve economies of scale, reduce risk and uncertainty in the competitive environment, acquire particular resources and activities, compete in broader markets, promote their brands, and reach new clients.
- Key activities: these are the most important actions that a company must take on a regular basis in order to offer a value proposition, reach markets, maintain customer relationships, and earn revenue.
- Value proposition: this is the combination of products and services offered by the company to satisfy the needs of its customer segments. Basically, it determines why customers choose one operator according to the value the company creates for clients with the service and product mix delivered.
- Customer relationships: these are the types of relationships a company establishes with specific customer segments, enabling client acquisition and retention as well as business development.
- Customer segments: these are defined as the different segments (of people and/or organizations) that a company aims to reach and serve.
- Key resources: these are the assets needed to guarantee the company operations, customer relationships, creation and offering of a value proposition, and revenue.
- Channels: these are how a company reaches and communicates with its customer segments to deliver a value proposition. The communication, distribution, and sales channels comprise the company interface, with its clients playing a very important role in the customer experience.
- Cost structure: the main costs incurred to operate a business model are detailed, including the cost for the acquisition of key resources, partnerships, and activities.
- Revenue streams: these are the sources of the revenue that the company generates from the commercialization of its products and services to each of its customer segments.

In this case study approach, information were collected from various sources – primary and secondary. Secondary information was gathered from document analyses including annual reports of Connexion, evaluation reports conducted by third-party research collaborations, and reports of Breng Knowledge center ([www.brengkenniscentrum.nl](http://www.brengkenniscentrum.nl)) and primary information was collected through interviews of the officials of local public transport operator, MaaS provider, regional government, rail providers and the parent company Transdev. An anonymous list of their organization and role is provided below. The interviews were conducted in two ways - one about the generic aspects of the transition towards FPT and the second part focused on the transition of the strategic and operational aspects based on the above-mentioned component mapping and analysis. In this paper we maintain focus on the internal evolution, therefore the findings from the second set of interviews. Also,

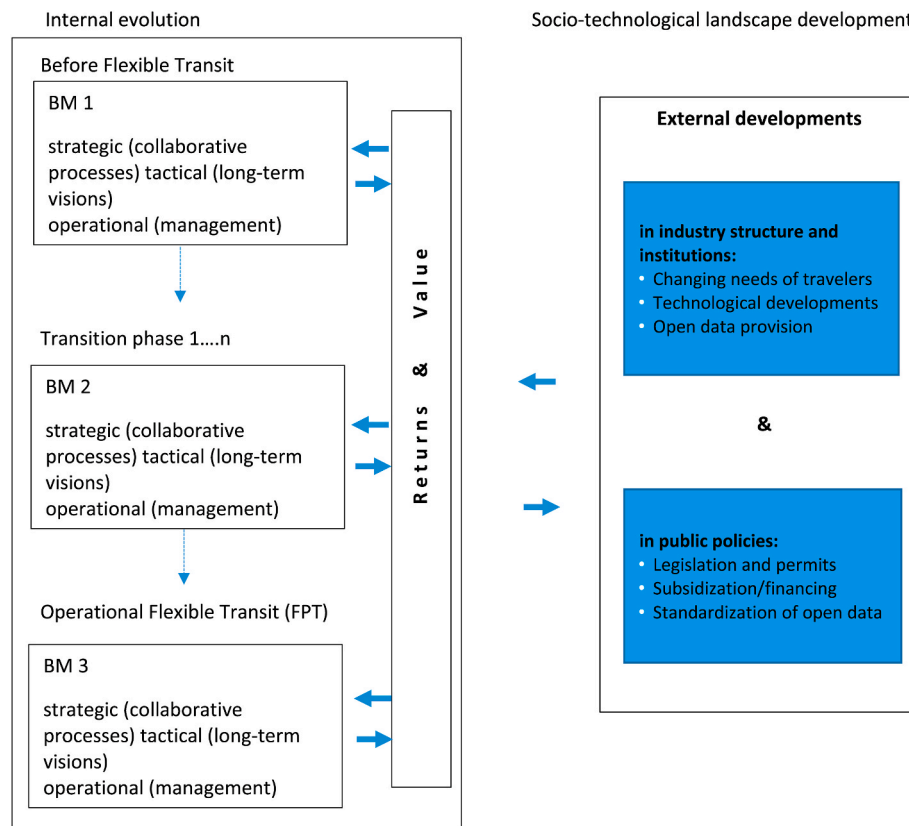


Fig. 1. Conceptual framework to understand the evolution of business models within public transport companies (adapted from van Waes et al., 2018).

because findings of the first set of interviews are rather inconclusive at this stage. However, they serve as a point of validation and triangulation referring to the parent and collaborating (rail, consumer board, etc.) organizations regarding the transition of the land transport authority Connexxion, which is the studied case here. Moreover, these interviews crosscheck the views of the allies, competitors and consumers in this transition to FPT covering the strategic (collaborative) activities. Further to that periodic meetings of the Breng Kenniscentrum (Knowledge Center), an inter-organization research and evaluation board, were attended to understand the thought process of the industry transition. As mentioned earlier, the authorities are yet to stabilize their tactical plan and long-term visions. The effects of external developments (Figure 1) are not discussed here elaborately either.

Interviewee #	Organization	Role/capacity
1	Connexxion (road transport)	Head of Business strategy (FPT)
2	Connexxion (road transport)	Business analyst (FPT)
3	Transdev (parent company)	Consumer strategy management (MaaS, FPT)
4	NS (National Railway)	Head of strategy
5	NS (National Railway)	Researcher (operation and management)
6	Arriva (regional railway)	Head of development
7	ROCOV (consumer association)	Head of strategy

#### 4. A case study- Connexxion in Nijmegen

We present a case study of the transition from fixed to Flexible Public Transit (FPT). The case study area is a medium sized Dutch town near German border – Nijmegen, which together with its twin city Arnhem is

home to around 750,000 people (CBS, 2019). The population is a mix of different sector of socio-demographic representation with a heavy concentration of student population due to the presence of three large universities (general, medical and applied universities) in the region (Heyendaal area, for a detailed account see Meurs et al., 2019) and a substantial portion of migrated population (Aparna, 2020). Nijmegen has seen a major shift towards sustainable transition in mobility sector in the past few years in cycling and in public transport alike. One of the first bicycle highways was constructed here as well as the first publicly funded FPT pilots. Therefore, according to the role defined in section two, Dutch public transport providers is more inclined to act as an intermediary between technological niche and socio-technical regime, driving transitions by facilitating the stabilization process of technological innovation and its breakthrough from niche to regime level (also exemplified in Sharmeen & Meurs, 2019).

With this as a starting point we mark the transition of the local land passenger transport company Connexxion with its subsidiary Breng in the region. This is the first descriptive analysis of this ongoing transition. The timeline of concern here is between 2014 and 2019. We distinguish three phases in the transition process-pre FPT (Table 1) during pilot FPT (Table 2) and future of FPT (Table 3).

The land transport sector, particularly Connexxion in Nijmegen, can be divided in three categories in market:

##### 1Top market

City regions where density and demand are high and fixed public transport is still important in to remain frequent. Particularly the University campus shuttle suffer from overcrowding during peak hours (ref). As a result, the university administrations have sat together to shift the start time of classes to relax the pressure and to optimize service provisions of fixed public transport (ref).

##### 2Mid market

In suburban areas it is not profitable anymore to offer big busses. Several steps were tried, for example, providing smaller busses with less



seats, which deemed marginally profitable to barely breaking even. Initiatives such as, the neighbourhood bus services where volunteers would drive and conduct operations were not lucrative from maintaining regularity in service provision either.

### 3 Peri market

Defined as the perimeter of urban regions, usually the rural areas where demand is extremely low, on an average two people per ride, were facing increasing pressure from austerity measures as well. Public transport was partially met by taxi services which are expensive even when subsidized.

Traditionally regional government calls upon potential transport provider to place their bids for public transport subsidies. Competitive tendering is operative in the Netherlands from 2001 and a variety of forms of revenue generation and concession formats have been applied since (Veeneman & van de Velde, 2014). They are therefore seen as the clients by local transport providers whose terms and conditions they must adhere to. Usually the primary bid focuses on top of market, other two categories are tendered in somewhat differently given the low demand and accessibility. Internally what it means for the transport providers is that they have to make distinguished products for the regional governments.

## 5. Discussion on findings

We discuss the findings of the business model frameworks in the three phases here. For each phase we mark the notable differences with background, reasoning and aftermath as noted on the interviews and document analyses.

*Phase one: before the introduction of FPT; Timeline: Until December 2016*

Before the introduction of FPT in December 2016, Connexxion was (and still is) an organization which provided scheduled public transport in many big urban regions of the Netherlands, in many cases subsidized and regulated by the regional government. Therefore, a very important partner for Connexxion were the governmental clients (regions and

provinces). It was especially important for Connexxion to make sure that the allocated budget was fully utilized following the terms and conditions, and to provide as many scheduled public transport hours as possible by making sure that there were “a maximum number of buses on the road, even if these buses are not full”. As stated in the interviews, the fixed network is reasonably optimized, yearly, based on the demand, of course essentially not to the extent of fully demand driven. Profitability and capacity optimization were low in the agenda as the concessions were made available by the regional governments to maintain accessibility and equity. Therefore, issues like how profitable it was to use buses in certain areas, and if the bus was filled sufficiently was less of a concern. Connexxion just wanted to make sure to be “present in their concessions”, delivering convenience and accessibility to their end users.

As a result, Connexxion was less inclined to be an end-user-oriented organization, the governmental clients were more important to gratify. Delivering exceptional customer service, and identifying all the needs and preferences of end-user was therefore not of the utmost importance (Table 1).

With regards to marketing, although digital marketing was upcoming, a lot of the marketing was still done via analogue popular media channels. It was even remembered that “for Arnhem and Nijmegen, around 300,000 leaflets with the new timetable, proposition and product were distributed once per year in December”. Another important channel for distribution were the ticket selling points, which were available in different ticket counters and shops. Accessibility of these ticket selling points was important: “the client said you should have a ticket selling point every 3–5 km, so we were approaching every shop to sell the tickets”. A more general overview of the developments in ticketing system at the national and regional levels is reported in Veeneman and van de Velde (2014).

Important differences with the other two phases, are the lesser amount of a focus on profitability, digitalization and client orientation. Some key activities and partners remained the same through the years, such as the governmental clients and end-users as important partners,

**Table 1**  
Summary of business model features – pre FPT

Key partners	Key activities	Value proposition	Customer relationships	Customer segments
<ul style="list-style-type: none"> <li>-Touring car companies who strengthen Connexxion</li> <li>-Clients: provinces, regions</li> <li>-End-customers</li> </ul>	<ul style="list-style-type: none"> <li>-Marketing</li> <li>-Customer care</li> <li>-Operational processes</li> <li>-Active on business market</li> </ul> <p><b>Key resources</b></p> <ul style="list-style-type: none"> <li>-Vehicles</li> <li>-Personnel</li> <li>-Infrastructure, e.g. parking spots</li> <li>-Little digital infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>-Providing public transport by maximizing the scheduled public transport hours</li> <li>-Convenience, accessibility</li> <li>-Please governmental clients, use all their subsidies: demand-based operations</li> <li>-Profitability of concessions less important</li> <li>-Commercial value and value for traveller less important</li> </ul>	<ul style="list-style-type: none"> <li>-Few automated services</li> <li>-Few self-service, customer has to have contact with ticket selling point/customer care</li> </ul> <p><b>Channels</b></p> <ul style="list-style-type: none"> <li>-Once per year leaflet with new time table</li> <li>-“Analogue marketing, mass media”, upcoming digital marketing</li> <li>-Distribution: ticket counters and shops, accessibility of ticket selling points important</li> </ul>	<ul style="list-style-type: none"> <li>-Tourists</li> <li>-Students/scholars</li> <li>-Commuters</li> <li>-Seniors</li> <li>-Free time travellers</li> </ul>
<b>Cost structure</b>				
<ul style="list-style-type: none"> <li>-Personnel</li> <li>-Vehicles</li> <li>-Marketing (mostly analogue and mass media)</li> <li>-Digital infrastructure</li> </ul>	<p><b>Revenue streams</b></p> <ul style="list-style-type: none"> <li>-Subsidies clients, provinces</li> <li>-Fixed incomes, e.g. subscriptions</li> <li>-Variable incomes, e.g. single tickets</li> <li>-Ratio between subsidies/own income is 75%/25%</li> </ul>			

and the operational processes and marketing activities. Moreover, personnel and fleet management remained the biggest sources of costs for the company.

*Phase two: During FPT pilot; Timeline December 2016–July 2019*

In December 2016, the first pilot FPT was introduced in the form of a DRT called Breng flex. It offered mobility on demand that can be arranged through a mobile (later extended to computer) app from bus stop to bus stop for a fixed rate of €3.50 per trip. This was in response to the market demand and the regional government's agenda setting towards innovation and smart mobility (Sharmeen & Meurs, 2019). Breng flex was accepted well by the consumers in general even by the rural inhabitants where it replaced the scheduled public transport (Haanstra, van der Pool, & van Weert, 2017).

The service landscape and tasks of Connexxion as a public transport provider were becoming very different. To begin with, Connexxion did not see itself anymore as a provider of public transport, but “as a provider of mobility, especially for the peri market, such as the rural areas”. It had to work together with more partners, which were also present in other types of transport, such as shared bikes and cars: “we worked with several parties we would have never collaborated with before in the past”.

Not only the amount and type of partners changed; since the regional governments “had a lot less budget available for mobility subsidies”, profitability of the concessions became much more important, so Connexxion “had to be creative with which kind of mobility to provide and where”. One of these creative solutions was the development of Breng flex, which fits within the peri market where regular buses are not profitable. This complements the exploration analysis that MaaS will be more advantageous to serve the rural regions (Geurs et al., 2018). The company also aims for a more sustainable approach, for example, by being the first to provide CO<sub>2</sub> neutral buses.

Because of the external developments, Connexxion also had to become a more demand-based company for the end-users. “We had to look more into: where is a lot of demand, and which offering suits this demand, who is target group, etc.” The company began to focus more on customer care, since they “of course saw that other mobility providers did this much better” (Table 2).

Digitalization also had an impact on this, since it became possible to make more detailed customer segments, and identify to which segments one end-customer belongs. For example, “a commuter is a different customer in the weekend, and we had to think about that”. Digital marketing channels, such as an app and website, were becoming more important than the old marketing and distribution channels. The marketing also became more tailor-made: instead of the general leaflets, “customers have an app in which they get push messages about their preferred transport lines”. The digitalization also brings other activities and costs, because it is important to maintain and extend the whole digital infrastructure.

Important developments in this phase were digitalization, the focus on profitability, and new collaborations with other parties. Another important difference is the shift from public transport provider to mobility provider.

*Phase three: future of FPT; Timeline: July 2019 – Future*

With regards to the future transitions, the interviewees see to possibilities which have vastly different consequences for the business model. There can be two scenarios of transition here. In the first scenario, Connexxion becomes a sort of director who is the “backbone who ensures integration and connection with other systems”. In this scenario, the company will be responsible for marketing, technology, ticketing, customer care, sales, possibly also of maintenance, and services - “becoming like a company who manages the overarching business”. In the second scenario, Connexxion becomes remains largely an executor who manages the operational processes of public transport. They become part of a MaaS consortium with less marketing and management responsibilities. Depending on the scenario which unfolds, all costs, incomes, activities, resources, and partners will change.

Something which stays certain in this is that the focus and inclination will change towards satisfying the demand of the end-users, which is a distinct shift from motivation than before (phase one - pre FPT). Keeping up in line with the core of FPT it will be more user-oriented. However, the company wants to groups different segments of customer than offering service provisions on a more individual level, where the boundaries between customer segments fade.

Digitalization will play an even more important role in the future, for

**Table 2**  
Summary of business model features – during pilot FPT

Key partners	Key activities	Value proposition	Customer relationships	Customer segments
<ul style="list-style-type: none"> <li>-IT collaborations: e.g. “Amsterdam MaaS pilot (Zuidas) inscribe with Radius and Over Morgen”.</li> <li>-Other ways of dealing with partners, more open to collaborate with shared bicycles and other mobility companies</li> <li>-Touring car companies</li> <li>-Clients: provinces, regions</li> <li>-End-customers</li> </ul>	<ul style="list-style-type: none"> <li>-More customer care</li> <li>-Different (IT) marketing</li> <li>- Operational processes</li> <li>-No longer active on business market</li> <li>-Maintain pay systems and IT processes to manage data</li> </ul> <p><b>Key resources</b></p> <ul style="list-style-type: none"> <li>-Sustainable vehicles</li> <li>-Personnel</li> <li>-Infrastructure, e.g. parking spots</li> <li>-Invest more in digital infrastructure to acquire, maintain and manage data</li> </ul>	<ul style="list-style-type: none"> <li>-Providing mobility in general</li> <li>- Scheduled public transport</li> <li>hours not as important anymore, profitability, efficiency more important</li> <li>-Different product-market combination</li> <li>-Sustainability</li> <li>-More demand-based for end-customer</li> </ul>	<ul style="list-style-type: none"> <li>-Digitalization → more automated services, through website/app</li> <li>-More self-service</li> <li>-Smart marketing (e.g. month before subscription ends reminder)</li> </ul> <p><b>Channels</b></p> <ul style="list-style-type: none"> <li>-App</li> <li>-Website</li> <li>-Barcodes</li> <li>-Digital channels where customers are followed better, tailor-made marketing</li> <li>-Distribution: “lots of ticketing selling points closed”</li> </ul>	<ul style="list-style-type: none"> <li>-Tourists</li> <li>-Students/scholars</li> <li>-Commuters</li> <li>-Seniors</li> <li>-Free time travellers</li> <li>-Look more at developments in database → less clear boundaries between segments</li> </ul>
<p><b>Cost structure</b></p> <ul style="list-style-type: none"> <li>-Personnel</li> <li>-Vehicles</li> <li>-Marketing</li> <li>-More costs of digital infrastructure</li> </ul>		<p><b>Revenue streams</b></p> <ul style="list-style-type: none"> <li>-Subsidies clients and provinces</li> <li>-Fixed incomes, e.g. subscriptions</li> <li>-More variable incomes, e.g. single tickets</li> <li>-Ratio between subsidies/own income is 50%/50%</li> </ul>		

**Table 3**

Summary of business model features – future of FPT

Key partners	Key activities	Value proposition	Customer relationships	Customer segments
<ul style="list-style-type: none"> <li>-Scenario 1 – all mobility companies who are integrated and connected by Connexxion</li> <li>-Scenario 2 – director of consortium, client,</li> <li>-touring car companies</li> <li>-End-customers</li> </ul>	<ul style="list-style-type: none"> <li>-Scenario 1 – marketing, technology, ticketing, customer care, sales, maybe maintenance, services.</li> <li>-Scenario 2 – no customer care, no sales, no marketing.</li> <li>Operational processes: maintenance, services (“although even this could change”)</li> </ul> <p><b>Key resources</b></p> <ul style="list-style-type: none"> <li>-(Sustainable) vehicles</li> <li>-Personnel</li> <li>-Infrastructure, e.g. parking spots</li> <li>-Invest more in digital infrastructure</li> </ul>	<p>Two possible options:</p> <ul style="list-style-type: none"> <li>-Scenario 1 – Becoming director: “backbone who ensures integration and connection with other systems”</li> <li>-Scenario 2 – Becoming executor: “part of consortium who only does public transport”</li> <li>-BrenG Flex probably replaced with regional taxi</li> <li>-Profitability and mobility even more central</li> <li>-Sustainability</li> </ul> <p><b>Revenue streams</b></p> <ul style="list-style-type: none"> <li>-Subsidies clients and provinces</li> <li>-Variable incomes, e.g. single tickets (“account-based travelling – token with debit/credit card system, pay after ride”)</li> <li>-Ratio between subsidies/own income will become more like 35%/65%, since provinces and city regions have less money for mobility</li> <li>-“Scenario 1 potentially more marginal in revenue than in scenario 2”</li> </ul>	<ul style="list-style-type: none"> <li>-More automated services</li> <li>-More self-service</li> <li>-Smart marketing (e.g. month before subscription ends reminder)</li> </ul> <p><b>Channels</b></p> <ul style="list-style-type: none"> <li>-More digitalization</li> <li>-Less tickets selling points</li> </ul>	<ul style="list-style-type: none"> <li>-No clear segments, individual can fit into multiple segments</li> <li>-Individual customer level</li> </ul>
<p><b>Cost structure</b></p> <ul style="list-style-type: none"> <li>-Personnel</li> <li>-Vehicles</li> <li>-(Digital) marketing</li> <li>-More costs of digital infrastructure</li> </ul>				

identifying and reaching these end-customers. The way in which customers pay will perhaps also change. The fixed incomes from subscriptions will possibly be replaced with “account-based travelling, where we have a token with a debit/credit card system, and the customer pays after his/her ride”.

Since profitability stays important, Connexxion has to search for more innovative solutions for different areas in which they provide mobility. Although the experiment was successful, the future of BrenG Flex is uncertain. The regional government could suspend BrenG flex, and replace it with regional taxi as it requires high subsidies from public funds to remain operational (Berends, 2019), although that is seen as ‘a step back in time’ by the transport authorities.

From the interviews, it appeared that Connexxion is likely to receive less subsidies in the future, when comparing it with their own incomes as a company. “The ratio between subsidies from governmental clients and making our own money has shifted more towards making our own money, and this ratio will become more skewed in the future”.

An important development in the future will be which role Connexxion as a company is going to get: a directing or an executing role. This will influence the overall structure of the business model. Other significant developments are increasing digitalization, the way in which the peri market will be served, and the new payment system which would be account-based. The amount of subsidies from governmental clients will be of huge importance for the incomes of the company.

In a recent development it was announced that the FPT pilot will be ending by the end of 2019. According to one of the business development manager “The main reason is the business case was negative .... within the context of our business and the system (public concession, constraints etc.) it is very hard to be very demand driven and viable at

the same time.” The public authorities (provincial and central governments) outline in their legal mandate to make public transport accessible to all. The societal goals are hard to maintain while being a viable self-sustaining service (Table 3).

## 6. Conclusion

This study contributes to understanding transition and governance of FPT from the perspective of a transport provider. We present a conceptual framework and corresponding methodological outline to understand the transition. A case-study is presented to exemplify the concept using a Dutch FPT pilot that is built in close collaboration with local public transport stakeholders, regional governments and academic research clusters. The case study is situated in a mid-sized Dutch city called Nijmegen, situated near the German border.

This research follows and reports the business model evolution of the local transport provider Connexxion to understand the key points of transition from fixed to FPT. For the ease of generalizing and communicating the findings to the business practices and to maintain the scope to extend the research further the business model Canvas was taken as a basis being the most popular framework to map the key transformations. The novelty of the approach provides a universally replicable exemplar of tracking the evolution of internal transition of companies, because first, the framework is quite simple, and second, the use of Canvas business model makes the terminologies understandable not only to the research community but more importantly to business practices, offering a valuable learning trajectory. Three phases in the transition process have been distinguished – pre FPT, during and looking ahead in future spanned between a period of five years. The shifts in key partners,

resource allocation and revenue streams are marked.

The most significant shift is the client orientation of the public transport firms – from regional government to end users. Fitting to the central concept of demand-based services, it is truly user-oriented. Second, the ratio between income from profits and from subsidies is experiencing major upheaval from 25%/75% to a predicted 65%/35% between the three phases we examined, intensifying the need for value creation and eventually revenue generation. Third, the regional governance arrangements are also transitioning from being a provider to a facilitator with new central legal obligations and likewise local regulatory mandates. This has a profound impact on the overall governance of smart mobility management in the Netherlands, among others. This initial trace of internal transition, however incomplete and ongoing, provides useful insights of the overall product and process management and emerging business model configurations and contributes to the learning trajectory of FPT service organizations.

Moreover, progress in digitalization of service delivery, real time update and information dissemination is also notable during these transitional phases. The marketing and distribution channels are repositioned gradually from ticket sale points to online channels and mobile applications. The improvement in efficiency is apparent both for the users and the providers. On the flipside however the equity, inclusion and accessibility issues are known to be compromised particularly with respect to the struggle of some vulnerable groups of users in keeping up with the 'smart' information and technology based mobility features (Neerven, 2018; Perrons, 2004). The effect of such decline of human touch is yet to be seen and perhaps is too early to be assessed at these initial stages of mobility transitions. Services like Breng flex have the potential to cater to needs of the users increasing societal value of public transport services, however, achieving societal goals whilst being a self-sustaining business case remains a challenge to date ((Jittrapirom, van Neervan, Martens, & Meurs, 2019)).

Also remains for future research are the effects of external factors and the transition to more integrated multi-modal service provisions e.g. MaaS. This is noted in both of the future directions the transport provider would take. It would also be insightful to investigate the and compare each case for each of the scenarios mentioned in phase three, i. e. transport operators remaining provider of certain passenger transport provisions as part of MaaS or the shift to a more managerial role to facilitate MaaS. Further to that a comparison to international cases to test generalizability and comparability of the findings will be followed through in the subsequent research plans.

## CRedit authorship contribution statement

**Fariya Sharmeen:** Conceptualization, Data curation, Formal analysis, Writing - original draft, Writing - review & editing, Project administration. **Denise Drost:** Data curation, Writing - original draft, Formal analysis, Writing - original draft. **Henk Meurs:** Conceptualization, Data curation, Funding acquisition, Supervision, Project administration.

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