Business models in urban logistics

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Abstract

An efficient urban transport system is essential for sustainable development in urban areas. Urban logistics is now facing many difficult challenges due to:

- Increasing urbanization.
- Increasing demand for frequent and just-in-time deliveries in urban areas.
- Increasing competition for the use of limited urban infrastructure.
- Increasing complexity of the multidisciplinary problems both encountered and caused by urban goods transport.

On the other hand, the opportunities for dealing with the challenges have increased in recent years. Not only governments, but also the private sector and citizens have become aware of the need for sustainable development and are realizing that it is a common responsibility of both public and private actors. Because of the complexity of issues involved in sustainable development objectives, engaging private sector and citizens in the decision-making process and thereby developing accountable partnerships among all stakeholders have become important in the policy-making process.

Urban logistics, the last link of the logistic chain, is thus a sector of activity which has great importance for its economic impact and for the dependencies that other economic activities have on these services.

The current paper makes a conceptual review of some urban logistic solutions already implemented and identifies the critical aspects for the design of business models related with urban logistics. Our aim is to identify and clarify the potential schemes of urban logistics and to understand the requirements for a successful development of the proper business models for their implementation within the urban logistic framework.

Key words: Business models, urban logistics, urban goods transport.

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Resumen

Un sistema de transportes eficiente es esencial para el desarrollo sostenible en las áreas urbanas. La logística urbana afronta hoy en día difíciles retos debido:

- A la creciente urbanización.
- Al aumento de la demanda de entregas frecuentes y justo a tiempo en áreas urbanas.
- A la creciente competición por el uso de infraestructuras urbanas limitadas.
- Al crecimiento de la complejidad de los problemas de competencia transversal que el transporte urbano de bienes genera y se enfrenta.

Por otra parte, las oportunidades para ajustarse a estos retos han aumentado en los últimos años. Los gobiernos, el sector privado y los ciudadanos están más sensibles a las necesidades para un desarrollo sostenible. Debido a la complejidad de las cuestiones implicadas en los objetivos del desarrollo sostenible, hoy en día es fundamental hacer que el sector privado y los ciudadanos participen en el proceso de decisión, y desarrollen un acuerdo responsable entre todos los interesados.

La logística urbana, el último eslabón de la cadena logística, es por consiguiente el sector que presenta mayor impacto en la economía debido a la dependencia de otras actividades económicas de sus servicios.

Este artículo presenta una revisión conceptual de algunas soluciones de la logística urbana en uso en la actualidad e identifica los aspectos críticos para la definición de sus modelos de negocio. Se pretende identificar y clarificar los esquemas potenciales de logística urbana y entender los requisitos para el desarrollo con éxito de sus modelos de negocios y su implementación en el contexto de la logística urbana.

Palabras clave: Modelos de negocio, logística urbana, transporte urbano de bienes.

INTRODUCTION

Globalisation and other new market trends have dismantled many of the barriers that for a long time kept companies from freely developing their operations. Therefore, companies engaged in new productive and distribution solutions, embrace multiple agents based in very different locations. The transportation sector has been called to bridge the growing distances between these locations, and to assure a continuous supply of goods between them. Furthermore, the increasing activity of heavy trucks speeds up the deterioration of road infrastructure, increasing the public budget efforts in road maintenance. So, the increasing logistic activities within urban areas are jeopardising the sustainability of such regions.

Logistic companies have no incentive in engaging for sustainable solutions, because the costs they are responsible for are partly supported by the whole society, as externalities. This raises the need for regulation, so that externalities are properly incorporated in the activities that are provoking them. However, public intervention in urban logistics has had so far a rather narrow scope, being commonly limited to traffic restrictions (e.g. access times or vehicles' dimensions). One of the reasons behind this seems to be the lack of knowledge on adequate tools to deploy effective measures regarding urban logistic problems. Moreover, there is a strong belief that an increase of costs in logistic activities would result in a decrease of economic competitiveness for the companies and, ultimately, of the whole regions.

Urban logistics, is thus a sector of activity which has great importance for its economic impact and for the dependencies that other economic activities have on these services. However, the balance is delicate as it also poses serious problems to the other users of the urban space – congestion, noise, obstruction of roads and sidewalks, infrastructure degradation, and so on. These problems have enormous costs for the society, and hinder the overall urban sustainability.

In order to tackle the problems mentioned above, rationalisation of the distribution process (from the economic, spatial and temporal perspectives) is required. This means reducing the flow of goods yet keeping the adequate level of distribution to satisfy consumer's needs. As a way to achieve this, various solutions have been pointed out in several European cities. These solutions are not only aimed at the transport activity, but at the organization of the whole logistic chain. In some cases, the implemented solutions were adopted as "stand alone" solutions, focused on a specific case or problem; in some other examples, combined solutions were applied, i.e., several measures were implemented in a combined form, as part of a broad political strategy for urban logistics.

Generally, the different authors try to group the adopted solutions in accordance to different criteria [1], [2]. In this work, we decided to group the measures identified according to their focus of application. This systematization can be found in Table 1, where they were placed according to the degree of intervention needed for their implementation (i.e., from "soft" to "hard" measures):

Table 1
Measures implemented to solve the urban logistics problems

Type of Measure	Examples
Legislative and organizational measures	Cooperative logistic systems, encouraging night deliveries, public-private partnerships, intermediate delivery depots.
Access restriction measures	Access restrictions according to vehicle characteristics (weight or volume), conditioning access to pedestrian areas, urban tolls, periodic restrictions.
Territorial management measures	Creation of loading and unloading areas, of load transfers, and mini logistic platforms.
Technological measures	GPS, track and tracing systems, route planning software, intelligent transport systems, adoption of non polluting vehicles and vehicles adapted to urban characteristics (size and propulsion).
Infrastructural measures	Construction of urban distribution centres, and peripheral storing facilities, use of urban rail for freight (freight trams), underground freight solutions.

Some of the measures identified are very ambitious, while others lack the needed coherence and fail to achieve the goals for which they were designed. This happens for a number of reasons, like the relative novelty of the introduction of this subject in the urban management agenda, and also the lack of knowledge about the implementation processes involved in urban logistics and hence on the appropriate way to tackle the collateral problems accruing from these processes.

Another very important issue relates with the difficulties associated with modelling urban logistics, given its fragmented character largely caused by the fact that a significant amount of transport is done on private basis. It is worth noting that in all experiences reported the main difficulty in handling urban logistics lies in understanding the associated origin-destination matrix.

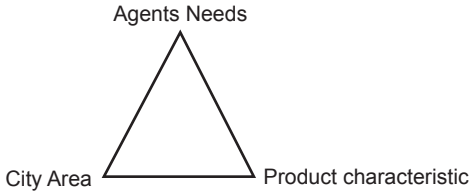

Figure 1. Schematic view of the Logistic Profile Concept

One of the main objectives of the current project [3] was to test the validity of the "Logistic Profile" (LP) concept, which we believe will be an important tool for the Urban Logistic management and a key-element in the conception of a Urban Logistic Master Plan. The LP concept is based on the hypothesis that it is possible to identify , for some well-defined areas inside a city, reasonably homogenous groups of logistic needs, based on three key points: the urban characteristics of the area, the requirements of the logistic agents (i.e., the requirements concerning the type of delivery), and the characteristics of the products being transacted . The LP of a given urban area is thus defined by the interaction of these three key aspects (Figure 1).

Our hypothesis is that in the areas of the city in which LPs[1] can be feasibly defined, it will then be possible to adjust urban logistic services which will optimize the consumption of the involved public and private resources (space, vehicles, etc.), in function of the needs of the different market segments.

Several variables are used to qualify the logistic profiles; these are identified below (Table 2):

Table 2
Variables used to determine the Logistic Profiles

City area features	Product characteristics	Agents' needs
- Commercial density and homogeneity – number of shops per block, and percentage of different shops (in terms of goods sold) - Logistic accessibility,– level of congestion on the streets serving the area; existence of delivery bays and level access between the shop and the parking of freight transport - Restrictions of hourly and weekly periods of delivery	- Fragility - Perishability - Cooling needs	- Urgency of deliveries - Frequency of deliveries - Amounts to be delivered - Timeliness of deliveries ("After hour deliveries")

[1] It will only be possible to define a LP of an area if it has a significant group of homogenous "logistic needs".

These variables can be combined in an array of different LPs. However, more than getting a full comprehensive list of profiles, it is of higher importance to stress that it is possible to match different logistic services to specific logistic profiles, in order to optimize the delivery processes. The way this is done is explained below.

First of all, we need to consider different logistic services, or combinations of services, aimed at serving different delivery needs. The services considered here arise not only from the literature review, but also from the observations done, namely of the experiences implemented or being studied in the city of Paris. They were selected and designed in a way to serve the study area (explained below), with the aim of creating services that work integrated as a system, and so to cover all the logistic needs of the area being served.

The main characteristic of the urban logistic system is thus its high number of stakeholders and the heterogeneity of their needs, which force a very thin segmentation of the proposed services, often going below the minimum scale for economic feasibility.

Bearing in mind what has been said so far, the solutions / services considered are the following:

- Two hierarchic levels of freight terminals inside the urban territory, which might act in conjunction with freight yards located outside city boundaries; the higher level, bigger terminals, shall act as freight hubs, collecting freight coming from the freight yards or directly from the producers, and distributing it to smaller level terminals, which shall be fully integrated within the urban tissue; the exact locations and sizes of these terminals is to be planned in function of the different logistic needs of the areas they are to serve; these terminals shall be associated with delivery services responsible for the "last-mile" distribution; these shall be performed by "eco-friendly" vehicles, such as bicycles, electric tricycles and so on, according to the different LP needs;

- Cooperative services like car pooling and car sharing, which can be put together by groups of agents (e.g. shop-owners) with the same delivery needs. Deliveries done this way will directly link any of the terminals mentioned above with the recipient's' locations;

- Safe deposit boxes (similar to the so called "drop point deposit boxes" found in Paris), in which medium sized lockers are placed on key points,

like parking lots or freight terminals; these boxes work like normal postal boxes, in which parcels are dropped and then picked by the recipients (repair technicians, services or even end costumers); these boxes shall complement other solutions to be implemented. They do not have the goal of reducing the number of deliveries, but to minimize the effects caused by the randomness of small and urgent deliveries, and to avoid the failure of such deliveries due to the absence of the final recipient;

- Collective and regular services using the facilities used by regular public transport in non-operating hours (e.g. light rail, tram or underground networks); none of these types of services was explored in the current work, due to the absence of such networks in the area chosen as case study.

The current paper makes a conceptual review of some urban logistic solutions already implemented and identifies the critical aspects for the design of business models related to urban logistics. The research builds on a previous work commissioned by the Science and Technology Foundation of Portugal (FCT), referred in [3], which analyses an area inside the city of Lisbon, identifies its logistic problems and assesses the benefits of introducing new delivery solutions, based on a concept called "Logistic Profile", developed within the scope of the project.

The results achieved in the pilot study were rather encouraging and show that an improvement of the current situation is possible, if the proposed solutions are implemented, and if adequate urban logistic services are feasible. Consequently the natural follow up is to understand the requirements for a successful development of each type of business models for the urban logistic sector.

So, the goal of this paper is to identify and clarify the potential schemes of urban logistics and to understand the requirements for a successful development of the proper business models for their implementation within the urban logistic framework.

2. STATE OF THE ART OF URBAN LOGISTICS

The growing dimension of the negative impacts of the urban logistic activities has been capturing the interest of a growing audience: governments, population and, naturally, scientific community. Nonetheless the body of knowledge of this research area when compared with others, like urban passenger transport or even long distance freight transport, is still rather

incipient. The recent nature of this research field is not the only reason for this state, urban logistics presents a set of characteristics that makes its study rather difficult.

Firstly, there is a general lack of reliable and complete statistic series, and without knowing reality it is not possible to draw effective tools. Secondly, urban logistics is highly dynamical and made of a complex web of interacting agents with different purposes and characteristics. Moreover, urban logistics share and compete for the urban space with other activities, such as private utilisation. Therefore, the complete study entails the incorporation of all agents and their corresponding relationships. Thirdly, urban distribution is commonly an integral part of larger distribution schemes that go beyond the urban regions' borders. Companies have to transport their goods to and from locations that often are within urban regions. Since they plan their distribution schemes globally, urban logistics patterns often reflect the characteristics of those schemes and not necessarily the urban area's characteristics.

Therefore, the scientific community is having major difficulties to develop tools and techniques as effective as in other fields like urban passenger transport or even long distance freight transport.

Furthermore, the field of research in urban logistics still shows strong signs of being in mature, as for example the inexistence of a universal accepted definition of urban logistics. For all these reasons the still rudimentary set of modelling techniques available is quite understandable.

The first author to make a complete review of the existent models and tools was Ogden in 1992 (quoted by [4]). This author also presents the main characteristics that an ideal model should present, namely, to consider the elasticity and volatility of demand, to be able to handle with several ways of transport, to incorporate other flows different from goods, to be dynamical and universal [5].

The most common model in use is the well known 4-step model, used for analysing passenger traffic. However, this model presents some relevant limitations that reduce its applicability. Firstly, in this model the urban freight transport is considered as a percentage of all traffic and not considered independent [6]. Secondly, there are major differences in the structure of the supply and demand between passenger traffic and freight traffic [5]. Thirdly, the motivation underlying people's mobility is totally different from that

originating freight transport. Fourthly, the people's mobility patterns are completely different from freight transport. Nonetheless, the 4-step model offers a reasonable framework to start modelling in urban logistics.

Recently, other modelling techniques have been developed, which can be clustered in three groups: gravitational models, like some models used in passenger transport, input-output, or spatial equilibrium of the prices [4]. Alternatively, models can be grouped in function of their level of analysis: disaggregated, if the focus of analysis is the individual action of each agent, aggregated is they are more focused on the specific group of agents. The disaggregate models can be further classified: behavioural if they take into consideration only one dimension, inventory if they take into consideration multiple dimensions [5]. Identically, the aggregate models can be further classified in function of the unit of analysis: based on the products, if calculations are based on the flow of goods; or based on the vehicles' trips when the focus are the routes and vehicles needed to fulfil the demand on each route. Increasingly, researchers are combining different models in order to compensate the limitations of one with the other (see, for example, [7]).

In the last decade, a new concept ha been brought to the fore, by Taniguchi et al. [8], the concept of City Logistics. This concept claims that the resolution of the current urban logistic problems can not be solved by a single solution, but only by the combined implementation of a set of solutions, like for instance: cooperative urban distribution systems, construction of urban logistic platforms, control of the weighting load, making use of the public transport system (metro and tram), etc. Under the umbrella of City Logistics several existing models have been adapted to modelling urban logistics distribution, such as, just to mention some: vehicle routing and scheduling, dynamic flow simulation, logistics terminal location models, simulation, multi-agent systems, and network models.

Recently, Hensher et al. [5] have proposed a new type of models that take into consideration the rational character and behaviour of the agents and the dynamic nature of the logistic systems. In Europe, the European Union funded research programme BESTUFS developed, aiming at enhancing the knowledge on urban logistics.

The development of simulation models allowed, in turn, the development of tools to support the decision process in the logistic activity. The best known of these tools are:

- FRETURB, which has been developed in France by the Laboratoire d'Economie des Transport, is able to analyse and evaluate scenarios, calculating the total number of vehicles generated by each region. Amborsini et al. [9] present a practical application of this tool.

- WIVER developed jointly by IVU Traffic Technologies AG and PTV AG, computes the total number of trips generated by each source (e.g: stores and commerce) and segments the trips in function of the economical activity and type of vehicle. This tool has been used in the European Union founded project REFORM (1998).

- VISEVA has been developed jointly by Technische Universität Dresden and PTV AG, upon WIVER. This tool included a model of system dynamics, allows including the effect of time (see [10] for a practical example).

- The NATRA tool has been developed upon an extensive survey made on the region of Stockholm. This tool is able to calculate the flows between the various areas considered in the study.

- Finally the Technical University of Delft has developed the very complete GOODTRIP tool that calculates the flows, the traffic generated by those flows and the respective impacts. Boerkamps, J. et al. [6] present a practical application of this tool.

Summing up, the impacts of urban logistic activities have only been felt over the last years.

It is out of the scope of this paper to present a full review of business models state of the art, or even current practices, which entail too many realities and business practices that are beyond our goals. Nevertheless, the survey made shows the existence of many papers and magazine articles directly linked to firms and business models and plans.

This type of application does not match exactly with the framework being proposed by the authors under the opportunities entailed by urban logistics environment. The urban reality is global and complex, with several actors/ agents interacting at different stages, as it was seen before. There are also spatial and operational proceedings specific over geographic space, time and business (and decision) space, accreted by administrative and legal non-homogeneous realities.

On the next sections of this paper the Business Model concept is presented, major tensions and difficulties are identified and main conclusions about the applicability of business model to urban logistics are presented. Future research directions are also identified.

3. BUSINESS MODEL

Both words, business and model, by themselves have a specific meaning. It can be said that the term business relates to "the activity of buying and selling goods and services" and "earning money". Model relates to "a representation of something as a simple description of an object that might be used in calculations". Thus, we reach a simple understanding that a business model is a representation of how a company buys and sells goods and services and earns money.

However, the definition of this expression is not so simple. A review of the literature using the term business model shows there are sufficiently broad concepts to embrace different reflections on business models. A lot of the fuzziness and confusion about business models stems from the fact that when different authors write about business models they do not necessarily mean the same thing [11]. At this stage we will try to keep it simple and admit that a business model is a conceptual tool that contains a big set of elements and their relationships, expressing the business logic of a specific firm [12].

The business model should reflect a description of the value a company offers to one or several segments of customers and of the architecture of the firm and its network of partners, for creating, marketing, and delivering this value and relationship capital, to generate profitable and sustainable revenue streams. [13]. Besides, a good business model answers questions like: Who is the costumer? And what does the customer value? It also answers the fundamental questions every manager should ask: How do we make money in this business? What is the underlying economic logic that explains how we can deliver value to customers at an appropriate cost?

A good business model remains essential to every successful organization, whether it is a new venture or an established player [14].

Business models evolve as competitive pressure is put over a firm to pursue profits through two main means. Firstly, the conquest of new markets by geographical expansion and/or the introduction of new products, such as

new technologies or skills, secondly, by cutting costs through the adoption of new technologies and new skills.

Business modeling is the managerial equivalent of the scientific method – you start with a hypothesis, which you then test in action and revise when necessary [14].

When people say "business model," they're really talking about three different kinds of things: components of business models, real operating business models, and what we call change models.

These aren't really complete business models at all—they're just pieces. Business model components range from revenue models and value propositions to organizational structures and arrangements for trading relationships. The components of a business model are: pricing model, revenue model, channel model, commerce process model, internet-enabled commerce relationship, organizational form, value proposition [11].

Each may be an important part of a business model, but not the whole thing. Since the Internet has dramatically impacted the way firms reach customers, price, and tailor the commerce experience, e-watchers have paid a great deal of attention to new value propositions, new channel configurations, and new revenue models. Many have mistakenly called these pieces of business models.

Operating business models are the real thing. An operating business model is the organization's core logic for creating value. The business model of a profit oriented enterprise explains how it makes money. Since organizations compete for customers and resources, a good business model highlights the distinctive activities and approaches that enable the firm to succeed—to attract customers, employees, and investors, and to deliver products and services profitably.

A change model goes one step further. It describes how an organization adapts in a dynamic environment. A change model is the core logic for how a firm will change over time to remain profitable in a dynamic environment. Operating business models create core assets, capabilities, relationships, and knowledge; change models extend and leverage them.

As explained previously the business model has a development plan that allows designing and realizing the business structure and systems that

constitute the operational and physical form the company will take. We can call this relation between strategy, organization, and systems the business triangle that is constantly subject to external pressures, like competitive forces, social change, technological change, customer opinion and legal environment.

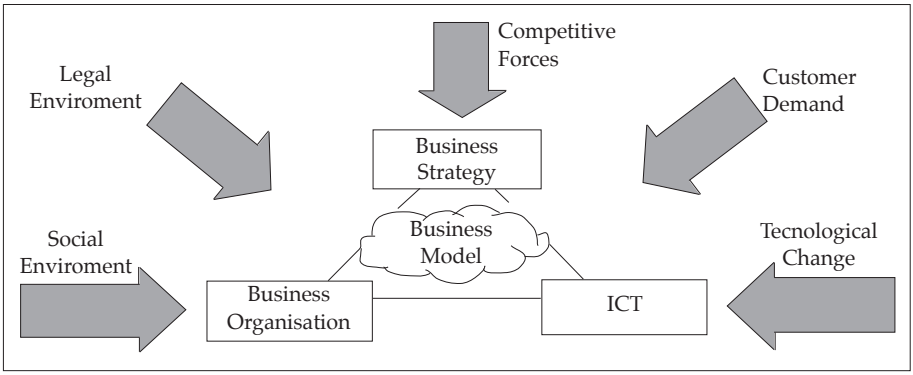

Figure 2. Source: [13].

Finally, the business model can be seen as the conceptual link between strategy, business organization, and systems. The business model as a system shows how the pieces of a business concept fit together, while strategy also includes competition and implementation.

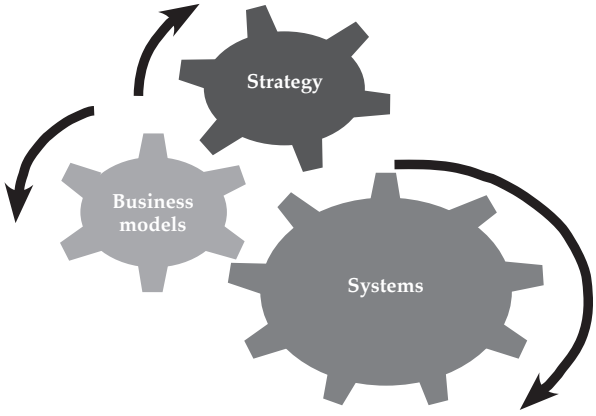

Figure 3. Business model relations with strategy and systems.

Second, business model implementation contains its translation into concrete things, such as a business structure (e.g. departments, units, human resources), business processes (e.g. workflows, responsibilities) and

infrastructure and systems (e.g. buildings, ICT). Business models are subject to external pressure and thus constantly subject to change.

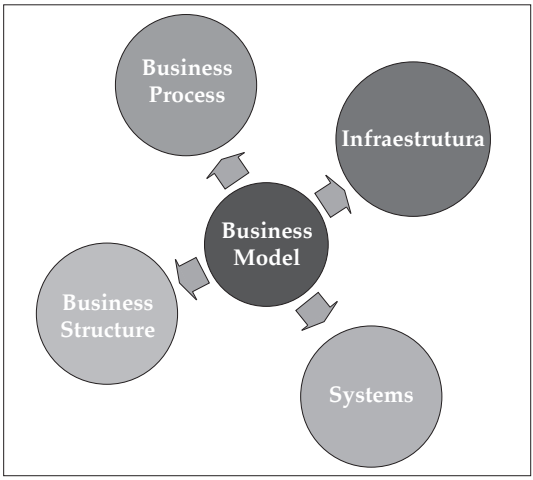

Figure 3. Business models translation into four main elements.

4. AGENTS

For a better understanding of the adaptation potential of the business model concept to urban logistics it is necessary to identify all the stakeholders involved in the process, and to identify their motivations and separate interests.

Each stakeholder has a different task within the process of urban logistics, as is indicated in Table 3 - Division of tasks.

Table 3
Division of tasks. Source: [15].

Parties/stakeholders	Function
Municipalities	Division of available space and time (road and kerbside) to different parties in a balanced way
Police	Law enforcement, traffic management
Retail, companies, institutions, construction areas, inhabitants	Demand and receive goods and services
Producers, trade, wholesale, shippers and transporters	Suppliers of goods and services

Space and infrastructure available for transport within the urban area are limited and has to be shared between many interest groups with diversified interests. The need for mobility and enhancement of the living environment is increasingly important in urban areas while transport demand is continuing to rise. The interaction of rising demand and limited space has led to declining mobility and increasing congestion.

Although all stakeholders share a common interest in the consumption of goods, their other individual interests often conflict, as shown in Table 4. The interests of various stakeholders involved.

Table 4
The interests of various stakeholders involved. Source: [15]

Stakeholders	Interests
Residents	Good living surroundings, minimal hindrance of vehicles and trucks, especially during night hours. Timely availability of goods.
Visitors	Attractiveness, good shopping environment, accessibility and parking space.
Estate managers and developers	Profitability
Retail	Good shopping environment for visitors and customers, profitability.
Shippers, carriers and retail	Accessibility, attractive local working environment, adequate infrastructure for transport operations, cost efficiency.
Businesses	Accessibility, attractiveness.

For a sound and efficient urban logistics policy, the interests of all the various actors must be taken into account.

In many domains of the Transport sector there is a strong intervention of Public Authorities. Virtually everywhere in the safety and environmental protection dimensions, in the definition and scheduling of infrastructure investments (even when they are financed by private parties) and in significant parts of the Transport Services markets, for needs of coordination (dense agglomerations) or of coverage (low density areas, isolated regions)

Public Authorities have the right to define the rules of the games (preserving nondiscrimination of providers and of clients), which reduces the degrees of freedom of companies to design their Business Models. In a common transport infrastructure business model, the State appears as the client of a concession contract and sets for initial procurement and delivery.

Other models have existed and some are still developing, mostly defined by the State in each case:

- Private investment in infrastructure already present for some 150 years.
- Railroads (vertical integration with operations), turnpikes (tolls on travellers).
- More recently significant increase of franchises (concessions) and Public-Private partnerships.
- Public command and ownership, but payment scattered over lifecycle, based on availability and quality of maintenance.
- Separate contracts for maintenance upgrade.
- Traffic Management mostly done by public agencies (different in each mode).

In the continuation of this work an in-depth analysis of these alternative models will be developed it is however, out of the scope of the business concern focused in urban logistics

5. TENSIONS

Urban logistics issues result from a wide pattern of developments in our society. These include movement toward a post-industrial society, ageing and individualization, urbanization, and sustainable development. Policymaking in such a context requires well-designed consultation and participation processes due to the complexity of issues involved and diverse interests of various stakeholders.

This is particularly the case for policy-making in urban logistics, since it involves many different parties with diverging and often conflicting interests who have to share limited urban space. The complex operations of urban logistics and the variety of problems they cause further complicate policymaking in this area namely in a theme that hold a great number of agents.

Well-designed consultation and participation processes are essential components of democratic governance. They are increasingly important for the implementation of measures achieving sustainable development objectives, because of the complexity of the issues involved. Co-ordination mechanisms are needed for confronting and reconciling diverging interests and points of view among different social groups and stakeholders.

In the perspective of civil society, such mechanisms require:

- Establishing co-coordinated policy frameworks that involve all levels of governments, both horizontally and vertically.
- Involving citizens and business in an interactive process with governance.
- Developing accountable partnerships, e.g. public-private partnerships and sometimes public-public partnerships, through the association of different levels and scope of government.
- Establishing national and international transparency and consultation with interested groups in the development and implementation of policies.

In order to achieve cohesive development under these mechanisms, governments need to:

- Establish a clear vision of desirable future directions.
- Organize multi-stakeholder forums to translate the broad vision into specific short term and long term objectives at the national and local level and to examine available policy options.
- Apply mechanisms for cross-sector policy integration, recognising that business agents and citizens manage themselves in a rather holistic perspectives.
- Monitor current trends and identify necessary changes in the course of action.

Policy-making for urban logistics is particularly complex and difficult due to the following features:

- Conflicting and diverse requirements of a wide range of participants.
- Complex and diverse operations of urban logistics and the various problems caused thereafter.

In many countries, problems of urban transport are dealt with at a local or regional level. Only a few countries have developed an explicit encompasse national policy focused on urban logistics. The private sector requires consistent and fair approaches in policy measures to be applied throughout their supply chain. Such approaches appear to be difficult where there are no national initiatives or guidelines to ensure consistency among local or regional measures.

The different problems identified and logistics solutions adopted provoke several tensions. These tensions, as emergent conflicts between agents or intra-agents, can be of three main types.

- Latent tensions, which are detected by the analyst but the friction is not recognized by the stakeholders / parts.
- Emergent tensions which are recognized at least by one of the stakeholders / parts. Conflict escalade apparently suspended. The friction exists but it's not triggered by any stakeholder / any of the parts.
- The confirmed tensions which are declared and the friction consolidates.

For each type of tensions it should be pointed out which variables can change the play of forces in the tensions map and also identify the challenges at stake. Those challenges are changes in the balance of tensions due to the action on variables previously identified. Mapping agents' tensions is certainly the first step in any city if the objective is addressing urban logistics and this can and should be done recurring also to participatory approaches

6. CONCLUSION

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The understanding of what is a business model and the importance of its clear definition as a foundation of strategic decisions of the agents is crucial to achieve an efficient model business in urban logistics.

One must be aware of the fundamentals of Business Law, understand the role and nature of contracts as the framework for commercial relationships and be conscious of the dominant practices and innovation streams in business models in the various transport modes – in infrastructure provision and

in operations - as a result of the corresponding factors of value generation and of risk.

In order to achieve efficient and successful business models, it is necessary to understand what the priorities are to solve in urban logistics. The first set of conclusions to be drawn from our exploratory research is:

- No single solution can be adopted for the urban logistics problem;
- Different from the logistic of passenger the freight has a much more fragmented demand which requires the concerted offer of different services;
- These services must be complement each other in satisfying the different requirements of the stakeholders of an urban area.

Business models have already shown their efficiency within the sphere of private companies and firms. The benefits achieved through its implementation should also be evident in the logistic field.

The concept of business model can be implemented in a different scope, with a bigger coverage area, engaging all the subsystems contained in the urban logistic system. The transferability of the business model concept to the urban logistic system will optimize the relationships between the different subsystems that compose the urban logistics system, minimizing the existing tensions, promoting the competitiveness and sustainable solutions.

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