Master Thesis:
Regulating e-hailing services: the case of Uber Regulation in Mexico City and Bogotá

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ABSTRACT

In recent years, Taxis apps have brought about a significant change in the individual transportation sector having implications for the current regulatory framework that governs this market. Among these taxi applications Uber has been the one application that has without any doubt whatsoever, revolutionized the individual public transportation sector facing legal and regulatory challenges in every city where it initiates operations. These struggles are often due to the fact that Uber does not fit into the legal requirements that regulate the traditional taxi industry, and consequently, this startup has been subject to fierce public debate. Bearing this in mind, the purpose of this work is to identify the main institutional conditions under which Uber and similar companies should be regulated by city governments. Based on a comparative case analysis of Mexico City and Bogotá, we aim to understand the current regulatory framework that governs the traditional taxi market identifying the main actors involved and their relationship thereby helping address governance challenges of Uber in these capital cities, and also offering some recommendations for Mexico City and Bogotá or for that matter, any city looking for appropriate guidelines to govern their City’s Taxi System bearing in mind the ultimate goal of improving the quality of life for their respective citizens.

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# TABLE OF CONTENTS

1. INTRODUCTION AND PROBLEM STATEMENT .................................................. 5  
   1.1 Introduction .................................................................................................. 5  
   1.2 Methodology ............................................................................................... 7  

2. BUILDING A FRAMEWORK ........................................................................... 8  
   2.1 Urban Transport System ........................................................................... 8  
      2.1.1 Urban Transportation including Public Individual Transporters .......... 8  
      2.1.2 Regulations for Public Individual Transporters (Taxis) ....................... 11  
   2.2 Entry and Impact of Information and Communication Technologies (ICTs) in Urban Mobility Landscape ................................................................. 14  
   2.3 Urban Governance .................................................................................... 16  
      2.3.1 A New Era for Urban Transport Governance .................................... 17  

3. CASE STUDIES ............................................................................................. 20  
   3.1 Case study 1: Mexico City, Mexico ........................................................... 20  
      3.1.1 Context ............................................................................................... 20  
         A) Historical Development ...................................................................... 20  
         B) Urban Transportation System Development ..................................... 22  
      3.1.2 Institutional Organization ................................................................. 28  
         A) Administrative Organization ............................................................. 28  
         B) Regulation of Individual Public Transporters .................................. 31  
   3.2 Case study 2: Bogota, Colombia .............................................................. 38  
      3.2.1 Context ............................................................................................... 38  
         A) Historical Development ...................................................................... 38  
         B) Urban Transportation System Development ..................................... 40  
      3.2.2 Institutional Organization ................................................................. 45  
         A) Administrative Organization ............................................................. 45  
         B) Regulation of Individual Public Transporters .................................. 47  

4. ANALYSIS .................................................................................................... 54  
   4.1 City’s Taxi System Background ............................................................... 54  
   4.2 Taxi Industry Regulation ........................................................................... 55  
   4.3 Main actors involved .................................................................................. 61  
   4.4 Environmental, Social & Technological challenges ............................... 62  
   4.5 Stability of the Uber Regulation in Mexico City & Bogotá ....................... 63  
   4.6 Findings .................................................................................................... 64  

5. CONCLUSION & RECOMMENDATIONS .................................................... 65  

6. REFERENCES ............................................................................................... 68
- TABLE OF FIGURES -

Figure 1: Vicious circle of Urban Transportation in developing countries ......................... 11
Figure 2: Typical vicious cycle of transportation (de-) regulation in developing countries 12
Figure 3: Main sector issues of the vicious circle of Urban Transportation in developing countries .......................................................................................................................... 14
Figure 4: Conceptual Framework......................................................................................................................... 19
Figure 5: Demographic Population in MCMA 1950-2020................................................................. 21
Figure 6: Daily trips profile of MCMA, 2007...................................................................................... 26
Figure 7: Average travel time by means of transportation (minutes)............................................. 27
Figure 8: System of governance for public transportation in Mexico City.......................... 30
Figure 9: Authorities in charge of Urban Transportation Systems in Mexico City .......... 31
Figure 10: Actors involved and their relationship with the operation and regulation of Individual Public Transportation – Mexico City.......................................................... 37
Figure 11: Population growth of Bogotá 1985-2020 ................................................................. 39
Figure 12: Daily trips profile of Bogotá, 2011 .................................................................................... 43
Figure 13: Average travel time by means of transportation (minutes), Bogotá ............... 44
Figure 14: Authorities in charge of Urban Transportation Systems in Bogotá ................. 46
Figure 15: Number of vehicles registered for Taxi service in Bogotá .............................. 47
Figure 16: Ratings to the means of Individual Public Transportation (Taxis) – Bogotá ... 48
Figure 17: Actors involved and their relationship with the operation and regulation of Individual Public Transportation – Bogotá ........................................................................... 53

- TABLE OF TABLES -

Table 1: Main actors related to Urban Transportation Systems ............................................. 14
Table 2: Relevant components and actors involved with Urban Transportation Systems 18
Table 3: Trips per day in the Metropolitan Area of Mexico City (MAMC) ......................... 27
Table 4: Motorization rate: vehicles per capita ........................................................................... 27
Table 5: Base fare of Individual Public Transportation services ............................................. 36
1. INTRODUCTION AND PROBLEM STATEMENT

1.1. Introduction

Currently, many cities worldwide are experiencing a significant demographic growth. It is estimated that by the year 2050 at least two thirds of the world’s population will be living in cities, that is, in urban settings. This process of rapid urbanization has brought about profound social, economic and technological changes posing new challenges in the large urban systems of cities; that must be better addressed and as such, require a strong governance framework for purposes of advancing towards the consolidation of cities making their urban infrastructures more efficient, resilient and environmentally sustainable.

Given this background, Transportation is one of the Large Urban Systems that has been revolutionized by the entry of new information and communications technologies (ICTs). In the particular case of individual public transportation, apps on mobile devices have allowed for and have provided a new peer-to-peer transactions model, challenging the existing way of doing business. Likewise, these technological innovations have brought implications for the current regulatory framework that has governed taxi systems in cities for decades. In this context, Uber appears as the most relevant and outstanding case of taxi apps. Since it was launched, it has caused uproar worldwide in almost all countries where Uber has entered the taxi market (Spain, Canada, Germany, Colombia, France, Panama, Mexico, and Brazil), it has revolutionized it and has faced major legal and regulatory challenges. Uber emerges as an “innovation disruptive” business model resulting in unprecedented competition to the taxi industry and changing the nature of traditional taxi system.

In many cities the traditional taxi system is heavily regulated and, the fact that the number of taxi licenses is strictly limited and fares are regulated has fossilized the current taxi industry. Furthermore, inefficient and inconsistent regulations have not been sufficient incentives for technological development and competition within the taxi market and, this landscape appears to be more prevalent in developing countries, where taxi rules are developed as a result of political vested interests with this transportation sector and where technology and regulation are often posed as adversaries. In most of these countries technology gives way to enterprise and growth, while regulation represents government, bureaucracy, and growth constraints.

As a result thereof, the existing taxi system in the majority of cities is pretty much follows the pattern of last century thinking and therefore, it is being challenged by companies such as Uber that has taken advantage of innovation, technology, marketing strategies and a peculiar interpretation of current legislation possibilities and limitations, for purposes of offering services that in many aspects are superior to their traditional ones provided and which are in high demand by users. This has created a reality transmitting a message that is quite clear for all players involved: it is not productive for governments to go against this new reality; governments must learn to channel their city inhabitants expectations
responding to this new trend and they must “bite the bullet,” and take advantage of this to benefit their city’s taxi systems and the lives of their citizens.

The Uber case and its involvement as part of city urban transportation systems is more than solely about a discussion from a legal standpoint, but rather it is about becoming part of 21st century with regards to updating and retrofitting taxi regulations into current markets. The solution is not designed merely for the purpose of looking for rules for the application (app) but for the companies providing the service as well as for the drivers who use it. Thus, my research question is:

*Under what institutional conditions should city governments regulate Uber for purposes of maintaining a fair, vigorous and sustained competition with regards to the traditional taxi industry?*

We attempt to answer that question by developing a comparative study of two capital cities in Latin America: Mexico City and Bogotá.

The objective of this paper is to identify the main institutional dimensions that must be developed and implemented for purposes of creating a successful regulatory framework for e-hailing taxis. We also wish to respond the following questions:

a) Same market, same regulations?
b) What are the major rationales that must be considered by policy-makers for purposes of regulating the e-hailing taxi markets?
c) What are the recommendations for Mexico City and Bogotá?

This work is divided in 6 chapters. Chapter one includes the introduction and the methodology used to discuss the research question and the objective of this study as well as the methodology to be followed for purposes of answering our research question. Chapter Two comprises the literature review upon which the entire thesis will be developed. Chapter Three mentions the description of the study cases: Mexico City and Bogotá. Chapter Four is comprised of a comparative analysis of the cases studied based on the literature review. Chapter Five presents the conclusions and findings of this study for purposes of helping respond to the question posed in this investigation.

Finally, the purposes of this study is to propose useful recommendations for both Mexico City and Bogotá, as well as suggestions for studied to be conducted in the future. At the end of the master thesis you will find the references that were used throughout the investigation.

**1.2. Methodology**

To answer our research question and achieve the objectives of this work we will conduct a qualitative and comparative case study of the actions taken by city governments to address the emergence of Uber as a mode of individual public transportation (Taxi) in cities. We are
going to use empirical data from the phenomenon that we wish to understand and also published materials such as books, papers, newspapers and magazines.

For purposes of structuring our study, we will present our conceptual framework based on the following domains of scientific literature:

- **Individual Public Transportation and its regulations;** we will explore the background/context of individual public transportation (taxis) within urban transportation systems and provide a brief history of the regulation of the given city’s taxi services.
- **The impact of information and communications technologies (ICTs) in Urban Transportation Systems;** this literature is relevant to our case because as we know, currently new technologies and innovations are changing the way of doing things. In the particular case of individual public transportation, taxis apps have appeared as a new model of peer-to-peer transactions, providing an efficient service and disrupting the existing way of how the old taxi system operated.
- **Urban Governance;** because our case takes place in an urban context we will cover the concept of urban governance in three dimensions: political, economic and social. As we mention ICTs are impacting transportation but at the same time, they are creating a new legal and regulatory issues that need to be addressed. These are not necessarily technological issues but rather, governance issues.

Once the theoretical research framework has been designed, it will help for purposes of organizing our case. It will give us the relevant components and actors involved with urban transportation systems and its regulations.

This current research paper selected the cases according to two main requirements: the feasibility of getting the data and the representativeness of the case in the Latin American context. According to this criteria, two cases were selected: Mexico City in Mexico and Bogotá in Colombia. Each case was described following the literature review structure and the outline of the main actors involved and their relationship with taxi system, both the traditional one and the case of Uber and its regulations. With the structured data we hope to have a good overall picture of the current regulatory framework of traditional taxis and Uber as a new member of individual public transportation system in Mexico City and Bogotá.

Then an analysis will be conducted, for purposes of understanding what main elements were considered in each case by policy-makers to regulate Uber and similar companies in the metropolis selected for this work. First of all, we will describe each case using the data collected. Second, we will compare both cases. This analysis should allow us to understand why in Mexico City the regulatory framework approved for e-hailing taxis was a successful case in Latin America and why in the case of Colombia the result obtained has not been satisfactory. Finally, after the analysis of the case we will arrive at certain conclusions and make recommendations that will allow policy makers and urban transportation professionals to understand the Mexico City and Bogotá context, and what dimensions should be addressed from an urban governance perspective in order to develop and implement regulations for e-hailing taxis in Latin American cities. We will also suggest some topics that are worthy of further research.
2. LITERATURE REVIEW (building a framework)

The review of pertinent literature should allow us to build a conceptual framework that will then be used to structure our case. This work involves on the one hand, dealing with the Individual Public Transportation supply and related regulations (see 2.1), and on the other hand, with the entry of ICTs in Urban Transportation Systems and their impact on mobility patterns and in user behavior (see 2.2). We will see that in the context of Individual Public Transportation, ICTs are creating issues, which are no longer technological, but rather very often, the result of poor Governance (see 2.3). In this section, we will identify the groups and actors involved in Urban Transportation Systems and the relation among them to finally build our conceptual framework.

2.1. URBAN TRANSPORT SYSTEMS

2.1.1 Urban Transportation Systems including Public Individual Transporters

Urban Transportation Systems have been traditionally the base for the efficient movement of human masses in densely populated settings and their contribution is pivotal to promoting comfortable urban environments that are feasible for human life. They depend highly on the way transportation is being utilized. According to Mr. Figueroa (2005)\(^1\), globalization and liberal policies that have impacted the efficient performance of daily city operations have also influenced the urban transportation system behavior. Urban sprawl processes, the new ways of economy insertion, and their expression in cities, have been widely accompanied by a transportation system that has assumed a functional role in its development. New urban transports organization and functioning trends reveal precisely an institutional, political and operative transformation that serves as a functional support to urban demands and urban development trends.

One of the most demanding challenges that local governments face in cities around the world is mobility, which also affects most urban services. As demographic density rises, old cities as well as emerging ones, face the need to bring solutions to the rising demand for mobility, with their limited transportation capacity, which is lower due to a non-sufficient public transportation supply.

Urban transportation systems usually consist of a connection of a chain of city buses, trains, and taxi systems that offer a variety of transportation modalities for users to choose from without having to drive their own vehicle. For Fernández (1999)\(^2\), the aim of every Urban Transportation System must be the mobility of people instead of vehicles. Later on, what must be looked for is maximizing transportation system capacity (number of people transported in an hour), instead of road capacity (number of vehicles that can circulate in an hour). Likewise, Fernández (1999) states that by conceiving public transportation systems, whether individual or public, it is necessary to keep in mind their being fast and comfortable as well as flexible and attainable for all riders.

In a general way, for transportation practice purposes and its benefits, the Transportation System requires multiple elements that interact with each other, and that can be summarized...
as follows:
1. **Infrastructure**, which is the physical part of the conditions required for transportation. These can be: underground infrastructures (metro tracks or underground train tracks) or surface infrastructures (roads, bicycle lanes, designated bus lanes, among others) (IGLUS, EPFL, 2016)\(^3\).
2. **The vehicle or car**, represented by the different ways of transportation. This is the instrument that allows mobility for people, things or objects from one place to the other. In the case of urban public transportation, the modes can be individual (taxis, public bicycles, motorcycle taxis) or mass transit (bus, subway, trolley car).
3. **The transport operator**, that is, the person or institution in charge of the operation of the vehicle or car in which people or things will mobilize.
4. **Rules, regulations and laws**, are the transportation system’s main factor, because they determine the way to move from one place to another and in addition thereto, they regulate the operation rules, that is, “the rules of the road,” for both users and providers of transportation services.

Since the subject studied considers two Latin American cities (Mexico D.F. and Bogotá) as case analyses, it is important to have a general view of the distribution of urban transportation modes in this region. According to a 2007 study of fifteen cities in nine Latin American countries, with a total of 113 million inhabitants, over two thirds of trips (71%) were made by public transport, walking or cycling. This distribution differs from other regions with higher levels of development, where the total of all trips using these transportation modes is much lower (reduced to 50% in Western Europe and 14% in the U.S.A.) (Lupano & Sánchez, 2009)\(^4\).

However, big Latin American cities and developing countries in general, face a “vicious circle of urban transportation,” in which the increasing motor vehicle use negatively contributes to damages in relation to public transportation and passengers, and it increases vehicle congestion (see fig. 1 below). According to a publication of UN-Habitat (2012)\(^5\), in developing countries having a private vehicle has undeniable advantages, like greater route flexibility, comfort, safety and speed. They are also symbolic of a certain social status, especially with regards to the models of cars driven. As Pardo et al. (2012)\(^6\) state, owning a private car or a motorized two-wheeler is a major aspiration for people in cities in developing countries, in particular, where public transport service is often inadequate and unsafe.

If current urban development models and public transport supply remain the same, the likelihood is that the rate of motorization will continue to increase to levels that currently exist in most developed countries. However, one should distinguish between the phenomenon of motorization and the effective use of this medium. Efficient public transport that is predictable and of quality may encourage less private vehicle use, particularly for scheduled trips (work, school). Similarly, a compact city, with suitable conditions for pedestrians and bicycle mobility and multi-functional urban spaces would also help to discourage car use (UN-Habitat, 2012).

Currently, Public Transportation in Latin America requires **big investments in infrastructure, institutional strengthening, and a well-trained technical staff for planning and implementation**
of suitable projects that will adequately satisfy citizen needs.

Within transportation systems, Individual Public Transportation is the most commonly used term to refer to transportation services consisting of a vehicle owned by a person or private organization offering a service that is part and parcel of public transportation services available in cities. According to an article published by RIT, Zona Metropolitana de Querétaro (2015)\(^7\), technically individual transportation differs from public transportation in three aspects:

- Individual public transportation is not subject to established routes, but to the path that is chosen by the user to be more convenient.
- It does not depend on schedules, differing from mass transit transportation, where the schedule of the trip depends on service availability.
- User selected journey speed (within the laws, rules and regulations of a given location and vehicle and infrastructure limitations).

In the case of urban transportation, we can mention Taxis as the most representative example of Individual Public Transportation. Taxi services are able to pick-up passengers precisely where they are standing and drop them off precisely at the desirable destination, without being bound to a predetermined path (Veloso et al., 2011)\(^8\). This indicates that Taxi services are flexible in terms of route operation and easy accessibility. Taxis fill a critical gap by providing transportation when driving or when there is a prevailing unavailability of other public transit modes, and thus, it both serves as supplementary public transit and as a substitute for public transit as well. (Rayle et al., 2014)\(^9\). For the rest of our case we will consider the definition of Taxis as stated in the reading of IGLUS, EPFL (2016) as follows: “Taxis are basically private operators making use of the city roads, and are generally licensed by a public authority – in general, a local public authority”.

Unlike mass transit systems such as subway, trolley or buses, which are designed, ruled and operated according to general principles, Taxi systems are much more complex and have many more variations to be considered, as well as many other actors involved. As Salanova et al., (2014)\(^10\) concluded, the demand for this kind of public service is provided by the combination of three service models, such as: standing, hailing and dispatching markets. Taxi stands are designated places where a taxi can wait for passengers and vice versa. Taxis are forming queues, and served with FIFO rules (first-in, first-out), while passengers take the first taxi in the queue. Customers must walk to the nearest taxi stand. In the hail market customers hail a cruising taxi on the street. This case is the most unfavorable situation concerning the information aspects for the customers, due to the uncertainty about the waiting time and the quality/fare of the service they will find. On the other hand, customers don’t need to walk to the nearest taxi stand. In the dispatching market customers call a dispatching center requesting for immediate taxi service. Only in this kind of market consumers can choose between different service providers or companies. At the same time, companies can build up customer portfolio and loyalty by providing good quality services. The market in this case is more competitive since companies with larger fleets can offer lower waiting times.
2.1.2. Regulations for Individual Public Transporters (Taxis)

To understand the state of urban transportation in developing countries we have reviewed Ardila-Gómez (2012). He identifies several major, interrelated sector issues; creating what he calls the vicious circle of urban transportation in developing countries, see fig. 1.

**Figure 1: Vicious circle of urban transportation in developing countries**

As previously elaborated, based on Ardila-Gomez (2012)

As Witter (2012) stated, the transport sector is more and more identified as striving for efficiency and profitability for private stakeholders. There is an obvious need for some kind of public regulation over private actions. As a result of shifting more and more responsibility of achieving public good over to the private sector, the role of governments has substantially changed. In this sense, Affichard et al. (1997) outline two major notions of a state:

1. On the one hand there is the understanding of an active state that aims at directly provoking behavioral changes in its private stakeholders. This active role directly requires adequate and efficient instruments to influence private behavior (regulations).
2. On the other hand, there is the notion of a state as a passive ‘referee.’ In this context, special emphasis is placed on the (positive and negative) social impacts when private market players are relatively free in their actions of providing for goods and services for the general public (deregulation).
In the case of developing countries and emerging economies, public transport supply is centrally determined by deregulation since the 1970s and 1980s. Experiences with deregulation have been somewhat different than in industrialized countries, among other reasons, due to a strong role of informal, artisan transport providers (Witter, 2012). Berger (2002) and Meakin (2002) both describe the typical regulation process of public urban transport in developing cities as a ‘vicious cycle’, where a weak, incoherent regulatory framework exacerbates the lack of control over transport providers (see figure 2).

Figure 2: Typical vicious cycle of transportation (de-) regulation in developing countries

Witter (2012) summarized this vicious cycle in three basic steps:

- Inefficiencies and deficient supply (often experienced during the period of a nationalized system) create an incentive for informal operators to provide transport services in areas where there is an unsatisfied demand.
- Being aware of the deficient formal system, public authorities react on the one hand by bureaucratic ‘over-regulation’ of formal operators, which often causes resentments against re-investment, and on the other hand, by illegal economic practices (corruption) and allowing illegal providers to enter the market without any operational standards. Also prevalent is the fact that several governments on national, regional and local levels lack coordination of their regulation activities. Therefore, initiatives that are planned at higher levels do not become implemented at lower levels of government.
- Regulatory failures result again in deficient transport supply in some areas, and thus, the inception of new informal services.

In developing and emerging countries, deregulation (or rather incoherent regulatory frameworks) has often given rise to a considerable number of small-scale enterprises (formal and informal, i.e. illegal ones). Those operators heavily compete on the street for potential passengers. They equally try to maximize revenues by minimizing service costs, and this practice has a negative impact on transport safety and it leads to heavy emissions leading to environmental compromise. Moreover, in extensively deregulated systems, labor rights are severely impaired (Witter, 2012).
In the specific case of Taxi services, their market has been traditionally regulated by cities, as a result of controlling the number of licenses issued and the prices of services offered for the purpose of protecting both the riders and the taxi drivers. This regulation assured a minimum income to taxi drivers while protecting riders from abusive fares, but it also created a market for taxi licenses, where prices were controlled by the free market, and not by policy makers (Salanova et al., 2014). According to Cooper et al. (2010) the standard regulatory model for the taxi industry is the “QQE” framework (quantity, quality and economic control on operators) and it is a three-part framework that contains the following elements:

1) **Quality Control**: i.e. controls on vehicle age, appearance, disability requirements, all enforced by testing and inspections.

2) **Quantity Control**: i.e. controls on the number of taxis in a specific jurisdiction modified according to analyses of demand, significant unmet demand, latent demand, projections of future demand, or local politics and vested interests.

3) **Economic Controls**: i.e. fare setting based on regular analyses of operator costs and revenues for the purpose of providing fair compensation for operators and stable prices for passengers through cross-subsidization of fares (i.e. off-peak fares subsidies on-peak trips, (Harris, 2003)).

In addition, it is important to mention that the taxi market regulation has currently been impacted by the growing use of taxi apps, generating a need for existing regulatory framework assessment made by responsible decision makers from this urban transportation sector. Harding et al. (2015) claim that Taxi apps have brought about a significant change in the market, which has implications for the existing regulatory framework, summing it up in three aspects: the market swell for taxi trips mitigates the need for quantity restrictions; sparse and geographically spread-out location demands can be satisfied with a supply at the appropriate price; and post-trip feedback, in high volumes, helps maintain service standards across the board, removing the need for regular external checks.

In this same sense, as Harding et al. (2015) concluded “Regulators should shift their focus away from responding to calls from incumbents to restrict the growth of this market by banning taxi apps and enforcing existing regulatory frameworks. Instead, regulators should allow taxi apps to swell the market. The focus of regulatory interventions should be on the possibility of future monopoly and collusion in a market led by smartphone apps, a regulatory approach that may look very different to the current “QQE” framework”.

There is a need for evaluating taxi services by the decision makers responsible for the regulation. However, according to Ardila-Gomez (2012), in the case of developing countries, one of the main problems in urban transportation systems is represented by what he calls “weak institutional capacity” (see fig. 3), thus confirming the need to transform the existing attention of governments to institutional framework design. For that reason, for evaluating the regulatory framework of transportation systems, it is necessary to reflect on the transformation of regulatory and control public institutions dedicated to coordinating public transportation systems.
Figure 3: Main sector issues of the vicious circle of urban transportation in developing countries

![Diagram showing main sector issues]

*Source: own elaboration, based on Ardila-Gomez (2012)*

We have summarized the actors coming from the review of the literature on urban transportation in the following table.

**Table 1: Main actors related to Urban Transportation Systems**

<table>
<thead>
<tr>
<th>Urban Transport Components</th>
<th>Actors Involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand</td>
<td>Users</td>
</tr>
<tr>
<td>(person’s who need to move)</td>
<td></td>
</tr>
<tr>
<td>Supply</td>
<td>Administrator Operators</td>
</tr>
<tr>
<td>(infrastructures, modes of transport, interface)</td>
<td></td>
</tr>
<tr>
<td>Legal and institutional framework</td>
<td>Authorities</td>
</tr>
<tr>
<td>(regulatory policies and regulations)</td>
<td>(planning, management and control)</td>
</tr>
</tbody>
</table>

*Source: Author’s Analysis*

**2.2 ENTRY AND IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTs) IN URBAN MOBILITY LANDSCAPE**

Over the past 15 years the ICT revolution has driven global development in an unprecedented way. Technological progress, infrastructure deployment, and falling prices have brought unexpected growth in ICT access and connectivity to billions of people around the world. In 2015 there were more than 7 billion mobile cellular subscriptions worldwide, up from less than 1 billion in 2000. At the same time, the percentage of the population covered by a 2G mobile-cellular network grew from 58% in 2001 to 95% in 2015. Likewise, it is important to mention that Mobile Broadband is the most dynamic market segment; globally this market penetration reached 47% in 2015, a value that increased 12 times since 2007 (Sanou, 2015)\(^20\).

In the wake of the parallel development of ICTs, the Internet, wireless solutions, mobile
Telephony of incoming generations, and mobile Internet services have emerged in recent years as a promising socio-technological channel and perhaps a domain in its own right, for a variety of community-based, administrative, or business applications. Mobile technologies are having a great impact on how we live our lives and these influences range from personal relations to interaction in society and from the transformation of the public sector to the dynamics of economic development (Misuraca, 2012). As Sanou has stated, “Globally 3.2 billion people are using the Internet, of which 2 billion are from developing countries. ICTs will play an even more significant role in the post 2015 development agenda and in achieving future sustainable development goals as the world moves faster and faster towards a digital society”. The so-called Internet of things (IoT) is causing a revolution in the world of ICTs creating new markets.

The end of the first decade of the 21st Century saw that new forms of exchange and economic activity were made possible by new information and communications technologies (ICTs), initially computers and on-line exchanges such as EBay (1995) or Craigslist (1996), but it was with the advent of Airbnb (2008) and Uber (2009) that the sharing economy exploded onto the national and world stage. However, the main point is that in every one of these instances, new ICTs allowed possible consumers and possible providers of goods and services to make contact when they otherwise would not, or could not (Hanks, 2016).

ICTs have allowed the globalization of complacency relationships and the expansion of sharing economy or collaborative consumption (The Economist, 2013). In fact, Botsan (2010) argues that the future of society is not in the ownership of things but in the access to them, and says he is against the economic and social model that encourages the accumulation of possessions, and he is for the emergence of a new model that invites share, and reuse of resources that are not being used. As a result, a new economic model is created, that maximizes the use of resources that have been underused, such as sharing the use of a car, a parking space, company buses, professional services, among others. This economic model has as its pillars: sharing goods and services with the purpose of making the best use of these, having a larger focus on the access to the resource rather than its ownership; counting on self-regulation mechanisms on the consumers’ or riders’ behalf; and lastly, coordinating interchanges between individuals in a more flexible and expeditious way, by using new technologies (Garzón, 2014).

In the context of Urban Transportation Systems, ICTs have supported the creation of new transportation modes. Instead of the traditional use of cars, people mix different transportation modes, using what they need when they need it, and technological advances are making this “Smart mobility” possible, increasing their solutions, such as sharing vehicles by the hour, as well as a wide variety of vehicles for rent at different fares. The same way, cell phone apps make it possible to use different modes of transportation, it is easier now to combine transportation by air, train, and car in different ways in order to reach a given destination (Taride, 2013). An example of this is the impact of smartphones in mobility. Everything can be done from a cellphone or a tablet, finding a nearby vehicle (taxi), reserving it, paying for it, changing destinations and accessing guides and navigation systems, parking spots and pedestrian routes. Likewise, ICTs are availing themselves of a whole new trend
composed of low car sales/ownership. In the most populated cities in developed countries car sales have decreased and the use of smartphones opens the window to a new way of mobility, combining different means of transportation. In cities like London, according to a report made in 2012 by the local agency for transportation management, *Transport for London*, 40% of homes do not own a car. The slope in vehicle acquisition is evident in the number of homes with more than one car in the capital city, which went from 21% in 2001 to 17% in 2007, showing that car acquisition, with all the added expenses it implies, is no longer the best fitted model for city dwellers.

Currently, sharing economies and the shared mobility derived from it, are quickly growing all around the world. Urban public transportation is being challenged by new innovative urban mobility solutions. As Geloso and Guénette (2014)\(^{27}\) stated, new ridesharing applications like Uber, Lyft and Sidecar, are currently revolutionizing the urban transportation industry, by allowing taxi drivers to find clients more rapidly, and other individuals to offer transportation services more easily. These technologies could lead to considerable improvements for customers, but the only real barrier to the adoption of these new technologies is the existing, widespread system of taxi licenses (operation permits). In some cities, it is impossible to enter the taxi industry without acquiring such a license, or renting one from someone who owns one. For example, in Montreal, the price of an operation permit is currently about $200,000 (Taxi à vendre, 2016)\(^{28}\). The increased competition created by ridesharing applications is reducing the value of these licenses. A study undertaken in the Chicago area shows that as ridesharing applications grew in popularity from accounting for 2.5% of rides to 20% of rides, thus the value of the taxi permit fell by 57% (Teal, 2014)\(^{29}\).

However, the biggest obstacle that sharing economy companies are facing right now is legal threats, as stated by Cannon & Summers (2014)\(^{30}\) who mention in their article: “regulation is often the most significant barrier to future growth for sharing economy firms. This is particularly unfortunate since the incentives of city governments and sharing economy firms are often aligned”. In the case of Mobility Systems problems, such as low quality services in public transportation systems including taxi services; the lack of investment for urban transportation projects and infrastructure; young people’s tendency not to drive and not own cars, together with the increasing use of smartphones and connectivity generated by internet are contributing to the growth of Shared Mobility in the biggest cities of our planet, causing that platforms such as “Über”, “Cabify”, “Lyft” and “Blablacar”, among others, are penetrating Latin American markets in a really quick manner, generating a positive reaction among the users of their services and at the same time, creating problems for the authorities in relation as to how they should be regulated.

### 2.3. URBAN GOVERNANCE

Because the ICTs are impacting transportation and creating a whole new array of issues need to be taken care of, that are not technological issues but in reality Governance issues. An example of this, is the quality of the public transportation services provided to users, which ceased being an engineering problem to irrevocably becoming an institutional and political
challenge for local governments, thus, testing their capacity to promote changes both in providing transportation services as well as in relation to its users/users behavior. In other words, the functioning and reorganization of urban transportation systems, whether individual or massive, depends more and more on Governance.

In our case study, in order to achieve the institutional transformation required for efficient and transparent management of urban transportation systems together with the efficient use of the remainder of its social actors, Governance means a change in management practices and structures with a higher dose of administrative coordination and cooperation. Currently, it is not possible to deny that there is an evident need to count on the technical capability and operative efficacy of public institutions and organizations for the purpose of providing transportation services where user centered quality is evident.

During the last few years, the way to govern cities has experienced meaningful changes. The most important cities around the world are facing new urban and economic challenges, where political, institutional and administrative action and traditional governance models no longer offer efficient or sustainable solutions. Society has moved from a model of governance in which the state was the political center and had undisputable monopoly of articulation and quest of collective interest, to a situation on which decisions are the result of interaction and mutual dependency between political institutions and society. Since the 1990’s, the term Governance came into used in order to refer to this reality, as a different phenomenon of traditional government, based on the hierarchic relationship between the government and the governed. Governance as a concept attempts to explain the most recent transformations in the government functions in a complex globalization/relocation context, social complexity (implying juxtaposed integration/differentiation processes), scientific-technological advances, bias of politics, loss of the self-sufficient role of the state and ambiguity in state action (Kooiman, 2005; Jessop, 1999).

For the rest of our case study, we will consider the concept of Governance as explained by Aguilar (2008); “Governance in a descriptive sense alludes to the larger capacity of decision and influence that non-governmental actors (private and financial companies, civil society organizations, autonomous thought centers (“think tanks”), international financial institutions), have acquired in the processing of public affairs, in the definition of orientation and implementation of public policies and services, and in giving rise to new ways of association and coordination of governments with private and social organizations in the implementation of policies and in providing services”.

2.3.4. A New Era for Urban Public Transportation Governance

The Urban Transportation problem is no longer a matter of engineering or financing, to become unavoidably an administrative and political challenge for local governments, as evidence of their capacity to promote changes in providing transportation services as well as changing users’ behavior. In other words, the operation and organization of Urban
Transportation services, whether individual or massive, public or private, depend more and more on Urban Governance (Dávila & Brand, 2012)\textsuperscript{34}.

To date, according to a publication by UN-Habitat (2012)\textsuperscript{35}, the standard response to addressing urban mobility issues typically has been to increase infrastructure, mostly for cars, such as building more roads, highways, flyovers, or tunnels. Unfortunately, these developments engender a vicious circle: more roads, more cars, more congestion. Besides, more infrastructures stimulate urban sprawl because access to peripheral urban areas is eased, increasing car use, which, in turn, calls for further infrastructure development, and so on. In addition thereto, in metropolitan areas where administrative boundaries do not always match, each administration has its own mobility policies and transportation systems. This often leads to inefficiencies and unattractiveness due to uncoordinated operations, such as mismatching schedules or multiple fares. Well-operating institutions and a high level of political support are essential for creating and maintaining good quality infrastructure and services for urban mobility (UN-Habitat, 2012)\textsuperscript{36}.

In the specific case of Taxi Industry, from the standpoint of a local government, the theme of Uber’s entrance into the taxi and livery service marketplace has challenged the status quo on every level in a small amount of time. Local governments faced with this disruption of the status quo have sought to gain leverage over Uber’s activities in order to assert control and maintain regulatory authority and relevance. At the same time, they have incentives to protect their financial and contractual benefits with their current “lessees”: the medallion holders (Schneider, 2015)\textsuperscript{37}.

To fully understand our case, in the following table we have summarized the relevant components and actors involved from the different bodies of literature consulted.

**Table 2: Relevant components and actors involved with Urban Transportation Systems**

<table>
<thead>
<tr>
<th>Urban Transport Components</th>
<th>Actors Involved</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demand</strong></td>
<td>Users</td>
</tr>
<tr>
<td>(person’s who need to move)</td>
<td></td>
</tr>
<tr>
<td><strong>Supply</strong></td>
<td>Administrator</td>
</tr>
<tr>
<td>(infrastructures, modes of transport, interface)</td>
<td>Operators</td>
</tr>
<tr>
<td><strong>Legal and institutional framework</strong></td>
<td>Authorities</td>
</tr>
<tr>
<td>(regulatory policies and regulations)</td>
<td>(planning, management and control)</td>
</tr>
<tr>
<td><strong>ICTs</strong></td>
<td>Stakeholders</td>
</tr>
<tr>
<td>(data layer, e-hailing)</td>
<td></td>
</tr>
</tbody>
</table>

*Source: Author’s Analysis*

To conclude this first chapter, below is a synopsis of the conceptual research framework, for the purpose of providing an overview of the existing relation between the research question and the literature review.
Figure 4: Conceptual Framework

As we can see from Figure 4, the proposed conceptual framework suggests that ICTs penetration are impacting the management of Urban Transportation Systems and more specifically, the quality and efficiency of the individual public transportation service (taxi) provision. As a result, after half a century, the transition to the new millennium represents a change in public transportation policies. Authorities in charge of urban transportation have the opportunity to shape the future of transportation. In order to capitalize on this transformation, cities and governments must rethink and address decades of old rules, regulations, and entrenched vested interests. They also must understand that tackling the complexity of large urban systems cannot be achieved without proper Urban Governance. However, the looming question is whether they have the political will to take action, and how will they rise to this urban challenge.
3. CASE STUDIES

We now have our conceptual framework to explore that in many cities with the entry of ICTs in the transport sector, the institutionalism of Individual Public Transport has been questioned. Governance is needed to achieve institutional transformation of Urban Transportation Systems. The conceptual framework helps us write our cases, as we review all dimensions following the identification of actors we have established. In this chapter we study the case of two Latin American cities: México City and Bogotá D.C. Both are capital cities characterized by a rapid urbanization process and by being the cities using more Ubers in Latin America. First of all, I will present the case of México City; second, the case of Bogotá. Both descriptions will be organized in three sections: introduction of the Country and City context, subsequent thereto, a deeper emphasis is placed on the case study area, Urban Transportation Systems and their regulations. Then we will show the importance of Individual Public Transporters (Taxis) within Urban Transportation Systems. However our major interest is to review their regulatory frameworks, with a deeper look at the impact of ICTs in providing individual public transportation service to finally understand how the governance of individual public transportation is being impacted by the entry of Uber. Finally, we will present a graph with the main actors involved and their relations with the Taxi industry and its regulations.

3.1 CASE STUDY 1: MEXICO CITY, MEXICO

3.1.1 CONTEXT

A) HISTORICAL DEVELOPMENT

Mexico City, also known as the Federal District, is the capital of Mexico and also Mexico’s largest city. The Aztecs founded the city in 1325 AD, which later became capital of New Spain after the Conquest of the America’s. The Federal District was created in 1824 after Mexico achieved its independence from Spain. The Republican Constitution of 1824 established Mexico City as the nation’s capital (CDP, 2015)\(^38\).

Throughout the twentieth century, Mexico City has experienced significant growth both in size and population (Varela, 2015)\(^39\). The economic and political pre-eminence of Mexico City was enhanced, particularly during the Porfirio Díaz Dictatorship from 1870 to 1910, which endowed the nation’s capital with strong advantages in terms of social and physical infrastructure. It was, however, after the Mexican Revolution (1910-17) when the city’s population began its decisive upsurge (Connolly, 2003)\(^40\). During the 30’s Mexico’s capital started to grow at higher rates compared to the rates observed at national levels. By 1950, the city expanded its reach within the Federal District concentrating 99% of the population to the metropolitan level. Between 1950 and 1960 urban population growth in Mexico City increased even further yet. During the seventies, the city grew out into the State of Mexico in response to policies and housing projects located in the outskirts of the City (Varela, 2015). However, it was during the 1970s and 1990s when the territorial dimension of the
city and its population grew dramatically. It extended from 683 Km2 in 1970 to over 1,295 km2 in 1990; whereas the population exploded from 8 million in the 1970s to over 15 million in the 1990s (Connolly, 2003).

Today the estimated population of Mexico City is over 8.9 million people (INEGI, 2016)\(^{41}\). However, that of its metropolitan area is much greater with a population of 21.2 million people. It concentrates 17% of the nationwide population, making Mexico City the most populous metropolitan area in the Western Hemisphere. It is estimated that the population will reach 22 million by 2020 (CONAPO, 2010)\(^{42}\), (see Figure 5). Currently the definition of what is called the Mexico City Metropolitan Area (MCMA) includes the Federal District; 59 municipalities in the State of Mexico and one municipality in the State of Hidalgo.

Some facts such as a drastic reduction in fertility caused by family planning policies introduced in the 1970s and the increase in life expectancy, are defining the new city demographics. Moreover, rural inhabitants are now more attracted to crossing the border and moving to other large and medium-sized cities (Connolly 2003). Indeed, there are more people leaving the Mexico City Metropolitan Area than arriving (INEGI 2009)\(^{43}\). Urban migration has slowed, and now natural growth is the main cause of Mexico City's population growth (World Population Review, 2016)\(^{44}\). However, despite the drop in the population growth rate, the profound impact of uncontrolled expansions remains starkly visible across the agglomeration, with poor housing and urban infrastructure, thus resulting in marginalization erupting abundantly over the entire region (IGLUS-EPFL, 2016).

**Figure 5: Demographic Population in MCMA 1950-2020**

![Graph showing demographic population in MCMA 1950-2020](image)

*Source: Author’s elaboration with data from Connolly (2003) and CONAPO 2010*

In spite of the changing demographic trends, the country’s capital has never stopped growing. According to Connolly (2003), densities have remained stable over 500 years, oscillating around 120 persons per hectare as the city grows cyclically, in accordance with macroeconomic and social processes governing urban development. As a general rule, the
city expands horizontally in times of recession, when land is cheap, and consolidates in times of economic growth when credit for building is available.

From an economic standpoint, Mexico City has always accounted for a large percentage of the National GDP. According to INEGI, in 2012, Mexico City’s GDP accounted for 17% of the national GDP. By 2012, Mexico City’s GDP increased 4.4% in comparison to the previous year; that meant a recovery in the city’s economy from the 2009 crisis (Gobierno de la Ciudad de México, 2015-Government of Mexico City). It is estimated that Mexico City’s GDP will grow at a rate of approximately 4.5% by 2020 (Mexico City’s Mayors’ Statistics, 2007).

As we can see, Mexico City, as any major city is facing demographic challenges. An unmeasured growth in population has resulted in an unprecedented urban sprawl. The depopulation of urban areas of Mexico City and the increasing settlement of its suburban areas results in a trend leading to a steady decline in population growth rates in the metropolis. Since the 1990s to date, the urban sprawl has caused greater and longer trips, from the urban neighborhoods to the capital, which is where the main economic activities and government business are conducted, causing congestion and mobility problems.

It is with this perspective that Mexico City gathers the most important economic, political and cultural activities in the country. For purposes of understanding the role of transportation infrastructures in Mexico City, as well as the extensive car ridership as a result of the city’s urban growth pattern, let us now look into its urban transportation system development.

B) URBAN TRANSPORTATION SYSTEM DEVELOPMENT

Before delving into this specific topic, we would like to point out that Mexico City is characterized by having two political-administrative periods: before and after 1997. Before 1997, Mexico City had an unelected government; this one was appointed by the national government. It was not until 1997 that the head of the Mexico City Government began being elected by popular vote. Because of this very pertinent fact, before 1997, the governance as well as the development of urban transportation systems in Mexico City were marked by a very active participation of the national government.

• Period before 1960: The beginning of the Electric Streetcars and Microbuses

Electric streetcars began running in Mexico City in 1900 under the Porfirio Diaz. A group of Canadian and European investors formed Mexico Electric Tramways Co., known locally as “Tranvías Eléctricos de México” (TEM), which would long time be the sole operator of electric streetcars in the city (Morrison, 2003). In 1908, the first internal combustion

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1 Microbuses are low-capacity public transport vehicles, smaller than buses. Likewise, in Mexico City they began to operate in the late sixties as “taxis fixed route” (public taxis).
engine vehicles appeared. They were for the exclusive of the higher classes, those with high purchasing ability (CAF, 2011). Subsequently thereto, in 1915 due to a protracted trolley union members’ strike, groups of people adapted automobiles, lengthening the chassis and modifying seats with wooden benches, created what was called as “Camioncitos” (microbuses), which became very popular, as they reached off route areas of the city and into the suburbs, thus becoming a very profitable business (Marquez, 2012).48

During the first 17 years of the 20th century, the urban sprawl was favored by trolley cars that eased movement. By 1917, trolley cars counted on 14 lines that covered the entire city (Rodriguez & Navarro, 1983). During the following thirty years (1917 - 1946), an increase in the number of “camioncitos” (now known as “camiones”) fleet was registered and a competition began between both public transportation services: buses and streetcars (Gonzalez, 1988)50.

Between 1920 and 1945, there were many protests by the Mexican employees of the Mexico Tramways Co. against it. This friction resulted in President Manuel Avila in 1945 accusing Mexico Tramways Co. of poor service and broken contracts (Morrison, 2003). Subsequent thereto, the monopolized company was nationalized (Marquez, 2012). In 1952 a public entity was created, known as “Servicio de Transportes Eléctricos del Distrito Federal” (STE), which was the new one entity responsible for electric streetcar operations.

In 1960, 45% of the population lived in the suburbs, tendency that increased the need for mobility to satisfy the population growth (Rodriguez and Navarro, 1983). In addition, middle and high social classes purchased cars, which increased the number of vehicles by more than 350%. Concurrently thereto, buses were the main means of transportation in the city. Both means of transportation operated on a road system that was already presenting congestion problems. This resulted in one of the most harmful phenomena for the future of the city: the transportation vicious cycle (CAF, 2011).

• **Period 1960-1980: The beginning of the Mass Transportation System in the City & Government Participation**

Up to the second half of the 60’s, México City did not count on an organized system for public transportation. The Mass Transit System (Metro) inaugurated in 1969, was to become the backbone of the metropolitan area transportation system, thus displacing the exaggerated presence of taxis. From its inception, the system was operated by a public entity of the Department of the Federal District (DDF)2, so-called “Sistema de Transporte Colectivo- Metro” (STC). In 1969, it was composed of 12.7 Kms of tracks and 16 stations. Between 1971 and 1976, the development of the Metro network was stopped and the second stage of subway construction was built between 1977 and 1982, resulting in 78.8 kms of tracks and 80 stations (González & Navarro, 1987).51

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2 DDF – was the public body of the Mexican Federal Government created to take over the government of the Federal District (1928-1997).
The beginning of the subway system thrusted transportation planning in the Federal District, however, the National (Federal) Government was in charge of regulating urban transportation, resulting in delays in the institutionalism of the transportation sector. Transportation management losses resulted in very high costs for the city, being a fundamental task the creation of effective city planning proposals for effective problem resolution. This governability model strengthened the irregular growth process that was evident with the increasing number of public taxis as well as in the urban sprawl and metropolitan population growth prevalent in Latin American capital cities in the aforementioned period of time.

Between 1973 and 1974, for purposes of reorganizing the bus system, bus driver unions merged and created buses public limited liability companies (CAF, 2011). By 1976, these buses public limited companies attended 42% of the 15 millions of daily trips within the Federal District, while the subway was used by merely 9.2% of passengers. On the other hand, low capacity units such as taxis, public buses and individual cars, constantly increased their importance within the transportation sector.

• **Period 1981-1996: Microbuses Crises & Privatization of Public Transportation Services**

The economic boom of public transportation during the first half of the 20th century, where drivers had unions and post-revolutionary limited liability public companies combined with rapid urban growth, generated an over demand for public transportation services, resulting in the fact that drivers had a good reputation and their fares were high. Subsequently thereto, in 1981, preponderance of public transportation forced authorities to regulate fares and transportation services, as an economic strategy for the general benefit of society (Berrones, 2014)\(^{52}\).

In 1981, the national government through the DDF took over bus services. All concessions were eliminated and a decentralized company, Urban Transport Ruta-100 (Autotransportes Urbanos de Pasajeros Ruta-100) was created as the sole bus company authorized to provide such services in the Federal District. Ruta-100 operated between 1981 and 1995, and during this time it had a fleet of up to 7500 vehicles servicing 207 routes (Berrones, 2014).

During this period, subway construction continued at a lower rate than in previous years. The first light train line was also built, to cover the Federal District neighborhoods located to the south. In 1995, the Mexico City Secretary of Transportation (SETRAVI)\(^3\) was created, which was comprised of the existing Federal District transportation agencies. According to CAF (2011)\(^{53}\), the Urban Transportation Systems history in Mexico City at the end of 1996 can be summarized in three aspects:

- Inefficiency of the metropolitan transportation system, with longer trips and more expensive mobility. That was the result of the low capacity means of transportation

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\(^2\) SETRAVI - Secretaría de Transporte y Vialidad; currently SEMOVI - Secretaría de Movilidad.
individual private vehicles, taxis and public vehicles), being used for half of all trips, which was similar to the higher capacity means (subway, bus, light train, trolley car).

- Bankruptcy of the public company Urban Transport Ruta-100, a service of fundamental relevance due to its role in society and its metropolitan operations.
- The proliferation of the public transportation services provided by microbuses. A public transportation service that was deregulated and had grown more than 1200% in 17 years.

**Post 1997 Period: The New Millennium & the Metropolitan Transportation System**

The transition to the new millennium was accompanied by the raising of individual vehicle use in the metropolitan area and 160,000 additional vehicles per year increasing to 200,000 by the end of the 20th century, and from 250,000 to 300,000 during the first years of the new millennium. This increase and the predominance of low capacity units within the public transportation, increased congestion and environmental impact.

During this period, the political transition that had started with the arrival of Cuauhtémoc Cárdenas in 1997, advocating increased local government autonomy, due to the fact that he was the first Head of State popularly elected, broke the informal relationships that used to characterize the life of public works, setting forth the beginning of a transformation in city management (IGLUS EPFL, 2016). This political fact had an important influence on urban infrastructures management, especially with regards to transportation management. According to CAF (2011), from 1997 to 2000, one important fact was the unfortunate rise of the taxi fleet as a result of 5,000 additional concessions, increasing the severe oversupply that had been created in recent years.

By the end of 2000, issuance of new taxi concessions was frozen due to public transportation issues, thus strengthening public transportation with the renewal and rise of the RTP fleet and the acquisition of new trains for subway and light train lines. For individual transportation (taxis, buses) a new program of vehicle renovation is conducted for the purpose of substituting microbuses with modern low emissions engines buses, and by replacing obsolete taxis for new vehicle models. However, the main issue was the increase of the private vehicles. Therefore, the Federal District Government decided to build roads ensuring metropolitan connectivity (CAF, 2011).

The most relevant fact in public transportation was the creation of a new mode of transportation in the Metropolitan Area; the first line of Rapid Bus Transit (BRT) simply known as “Metrobus”. The first corridor was open to the public in 2005. Currently, Mexico City has three rapid bus transit or transportation corridor systems. Metro bus Insurgentes subsequently expanded its service coverage (Metrobus Insurgentes Sur) as did Metrobus Eje 4 (Lámbarry, 2010).

**Currently**
Mexico City has an extensive public transportation network system. The mass public transportation system is composed of the subway (Metro); Trolleybus system (Trolebus); BRT System (Metrobus); Suburban and Light Train. Public transportation is comprised of buses and microbuses. Individual public transportation includes bicycles and taxis; the latter being the most important mode within the individual public transport in the city and which is being impacted by the entry of companies such as Uber and Cabify in the taxi market.

Daily trips in MCMA reached 48.8 million and 2.5 trips per person per day by 2007. Public transportation concentrates the majority of trips with 58.1% followed by non-vehicle users (mostly pedestrians) (26.9%) and, private vehicles with 15%. Out of the 24 million daily trips made in public transportation, only 31% are made through mass transportation systems like the subway, or Mexico’s BRT system (Metrobus) (Varela, 2015). See figure 6.

**Figure 6: Daily trips profile of MCMA, 2007**

![Chart showing daily trips profile of MCMA, 2007](image)

Source: Author’s elaboration with data from CAF 2011, CTSEMBARQ Mexico and 2007 mobility survey SETRAVI

In Mexico City car ownership and use has considerably increased. The origin-destination surveys from 1994 and 2007 show that the increase in the number of car trips in the MAMC by far exceeds demographic growth rate. Between 1994 and 2007, the number of car trips increased by approximately 40%; while the population increased by 24%, (see Table 3) (CTS Mexico & ITDP, 2011)\(^56\). Likewise, vehicle fleet has grown rapidly. In 1990, there were 2 million cars on the road. By 2008, there were over 5 million cars. It is estimated that by 2020 the car fleet will be 7.5 million, and 9.5 million by 2030 (Zamudio and Alvarado, 2014)\(^57\). Table 4 below shows the vehicle ridership rate nationwide in Mexico, as well as in Mexico City from 2000 to 2010. As we can see, one of the problems facing the city is the proliferation of individual privately-owned vehicles. Despite advances in the development of public transportation systems in the city, for many years public investments have been focused on road infrastructure development to benefit private transportation, which has encourage its use (UN-HABITAT, 2015)\(^58\).
Table 3: Trips per day in the Metropolitan Area of Mexico City

<table>
<thead>
<tr>
<th>Year of Survey OD</th>
<th>Total of Trips (millions)</th>
<th>Modal Participation (Car)</th>
<th>Car Trips (millions)</th>
<th>Increase of Car Trips</th>
<th>Increase of Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1983</td>
<td>12.1</td>
<td>15%</td>
<td>1.8</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1994</td>
<td>13.6</td>
<td>17%</td>
<td>2.3</td>
<td>27%</td>
<td>34%</td>
</tr>
<tr>
<td>2007</td>
<td>17</td>
<td>19%</td>
<td>3.2</td>
<td>40%</td>
<td>24%</td>
</tr>
</tbody>
</table>


Table 4: Motorization rate: vehicles per capita

<table>
<thead>
<tr>
<th></th>
<th>Motorization rate (vehicles/thousand people)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2000</td>
</tr>
<tr>
<td>Mexico (country)</td>
<td>160.1</td>
</tr>
<tr>
<td>Mexico City</td>
<td>291.9</td>
</tr>
</tbody>
</table>

Source: Islas et al. (2011)59

Another pertinent fact to be considered within the context of Urban Transportation Systems in Mexico City is the average travel time. According to CAF (2011) it was 40 minutes by subway or train; 50 minutes by bus; 27 minutes by taxi and 35 minutes by car. (See fig. 7).

Figure 7: Average travel time by means of transportation (minutes)

Source: CAF 2011, based on Observatorio de Movilidad 2009

The rapid growth in MCMA’s population, traffic congestion, a relatively old vehicular fleet and industrial activity over the latter half of the 20th century, combined with the city’s meteorological and topographical situation, has produced dangerous levels of air pollution, making it one of the most polluted cities in the world (Molina and Molina 200260; Molina et al. 200761). Pollution and smog create new challenges in terms of public health. The geographical and climatic location of Mexico City, together with the demographic boom it experienced, have all helped to create deathly high pollution levels in the urban area. First warnings were delivered in the 1970s, although little mitigation was made during the 1980s,
as a result thereof, air pollution became a public health emergency in the following decade (Garza 1996)\textsuperscript{62}. In fact, the air quality is one of the biggest environmental problems that the city is currently facing to date. (Mijares and Dodder, 2014)\textsuperscript{63}.

Vehicles were to be blamed for up to three quarters of the pollution, and thus all efforts were focused on reducing their impact by renovating old diesel public transportation services and introducing electrical options (such as trolley buses) (Garza 1996). The effectiveness of such measures was modest since they did not address the main source: private mobility within the city. A battery of regulatory measures transforming the transportation system in the city was then enforced during the late 1980s and the 1990s, such as tightening emission standards requirements, the planned-to-be-temporary “A Day Without Car” Program prohibiting the circulation of each vehicle one day a week, promoting incentives for unleaded fuels, or inspecting industrial facilities to control emissions (Garza 1996). Additionally, several policies were developed to create public transportation options as opposed to privately owned vehicle ridership, for the purpose of generating changes in attitudes as to how large masses of human populations can move around in modern-day cities. (Zamudio and Alvarado, 2014). An example of this is Metrobus, according to SETRAVI (the Mexico City transportation authorities) data, between 2005 and 2008, this transportation modality has avoided the emission into the atmosphere of 107,257 tons of CO\textsubscript{2}. Likewise, with the implementation of the BRT System (Metrobus) the use of privately – owned vehicles has been reduced. According to the Mexico City government, 17% of the metrobus users were previously using their cars to make these trips. (Zamudio and Alvarado, 2014). However, current pollution levels are still the highest in the country, with some substances at dangerously high levels (that is, ozone concentration is 2.5 times the safety levels recommended by the World health Organization) (Ireland 2014)\textsuperscript{64}.

As we can see Mexico City is facing mobility and environmental challenges. In the metropolitan area, low-capacity vehicles and taxis that comprise public transportation services are rapidly expanding with a growing motor vehicle fleet. This fact has contributed to the congestion of Mexico City, causing the vicious circle of urban transportation that we have reviewed earlier in this paper.

\textbf{3.1.2 INSTITUTIONAL ORGANIZATION}

\textbf{A) ADMINISTRATIVE ORGANIZATION}

The United Mexican States is a federal republic composed of thirty-two federal entities; thirty-one state governments and one Federal District government, which is Mexico City. The Constitution of 1917 stipulates that each one of these entities has its own congress and constitution, thus resulting in their being are free to govern themselves according to their own laws, providing the latter do not contradict the Constitution of the country. The states are internally divided into municipalities. Each entity consists of a freely elected governor and congress (or assembly); and municipal governments with an elected mayor and each with a freely elected municipal council, headed by the mayor (Connolly, 2003).
Mexico City has a special status within the federal republic. It does not have a Constitution but rather a Statute of Autonomy. For administrative purposes, the Federal District is divided into 16 boroughs (delegaciones in Spanish), which are not fully equivalent to a municipality. Until 1998, the national President designated members of the Federal District government, like ministerial posts, and he in turn designated heads (delegados) of the 16 boroughs (delegaciones). The first elected Head of Government of the Federal District was Cuauhtémoc Cárdenas. The designated heads (delegados) were also elected by free suffrage for the first time in 2000 (Connolly, 2003).

Regarding institutional responsibilities, Federal authorities (at a nationwide level) have jurisdiction throughout the entire national territory, state authorities have jurisdiction within their state, and municipal authorities have jurisdiction at local levels (Islas et al., 2011). In the case of the states, municipalities provide city services, whereas in Mexico City, most of the services are provided by the Government of the Federal District and not by the boroughs. Nowadays, the Metropolitan Area of Mexico City is governed by the Federal District, the State of Mexico, and in a lesser degree, by the State of Hidalgo.

Regarding mobility in Mexico, each governmental level, national, regional and local, has specific roles in urban transportation management. Usually, there is a clear definition of tasks, decisions and responsibilities for each one of the levels of government, but there could be several exceptions (Islas et al., 2011). Currently, there is no institutional and legal framework to regulate urban transportation in metropolitan areas (Lobo, 2014)\textsuperscript{65}.

According to Islas et al. (2011), in the national government the development and implementation of urban mobility policies is a responsibility that has been assigned to three secretariats. These are:

- **The Communications and Transportation Secretariat (SCT).** This entity is responsible for planning, constructing, operating and regulating transportation infrastructure needed for purposes of national integration. SCT is in charge of regulating intercity transportation. Moreover, SCT is responsible for the proper integration of intercity transportation infrastructure with urban transportation infrastructure.

- **The Social Development Secretariat (SEDESOL).** This entity is responsible for formulating national policy regarding urban development and urban transportation policy needed for sustainable urban development.

- **The Finance and Public Credit Secretariat (SHCP).** This entity is responsible for evaluating and providing funds for transportation projects and programs in the national budget. In addition thereto, it is responsible for making decisions regarding key elements of energy price policy.

Several other national government secretariats make decisions impacting urban transportation. For example, the Economics Secretariat may propose and implement policies related to vehicle production and marketing (Islas et al., 2011).
In state capitals, such as Mexico City, the state government is in charge of granting concessions for the purpose of providing public services. It regulates fare policy decisions, public service supervision, route design and other activities (Islas et al., 2011). Municipal governments have responsibilities, such as: traffic control on urban roads; public security, safety and emergency response; geometric design approval of local streets; planning and management of municipal urban development.

In Mexico City, state government organization is very similar to the national government organization. It governs urban transportation systems through three secretariats, which are:

- **The Secretary of Mobility (SEMOVI).** This entity is responsible for regulating public transportation. Likewise, it is in charge of transportation planning.
- **The Secretary of Infrastructure (SOI).** This entity is responsible for building transportation infrastructures as well as transportation systems maintenance.
- **The Secretary of Public Security (SSP).** This entity is responsible for managing city traffic.

The system of public transportation governance in Mexico City is fragmented at several levels from planning to operations, and this creates serious difficulties for purposes of integrating different transportation modes across the different administrative boundaries. For example, in the MCMA there are eight companies operating public transportation systems: 5 in Mexico City, 2 in the State of Mexico and only one envisioned as a suburban transportation service, (See Figure 8) (Varela, 2015).

**Figure 8: System of Governance for Public Transportation in Mexico City**

![System of Governance for Public Transportation in Mexico City](image)

*Source: Developed by the author, based on Varela 2015*

Finally, the urban transportation sector in Mexico is regulated at two government levels: the national and the state government levels (Mijares and Dodder, 2014). In the following figure we have summarized the government authorities in charge of regulating urban...
transportation systems in Mexico City.

Figure 9: Authorities in charge of Urban Transportation Systems in Mexico City

![Diagram of Urban Transportation Systems]

Source: Developed by the author

In Mexico City, in each case, the legal instrument for purposes of operating in the realm of public transportation is having been awarded a **concession**. In each and every transportation mode, vehicles as well as routes are subject to regulations, (with the exception of collective taxis), while frequency is not regulated in transportation mode. Public transportation operates on regulated fees. Microbuses, standard and articulated buses, as well as electric means of transportation (train and subway), offer their services on regular routes. The system for charging and collecting fares is internal for microbuses and standard public buses, while on the subway, train and articulated buses payment is external, meaning that ticket purchasing is done in an office. The metrobus system works with a magnetic card through automatic turnstiles, located inside stations and/or around them (CAF, 2011).

As observed, the Taxi sector is becoming more and more important among public transportation modes prevalent in Mexico City. We shall now review how Taxis are regulated and with the introduction of Uber in the taxi market in Mexico City, let us review how it is regulated.

### B) REGULATION OF INDIVIDUAL PUBLIC TRANSPORTERS

#### Classical Individual Public Transporters

Among Individual Public Transportation modes, it is important to take into account the relevance of Taxis in the dynamics and functionality of new residential developments in Mexico City. Prior investigations regarding participation of public transportation in the urbanization process occurred in the Metropolitan Area of Mexico City, refer us to the internal service of residential units through taxis, which constitutes a key element due to the dimensions of the residential complexes, hence, the distances between some houses and the entrances (Negrete & Paquette, 2011)\(^6\). According to a study conducted by the Autonomous Metropolitan University, taxi service is the public transportation sector with the largest fleet in Mexico City: 106,000 regular units and about 22,000 “illegal” or
“pirate” units, but is four times the number of public units and it performs barely 4.4 percent of rides (López, 2012). Likewise, according to Parametría (2013), taxis are used by nine out of ten inhabitants of the Federal District, estimating that daily rides provided for this transportation mode is about 1.1 million. This article (Parametría, 2013) also shows that in a poll among urban transportation riders in Mexico City about the most used mode of urban transportation, Taxis, represent the third most used option.

According to Jiménez (2009), the current Federal District Transportation Law does not point out what must be understood as Individual Public Transportation; nevertheless, the repealed Regulation for Public Transportation through Taxi Service in the Federal District gave a concept, pointing out that “it is an activity consisting in the transportation of one or more passengers in vehicles known as taxis, in all of their modalities, made by the public administration of the Federal District, whether by itself or through physical or moral persons properly authorized under the form of concession, which is offered in a regular, permanent, continuous, uniform and uninterrupted way to the public in exchange for the payment of a fee.” With reference to the operation of Taxis, Article 43 of the current Federal District Transportation Regulation only defines two kinds of taxis: free taxi and site taxi, let us point out their features, as follows:

- **Free Taxi.** A vehicle that provides an individual public transportation to the passenger, without a specific itinerary or permanent route to any service base within the territorial scope in the Federal District. They can form guilds to provide a service, previously authorized by the Secretary.

- **Site Taxi.** Vehicle that provides a service of individual public transportation to passengers, without a specific itinerary, through physical spaces authorized as “bases” (taxis stops), modal transference centers, terminals, and other places determined by the Secretary. These can be constituted by unions and freely provide a service.

The Individual Public Transportation regulations (Taxis) are established in the Federal District Mobility Law; Federal District Transportation Law and in the Federal District Transportation Regulation. The object of the first one is to regulate transportation for passengers and load services in the Federal District in all its modes. At the same time, the Federal District Transportation Law contains a chapter related to the concession, with particular measurements for security in the individual passenger public transportation service. Referring to the Federal District Transportation Regulation, the taxi service is highlighted, defining the kinds of free taxi and site taxi (Abascal, 2011).

In those legal instruments the main features of Taxis and their operation in Mexico City, are grouped as follows:

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6 http://www.consejeria.cdmx.gob.mx/index.php/articulo-leyes-y-reglamentos/27-leyes/930-ley-de-movilidad-del-distrito-federal#ley-de-movilidad-del-distrito-federal
a) *Taxi-Driver duo.* In the aforementioned legal instruments requirements a taxi driver must fulfill, such as characteristics and specifications of the vehicle. Among the most important aspects, highlighted is the obligation of the concessionaire of the taxi service to take yearly training courses about driving, self-defense, civility and respect for the pedestrian, as well as the obligation to use vehicles no more than five (5) years old. Likewise, it points out, as far as the characteristics and requirements that the vehicle must satisfy, such as the official identification of them and the use of taximeters. To confirm the compliance with all the criteria proposed in the law and guarantee an optimal provision of this kind of public transportation service, the State have the authority to make vehicular technical revisions (*Revisión Vehicular*). This process is performed by the Secretary through a public lottery based in the vehicular pattern of the Public Transportation Registration, whereby 20% of registered units will be inspected. Said list will be published in the Federal District Official Gazette, indicating the place, date and time; if units are not presented at the appointed (date and time) they will receive a fine equivalent to 230 days of the current minimal wage.

b) *Concessions.* In the Federal District, the Transportation Law and the Transportation Regulation establishes a general concessions regime, without making any distinction between individual or public. Regarding concessions ownership, the former establishes that any given natural person or legal entity may own up five concessions (Art. 30 of the Federal District Transportation Law and Art. 17 of the Federal District Transportation Regulations). These concessions are valid for up to 20 years, which period of time may be renewed for the same number of years (Art. 43 and 35 of the Federal District Transportation Law). The proceeding for the assignment of said concessions is initially through Call to Public Auction. The restricted invitation operates for services that are complementary to existing services and for those that have ceased to operate. Concession rights are terminated by resolution of the competent authority. The Federal District Transportation Secretary has a contracting committee, which can adjudicate the concessions directly when their award creates disloyal competition or monopolies; when it endangers the providing of services as such, or when there are general public needs which must be addressed. Transportation systems are implemented with new technologies; mandating environmental conservation or the latter is enacted by an administrative or court order (Art. 26 of the Federal District Transportation Law). Of utmost importance is the fact that in the Federal District the assignment of rights and obligations derived by the concessions is not allowed, thereby prohibiting its alienation or rent (Art. 36 of the Federal District Transportation Law). Nevertheless, the designation of three beneficiaries to whom the concession could be assigned in the case of mental or physical lack of capacity, or death is allowed.

c) *Fares.* The law has defined it as the amount of money that riders pay for services provided. In this sense, the taximeter indicates the cost of the ride according to the authorized fee by the State government. Fares are calculated depending on the distance, wait time, traffic delays, initial charge, and the number of passengers. Fares are determined by Federal District Government Head proposed by the Secretary, and are
Another trait of individual public transportation in Mexico City is the fact that the State Government coordinates a special taxi substitution program, to provide credits and financial support. This program is for taxi concessionaires up to 68 years old who require vehicle substitution, no matter the model. The purpose of this program is to renew concessionaire vehicles. This program also aims on protecting the source of income of the concessionaires, by optimizing their vehicles’ image and service quality, by reducing expenses caused by constant deterioration of their units; ensuring the validity of their concession, by being able respond to the norms for quality service, and by guaranteeing the safety and comfort of the driver and his/her passengers.

In this context, it is quite clear that the concession of the public service does not grant any rights. The competent authority is merely assigning the task of providing a service to a private operator. The former empowers the latter for purposes of providing a public service and the latter receives a financial benefit that is not ownership or any other real right over such service, because it is a concession, not an assignment (Abascal, 2011).

It is important to mention that within traditional taxis services context, the Mexico City government is not approving new taxi licenses, resulting in an irregular or informal market where you can buy a taxi license. The cost is approximately 40,000 national currency (2,146.58 US dollars) and in addition thereto, amounts between 40,000 to 60,000 national currency (2,146.58 – 3,219.88 US dollars) must be paid for the concession.

Newcomers: the case of Uber and its regulations

Advances in information and communication technologies (ICTs) have enabled several developments in products and services that have reshaped several industries. Individual public transportation (Taxis) has not been immune to the advances in ICTs. Ubiquitous smartphone use has resulted in a more networked economy and new real-time ride-sharing services have emerged. Companies like Uber, Lyft, and Sidecar have launched smartphone applications that link customers with drivers in the vicinity, with GPS providing driver and customer location along with route navigation (Alexander & Gonzalez, 2015)\(^7\).

The most popular of these new transportation network companies (TNCs) is Uber. For this reason we have chosen it for our research. Uber (originally known as UberCab) was founded in March 2009 in San Francisco. In July 2010, Uber went live for the first time in San Francisco (Chokkattu & Crook, 2014)\(^72\). In October 2010, the company changed its name from UberCab to Uber and that same year in November, Uber went live on Android. By May 2011, Uber had started operating in New York City. In the subsequent six months, it expanded its service in Washington D.C., Chicago, Boston and Paris. In July 2012, Uber introduced a new peer-to-peer service known as UberX. This more affordable service

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\(^7\) National currency – Mexican Peso / 1 US dollar = 18.63 Mexican Peso (05/27/2016)
connects any car owner who passes a background check to a passenger through the Uber app (Feeney, 2015). Currently, Uber operates in more than 250 cities around the world.

In Mexico City, this start up operates since 2013 and works the same as in the rest of the world. Uber operation is simple: the app is downloaded for free into the Smartphone; the user creates a profile in which he/she enters his/her basic data and a credit card number, because cash is not accepted by Uber. Service can be requested from any vehicle registered. The software in this app detects the location using the integrated GPS in the Smartphone and tracks down any of the Uber units within 4 kms. The closest ones receive a service notification in their phones and then drivers decide whether or not to take the call. If service is accepted, the user will receive the information of the vehicle that will pick him/her up in his/her phone: photo, car model, license plate number, driver’s name and estimated time of arrival. Once the driver picks up the customer, this app shows the route and the estimated time of arrival to requested destination.

A person interested in registering as an Uber driver must be an individual with a registered business; he/she must own the vehicle and sit for eight different exams (Arévalo, 2014). The estimated fare for Uber is calculated based on the distance and can be calculated through the app, specifying the place of departure and destination. Besides, if the ride is shared with other passengers, the fare can be directly divided in the app and it has the ability to each portion of the fare to the corresponding credit cards. Finally, Uber gives its users the opportunity to assess drivers and vice versa.

These new trends in taxi services provide new options for urban travel that challenge the existing regulatory frameworks governing the taxi industry. As can be observed, the legal instruments regulating Traditional Taxi Cabs in México City do not establish any kind of regulations for passenger private services offered through the apps and computer platforms, such as the case of Uber and Cabify. For that reason, in June 2015, the México City Government decided to regulate this kind of service through a special agreement (it is not a Law) published in a Mexico City District Gazette No. 133 Bis. July 15, 2015; thus becoming the first Latin American city to regulate Uber.

Important to mention is the fact that for purposes of promoting fair competition for the benefit of city mobility, working tables were set up with the participation of taxi service representatives from Uber, EasyTaxi and Cabify; that is, citizens that were experts in mobility, technology, and NGOs. The purpose of this was to create proposals that would allow for innovation in services offered by taxis but under a scheme of “fair competition”. Stakeholders who participated in these encounters gave recommendations aimed at improving the conditions under which every transportation service operates, allowing the coexistence of diverse systems of individual public transportation in México City. They defined the aspects contemplated in the agreement as well as improvement conditions for traditional individual public transportation. As a result, among the important aspects contemplated in the regulation approved to companies such as Uber and Cabify in Mexico City, were the following:
1. Platforms must register with the Secretary of Mobility (SEMOVI) through the payment of 4 thousand 617.50 national currency (292.50 US dollars). The yearly permit each driver must carry on him/her costs 1.599 National currency (101.29 US dollars).

2. Car operators must be registered to receive a permit to offer their services. Requirements are:
   - Cars must cost at least 200,000 National currency (12,668 US dollars) reflected in the original bill of sale.
   - Have sticker of known as “the zero sticker” (“calcomanía cero” in Spanish), four doors, air conditioning, air bags, seat belts, radio and an identification determined by Secretary of Mobility to be set in a visible place in the vehicle.

3. Drivers must contribute 1.5% of each ride to a transportation fund created by the Government of the Federal District “The Taxi, Mobility and Pedestrian Fund” destined to the public works related to mobility.

4. This agreement does not establish a limit in the numbers of vehicles that an app can have circulating in a city.

There are also restrictions established for this type of service. These are:
1. Drivers cannot receive cash as a payment.
2. Drivers cannot be sublet their vehicles.
3. Drivers cannot receive payments through prepaid cards, or payment systems from stores.
4. Drivers cannot have a set base or fixed site.

Finally, it is important to refer to the fact that although users play an important role in the chain of urban public transportation services, their participation is not established in the legal instruments governing the Individual Public Transport (traditional ones).

Currently, in Mexico City, Uber offers four service options: UberX with the lower fare; UberXL for group low fare rides; UberBLACK, which is the original Uber and UberSUV which is the largest version of vehicle (UBER, 2016). Interesting, for example, is the case of UberX where the base fare appears in the taxi market within a competitive price in comparison to that of the classical Taxis (See Table 5) (Numérico, 2015).

Table 5: Base fare of Individual Public Transportation services in Mexican National Currency

<table>
<thead>
<tr>
<th>Kinds</th>
<th>Base Fare (US Dollar)</th>
<th>Each minute</th>
<th>Each Km</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helied Taxi</td>
<td>0.47</td>
<td>0.08</td>
<td>0.23</td>
</tr>
<tr>
<td>Standing Taxi</td>
<td>0.70</td>
<td>0.09</td>
<td>0.28</td>
</tr>
<tr>
<td>Radio Taxi</td>
<td>1.47</td>
<td>0.13</td>
<td>0.40</td>
</tr>
<tr>
<td>UberX</td>
<td>0.99</td>
<td>0.11</td>
<td>0.19</td>
</tr>
<tr>
<td>Uber Black</td>
<td>1.61</td>
<td>0.19</td>
<td>0.44</td>
</tr>
</tbody>
</table>

Source: Own elaboration based on Numérico (2015) with data from SEMOVI and UBER
To summarize, in the case of México City, we can affirm that from the Individual Public Transportation modalities, the Taxi sector plays a significant role in the daily dynamics of everyday city life. Providers of individual transportation service (Taxis) offer a service under a concession awarded by the state government to satisfy the population needs, and they must meet the requirements set forth by transportation authorities regarding: operation territories, bases, concessions and fees.

As our research question refers to identifying under what institutional conditions Uber should be regulated, keeping in mind that, as we discussed in the Literature Review, the reorganization and operation of Urban Transportation Systems depend more and more on Governance patterns; we have summarized in the figure below, the actors involved and their relationships with the operation of Individual Public Transportation.

(1) *State Government*, regulation entity of: fees, concessions, territorial scope and operation geographic points (bases).

(2) *Legal and regulatory framework*: concessions.

(3) *Taxis*, private operators.

(4) *Technological actors*: apps and computer platforms.

(5) *Users*, define the origin and destination, and at times, the route.

**Figure 10: Actors involved and their relationship with the operation and regulation of Individual Public Transportation.**

*Source: Developed by the author*
3.2. CASE STUDY 2: BOGOTÁ, COLOMBIA

3.2.1 CONTEXT

A) HISTORICAL DEVELOPMENT

The city was founded under the name of Santafé de Bogotá in 1538, by the Spanish conqueror Gonzalo Jiménez de Quesada. In 1549, according to a Spanish royal decree, it was named the See for the Royal Audience. In 1553, Pope Pius IV granted the city the title of Archdiocese; in 1719, the city was designated as the capital of the viceroyalty of the recently created province of Nueva Granada (Martínez, 1987). In 2000, the Constitution of 1991 changed the name of Bogotá to be officially known as Bogotá, Capital District, abbreviated as Bogotá D.C.

At the beginning of the 20th century, Bogotá took on the role of the main city in a process of economic growth and urban consolidation. This successive increase of central functions, and its role as capital city of the new Republic of Colombia, from 1819, definitively consolidated the preponderance of the city in the national urban system (Rueda-García, 2003).

During the first half of the twentieth century, the population living in rural areas was substantially greater than the urban population. In 1951 the census data still showed 61% of the total national population living in rural areas. Subsequently thereto, a new development model was adopted. It was adjusted by “Operación Colombia”, whereby urban industrial development and agricultural modernizations became predominant, thus resulting inevitably in the breakdown of traditional rural society, and massive migration to urban centers. Also political violence became an important additional factor in the migratory process. As a result, during the second half of the twentieth century, Colombian society underwent a number of deep transformations in its population distribution, economy, and social behavior. These conditions gave a strong thrust to demographic growth and to the urbanization process (Rueda-García, 2003). Likewise, the specific conditions of Colombian geography and their effects on the location of different growth centers gave rise to an urban-regional system characterized by the presence of some main metropolitan areas and a large number of urban centers of different sizes (Rueda-García, 2003).

Our case study Bogotá City, is one of these main metropolitan areas. Since 1800, the city has grown from approximately twenty two thousand people to eight million. The main factor in the growth of the city was migration from the Eastern highlands (World population review, 2016). According to the National Administrative Department of Statistics (DANE-as per its Spanish acronym) (2016) the total population went from 4.2 million inhabitants in 1985, to 6.8 million inhabitants in 2005 and 7.8 million inhabitants in 2015, representing over 16% of the total national population (48,203,405 inhabitants).

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8 The Royal Audiences were the Spanish courts establish by the King of Spain, for appealing sentences handed down by other authorities.
The population of Bogota is expected to be over 8.3 million by 2020; see figure below.

**Figure 11: Population growth of Bogotá 1985-2020**

![Population growth graph]

*Source: based on DANE data*

Bogotá and its metropolitan area have a high urban growth rate. According to the 2005 census by DANE the population density for the city is approximately 4,310 people per square kilometer. The rural area of the capital district only has about 15,810 inhabitants (World population review, 2016).

From an economic standpoint, Bogotá has always accounted for a significant percentage of the National GDP. Bogotá’s GDP growth has outperformed the national average in the last decade. In 2011, Bogotá’s GDP per capita was 34% higher than Colombia’s (10,956 vs. 7,239) (Bohorquez et al, 2013). According to the Bogotá’s Chamber of Commerce (2015), today Bogotá represents the eighth largest economy in Latin America. With a GDP of US$ 89,179 million represents 24% of the national GDP and is the strongest regional economy in the country.

As we can see throughout its history, Bogotá has played an outstanding role in the country’s life like many other major cities in Latin America. From the beginning it has been the main political, economic and cultural center of the country, currently becoming the epicenter of Colombia.

However, the urban growth in the metropolis have been characterized by a growth in housing in the surrounding areas of the city (urban sprawl), which has not been properly followed by a concurrent increase in urban transport infrastructure. Let us now see how the urban transportation systems have been developed and implemented in the city; and also how transport policies take place in the framework of urban development plans.
B) URBAN TRANSPORTATION SYSTEM DEVELOPMENT

• Before 2000

Since the end of the 19th century, public transportation in Bogotá has gone through different modes, starting in 1884, when the first mule pulled trolley car was inaugurated, managed by Bogotá City Railway Company, operation that lasted until 1910, with the arrival of electric trolley cars; undoubtedly improving the life and well-being for the city inhabitants, due to its simplicity in operation and identification of routes by colors, it allowed people to access the service without further complications and eased the use for people with a very basic level of education or for those who did not read or write. Additionally, there was a student discount (Aspilla and Rey, 2013).

Unrest and vandalism of the famous “Bogotazo,” which occurred on April 9th, 1948, the burning and destruction of the trolley car wagons caused the closing down in 1951 of the public company in charge of the managing the city’s transportation system. In the following years until the late nineties, public transportation service was provided, mainly by private companies that covered close to 80% of the transportation routes, using different types of buses, while the recently created the Urban transportation District Company (EDTU-as per its Spanish acronym) provided the bus and trolley bus services, which could only cover 20% of the available routes (Aspilla and Rey, 2013).

Economic difficulties, competition with private companies; progressive unit wear and tear; poor management and population growth led the Company to close down at the beginning of the nineties. This decision turned private companies into the sole service providers, resulting in their characterizing themselves as “affiliate companies” of buses and routes, which were assigned by the Bogotá Traffic Secretary. All of this led to a deterioration in quality and service provision, higher congestion (traffic jams), oversupply, “penny war”, accidents, environmental pollution. Moreover, the chaos in the public transportation provision and a weak institutional framework, subjected to the discretion of an urban transportation union which paralyzed the city every time there was a raise in fares, without this generating a requirement or an improvement in the quality of the service provided to the riders. (Aspilla and Rey, 2013).

Even though the administration of mayors Andrés Pastrana (1988-1990), Jaime Castro (1992-1994) and the first government of Antanás Mockus (1995-1997), presented proposals for solving the public transportation problem, they did not get any results. It was during the latter’s administration when a solution to the problem of urban mobility in Bogotá was presented, giving way to the implementation of a massive transportation system (Transmilenio Co., 2016).

By the end of the 20th century, the transportation situation in Bogota was critical. There was no efficient means of urban public transportation that could function as an option to privately owned vehicle use (which increased as urban sprawl increased) and the city registered low levels of competitiveness in regards to Latin American cities and an
unsatisfactory quality of life for most of its inhabitants.

- **After 2000**

The newly elected mayor, Enrique Peñalosa (1998-2000) included in his government program a Project to solve the public transportation problem. During the execution of the plan “Por la Bogotá que Queremos” (“For the Bogotá We All Want”) a determination was made regarding urban mobility and, more concretely, regarding the Mass Transportation Systems Project, and the construction of an infrastructure exclusively destined to its operation. It began with specialized trunk highways with restricted lane use, stations, bicycle paths and special pedestrian access squares, designed to make the use of the system easier for the citizens. However, based on the studies performed by Japan International Cooperation Agency (JICA) during the first Administration of Mayor Mockus, it was determined that a subway was not the most convenient short term option due to the fact that within ten to fifteen years a new line would be needed and its cost would then be ten times greater than the option of articulated buses (Transmilenio Co., 2016). Thus, the solution for public transportation became the design of a Rapid Transit Bus (BRT) project called Transmilenio (Ardila, 2004).\(^{85}\)

Transmilenio was a citywide, city-owned system that was supposed to offer speed and convenience to its riders. Buses were to run in designated corridors to avoid traffic overflows, and riders were to now purchase their tickets at the entrance of bus stations instead of upon entering buses. The Project started in 1998 and was operationalized in December 2000. Additional corridors opened every year until 2006 (Heres et al, 2013)\(^{86}\) and old buses were progressively taken out of these main corridors ensuring a smooth transition so that eventually Transmilenio was the only public transportation remaining on the main route (Audouin et al, 2016)\(^{87}\). Transmilenio agency is in charge of managing the System; coordinating the different actors, planning and controlling how this public service is provided, and it is responsible for providing an efficient service. Through concessions, Transmilenio outsourced the operation of the BRT system and feeder lines. Tendering processes were implemented where pre-Transmilenio era companies could bid if they had previously demonstrated experience operating the city transportation system. This process resulted in high competition and the birth of new entities composed of existing companies as shareholders and also with new partners from other industries responsible for cash investments (Audouin et al, 2016).

Transmilenio was considered a success in several axes of the city because it improved the efficiency of the transportation system, reduced travel times and afforded significant cost saving for citizens (Bocajero and Oviedo, 2014)\(^{88}\). However Transmilenio was never developed to integrate all the other transportation lines in the city. It always ran in a regulated manner, parallel to the traditional public transport system that was completely unregulated (Ramos, 2015)\(^{89}\).

In 2006, the city of Bogotá planned to integrate all of the transportation modes through
Bogotá Mobility Master Plan, and finally launched the Integrated Public Transport System of Bogotá (SITP-as per its Spanish acronym) in 2009. The plan proposed the development of an organized public transport network that would function with an integrated fare that utilized a unique payment method to improve local traveling conditions (SDP, 2009). SITP drivers get a fixed salary, which is independent of the number of passengers they transport, announcing the end of the “penny war” (Audouin et al., 2016).

In this way, SITP started its operations in the mid-2012 and despite the fact that the system contemplates social and environmental benefits, it is important to highlight that in its implementation the District is still facing major issues. First, the integration of the SITP with the traditional mass public transportation is still ongoing in the city. Currently, even though it was implemented with a Smart card called “Tu llave” (“Your Key”) as the only means of payment, 25% of the large fleet of feeder buses (2500 buses) are still operating on the old system (Audouin et al, 2016). Second, financial stability and balance must be guaranteed to all actors for all actors involved in SITP on a long term basis, specifically bus operators, who have experienced losses due to the low rates of system occupation. Likewise, its adaptation to the technological changes will be fundamental for the consolidation of SITP within the public transportation systems (Aspilla & Rey, 2013). Moreover, the local government must encourage deep changes within citizen culture in favor of its use.

Transmilenio Co. is in charge of managing the Public Transportation Integrated System and must be vigilant in its operation for purposes of fulfilling the demand for public transportation in the city of Bogotá with quality, efficiency and sustainability.

- **Currently**

As we can see, during decades the transportation system has been one of the biggest problems mandating solutions in Bogotá. Individual public transportation (Taxi ridership) emerges in the city as a solution to the mobility of its growing population in the surrounding areas. However, the quality of the taxi service is very poor. In this regard, with the entry of Uber in the Taxi industry we are witnessing a substantial transformation of the sector and its institutional framework.

Despite mass public transportation being the most important means of daily trips in the city, the use of motor cycles has increased in the past few years, resulting in more congestion in the metropolitan area causing a decrease in the speed of movement during rush hours. As an example, on main roads average speeds up to 10 km per hour, and sometimes, at rush morning hours, reaching 5 km per hour (Chaparro, 2002). Currently in Bogotá D.C the mass public transportation service is provided by three systems: the traditional bus service, Transmilenio and the illegal transport, locally known as “pirate” (Ardila, 2005). As we can see mass public transportation does not carry even half of the passengers, which cover their needs through the use of private cars or taxis, the latter being the most demanded of public

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9 The traditional bus service in Bogotá include buses (carry up to 70 passengers seating and standing), jitney vans (carry up to 45 passengers standing and 30 seating) and microbuses (15 passengers).
transportation services.

According to data published by the Bogotá’s Chamber of Commerce and by the Andes University (2015)\textsuperscript{92}, in Bogotá city by 2011 there were 11,587,750 trips per day. Mass public transportation\textsuperscript{10} covers 28% of the daily trips. Individual Public transportation (car, motorcycle, taxis and bicycles) represents 26% of daily trips and walking 27.5%, see fig. 12.

\textbf{Figure 12: Daily trips profile of Bogota, 2011}

\begin{center}
\includegraphics[width=\textwidth]{fig12.png}
\end{center}

\textit{Source: Bogota’s Chamber of Commerce and the Andes University (2015), based on Mobility Secretary (Mobility Survey 2011)}

Furthermore, according to JICA in 1995 the Bogotá motor vehicle use rate was 82.6 cars per each one thousand inhabitants, while according to the mobility survey\textsuperscript{11}, in 2005 it escalated to 84.7 cars per each thousand inhabitants. This indicates that the number of cars grew faster than city population (Bogota’s Chamber of Commerce, 2007)\textsuperscript{93}. In fact, according to CAF (2011), the number of cars registered in 2008 grew to 1,168,683 units (cars, buses, private and public service trucks) a number that is significantly higher than the one from a year before (1,062,698 units with an increase of over 10%). In addition, it is estimated that between 300,000 and 400,000 vehicles registered outside the capital city, run on the city streets (CAF, 2011). Since 1998 Bogota government instituted the vehicular restriction known as “Pico y Placa” (which could be translate as “Peak and License Plate”\textsuperscript{12}) and there are over 40% less private vehicles and 20% less public service vehicles on the road during rush hours (CAF, 2011). Nevertheless, several disadvantages associated with this measure have also been identified, including the increase in cars on the road due to the fact that drivers with sufficient purchasing power tend to buy a second vehicle (often a more polluting model); the increase in the number of trips by taxis and motor cycles; the risk of fraud inherent to the policy (such as counterfeit license plates), and the difficulty of dealing

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\textsuperscript{10} Mass public transportation in Bogotá is operated by minibus and bus, and there are no massive transportation systems on rails such as train, subway or trolley car.

\textsuperscript{11} The mobility survey was carried out by the Mobility Secretary of Bogotá D.C.

\textsuperscript{12} “Peak and License Plate” was a measure set in Bogotá to help regulate the traffic during rush hours. The measure restricts traffic access into a pre-established urban area for vehicles with license plate numbers ending in certain digits on pre-established days and during certain hours.
with exceptions provided for certain types of vehicles, people, or organizations (Breithaupt and Fjellstrom, 2002). 

Another pertinent aspect within the context of Urban Transportation in Bogotá is the average travel time, which is 40.5 minutes by car; 34 minutes by taxi and 73 minutes by bus, see fig. 13 (CAF, 2011). That means that if you use the bus it will take almost twice as long to reach your destination.

**Figure 13: Average travel time by means of transportation (minutes)**

![Average travel time by means of transportation](image)

*Source: CAF 2011*

In a study conducted by Arturo Ardila (1998) the same concludes that the main cause for congestion is the lack of governmental managerial capacity to plan and operate transportation systems. That means that capacity of system effectiveness was much lower than the one already installed. The Transportation problem has originated a process of decision making on the public administration, that establishes the restriction of cars through the rule of "vehicle restriction to be applied at rush hours" for particular vehicles and public service. In the case of privately owned vehicles the restriction was established at rush hours, which allowed speeds to be increased during those hours, but the congestion has moved to hours before or after the restriction, thus resulting in the fact that public administration response was contrary to the issue identified in the study conducted by Ardila. He concluded that the cause of the problem was an inadequate management of the supply, but the reaction of the authorities was based on control over the demand.

This context described in the city of Bogotá has caused an environmental impact, generating deterioration in the air quality, this becoming a topic of great concern due to its impact on public health and well-being of city inhabitants. Several experts affirm that Bogotá is the third most polluted city in Latin America and part of this pollution is caused by cars. The Mobility Master Plan ensures that “the city has a lot of obsolete vehicles in terms of age

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13 The Mobility Master Plan was adopted by Bogota D.C. State Government through Decree 319 of 2006, and establishes programs, projects and goals, short, medium and long term, with a 20-year horizon, for the development of Transportation Systems within the city, including strategies and policies about planning and operation of transport.
and vehicular design and this is reflected in the provision of poor transportation service. Besides, old vehicles that are more contaminating, enjoy a permissive normative in terms of pollution”. But this lack of regulation turns worse with the oversupply of mass public transportation units and the absence of a more organized and efficient operation of the fleet. All of these factors have generated concern for the citizens, perceiving serious problems in air quality. (Bogotá’s Chamber of Commerce, 2007). We can summarize this section saying that in Bogotá there is a vicious circle of urban transportation with the same characteristics we describe in the literature review.

3.2.2 INSTITUTIONAL ORGANIZATION

A) ADMINISTRATIVE ORGANIZATION

In the Colombian Constitution, Bogotá is identified as the only capital district along with 32 departments; making a total of 33 different, independent administrative units (Law-Decree No. 1421 of 1993)\(^\text{14}\). Each of these entities has autonomy for managing its affairs as well as for planning and promoting economic and social development within its territory. The departments also exercise administrative functions; complementary coordination of municipal actions and intermediation between Central Government and municipal power as well as providing services as determined by the Constitution and Laws (Porras, 2005)\(^\text{96}\). Departments are usually composed of municipalities (second and lower level of administrative division in Colombia) whose function is to insure the general well-being and improvement in the quality of life of their populations (Porras, 2005).

As a result of its special status of Capital District, Bogotá Capital District itself consists of 20 local municipalities (known as Localidades in Spanish) (Agreement 2 signed in 1992)\(^\text{15}\), being less important than a department municipality, all of which have their own local mayor (who is named by the City Mayor, out of three names proposed by the Local Administrative Councils). The Superior Mayor of Bogota (Alcalde Mayor) oversees the twenty localities. He is elected for periods of four years without the possibility of being re-elected in two consecutive elections. (Rueda-García, 2003).

Regarding mobility in Colombia, the Ministry of Transportation (nationwide level) is the head of the transport sector in Colombia. As set out in the document Conpes (2002)\(^\text{97}\) the National Government is responsible for:
- Setting broad policies in the urban transport sector;
- Enacting the general rules establishing the requisites, conditions and procedures regarding market access safety standards, delegation of responsibility between levels of governments, and coordination of local and national authorities;


• Identifying critical projects and helping the other levels of Government for purposes of funding and implementing them;
• Promoting private capital participation in the financing and operating of transport infrastructure within its constitutional mandate of not allowing monopolies and promoting efficiency in public service offer.

The National Government also regulates the special service of Buses and Taxis (CAF, 2011).

Concurrently, Municipal Governments (municipalities) are usually responsible (in the 32 other departments of Colombia) for:
• Planning urban transport, which involves defining financing structures, defining infrastructure requirements for the different transport modes, and setting bus routes and fares;
• Funding the construction, operation, and maintenance of urban transport infrastructure;
• Increasing infrastructure funding possibilities through private sector partnerships and providing public transport, such as the construction and operation of traffic light systems, the administrative procedures implementation, and any other aspect pertaining to the urban transport system;
• Regulating and supervising the supply of urban public transportation, typically in the hands of private investors;
• Managing traffic within their boundaries is a task for which municipalities must be accountable. (Conpes, 2002).

In the case of Bogotá, it is not the local municipalities (localidades) but, Bogotá D.C administration that takes care of transport activities through the Secretary of Mobility (see figure 14). This secretary called “Secretaría Distrital de Movilidad de Bogotá” (SDM-as per its Spanish acronym), is the central authority in charge of planning and supervising the provision of bus services. Likewise, SDM is responsible for authorizing the creation of bus companies and for supervising them. SDM is also responsible for authorizing new bus routes and determining the schedules, frequency, and determining the fleet a bus company needs to serve the assigned routes (Ardila, 2005).

**Figure 14: Authorities in charge of Urban Transportation in Bogotá**

\[\text{Source: Author’s elaboration}\]
For example, in the case of Transmilenio System, the city created the agency known as Transmilenio Co. in charge of outsourcing with the private sector the provision of bus services along high-quality standards. The city law that created the former, assigns this agency the responsibility of developing a rapid bus transit system using high-capacity buses and a trunk and feeder system. In addition thereto, the city law allows Trasnmilenio Co. to regulate and supervise bus services, possibly beyond its own corridors and to extend on to the non-Transmilenio system. This law prohibits this agency from owning buses (Ardila, 2005). Both entities report to the Mayor’s Office.

As we have seen, taxis account for 5.1% of the total trips, let us now see how they are regulated.

B) REGULATION OF INDIVIDUAL PUBLIC TRANSPORTERS

Classic Individual Public Transporters

Despite the fact that the taxi industry carries several rides per day in Bogotá, the regulation for individual public transportation is limited.

According to the Bogotá’s Chamber of Commerce and the Andes University (2015), the number of vehicles registered for the Individual Public Taxi Service, has been stable for the last five years. By 2015, the Taxi fleet in the city reached 52,360, with an increase of 35 units in comparison to 2013, see figure 15. However, if we take into consideration the rate of taxis per person in Bogotá we can readily see that there is an oversupply in individual public transportation. The recommendation is to take one taxi per each 200 inhabitants as an indicator. Based on this, the optimum number of taxis for Bogotá city would be over 35,000 taxis as opposed to 52,021 authorized vehicles in 2007 (Bogotá’s Chamber of Commerce, 2007).

Figure 15: Number of vehicles registered for Taxi service in Bogotá

Source: Bogota’s Chamber of Commerce, based on Mobility Secretary 2014
Taxis within Bogotá’s Transportation Integrated System perform an important task as feeders of the Mass Public Transportation System. According to Ibáñez (2012) several areas in the city have been identified near the TransMilenio stations, where Taxis operate as feeders of individual transportation services, or, irregularly, as collective ones, responding to a specific demand that has developed for this kind of transportation. This is because Mass Public Transportation does not reach some areas, or there is an absence of routes. But Taxis in both modes, individual (legal) or collective (illegal), are demanded by the riders because they provide a service at a different level from the one provided by Mass Public Transportation, by allowing the rider to ride sitting down, in comfortable and safe conditions, with a high frequency of operation, and a lower time per ride than the one offered by Mass Public Transportation. This pattern applies for short distance rides in areas with a low demographic density as well. It is also important to point out that according to the study made by the Mobility District Secretary (2011), illegal transportation service is provided in approximately 153 points in the city of Bogotá. Likewise, said study establishes that the total of riders of the different modes of illegal transportation is over 33,509 riders per day, the modality that registers the highest number of riders is the one of individuals providing a service for mass transit, with approximately 11,095 riders. The riders choose this means because of accessibility, time efficiency and comfort (Ibañez, 2012). Another important fact of Individual Public Transportation in Bogotá is vehicle age. According to CAF (2010) the Taxi average age in the Metropolitan Area of Bogotá is 4.5 years.

Likewise, according to Bogotá’s Chamber of Commerce (2007), in Bogotá the Taxi service has been well rated, with an average of 3.5 (on a rating scale from 1 to 5). By 2007, this rate descended in comparison to 2006, when it was 4.2 (see fig. 16).

**Figure 16: Ratings to the means of Individual Public Transportation (Taxis)**

![Figure 16](image)

*Source: Bogota’s Chamber of Commerce, based on “Bogota Como Vamos”- Perception survey of use*

In Colombia, the Individual Public Transport (Taxis) legislation is established in three legal instruments (Ibáñez, 2012). These are:
• **Law-Decree 172 of 2001**, issued by the Ministry of Transport by which the Individual Public Transportation Service (Taxi) is regulated, as follows: “The Individual Ground Public Passenger Transport in Taxi vehicles, is the one that provides service under the responsibility of being legally constituted and duly authorized in this transportation mode company, without being subjected to any routes or schedules, where the rider sets the place of destination. The trip will be freely established by the contracting parts.” In addition, it regulates the *authorizations given by the National Government for companies that provide Taxi service*. It is important to note that the validity of the authorizations of companies is indefinite as long as they fulfill all the required conditions and criteria to provide good service. Some pertinent topics outlined in this Decree are:

- Linking a vehicle to a public transportation company, meaning the incorporation of such vehicle to the fleet of that company. This is formalized through a contract between the vehicle’s owner and the company, and will be made official once the local transportation authority issues an operation card. (Article 27).
- Vehicle entry into the fleet. The inclusion of taxis into the transportation service can be by increments or by replacement. Inclusion by increments occurs when the association results in a growth in the number of vehicles within this modality operating in its respective sector. Inclusion by replacement occurs when the association is performed in order to substitute another vehicle registered for public service. Local transportation authorities cannot authorize the inclusion of new taxis in the public transportation services by increment unless the need for this service is determined as a result of a technical study described in the aforementioned Decree 172 of 2001 (Article 35).

Other topics defined in this legal instrument are: Competent Authorities of the transportation sector; Company Authorization Requirements; Procedures and validity for Company Authorization; Insurance; Service Provision Conditions; Vehicle Registration; Supply management.

• **Roadway Traffic National Code** pertains to Law 769 from 2002 by which the Traffic National Code is issued and other provisions are set forth, and to Law 1383 from 2010 by which the Law 769 from 2002 – Roadway Traffic National Code is amended and other provisions are set forth therein. The Roadway Traffic National Code establishes: Transit Authorities; Information reports; driver training centers; Driver’s Licenses; Vehicles; driving licenses; license plates; mechanical inspections; Motor Vehicles National Registration; speed limits; traffic signals; behavior norms; public transportation vehicles’ driving norms; roads use and classification; traffic control Procedures; Sanctions and Procedures; action in case of Intoxication.

• **Fare Regulation**, National Government through the Ministry of Transportation establishes the general principles for fares calculations for individual public transportation. Resolution 4350 from 1998 stated the methodology to be used for calculating public transportation fares. Moreover, it also establishes that the authorities responsible for transportation must calculate the public transportation fare within its jurisdiction.
In the case of Bogotá D.C, the rules and regulations regulating mobility in the city and taxi vehicle circulation contain the basic standards for providing the taxi service. These legal instruments are: Agreement Project 134 of 2002 “through which the provision of the individual public transportation (taxi) service and other measurements adopted for the improvement of such service in the capital district are regulated,” and Agreement Project 166 of 2012 “through which evening taxi safety areas in the capital district are regulated.”

These legislations regulate the control and correct operation of taxis for purposes of satisfying the needs and safety of its riders, which must be controlled by the operating companies when they affiliate the vehicle, the owner and the driver. Agreement Project 134 from 2012 set forth in Article 8 that “Individual public transportation companies will issue the control card for the drivers associated to the vehicles without demanding any extra cost whatsoever”. Likewise, it established that each vehicle may have up to 2 drivers backed up by their company of association.

Regarding the taxi fleet in Bogotá, since the early nineties the city government, through the Secretary of Mobility, only allowed the entry of new vehicles into the taxi fleet by replacement, creating the “right by replacement” also known as “cupo” (quota). The main purpose of this public policy is to limit the number of taxis in the city (Decree Number 613-1993). The price for this “right by replacement” depends on market supply-demand, because it can change without any kind of methodology or regulation. Prices will fluctuate according to the city. However, in Bogotá the cost is over 81 million national currency\(^{16}\) (26,856 US dollars) (Finanzas Personales, 2016)\(^{102}\). As a result, a new taxi in Bogotá can buy a cupo, which price can fluctuate from 81 million to 95 million national currency (26,856 – 31,495 US dollars); or the other option is to turn an old taxi into scrap metal, so that the new taxi occupies the place of the old one. (Finanzas Personales, 2016).

Likewise, an important aspect within taxi context is the “affiliation” to a taxi company. Some of these will charge a monthly administrative fee of approximately 40,000 national currency (13.26 US dollars). Nevertheless, currently, this amount further decreased due to the use of apps; these have substituted the radio phone. Currently, one of the radio phone devices costs between 400,000 – 600,000 national currency (132.62 – 198.93 US dollars) and, in addition, the taxi company charges a monthly payment of 80,000 – 100,000 national currency (26.52 – 33.15 US dollars) for the use of its frequency (Finanzas Personales, 2106).

With regards to the taxi fare, according to Decree No. 400 dated September 26, 2014, its Mayor is responsible for fare regulations and other fees related to Taxi service operation.

Upon reviewing these national and local legal instruments we have been able to identify different actors involved in the operation of Individual Public Transportation in Colombia, which are:

- Transit and Transportation Authorities, that define policies, regulate operations, fares, among others.

\(^{16}\) National currency – Colombian Peso / 1 US Dollar = 3016 Colombian Peso (05/17/2016).
• Public Transit Companies, that,
  – Require authorization to provide service from the competent authority.
  – Celebrate linking contracts (“affiliation”) with the individual vehicle owners, who are charged for their entry into the company.
  – Receive income depending on the number of affiliated vehicles.
  – Do not have an employment or contractual link with the driver.
  – Are not responsible for the operation of vehicles, except for the payment of traffic fines.
• Taxi owners, that,
  – Celebrate linking contracts (“affiliation”) with the companies, to whom they pay for their association.
  – Receive their income according to the number of trips made (although in some cases they sublet the vehicle to a driver in exchange for a daily fee).
  – Hire and remunerate drivers.
  – Assume part of the vehicle operational costs (fares collection, vehicle maintenance.).
• Taxi drivers, that,
  – Sign contracts with the vehicle owner, with whom they agree upon payments for said vehicle leasing.
  – Receive their income according to the number of trips made during a day of work.
  – Assume part of the vehicle operational costs (fares collection, vehicle maintenance).
• Users.

Newcomers: The case of Uber and its regulation

To the landscape describing the Bogotá Taxi industry, one new player must be added, one that just as in Mexico City came into the new market to become a major player for now and many years to come. In 2013 Uber started operations, having conflicts since then with different sectors of the city, but mainly with the Taxi drivers; in addition, Uber has gained a reputation as illegal and has been accused as unfair competition. In Bogota, Uber works the same way as it does in México City, and it offers four types of services as well, but the services it offers have different names, such as: UberX, the cheapest category; UberBlack, defined as the Premium category to travel with more style; UberVan, service for up to eight people in one ride; and UberAngel, which allows the driver to drive the user’s vehicle when the latter is not able to do so. Because fares can change according to supply and demand, in Bogotá the Uber service fare during rush hours can be 20% or 30% higher than the fare of traditional taxi service.

As we can see these legal instruments do not establish any kind of regulation or norms for the private passenger services that are offered through the apps and computer platforms. In Colombia, according to traditional Taxi drivers, Uber is an unfair competitor. They state that these vehicles do not comply with the regulations established by the Ministry of Transportation, entity in charge of regulating everything related to the provision of public service in the Country; furthermore the taxi drivers also argue that such vehicles do not pay taxes, receiving a greater profit from a much lesser investment (Sánchez et al., 2016).
After many disputes among taxi drivers and Uber drivers as well as the threats of going on strike and blocking the streets from the first group; the President of the Country, Juan Manuel Santos, delegated in the Ministry of Transportation, the creation of a Decree to regulate the service provided by Uber and in November 2015, Decree 1079 was created, which unifies all regulations for the transportation sector. In this Decree, as a regulation for the services provided by Uber, a new mode of individual public transportation was presented as “Luxury Taxis” which are defined as:

“(…) that who offers the riders with conditions of comfort, accessibility and operation at a level higher than the basic one. It is characterized by offering its services using solely technological platforms for the efficient attention to its riders. Payment will be made only by electronic means and the service will be provided only by sedan vehicles, and/or vans. This service will count on a regulated minimal fee that will not be, in any case, lower than that of the basic level”.

As a result, currently there are two kinds of taxi services in Colombia: the basic taxi service, which is the same classic taxi service existing; and the luxury taxi service which must only be booked through an app or technological platform. It also establishes that the drivers and vehicles providing this service must work under the following specifications:
1. Being black with a line on the side, which features will be defined by the Ministry of Transportation.
3. Counting on the required elements for online interaction in real time with the technological platform, necessary for the provision of the service.
4. Counting on ABS brakes, frontal air bags and headrest.
5. Having four (4) side doors.
6. Having a passenger cabin with the capacity to accommodate a minimum of five (5) persons, including the driver.
7. Having space for baggage with capacity no lower than 0.40 cubic meters.
8. Having the bodywork of a closed truck four door, and/or sedan automobile.
9. Vehicles destined to provide services as “Luxury Taxis” must have a minimum of 7 years within this kind of service, counted from the date its respective license was issued. After this has been comply, vehicles must be replaced or changed to a basic level taxi service.
10. Drivers cannot receive cash as a payment.

In the following figure we have summarized the case of individual public transportation in Bogotá, DC. We have identified the main actors involved and their relationship with the operation and regulation of Individual Public Transportation.

(1) National Government, through the Ministry of Transportation, this entity authorizes the companies providing the Individual Public service (Taxi).
(2) State (Departmental) Governments, through the Mobility Secretary, this entity defines policies, regulates conditions for the operations and fees.
(3) Taxi (Company, Owner, Driver).
(4) Service Users. Defines the origin and destination of rides and sometimes the route to be taken. The Service Rider pays a fare for the ride.

**Figure 17: Actors involved and their relationship with the operation and regulation of Individual Public Transportation**

![Diagram of Individual Public Transportation Governance](image)

*Source: Author’s elaboration*

To sum up, the objective of this chapter was to describe the cases of Uber regulations in Mexico City and Bogotá. As we can see, over the past 40 years these Latin American cities have experienced unprecedented growth rates, raising its urban population and having more traffic jams and pollution. This dramatic shift to highly urbanized cities has had a significant impact on its urban transportation systems efficiency including its taxi systems. In both cities the taxi industry has been impacted by the introduction of Uber, which started its activities in 2013. Mexico City was the first Latin American city that regulated Uber at the beginning of 2015; whereas in the case of Bogota D.C, taxi apps were also regulated by the end of 2015. Both descriptions illustrate the relevance of Uber within the city’s taxi system and the way authorities responsible for urban transportation have acted to face this urban challenge.
4. ANALYSIS AND DISCUSSION

The purpose of this chapter is to analyze and discuss the cases of individual public transporters regulations, comparing them with the previously conducted literature review. I will attempt to draw up parallels between the cases, starting with the analysis of the taxi background within public transportation systems in both metropolis and then, we will take a deeper look at the regulations for the traditional taxi market and for Uber.

4.1 City's Taxi System background

Regarding the landscape of Individual Public Transportation Systems (taxi) in the transport sector, we could say that Mexico City and Bogotá are quite similar. Both are metroplis of Latin America facing major demographic, mobility and transportation challenges. The efficiency of the different public transportation modes, whether used on their own or in combination (co-modality) is a big issue. The vicious of urban transport is a constant in most of the cities of developing countries; and as we could see along our description of each city, they are not an exceptions of this one: Urban sprawl, high motorization and congestion levels, together with a public policy focused on road infrastructure investment promoting the use of particular vehicles, have been the main characteristics of these metropolis.

Metropolitan public transportation systems in our cities studied are characterized by the lack of quality and efficiency in providing taxi service. Problems include a 20 year old vehicle fleet on an average; low confort standards and an average of one hour or more commute time per ride during rush hours. In addition to this, public transportation systems displayed poor route coverage. In this context, Taxis have been used by public transportation users to complement inadequate public transportation services based largely on bus system controlled by the unions.

Even though in both cities, mass public transportation represents a great number of daily trips (Mexico: 58% and Bogotá: 40%) taxis are used as the best substitute for the riders of public transportation to get their destinations. Mexico City and Bogotá are cities with large taxi fleets. In fact, during the last years, the taxi industry has undergone a continuous and considerable growth for both legal and illegal modalities.

In many major cities around the world, demand for taxi services is based on the comfort, convenience and relative speed of the taxi in comparison with public transportation. Likewise, most of the taxi services demands are from lower income groups. They have the need of using them for their daily commute for which no public transportation options exist. There is also often a strong leisure market, typically peaking during late evening and after midnight hours, when the supply of public transportation simply does not exist.

Comparing the taxi service demand in Mexico City and in Bogotá in both cities users of public transportation in urban areas choose taxis due to time efficiency, comfort and accessibility. Furthermore, we have to mention that in both cities even though in the past few years the growth of taxi fleets has been evident, the demand for this kind of service does not seem to
have been satisfied.

Nevertheless, there are many issues concerning the taxi market. The most pertinent one is related to its regulation and control. In Mexico City as well as in Bogotá the regulation of this individual public transportation service is limited and sometimes the law can be interpreted in several ways. In addition to this, in both metropolis there exists a weak institutional framework as well as some organizational weaknesses. Authorities in charge of individual public transport are not able to supervise efficiently so that taxi operators comply with all standards and regulations established nor do they enforce pertinent regulations to the extent desired. As a consequence, there is a poor operation of the taxi system, giving way to corruption within the taxi market.

4.2 Taxi Industry Regulation

Traditional Taxi Regulation

Most of the situations described above are a result of the regulatory framework that governs traditional taxi services. The regulatory framework that governs the taxi industry in Mexico City and in Bogotá are quite similar. In fact, they share similar requirements. Even though taxi regulation should be based on assuring the demand of the service; maintaining the financial balance of the activity and the provision of a high quality service; taxi regulations in both cities involve some governing principles such as:

(i) **Entry control** (with local authorities, for instance, setting the maximum number of vehicles that can be used to provide taxi services);

(ii) **Operations control**;

(iii) **Setting standard rates per fare**;

(iv) **Licensing and performance requirements**; and

(v) **Financial responsibility standards** (such as compulsory insurances)

As a result thereof, regulators have responded by attempting to restrict access to the taxi service market, but at the same time have caused market competition to be progressively lower.

Regarding the first item, control of entry into the taxi market, regulators seek to limit the number of taxis in the urban areas. Most of the policy makers believe that when entry into taxi market is not restricted by “quantity” controls, large numbers of prospective new entrants will attempt to enter the market, generating more congestion and pollution. On the other hand, this practice has had particularly negative effect on the city`s taxi system. Currently in both cities, the practice of “quantity” controls to govern individual public transportation operations has contributed in creating a monopoly in the taxi industry; thus making the acquisition of taxi licences play an important role in the taxi market economy.

In Mexico a taxi license is required for purposes of providing taxi services. City governments determine the number of taxi licenses available within its jurisdictions and they issue concessions for a maximum period of 20 years, with the right of renewal for the same
number of years, meaning that a taxi license can be leased out and in some cases even transferred. In addition the Mexico City Government has not granted any new concessions for many years. In the case of Bogotá, even though the National Government does not foresee any limitation in the number of vehicles that can be affiliated to taxi companies, the National Government relies on city governments to determine the number of taxis within its municipal jurisdictions. And as we observed, in 1993, the Bogotá City Government established that the existing taxi fleet was sufficient to meet taxi service demands by prohibiting the issuance of new licences, and by allowing the inclusion of new vehicles only for the substitution of any taxi authorized prior to that date. As of that date (1993), there has not been any change in public policy regarding this very pertinent issue.

Under these types of policies in both cities the results have been very much the same. Over the years, the limited number of licenses has created a monopoly that rents out to incumbent taxi drivers and taxi license owners and in addition, it has also created a black market for purposes of acquiring a taxi license, all of this resulting in a taxi license price increase. The fact that currently in both metropolis, the respective city governments are not issuing new taxi licenses to keep the same taxi fleet in the coming years, has created a black market for anyone who wishes to enter the taxi business. The cost of a taxi license fluctuates according to current supply and demand. There is no intervention or participation from the authorities in charge of this sector regarding this cost transaction; this fact proves once again, the lack of control authorities display in this regard.

Also important to mention, is that despite the fact that in both cities authorities in charge of the taxi sector indicate that the number of vehicles authorized for providing this service is sufficient for fulfilling public needs; the reality seems to be quite different. One of the main critiques users have in relation to taxi service is the lack of supply existing in certain areas and schedules, the latter being one of the reasons why taxi users have had to choose the illegal manner of operating. As a consequence, the number of illegal taxis has been growing steadily throughout the years.

At this point, we may ask, how can the Mexico City Government determine that the number of taxis authorized is sufficient for fulfilling the public need when there are no clear procedures, as well as no clear rules in the decision making process regarding the adequate number of taxis that should be on the road to satisfy the demand? In the case of Bogotá, the same question arises: How and under what procedures does the City Government allow and increase the number of taxis despite the fact that there was a “freeze” in the number of taxis per fleet. Compare 2007: 52,021 taxis vs 2010: 52,722 taxis? When addressing these questions, it may become noticeable that there is a lack of a solid and effective institutional and regulatory framework.

Regarding the second point highlighted, the operation of the taxi system; in both cities we can say that there are more similarities than differences. In Mexico City and in Bogotá, the demand for traditional taxi services is mostly provided by the combination of two kinds of taxi services, which were described in the literature review: standing and hailing. While the
dispatching or pre-booked market, mostly belong to the service known as “luxury hire-car”. It is true that this one offers a greater quality service but, their fees are higher as well, for which there are no alternatives for frequent users of public transportation. As we have said before, in these two Latin American metrópolis, public transportation services are demanded by lower income passengers who cannot afford a private motorized vehicle and who usually live in the outskirts of the cities where no efficient public transportation exists.

However, these two taxi markets (standing and hailing), from their inception have presented weaknesses in their structure and in their service provision model. As a taxi user, it is frequent to find the following situations: users of standing taxi market wasting time in long lines waiting to take a taxi. They have to wait an uncertain period of time until the next taxi arrives; while users who hail a taxi on the street are exposed to paying a higher fare, in addition to being exposed to personal safety issues, due to the possibility of that taxi being illegal.

As we can see in both metrópolis, the city governments in charge of individual public transportation have lost control and supervision over the operation of this sector. As a consequence, regulators do not have any information and precise data concerning the reality of this mode of transportation operating in urban areas. Even though in the case of Mexico City, taxi services are supplied by individual owner-operators through concessions granted by the city government, and in Bogotá taxi services are supplied by private companies through authorizations granted by the National Government, most of the taxis do not comply with the rules and regulations established by authorities for providing an efficient, safe, reliable and affordable service.

Furthermore, in many cases the legal taxis will not take the riders to their destination due to the amount of money getting paid for the ride. The model under which they operate, together with the congestion of said capital cities, results in a stark reality: the time it takes the driver to take the rider to his/her destination and go back to the operations base (in the case of standing taxi), or get another passenger (in the case of hailing taxi) is not profitable, it does not justify the time invested. As a result, drivers will prefer to wait for another passenger with a more convenient destination. On the other hand, if the taxi driver agrees to provide the service for such customer, the fee he will negotiate to collect for this service which is considered “special” is different from the fare that has been previously determined by the regulating authority. This last fact has contributed to the proliferation of illegal taxis. In addition, the number of city dwellers from the lower income brackets with the expectation and authentic need to satisfy their transportation needs at a fair and reasonable price is progressively growing, and be it as it may, this segment of the population will choose the least expensive of options, legal or not. Of utmost consideration is the time factor invested in reaching their destination at the lowest cost possible.

Adding to this scenario is the fact that in both cities it is likely that vehicle ownership and operation are fragmented. In most cases, operators authorized to provide this service purchase a vehicle or a fleet of vehicles and charge drivers a fixed weekly or monthly fee.
fact, in Bogotá this scenario is worse, even though there are taxi companies authorized to provide the service, they are nothing more than outsourcing companies, whose main incentive is to count on the greatest number of affiliates possible, thus increasing the number of individuals involved in taxi operations (enhanced company-vehicle ownership-operation). As a result, providing this service in many cases is made available to taxi drivers, who, to cover their expenses and make additional profit, use their discretionality in providing this service in some areas and not in others.

Concerning taxi fares, in both cases it is regulated. Governments regulated taxi fares to protect taxi riders from exploitation due to the dispersed nature of transactions. It is certain that governments have a responsibility to protect users from abusive fares in exchange for receiving a public service. Nevertheless, taxi sector fares regulation has created problems in the competitive functioning of the market. In México City as well as in Bogotá the fares charged for this service are linked to the value given to license acquisition. It is because of that fact, that in both cities, when fares increase, the price of the licences also increases, and this also generates pressure from taxi unions to authorities for purposes of increasing fares once again and so on and so on, creating a vicious circle where the only one deriving a benefit from all of this is the taxi owner, given the fact that the taxi rider keeps on getting a poor and low quality service.

Even though the information regarding this topic is very limited, we know that fares are revised and adjusted in most of the cases when taxi drivers voice their protests to authorities. Even though fares are controlled through taximeters that each vehicle must have, as required by the law, in most cases the taximeter does not work or the base fare is different from the one determined by the regulators, which results in a fare set by the taxi driver. Moreover, the lack of transparency by not demanding a receipt for the transaction results in this kind of irregularity occurring more and more frequently.

Finally, both Latin American cities in this study, have their taxi markets characterized by quality regulation in order to ensure that taxi services meet minimum quality standards as well as assuring the safety of its users. Quality regulations covers a number of specific requirements for owners, drivers and vehicles. Regarding owners, these must have a clean criminal record and carry the appropriate comprehensive insurance for their taxi operations. For drivers, among the most remarkable aspects that can be mentioned are: criminal background checks and minimum level of driving experience; and last but not least, the vehicles regulations, which are: passenger space, minimum engine power, age limits, vehicle identification and metering.

Despite the fact that in both cities, supervision is established for puoses of verifying that the quality regulations are satisfied, the procedure for such supervision/inspection as well as its frequency is not provided for in the regulatory framework, and as a result thereof, it falls entirely under the charge of the taxi sector. As a consequence, you can see that in each metropolis, the city’s taxi system is composed by a great number of vehicles that do not meet the required conditions for operation for purposes of offering a high quality service and indeed, it is not possible to observe directly taxi or driver quality, only the age and type
of vehicle. In addition, the incentive to improve quality is impacted by the problems of signaling and the lack of repeated interactions.

Despite the fact that as in most regulated industries, consumers can complain to the regulator services, in the case of taxi industry that does not apply. There is no way or mechanism established by regulators where taxi users can report their dissatisfaction in a fast and efficient way. As a result, taxis are not concerned with providing a better service.

However, in both metropolis despite the low quality of service offered by taxis and the high fares, the few alternatives of public transportation options has forced taxi users to accept these conditions as a “silent victim” in each city, without having the possibility of complaining to their respective city governments.

Uber Regulation

With the emergence of Uber in 2013 in both cities, the traditional taxi industry started to face increasing competition from this new type of transportation service. The emergence of Uber, threatens to eliminate the traditional taxi industry’s stronghold. Currently, traditional taxis are facing more and more ever-present demands from their users in terms of quality, efficiency, comfort and service affordability.

In both cities traditonal taxi sector had fought the emergence of Uber by lobbying at city government headquarters. However, at the same time, taxis users have lobbied in support of Uber. Since Uber started its operation, many taxi users shifted to Uber due to the lower fares, cleaner cars, and a higher quality transportation service. In this sense, citizens have played an important role in pressuring regulators to enact new regulations to govern Uber and other ride-sharing services. In fact, Bogotá and Mexico City are classified as the South American capital cities that present a higher demand for the Uber service.

Uber has been challenging the traditional taxi industry complaints by arguing that it is not subject to the same regulatory framework of the traditional taxi, because it is a company based on sharing technology, and not a transportation providers. However, in our first case of study, Mexico City, Uber and similar companies were regulated as Transportation Network Companies (TNCs) under different requirements than those demanded from traditional taxis. The four main areas of Uber regulation in Mexico City are:
- Type of service offered, should be only as TNCs;
- Restrictions on the kind of vehicle (cost and enviromental requirements);
- Restrictions on method of payment;
- Contribution of each ride to a city government mobility fund.

When analyzing these regulations, we can identify as a strength the fact there are no quantity controls and that this is about quality controls. We can also say that even though the vehicle must have a minimum price and count on availing itself of certain technology, there is no demand for the vehicles to have any specific identification. About the restrictions
on a method of payment (Uber cannot receive payment in cash), this is not an issue for Uber, because since its inception, its services can only be paid by credit card.

Nevertheless, we must mention that there are some weaknesses in the recently approved regulation that the government of México City is currently facing, which is related to passenger safety concerns, including background checks for drivers. Uber as a taxi service provider, is not subject to the same background check requirements by the city government as traditional taxis. Uber company certainly requires drivers to submit their data to the company and then these are passed on to a private company which performs the background check. But, in a city where “express kidnappings” by taxi drivers are still a concern we can say that under this regulatory model, passenger safety somehow escapes city government controls and ultimately, the taxi system, as an individual public transportation service is a responsibility of the city government who in turn is also responsible for what may happen to a given user/rider. Likewise, it is important that the city government establish safety measurements in the matter of electronic commerce, aiming to avoid felonies such as credit card cloning and the leak of user private and financial data.

Regarding the case of Uber regulation in Bogotá, the results for the company are not very encouraging. Regulators from the National Government adopted the current taxi regulatory framework and included a new kind of taxi, called “luxury hire-car”. The five main areas that this regulation includes for “Luxury hire-car” are:

• Types of service offered, should be only as TNCs;
• Vehicle Restrictions (color, model, type and specific identification as a Taxi vehicle);
• Fare controls;
• Payment methods restrictions; and
• Time-sensitive restrictions regarding time frame for providing service requested.

If we analyze the content of these regulations even though they are not based on quantity and quality controls, this regulatory framework solely sets conditions restricting the possibilities of service offered by this technological platform. The restrictions on the color and identification of the vehicle as well as the fare control, are requirements that are not set within the Uber business model. Because of that, we can conclude that the creation of this new modality of individual public transportation, classified as “Luxury Taxis” does not solve the Uber issue in that country.

In addition, the competent authority of Bogotá does not explain the status of Uber referring to what is established in the article “entry of vehicles as part of the taxi fleet”, which establishes that competent authorities will not be able to authorize the entry of new taxis into the public transportation service system, as long as the requirements of the service are undetermined through a technical study (Decree Number 613/1993). Within this context, in the case that Uber decides to accept the regulations established by the National Government and it registers as a taxi company, it will not currently offer its services in Bogotá.
Comparing Uber regulation in Mexico City and Bogotá, we can say that they are quite different. In the case of Mexico City, regulations for companies such as Uber were mostly positive. Uber recognizes itself as a transportation company and agrees to the parameters established in the regulation. The regulation approved is not based on quantity control; it is based on economic controls and quality controls that do fit into the existing Uber model. With regard to the Bogotá case, we can say that with the list of restrictions and requirements for the vehicles as well as the fares control, this regulatory framework is not a solution for the case of Uber or similar companies. In fact, we can say that the only action performed by the national government was the approval for the provision of one kind of taxi service through the use of technological platforms or apps. However, regulatory authorities have not envisioned Uber´s technology and its innovative business model. As a result, currently Uber has reacted to this regulatory framework approved and it is still operating in the city without satisfying the criteria established in the above mentioned Presidential Decree, and as such, there still remains the conflict between traditional taxis and Uber taxis.

4.3 Main actors involved

Regarding the main actors involved in the process of Uber regulation in Mexico City and Bogotá, there are some considerable differences. Let us discuss each one of the actors involves in the Uber regulation.

Authorities in charge of Urban Transportation Systems

Regarding the administration of taxi businesses in both capital cities, we can see that there are some striking differences. Colombia is a centralized government country while Mexico is a federal one. This means that, in the case of Bogotá, taxi regulation is subject to the purvue of the national government and the city government administers these regulations established. In Mexico City, as a federal entity, the state government is the one who regulates taxis services.

Despite the fact that in federal governments each entity can create or modify the law, creating the existence of different laws for the regulation and operation of urban systems in the same country; regarding Mexico City’s Taxi Systems, we can say that this government administration model is far better because it allows modifications and amendments to existing laws or the creation of new ones, responding to the needs of the local citizens in an efficient, effective and transparent way.

Individual Public Transportation (Taxis)

In Bogotá, the scheme for the provision of taxi service through “affiliate companies”, as third parties between the government and taxi system operators, has caused the taxi market to be governed by these, exerting an important political clout on the decision making process which is the central government’s role. This is clear as soon as Uber has not been regulated
Despite its benefits; it would seem that the real barriers to the adoption of this new type of taxi service is the “affiliate marketing taxi network” as well as the existing and widespread system of taxi licences. Currently, it is known that the entrance of Uber company in the taxi industry decreases the price of taxi licenses, and its approval raises questions regarding its price in a potentially open taxi market.

**Users & Citizens**

Mention needs to be made to the role of the user/rider and citizens in regular Uber services in cities. To face the emergence of Uber, the Mexico City government set up discussion groups with the participation of experts; representing Uber and other companies; representing the traditional taxi service; taxi users; citizens and NGO, before approving the regulations for this new model of service of individual transportation. This resulted in the proposal of a regulatory framework where stakeholders won, which eased its approval and acceptance. In the case of Bogotá, the current regulation was modified through a decree issued unilaterally by the national government without public participation in the process, and as a result, the problem of Uber and similar companies within the taxi industry remains unresolved.

Finally, comparing both cases, the way in which each authority in charge of urban transportation faced the emergence of Uber within the taxi sector in the metropolis was completely different. First, in Mexico City, Uber regulations were a product of participation spaces, which had as a center of discussion the user/rider and his/her freedom to choose how to move. As a result, regulators approved a regulatory framework which frame within the requirements demanded for this innovative business model to work within the context of the city. Secondly, the Mexico City Government taxi services based on the fair and balanced competition within the taxi sector; took advantage of the emergence of Uber in order to incentivize changes in the institutional framework that governs traditional taxi markets to provide a better service in the city and hence, to improve the quality of life of its users and citizens. In the case of Bogotá, policy makers according with the regulatory framework, took actions to address the case of Uber and similar companies proved how weak and limited the framework was that currently governs the taxi systems in Colombian cities, condemning taxi users to remain displeased with the current quality of the service offered. Colombia should follow the Mexican example, by first of all, considering decentralization of governance of this individual transportation sector and in secondly, promote incentives through participative and democratric spaces, so that the results of the decision making processes are focused to improving the quality of life of its inhabitants, by offering them a way to a more efficient and sustainable taxi service that works according to the needs of its users.

### 4.4 Other elements: Environmental, Social & Technological Challenges

Despite the success Uber has had in Mexico City we have to mention the fact that Uber company is currently facing some local environmental and social challenges, which are also
present in most of the Latin American metropolitan areas. The first one is regarding its fares/pricing structure, especially surge pricing on the vehicular restriction days. As we mentioned in the case descriptions, Uber pricing patterns can change in every coming minute. As an example, in Mexico City due to its high levels of pollution, there are some days in which the use of vehicles is restricted, increasing the demand of the Uber service on such days when prices can reach five, seven or even nine times the normal price to get from one point to another, which has caused anger among passengers wishing to travel at these periods of very high demand. To address this situation, Uber company has taken two measures: (1) limiting the dynamic fare to five times its regular price tops, during the days of vehicle restriction; (2) pushing UberPool services, saying passengers can save up to 40% per trip. Despite this, many riders have decided to use traditional taxis; with reference to the first case, because it is cheaper and regarding the second case, because of the lack of personal safety in the city (among other reasons), people still cannot fathom the thought of using a shared service.

The second challenge is that as we mentioned above, in these metropolitan cities, most of the taxi users live in the outskirts of the city, and Uber has not proven to be very efficient there. Their efficiency depends on the area they are required to serve or the cost for such service. For example, there have been complaints of users that have used their app requesting Uber service from outskirts of towns, and they wait for a car that never arrives.

Last but not least, as we know Uber offers its services through a technological platform not available to everybody, because it requires first of all, the use of a Smartphone with Android technology or iOS and secondly, it requires a credit card pre-registration. In spite of the fact that in developing countries, technology is advancing and the number of people with access to it, is growing, this still remains a major issue that compromises its widespread use. In fact, in both cities there are not any public policies directed to promote incentivates for the use of his technology. To date, only in Mexico a private initiative has risen that facilitates the access to Uber services. In December 2014, Uber signed a commercial agreement with Telcel/América Mobile (Carlos Slim company), so that the new phones from those companies when sold in México and Latin America already have the Uber app installed, this action implies a great step in the direction of Uber growth.

4.5 Stability of the Uber regulation

The operation of Uber, as any other public service in the city, should be accessible to every citizen, even to those not using smartphones, whether they are able to buy one or not or because they have one and are not able to use them, or even if they do not have access to a credit card. It is for this reason that, in the case of México City, the current e-hailing regulation could evolve in a near future, contemplating no restrictions for the methods of payment for this kind of service, meaning that the e-hailing companies have the freedom to accept a cash payment as well as the use of pre-paid cards. Likewise, it is important to think towards the elimination of these restrictions for purposes of requesting the service, for example, having the option of requesting the service by phone, due to the fact that many
people are still not familiar with the use of Smart technology, specially elderly and lower-income groups.

Regarding the case of Bogotá, we can say that at the end of the day, Colombia will be forced to re-evaluate and re-design the approved regulation. The number of citizens demanding Uber service keeps increasing day by day, so this company will keep operating and conflicts will keep arising with the traditional taxi sector and authorities. In this context, we can say that Uber will prevail, not just by itself, but also because users/riders will form a social movement, putting pressure on the government. Currently, it is hard to believe that a few thousand taxi drivers have more power than a million users/riders with Smartphones and information, who also have the right to demand a better public service.

In light of the aforementioned, in order for the e-hailing regulations to be balanced, they should be based on a “win-win” principle for all actors involved. A regulation by which users can count on better prices and a better service; the traditional taxi industry gets incentives that allow it to improve the quality of its services and, at last, one where the city can count on a taxi system that offers a safe, reliable and efficient mode of transportation.

4.6 Findings

It is evident that in both cities, Uber was a disruptive change in the taxi market. Both in México City and in Bogotá, the entry of Uber offering a more comfortable, safer and more efficient service, brought to the light that the service provided by traditional taxis for years was not efficient and also that the regulatory framework governing this individual public transportation system needed to be revised and transformed.

In both metropolis, Uber has not been a problem due to its model of technological innovation in providing the service; the real problem is that with its arrival, questions have risen regarding ways in which to date, city taxi systems have been governed. In both cases, individual public transportation has been governed through old schemes, based on the “QQE framework” and dominated by the taxi guild and by authorities in charge who have lost control throughout time. We also have seen that despite the fact authorities have said through decades that the existing regulations exist in order to protect the users, the latter have not been involved in the decision-making process.

With the entrance of Uber services, city governments understood that citizens demand a better service, because that is the characteristic of a competitive market. In the same vein, policy makers must think of how to tighten current regulations and not the other way around, as was the case of Bogotá. Even though it is still too early to define the impacts and the future of Uber on the long run, regulators should take advantage of this situation, and must think of how the regulatory framework that governs a city’s taxi system should be transformed in order to be sustainable in the long term, ensuring the quality and efficiency of the offered service that also counts on transparent payment transactions and, above all, that the user is more in power of the service he/she is receiving at a given time and place.
City taxi systems, in both developed and developing countries play a foremost role as feeders or supplementary services of transportation systems. Taxis have taken on pivotal importance as a public transportation modality for people who can afford them, due to the fact that they are much faster and more comfortable than public transportation. Additionally, when used by several persons at the same time, taxis turn out to be even cheaper than riding a bus or a subway. However, taxis as a transportation system have often been completely overlooked. In most Latin American cities, taxi services are known for not offering high quality standards and efficiency as well as being governed with regulatory frameworks that have been limited and ambiguous. In 2009, Uber emerged as a competitor for the traditional taxi market in urban areas changing the market for taxi journeys and thus, generating serious conflicts with the traditional taxi industry as well as having some implications for the current regulatory framework that govern city taxi systems. City Governments have the opportunity of taking advantage of this and start looking forward to improving current taxi service. However, there is a dearth of information for those cases in which governments have approved regulations for e-hailing taxi services in order to give recommendations for public leaders about how to change the current taxi regulatory framework or create new ones including e-hailing taxi. The question that remains surrounding is what is the appropriate regulation of e-hailing taxis and the displacement effects on the taxi marketplace.

Therefore, I have attempted to answer this question by making a comparative study of two Latin American metropolis: Mexico City and Bogotá. In both cities the traditional taxi market has been regulated through technical and economical regulations. Likewise, in both cases the deficient performance of taxis is the result of a weak institutional structure and insufficient regulations which have resulted in a poorly structured taxi system with users having had no other option for decades than accepting the poor quality of the service provided to them. The entry of Uber in both metropolis back in 2013, generated changes in the aforementioned service from the traditional taxi drivers, understanding that as a public transportation service, they should offer a good service to the users. Users did not hesitate to change and prefer the use of Uber over traditional taxis.

Despite the fact that in both cities in 2015 a regulation was approved for e-hailing taxi services, as we saw in the analysis, the results achieved were completely different. In the case of Mexico City, it can be concluded that the action from the city government to allow Uber to become a part of the taxi market through the opening of participative spaces, resulted in the inclusion of new transportation models within the city. Likewise, the approved regulation set a precedent looking forward to technological and organizational innovations in the future, which can be adopted and taken advantage of for purposes of improving efficiency in the traditional taxi service in the city, improving the quality of life for all citizens. In the case of Bogotá, the regulation approved by the national government for the e-hailing taxi services was not the result of a participative process and, in addition thereto, it created a negative precedent for the industry of technology and information. The Colombian government tried to sweep Uber into yesterday’s reality, rather than moving...
the entire taxi system toward tomorrow’s scenario. This concern made evident the fact that the current regulation of this transportation system seemed to be based on politicians’ whim and will, more than on a reality that mandated an inclusive and participative decision making process in the business of transportation for purposes of improving the mobility and quality of life of Bogotá’s population.

Despite the fact that Mexico City has achieved amazing results in its regulatory framework approved for e-hailing taxi services in the city, some recommendations to improve the current regulatory framework should be considered:

- Evaluating strategies and mechanisms for purposes of assuring the safety and protection of the user. This verification is currently contemplated within the company obligations, however, these companies should credit this attainment through the chosen means for such effect as long as they are transparent, sufficient and attainable.
- Supervising and assuring that TNCs can rely on clear processes for the inclusion of capable drivers who respect the ongoing normative, as well as having the training needed to be drivers.
- Evaluating possible measures for purposes of protecting the users in the electronic market, assuring that the user’s information such as address and credit card number will remain protected and will not be used for criminal acts.
- Promoting public policies that grant every citizen access to a Smartphone and a credit card.
- Promoting the performance of educational programs for the use of technology.

Regarding the case of Bogotá, the national government should, forst of all, face the possibility of granting the regulation of taxi service to City Governments. Secondly, public leaders should reconsider the already approved regulation, taking under consideration the aforementioned recommendations for the case of México City and, also regarding the following aspects:

- Opening participation spaces for the right of inclusion of new transportation models within cities. Regulations cannot be approached in isolation. It is necessary to promote spaces for participation and debate. Citizen empowerment works well for democratic institutions and stability.
- Regarding the autonomy of the TNCs in the matter of the fares determination, as long as they are kept through the fulfillment of transparent processes in the face of users. Likewise, referring to the use of a specific identification for the vehicle, TNCs have as their objective self regulation for achieving service quality to date, and its mechanisms seem to be more efficient and sufficient.
- Considering actions that allow modernization of traditional taxi services, thus helping them compete in the new technological age.
- Regarding fares to be collected for services provided and for city taxes, a creation of a mobility fund could be promoted as it was in México City, with the purpose of improving urban mobility in the city.
At any rate, city governments should assure that TNCs make their rules public as well as their protocol, so that the user is better informed about this new transportation option.

To conclude, it is evident that innovation and technology represent an opportunity to improve the efficiency of transportation systems for which the public policy and the current regulations should be taken advantage of, for the common interest of society and to improve the harmonious relationship that should exist between transportation and social dimension. Public leaders must promote the coexistence of diverse individual transportation systems within cities and even though it is one same industry, it cannot function under the same rules. They must allow innovation in menu of service options provided to inhabitants of a given city, under the rules of fair competition, looking forward to reaching a plane level insofar as conditions are concerned, whereby each transportation service could operate. Likewise, better addressing requires new models of governance through the participation of stakeholders. The importance of spaces for public participation in the decision-making processes in a bid to govern urban and social conflicts in cities is an undeniable fact of modern urban life. In addition, city governments should take advantage of the work performed in other cities, these examples would provide authorities new structures that are being developed to achieve better governance of e-hailing taxi market.

Finally, I believe that it is important to study the new urban conditions that arise as a result of the new mobility parameters, in order to create public policies that understand the value and condition of innovation, and also the need to design strategies that are capable of undermining possible collateral effects. This is not solely about technologies, it is also about urban and social conditions. In this sense, the impact of Uber on a given city’s transportation system has been poorly analyzed: Is Uber an asset by offering new options of mobility, or does it generate more vehicular congestion? At the end of the day, there is no city in the world that could move better by adding more vehicular congestion to its streets.
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71


