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Promoting integrated passenger transport solutions using a business approach

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ABSTRACT

In the 2011 White Paper on Transport, the European Commission calls for the provision of seamless passenger transport services across the European Union. The vision entails the integration of two transport systems that are quite independent of each other: the urban and interurban systems.

Expectations of extensive integration amongst transport operators may, however, be unrealistic, since the risks (e.g.: the sharing of sensitive information) often offset the eventual benefits (e.g.: increased ridership). Indeed, the main beneficiaries of integration include the passengers (e.g.: through reduced travel times) and the society (e.g.: through a reduction in energy consumption), which is, in itself, justification enough for public intervention. However, recent economic turmoil has placed significant pressure on national budgets and exhausted most of the capacity for deploying financial incentives, making it necessary to come up with alternatives.

In this paper we argue that transport operators could willingly integrate, as long as a business rationale is provided. Accordingly, achieving the European Commission's ambition depends on the ability to identify successful business models for integrated transport services. A business model describes a company's way of doing business and generating profits, by specifying its positioning in the value chain.

The results of the investigation show the existence of a business rationale in the integration of transport services that could be exploited through implementation of an adequate business model. Based on the results of eleven case studies, we designed two business model prototypes. Each prototype is meant to overcome specific contextual barriers to integration: located at the transport links and at the nodes.

1. Introduction

It has long been recognised at the European Union (EU) level that improvements in the provision of transport services require the adequate integration of the transport system. Over the last few decades, a significant amount of resources has been deployed with the aim of integrating the rather fragmented and modal focussed EU transport network. Improvements have been achieved, but the degree of integration is still limited. Also, the growth in demand has offset to some extent the benefits that have been achieved and parts of the network remain heavily congested, particularly in central Europe (European Commission, 2009, 2006, 2001).

The European Commission (EC) has recently pushed for further integration in its 2011 White Paper on Transport. In its vision, the EC aims to achieve the seamless integration of the EU-wide transport network, so that a traveller may travel seamlessly between any two locations (European Commission, 2011a, 2011b). This objective necessarily requires the integration of two independent transport systems – the urban and interurban systems. They present very distinctive features at multiple levels, including, amongst others: geographic coverage, network, provision of service (e.g.: frequencies or tariffs) and regulatory framework. Transport stations are the few points of contact in that they enable passenger transfer between systems. The integration of transport service across the two systems can be inherently more complex than modal integration within each one.

The benefits of integrated transport are well documented (Geerlings and Stead, 2003; Givoni and Banister, 2010; Potter and Skinner, 2000). Passengers benefit from an overall improved quality of service, including: a reduction in travel and waiting

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times, better service coverage and a reduction in tariffs. Transport operators can expect an increase in ridership thanks to the network effects or an eventual cost reduction owing to elimination of network redundancies or better utilisation of resources. Societal benefits include reductions in energy consumption, pollutant emissions and congestion levels.

However, resistance factors of various natures limit the amount of benefits that agents can expect to gain. Preston (2012) classifies them in four categories: concept, related with misunderstandings about the attainable or expectable degree of integration (Hull, 2005) that create over-expectations and over-ambitions amongst transport operators that could be frustrated upon implementation; deployment, which has to do with difficulties of implementation or operationalization that preclude the achievement of the envisaged level of integration; inertia to change, when transport operators do not have enough willingness to undergo the necessary changes in their cultural or procedural matrices to proceed with integration; and aversion to integration, related with the disbelief that many transport operators show in relation to the advantages of integrated services.

Public authorities have been responding to the low appetite for integrated services with different types of incentives (Buehler and Pucher, 2011; Hensher et al., 2013). Incentives are temporary compensation mechanisms of a regulatory or financial nature. They are designed to bend the normal market rules with the purpose of creating a favourable, albeit artificial, business context for integrated services. If no additional measures are taken to mitigate the resistance factors, when the incentives run out the market undergoes a new adjustment process and the burdens of integration come to the surface (Laffont and Martimort, 2002). If, at that moment, transport operators are not able to reach a stable level of integration, then the burdens of integration could overcome the benefits and the integrated transport services are likely to be discontinued. The extension of the incentives over time, whilst possible, is increasingly difficult to achieve, as the economic downturn is negatively affecting the public budgets. Alternative solutions to fostering the integration of transport services must then be sought.

In our opinion, the long-term viability of an integrated transport service is related with the capacity to generate sustained returns for the transport operators. Therefore, provided a business rationale, transport agents can be guided towards integration.

In this paper, we propose two business model prototypes to guide transport operators in implementing successful integrated transport services. A prototype of business model should provide enough guidance to support transport operators in designing an integrated service with sustained returns.

The business model prototypes were inferred from a total of eleven case studies and developed in accordance with the framework initially proposed by Osterwalder and Pigneur (2010).

This paper is structured as follows. Section 2 reviews the literature in terms of business models. Section 3 describes the methodological approach adopted in developing the prototypes. Sections 4 and 5 describe the research stages resulting in the formulation of the prototypes of business models. Section 4 presents the case studies on which development of the business models were based, while Section 5 describes the prototypes in detail. Finally, Section 6 presents the conclusions and provides recommendations for further research.

2. Review of literature on business models

The literature is populated with definitions of business models (Table 1) and, although consensus as to a definition is still lacking, the authors do converge on a number of aspects. A business model describes how resources are combined and transformed in order to generate value for customers and other stakeholders, and how a value generating company will be rewarded by its exchange partners that receive value from it (Magretta, 2002). A business model attempts to identify the elements and relationships that describe the business of a company. Thus, the business model concept can best be understood as a conceptual view of a particular aspect of a specific company (Osterwalder et al., 2005). Business models relate to value chains (Porter, 1985), value streams (Davies, 2004) and value constellations (Normann and Ramírez, 1998) amongst multiple business actors. However, how business models are configured and combined in project business is largely unexplored territory (Wikström et al., 2010). Conceptualisations of business models increasingly suggest that a firm can have several business models. The presentation of the business model normally follows a narrative in which the various building blocks are described in detail.

In this paper we adopted the definition proposed by Osterwalder and Pigneur (2010, pp 14) that states that "a business

Table 1
Selected scholarly definitions of business model concept.

Author	Definition
Timmers (1998)	Architecture for the product, service and information flows, including a description of the various business actors and their roles and a description of the potential benefits for the various business actors and a description of the sources of revenue.
Weill and Vitale (2001)	Description of the roles and relationships amongst a firm's consumers, allies and suppliers, identifying the major flows of product, information and money, as well as the major benefits to participants.
Applegate (2000)	Description that enables the study of a business's structure, the relationships among structural elements, and how it will respond to the real world.
Magretta (2002)	Story that explains how an enterprise works. Business models describe or prescribe more specifically how resources are combined and transformed in order to generate value for customers and other stakeholders, and how a value generating company will be rewarded by its exchange partners that receive value from it.
Leem et al. (2004)	A set of strategies for corporate establishment and management including a revenue model, high-level business processes and alliances.
Kallio et al. (2006)	The means by which a firm is able to create value by coordinating the flow of information, goods and services among the various industry participants it comes in contact with, including customers, partners within the value chain, competitors and the government
Al-Debei and Avison (2010)	The business model is an abstract representation of an organisation, be it conceptual, textual, and/or graphical, of all core interrelated architectural, co-operational, and financial arrangements designed and developed by an organisation presently and in the future, as well as all core products and/or services the organisation offers, or will offer, based on these arrangements that are needed to achieve its strategic goals and objectives.
Johnson et al. (2008)	Business model should consist of four elements: a customer value proposition, a profit formula, key resources, and key processes.
Casadesus-Masanell and Ricart (2011)	Company's choice of policies and assets, the governance structure of those policies and assets and their consequences, whether flexible or rigid.
Osterwalder and Pigneur (2010)	A business model describes the rationale of how an organisation creates, delivers and captures value.