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Thesis:

Title: "Explaining the relations between Bus Public Transport governance-management operational factors, and the Service Quality Perceived in Pristina, Kosovo"

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"Explaining the relations between Bus Public Transport governance-management operational factors, and the Service Quality Perceived in Pristina, Kosovo"

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Summary

Polluting aged buses stuck in traffic, non-integrated ticketing, reduced quantity of service over the weekends, and crowded vehicles in the peak hours with poor ambient conditions, are some of the features that describe the "non-integrated low quality perceived" bus public transport service in Pristina, the capital city of Kosovo. The Bus Public Transport system, is governed by the Municipality, and managed and operated by public and private companies. From the study pursued evidence was found that there are *critical concerns* regarding the quality of the service perceived by users.

What are the factors contributing to it? What decisions or functions are the operators and the Municipality making or fulfilling to facilitate the operation of the service? Are these decisions made and functions performed, causing harm or goodness? How are citizens really perceiving the quality of the public and private bus services? Are there lines or companies doing better than others? These are some of the questions being addressed by this research work. Finding out to what extent, the decisions and practices regarding operations pursued by the bus operators and the Municipality, are affecting the users' service quality perceptions, lay at the core of this research.

To achieve the objective a "case study" strategy was pursued, a surveying team jumped into the buses of four of the most representative lines in Pristina, for near 3 weeks, and asked 402 passengers, "what they think about different aspects of the service". Also, the three most representative bus service providing companies and the Municipality were interviewed (11 interviews) about their management practices. Two levels of analysis were pursued (descriptive and inferential), and their results, were complemented by the qualitative inputs from the interviews. In the end, some critical findings were obtained:

Two of the four bus services studied (one operated by a public, and one by a private company) were rated very positively by bus users in terms of quality perceived.

For the users' some aspects (criteria) of the quality of the service ended up being more sensitive and influential to their overall perception, like *comfort, time, and staff kindness*. Likewise, some functions performed by the organizations involved (Municipality and operators), ended up being more influential to those criteria, like *Vehicle renewal, Vehicle maintenance, Personnel,* among others. The relation between "*vehicle renewal* and *comfort*" happened to be one of the most significant and strong ones, both positively and negatively.

Based on the findings and outcomes obtained from this research work, the Municipality could focus and prioritize its actions on the evolution of the *management and operational* aspects of the bus system that are more influential towards the overall quality of the service. The vision of having a "High quality integrated bus public system transport" in Pristina should be the light that guides the path to follow.

Keywords

Bus transit management, bus transit governance, bus service quality perceived, bus public transport, bus operations.

Acknowledgements

Abbreviations

BPT	Bus Public Transport
DV	Dependent Variable
EU	European Union
GM	Governance and Management
IHS	Institute for Housing and Urban Development
IV	Independent Variable
L3	Bus line number 03 (Also referred as only "Line 03" in the text).
L4	Bus line number 04 (Also referred as only "Line 04" in the text).
L5	Bus line number 05 (Also referred as only "Line 05" in the text).
L10	Bus line number 10 (Also referred as only "Line 10" in the text).
LR	Linear Regression
MLR	Multiple Linear Regression
MM-GT	Mott Macdonald-Grant Thornton
MRQ	Main Research Question
PUTP	Pristina Urban Transport Project
RQ	Research Question
SP	Service Provider (Also referred as only "Operator" in the text)
SQP	Service Quality Perceived (or Perceived Quality of Service)
SRQ	Sub Research Question
SUMP	Sustainable Urban Mobility Plan
SV	Sub Variable

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Chapter 1: Introduction

1.1 Background

The transport sector accounts for nearly 25% of the world CO_2 emissions, 35% of those are produced in Europe, with increasing figures in the following decades (Geerlings, 2017). Issues regarding motorization and unsustainable mobility are not only occurring in large cities in developed countries, or rapidly growing mega cities, but also in small developing countries like Kosovo in the Balkans of Europe.

With a population of about 210,000 inhabitants (WPR, 2011), Pristina is the largest city of Kosovo. Congestion in intersections is created due to high number of vehicles, increased number of pedestrians and improper regulation of traffic signalization (Berisha, 2016, p 11). Even though Kosovo is a developing country, the Pristina region has gone through a rapid motorization process, having doubled the stock of licensed vehicles from 60 to 120,000 in 7 years 2012 (World Bank ECA, 2012). According to the recent ongoing studies for the Pristina Sustainable Urban Mobility Plan, in an online survey conducted among 1,579 respondents, about 40% of citizens declared driving a car, as their main mode of transport (Municipality of Pristina, 2017). Also, unregulated parking adds to this car predominance perception, with almost all sidewalks in Pristina's city center, being encroached by cars (World Bank ECA, 2012).

In terms of health and road safety, Pristina is approaching the maximum EU carbon dioxide allowed pollution level of 500 ppm (Pristina, 2016). In a recent study by Lenjani (2013), it was revealed that only in 2012, 2,314 people was injured, and 70 were dead in road traffic casualties. In the whole country of Switzerland with 40 times more population, 253 people died in road casualties in 2015 (ETSC, 2016)

Most of public transportation in the world is road based (World Bank, 2002). Being a relatively small metropolis, Pristina's public transportation relies solely on buses. The urban public transportation system of Pristina is composed by a network of 37 bus routes, operated by a Municipal Company called Trafiku Urban (TU) and a number of private service providers (EBRD, 2015). According to the ongoing studies for the Pristina SUMP, only a 23% of citizens declared using the buses as their main mode of transport (Municipality of Pristina, 2017).

TU (2017) is a medium-sized public enterprise owned by the Municipality of Prishtina and founded in 1976 by law number 04/L-111. It has as its primary activity providing urban, peri-urban, and regional passenger transport services. As a secondary activity, it also provides maintenance services for heavy vehicles (buses, trucks) to third parties. TU obtains its work permit from the Municipality of Pristina, it is managed by a steering board, and commanded by an executive chief office, which oversees 6 departments: Law, Finances, Communications, Technical, Control, and Security (Trafiku Urban, 2017).

Diagram 1: Institutional arrangements for BPT provision in Pristina.
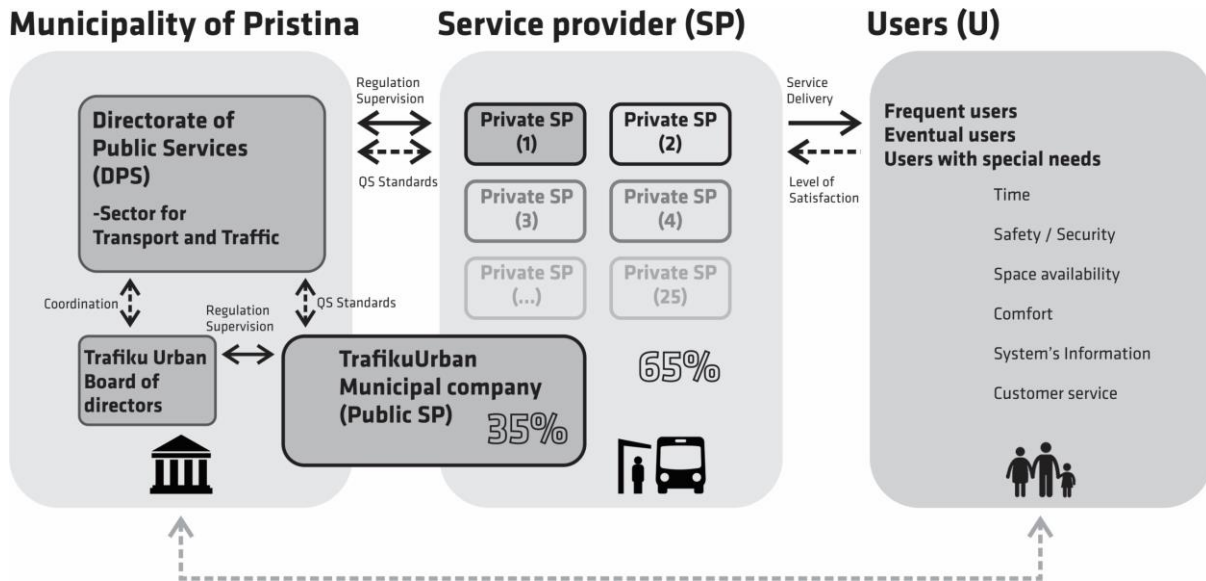
Elaboration: C. Simborth. 2017. Data sources: Berisha (2016), WB-ECA (2012),

The BPT system in Pristina is subject to a number of issues, related to different aspects (*managerial, regulatory, financial, physical, operational, technological, social*) related to its provision, that will be explained under the next title.

Several authors have written about how different *managerial, regulatory, financial, physical, operational, and technological*, aspects of a BPT service provision relate to the quality of the service that users receive. That will be disclosed later on under the Literature review.

1.2 Problem Statement

Even though compared to other latitudes in developing urban contexts (South America, Asia), Pristina is not a large metropolis, the city is already experiencing severe symptoms of unsustainable mobility and accessibility: *Surface public transportation delays*, exacerbated traffic congestion, non-regulated on street parking, improper signalization, road rage among others. Some people even declare having lost their jobs because of the public transport time dis-functionalities (Berisha, 2016).

Even though Pristina is still developing, car use seems to be growing rapidly, at the expense of public transport. As it was mentioned in the previous section, the car modal preference split (over 40%) appears to be already almost twice as large as the modal share for public transport (about 23%) as revealed by the recent SUMP studies from the Municipality and MM-GT (2017). For which special attention should be given, to the underlying causes of this comparatively low use of the bus services. Not only bus delays and traffic seem to be affecting the BPT service, but a series of other factors broadcasted by a series of local news channels through street interviews. Among them, the old age of the buses with seats in bad shape (KlanKosova, 2015); and the lack of available information about the routes in bus stops (Lajminet Kosovë, 2016), are some of the issues.

As it is informed by a 2012 World Bank ECA report (2012), the national law on public companies, does not allow them to receive public subsidies, TU has to balance its finances with the revenue coming from ticket sales. Fares are set by the Municipality of Pristina in 0.40, 0.50, 0.80, and 1.5 euros charged according to the nature and length of the route (Urban, Peri-urban, regional) as documented in the same report. This situation not only seems unusual in the European context (Fare sustained public transport service), but also problematic since

according to TU estimations, under that scheme, only 15 routes are profitable, 8 are self-sustaining, and 11 are unprofitable (WB-ECA, 2012). As a result TU has outsourced many lines, the provision of the service has been fragmented to more than 20 different private operators, the ticketing, operation, and information system is not integrated, and tight schedule adjustments must be done to match demand, and make the service feasible. This has led to a drastic reduction of the service outside peak hours and over the weekends to minimize costs (long headways), and to have an aging 20 years old, second hand, buses stock running on Euro 1 emission standards technology (WB-ECA, 20112).

These financial constraints have made the BPT in Pristina, "one of the most fuel efficient" as ranked by the World Bank in its TRACE[1] database, however that comes at the expense of **convenience, availability and reliability** for users (WB-ECA, 2012).

TU has declared they would require an influx of capital (subsidies, donations, loans) to upgrade its deteriorated infrastructure (WB-ECA, 2012, p 12), and private operators demand more bus dedicated lanes (now there is only one in Bill Clinton Avenue), but the local authorities seem to be concerned about the impacts in the local traffic, resulting from providing busways (WB-ECA, 2012). Meanwhile, illegal operators and informal taxis steal passengers away from licensed buses. "In the long run, the lack of public investment could be a factor of deterioration" concludes the report in that regard (WB-ECA, 2012, p 12).

By the time the World Bank - ECA (2012) report was written, it was mentioned there were ideas, and ongoing proposals to reorganize the service, consolidate the operation by a PPP arrangement with only 2 or 3 larger service providers (improve economy of scale and reduce costs), renew the bus stock, unify the ticketing and information system, improve the physical infrastructure, and the service checkups.

More recently, in 2015, it was documented that the Municipality of Pristina initiated the "Pristina Urban Transport" project (Project number 46489) in cooperation with the European Bank for Reconstruction and Development, which comprises: A 10 million Euros loan for Urban Trafiku's 30 buses renewal, and 21 additional buses; and a donor grant from the Czech Republic for complementary studies (technical assistance). Among the most relevant studies, there is, the Financial and Operational Performance Improvement and Corporate Development Programme (FOPIP) for TU, and the Sustainable Urban Mobility Plan (SUMP) for Pristina (EBRD, 2015). Although according to the tender publications, the assignments were due along 2016, the results have not been published on the Municipality websites. It has recently been informed by the media, that in January 2017, a first package of 15 new buses (30% of the total fleet) was already delivered in Pristina to be put in service immediately (EBRD, 2017).

Nowadays, It is not known by documented sources, what is the exact current status of the Pristina's public transportation private service providers reorganization (PPP arrangement). Also it is not known, if any of the issues (*operational, infrastructural, financial, managerial, technological*) affecting the transit quality of the service, have already been tackled.

After reviewing the available background information, it would seem that the most pressing issues for users are related to the *discomfort* derived from *delays* (longer travel times and less reliability), the deficitary or *inadequate conditions of operating infrastructure assets* (buses, bus stops, information), the *availability* conditions (High occupancy in peak hours, reduced service in non-peak hours), and the overall *non-integrated travel experience* (no unified ticketing), as it might be inferred from the sources already mentioned.

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[1] Tool for Rapid Assessment of City Energy (TRACE)

Likewise, from the background information review, it would seem quite visible, that the Pristina's BPT system's issues are limited (and reduced) to the financing of the system (revenue only based on a low cost tariff coming from users); however, it is important to note the fundamental **managerial role** that authorities (Municipalities) play in *planning, organizing,* regulating, *implementing reforms, and operating* the provision of public services in any sector (Brilhante, 2017). An inadequate management for BPT service provision may also lead to having inadequate plans; inadequate exploitation schemes, quality standards, tenders and contracts; or like in this case, a fragmented private service provision structure (25 operators) with little possibilities to capitalize on economies of scale, cross subsidy unprofitable routes, and viability along time. As a result of all of the above explained, Pristina has non-integrated Bus Public Transportation service, compromised by a series of technical and operational managerial decisions, affecting the user's service quality perceived.

Diagram 2: BPT service provision in Pristina, problem network
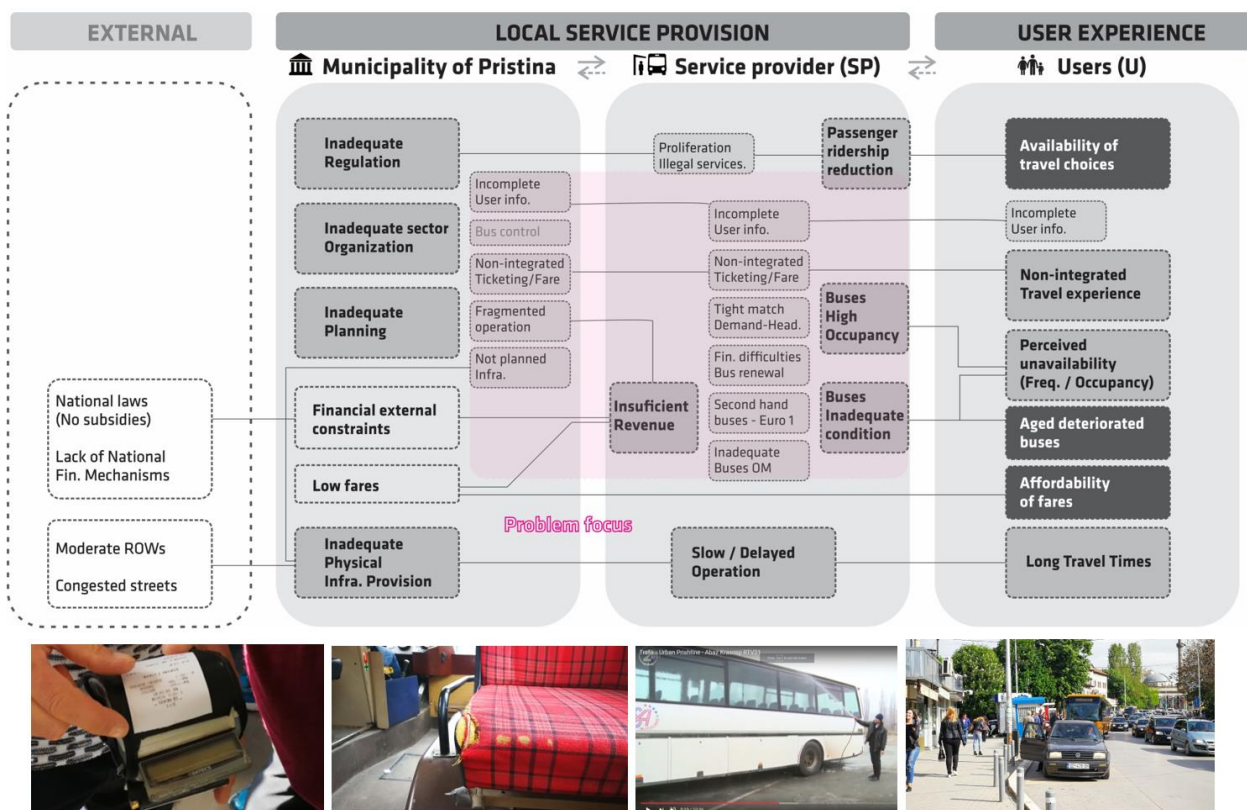
Elaboration: C. Simborth. 2017

Diagram 3: Differences in economy of scale for Public and Private BPT service provision in Pristina
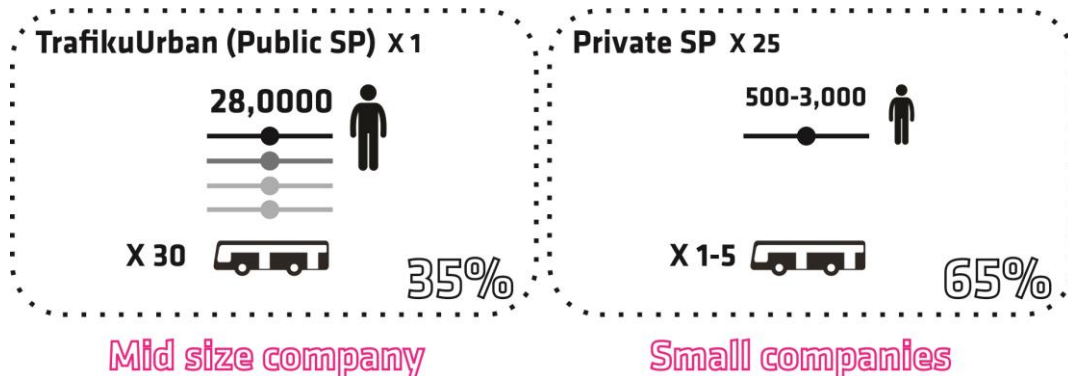
Elaboration: C. Simborth. 2017. Source: Municipality (2017)

1.3 Research Objectives

By using a case study for Pristina, this research work comprises first, the measurement of the BPT quality of service perceived by users in Pristina. Secondly, it comprises the revision of the current transit governance and managerial operational practices for BPT service provision, by the Municipality, public and private operators in Pristina (*vehicle maintenance, vehicle renewal, scheduling and operations, control, personnel*). Finally, it encompasses the explanatory interpretations of how and why those specific practices affect positively or negatively the current transit Service Quality Perceived by citizens in the context of Pristina.

Main objective:

Explain to what extent governance-management operational factors for BPT service provision, affect the Service Quality Perceived (SQP) in Pristina.

1.4 Provisional Research Questions[2]

Main:

To what extent governance/management leading factors for BPT service provision, affect the Level of Service (LOS) in Pristina?

Sub questions:
1. *What are the leading Governance/Managerial factors affecting BPT LOS in Pristina?*
2. *What is the LOS delivered by the Public BPT service provider?*
3. *What is the LOS delivered by the Private BPT service provider?*
4. *How BPT service provision institutional arrangements affect LOS in Pristina?*

1.5 Significance of the Study

Under the Pristina Urban Transport Project (PUTP), the city is now studying, planning and progressively implementing reforms, towards the re-engineering and wholistic re-organization of urban mobility in Pristina under the umbrella of four pillars: Public transportation, car transport and parking, active modes and public space, and quality of life (Municipality and MM-GT, 2017), quoting the city's Deputy Mayor Mr. Darda Sejdiu[3] "*We are doing major surgery*".

In this context regarding Public Transportation, the city has already started upgrading the assets of the BPT Municipal company (Trafiku Urban), by renewing the bus fleet of some of the public operated lines (starting with line 04), and modernizing the bus operations and maintenance facilities (EBRD, 2017). Parallelly, the SUMP studies are being elaborated having as one of its main outcomes, the redesign of the whole BPT network (Municipality and MM-GT, 2017). Additionally, the studies for the "Financial and Operational Performance Improvement and Corporate Development Programme (FOPIP)" for Trafiku Urban, and the

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[2] The revised research questions are presented in Chapter 3 (Section 3.1 Revised research questions)

[3] Inauguration speech of the first "SUMP stakeholder workshop", hosted by the Municipality in May 25th, 2017.

introduction of performance based public service contracts to incorporate the private sector (EBRD, 2017), are also moving forward, and seek to improve the management and performance of the local service providers.

It is in this promising context of change, that the present research acquires significance since it incorporates to the equation a new critical component, "**the users**", and the managerial issue of "quality" from the users' view. By first, knowing and understanding the quality of the BPT services (both public and private) in Pristina from the users' perspective; and second, by making visible the ups and downs of the current BPT managerial; the city may learn from their achievements and shortcomings, and inform their current policies, plans, and reforms, in a broader context, to keep evolving into the right direction towards a future "High quality modernized integrated public transportation system".

1.6 Scope and Limitations

The main limitation that this research work had to surpass, was the language barrier factor since the researcher was not fluent in the local language (Kosovar Albanian). There was a need to execute a large number of questionnaires to local users of public transportation (Kosovar Albanian speakers). Likewise, there was a need to network with local stakeholders and approach local organizations (Municipality, Public and private bus operators), where English was not always fluently spoken as a second language.

To overcome this limitation, two major factors converged. First the "time" factor; the researcher had the opportunity to move to Pristina, 2 months prior the data collection process, which provided him the time to progressively meet and network with local institutions, and identify local bilingual young professionals that could help deal in direct and practical ways, with the limitation (questionnaires, network, interviews). The second factor, was the possibility to have "University of Pristina", as a local "base institution"; which not only played the role of "centre of operations" and workplace, but also through key staff and the friendly students met there helped boost and make the most out of the "time" factor. Further details these are mentioned in Chapter 3 (Research design, under data collection).

Since this is research work is based on a case study, the scope of this work is limited to the selected cases, which are relevant to the BPT of Pristina, in Kosovo.

Chapter 2: Literature Review / Theory

2.1 State of the Art of the Theories/Concepts of the Study

2.1.1 Management (Theory):

According to Cole (2004). The first theories of management (classical) were pragmatic, rational, prescriptive, and focused on *structuring work and make organizations efficient*. After, they evolved into the academic world of social sciences with a focus on the "*human factor*" in the workplace (*motivation, interpersonal communication, individual satisfaction*) and *efficiency* (Fayol, 1949). Later on, social scientists brought up a more comprehensive concept: "*Organizations as social systems*", where internal variables interact with the environment in a context of *contingent circumstances* (Burns and Stalker, 1961).

By the end of the 20th century, business management developed the theory of management into different branches (*human resources, operation, production, strategic, marketing, financial and information technology*) within a comprehensive strategic view, focused on internal (*capabilities*) and external environment (*competition, positioning*) for determining competitive advantages (Porter, 1980).

Management in the context of organizations, is "the act of getting people and transformational resources together to accomplish desired goals and objectives, by planning, organizing, resourcing (human, financial, technological, and natural resources), leading, and controlling an organization" (Cole, G.A., 2004, p 6).

After reviewing the main concepts and premises under the theory of management, learnings can be brought into the context of cities (urban management), and more specifically into the field of public transportation service provision. First, to understand the work of governmental organizations, statutorily responsible for the delivery of public services and who usually play the role of regulators, administrative and/or political authorities; but which can also play the role of direct service providers. Second, and perhaps more suitably, to understand the work of direct public transport service providers in the form of Private or Public for profit or non-profit companies or organizations. Thirdly, both, government and operators can benefit from putting into practice in their sector, the different aspects of the theory of management. In fact, specific academic literature and research have been produced in the framework of "Urban management", and "Transit management". They will be discussed later within this chapter.

2.1.1.2 Urban Management

Several definitions describe what is management in the context of cities. According to Davison and Nientied (1991), it is "taking an active role in developing, managing, and coordinating resources to achieve a town's urban development objectives".

"It is the effort to coordinate and integrate public as well as private actions to tackle the major issues the inhabitant of cities are facing to make a more competitive, equitable and sustainable city" (Dijk, 2006).

Modern urban management is "the process of developing, implementing, coordinating and evaluating integrated strategies with the help of urban actors, taking into account the objectives of the private sector as well as the interests of citizens, in the framework of a policy defined at a higher level of government to achieve the potential sustainable economic development" (Klint and Bramezza, 1995).

From them, it can be summarized that **urban management** consists on using resources, integrated strategies, and the participation of public and private actors in the guise of the public

interest, to address urban issues and implement reforms, and policies to achieve development objectives.

2.1.1.3 Transit Management

A first definition of transit management deals with the competitive circumstances under which public transportation operates within organizations, being marketing a key function to understand, but that has been largely neglected (Hovel, Jones, and Moran, 1975).

A second more specific definition of Transportation Systems Management (TSM), comprises a wide range of potential improvement strategies for the activity of public transportation, featured by non-facility, small scale articulated actions, and low capital cost operations (Lockwood, 1979). TSM focuses on both, demand management and the optimization of transit supply using existing transit facilities and highways to achieve a broad range of goals focused not only on moving vehicles, but mainly people and goods (Lockwood, 1979). TSM is a cross disciplinary approach that uses combined strategies and performance measures to be tested as a way to produce reliable data for planning (Lockwood, 1979).

One of the main contributions of the research and theory produced in relation to "Transit Management" at the time, is that, it incorporated the "consumer behaviour" as a variable in the transit service delivery process. It also incorporated "Marketing" approach with clear consumer oriented promotion activities, a major function within the typical managerial practices (scheduling, dispatching, operation, maintenance, servicing, control) of transit service provision (Lockwood, 1979).

2.1.1.3.1 Marketing of transit

It is an organized program undertaken by the transit agency in order to promote transit services and inform the public about them, ensure potential riders area attracted to the system, and ensure the service is provided where it has maximum overall benefit considering the operators' efficiency and the users and community perspective (Vuchic, 2005, p 361).

2.1.2 Urban Governance

There are several definitions and models of governance, being the most sounded: The rational (command and control), new public management or market model (purchaser state), and the network governance model which focuses in the interdependent interaction of actors relating horizontally to share information, and resources for collective action (Klijn, 2007). According to the available literature, Network governance is necessary in contexts of uncertainty where no actor possesses the single power to determine others' strategies, but cooperation and exchange is sought (Koppenjan and Klijn, 2004). Network Governance is relevant in environments of complex undertakings and complicated societies (Klijn, 2007, p 17), where different but interdependent actors need to interact to produce outcomes (Klijn and Koppenjan, 2012).

The theory of network governance seems to be relevant in the context of this thesis, given that public transportation issues occur in a context of high complexity, where different private, and public actors interact, need from each other, and are affected by several political, social, economic and highly technical factors.

2.1.2.1 Transit Governance

Public transportation is a service and a basic public utility (Vuchic, 2005). There is special considerations around it regarding quantity, quality, efficiency, and price that require government attention and intervention in order to maximize its use and minimize public expenditure (Vuchic, 2005). All these aspects influence on the ownership of transit systems,

the organization of operating agencies or companies, and the government regulations (Vuchic, 2005), that in the end govern public transportation systems.

Many are the institutional formulas that can be adopted to govern public transportation systems, depending on local conditions, the level of private participation, the size of cities, and the extension of metropolitan areas given the most identifiable (Vuchic, 2005):

- Private transit companies regulated and assisted by the state.
- Public agencies in the form of quasi private companies (shareholders).
- Municipal agencies or city-based transit agencies.
- Special purpose governmental organizations in the form of county or state owned transit agencies.
- Regional Transit Authorities in the case of extensive urban regions involving several municipalities.

Remak (1979) discusses two other types of organizations like Mergers (fusion of operation companies), and Transit Federations with ample powers being applied in complex German cities (Munich).

In sum, models of transit governance are diverse. They materialize on institutions with ownership over the transit systems, and depending on every case fulfil functions of regulate, build and/or operate transit services, and coordinate planning, operation, and in some cases financing public transportation systems with integration objectives (Vuchic, 2005).

2.1.2.1.1 Transit Agencies

As it has been discussed in the previous section, Transit Agencies and Governing organizations can adopt many forms and functions, and they play a major role in ensuring that **high quality integrated transit services** are delivered to satisfy present and potential users' requirements, and play a dominant role in a city development (Vuchic, 2005).

Most transit agencies are governed by a board of directors, appointed by cities, and composed by a group of individuals with strong civic interest, technical knowledge, profound interest in the transit system, and absence of potential conflicts of interests or strong political involvement (Vuchic, 2005).

Transit boards have the primary role of setting up the policies and making strategic decisions to develop a transit system that satisfies the city or region's needs for effective an attractive services with high economic efficiency (Vuchic, 2005, p 301).

While the goal of public agencies is providing **optimal transit services**, private organizations usually have **economic efficiency** as their major goal. To combine both objectives, public agencies contract out some services as way to achieve both goals: High quality services oriented to citizens (increased ridership), as well as high economic efficiency, in a coordinated way (Vuchic, 2005).

Transit Agencies usually need to have a General Manager, Executive Director or CEO, responsible for day to day **operations and management**, and have the following departments: *Operations (scheduling and operations), engineering and maintenance, fixed facilities (construction, maintenance), accounting, information, personnel, planning, safety and legal aspects, public relations and marketing* (Vuchic, 2005).

2.1.3 Transit integration

An urban area comprises several transportation resources like roads, rails, parking, transit vehicles and modes, automobiles, and non-motorized facilities, which are all interdependent elements of an urban transportation system (Remak, 1979). However, all this resources and services are not always planned, managed and operated coordinately for which the *long-range goal* is the total system integration to better serve users (Remak, 1979).

Remak (1979) explains, that the system integration, is a management technique to integrate highly interdependent functions that are administered independently to improve the overall system effectiveness according to different objectives. In the case of transportation systems, these objectives could vary from integrating all public and private available resources, to only part of them. *Transit Integration* would comprise the integration of all public transportation services and resources in an urban area with the following specific objectives (Remak, 1979):

- Operate all transit as a single area wide system.
- Eliminate wasteful duplications
- Combined planning, purchasing, marketing, and use of facilities
- Enable ease of transfer for users throughout all services in the network

The literature discusses basically three levels of integration:

- Institutional: Having an organizational framework, institutions or arrangements for coordinated planning and operations activities in the form of Transit Federations, Mergers (Remak, 1979), Quasi private companies, Publicly owned transit agencies with special purposes, or Regional Transit Authorities[4] (Vuchic, 2005).
- Operational: Application of management techniques to optimize the allocation of transit resources, and coordinate modes, services, fare schemes, information, and street regulations (Remak, 1979).
- Physical: Provision of jointly used facilities and equipment for, operation and users transfer, information, and accessibility (Remak, 1979).

According to Vuchic (2005), the process of Transit Integration is still a challenge in many countries worldwide where it is limited or inexistent. Generally speaking, the greatest progress on this regard, has been achieved in Western European countries, Canada, and the United States (Vuchic, 2005). However it is the way to go since it is widely acknowledged that System Integration is an effective mean to improve public transportation services in cities and metropolitan regions (Remak, 1979).

2.1.4 Transit operations

The major aspect transit operations must consider for efficient operations that meet passengers needs are: First, the system's orientation towards present and potential passengers; second, applications of telecommunications and informatics technology; third, vehicle maintenance and determination of life length; and finally, safety and security (Vuchic, 2005).

According to Vuchic (2005), transit operations covers, system management, scheduling, and functioning, from the operating agency's point of view. A **transit line** is the basic component of a transit system operation (Vuchic, 2005, p 4). A transit line is the infrastructure and service provided on a fixed alignment by vehicles on a predetermined schedule (Vuchic, 2005, p 4).

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[4] More about this regard is discussed within this chapter in the section "Transit governance".

A transit network, is a set of connecting and crossing transit lines, that are coordinated for the provision of integrated services and efficient operations to satisfy the convenience of passengers in a certain area (Vuchic, 2005).

The line length, is the one way distance between the two terminals along the line alignment; the network length is the total length of all alignments served by one or more lines; and the total line (route) length is the sum of all line lengths regardless of whether they operate alone or overlap with other lines (Vuchic, 2005).

Image 1: Transit lines, network, and station concepts

Line lengths: $L_{AC} = 6$ km, $L_{AD} = 5$ km, $L_{EF} = 7$ km

Network length: $L_{AC} + L_{BD} + L_{EF} = 15$ km

Total line or route length: $L_{AC} + L_{AD} + L_{EF} = 18$ km

● Stations

○ Transfer stations

□ Terminals
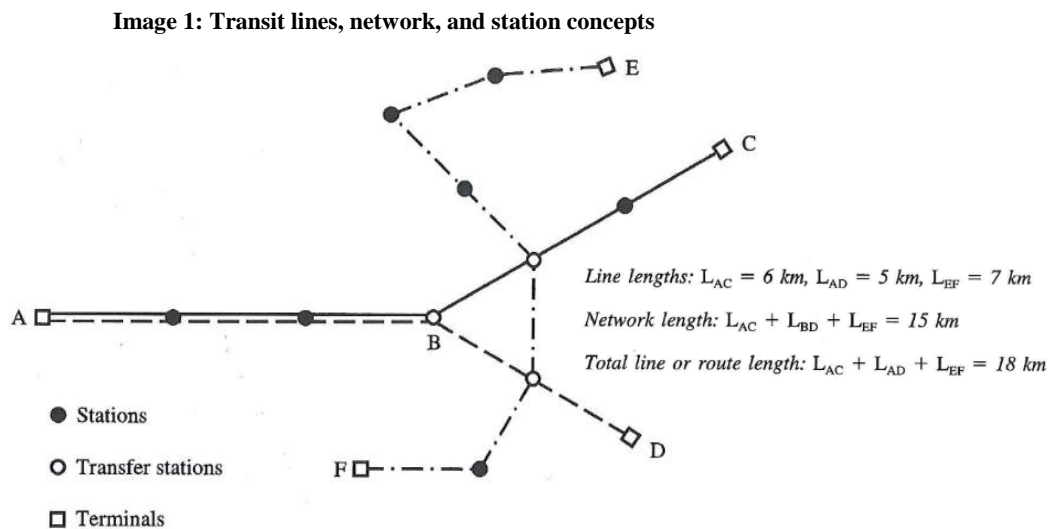
Source: Vuchic (2005)

2.1.4.1 Scheduling

Transit scheduling is the process of computing the frequency of service, the number of vehicles required, the timing of their travel, and other related operating elements (Vuchic, 2005, p 44). Scheduling produces numerical schedules for operators and supervisors, timetables for the public, and operating data for a line (Vuchic, 2005, p 44).

According to Vuchic (2005), optimum operation in regular public transportation services is determined by uniform headways during different schedule periods, because, it favours random passenger arrivals to stops and stations, reducing vehicle delays propagation and resulting into better reliability.

A transit company must provide precisely scheduled services with high reliability (Vuchic, 2005, p 303). Scheduling of services must consider passenger requirements, intermodal coordination, operating efficiency, and requirements of a larger labour body: drivers, controllers, supervisors, and others (Vuchic, 2005, p 303).

2.1.4.2 Vehicle fleet maintenance

About the **vehicle maintenance procedure**, the major factors influencing vehicle reliability are the quality of the vehicle design and production, and the quality of maintenance, which involves the personnel, and the performed procedure itself (Vuchic, 2005, p 326).

When these procedures are not legally prescribed by government standards, they depend on the maintenance practices a specific transit agency (or operators) follows (Vuchic, 2005). Maintenance methods can be classified as:

- *Reactive maintenance* is the lowest quality strategy, where parts which failed or are about to fail are replaced or repaired (Vuchic, 2005, p 326).

- *Preventive maintenance* is a programmed procedure based on service intervals. It is organized in a series of 04 to 05 procedures performed at intervals defined by distances travelled (Vuchic, 2005, p 326). See table.

Table 1 Standard maintenance service categories and intervals

	Interval	Unit
Fueling, cleaning, brake inspection	1	Day
Service A	12,500	Km
Service B	50,000	Km
Service C	100,000	Km
Service (D)	400,000	Km

Source: Vuchic (2005)

Service A,B, and C consist of increasingly more comprehensive sets of inspections, part replacements and repairs. Service D consists of a general overhaul, meaning the vehicle is dismantled and entirely rebuilt (Vuchic, 2005, p 326).

- *Predictive maintenance* is when vehicles have diagnostic devices that indicate the condition of different parts. Only deteriorated parts are replaced at the end of the prescribed intervals. This is the most economical and sophisticated method (Vuchic, 2005).

The **vehicle length of life**, is related to the obsolescence of the present fleet in economic (lowest life cycle costs), physical (Acceptable physical reliability), and functional (superseded by new technology) terms. The following evaluation factors help decide when new vehicles should be purchased (Vuchic, 2005):

- *Annualized investment cost*: Longer life reduces average annual investment for vehicle purchase.

- *Vehicle maintenance facilities:* New vehicles may require changes in maintenance facilities, equipment and personnel skills (retraining).

- *Cost of investment and operation:* As vehicles become older, this cost increases due to more frequent and heavier repairs, and increase on energy consumption.

- *Vehicle resale or salvage value*: If vehicles have more years of operational capability, they have a resale value to take into consideration.

- *Passenger comfort*: The design attractiveness and features of new vehicles (air conditioning, large windows, low floor bodies, damage resistant seats) provide higher comfort and service quality.

- *New Technological features*: New vehicles offer improved operations and control, more efficient engines with cleaner fuels and better exhaust control, and auto diagnostic systems for malfunctioning.

2.1.4.3 Safety and Security

Safety is defined as the absence of accidents that may cause injury to persons and/or physical damage. Public transportation is a public service and it is expected to have a high degree of safety in terms of infrastructure and vehicle design, and operations. Passengers, employees and property must be strongly protected (Vuchic, 2005).

The major components for a transit system safety are classified as (Vuchic, 2005, p 331).:

- *Vehicle design and performance*
- *Vehicles movement and control*
- *Line and station organization, operation and control*
- *Travel way design and protection*

A systemic approach that considers safety aspects in planning and design, and the interactions between the different physical components and operating procedures of a transit system must be considered. Also, the safety approach taken and the outcome obtained vary among modes, the elements to consider for buses safety are (Vuchic, 2005):

- *Driver training and performance* (safety record)
- *Vehicle performance* (driver visibility, ability to manoeuvre, availability of devices to prevent sliding and skidding).
- *Bus body design and strength* (ability to withstand collisions and impacts)
- *Fire prevention and resistance* (Use of non-flammable materials, provision of emergency exits)
- *Conditions along the line* (traffic, protective signals, reserved bus lanes or ways)
- *Bus stop design and operations* (stop locations, boarding and alighting conditions)
- *ITS elements* (radar for collision warning)

Security in transit systems is defined as the absence of or protection from acts that endanger the system's passengers, employees, property or facilities. Endangering acts can go from violent or criminal events to theft and fare evasion (Vuchic, 2005). The major aspects of security in transit systems can be:

- Passenger security: Crime to passengers should be prevented since it also affects the image of the system, and reduce ridership. The major factors influencing security in this regard are the system's physical condition (stops, stations, vehicles), the characteristics of passengers, and surveillance activities (personnel, CCTV, voice announcements) in place (Vuchic, 2005).

- Employee security: Crime to employees may happen when they handle cash fares. That factor may be mitigated or eliminated (Vuchic, 2005).

- Protection of revenue: Loss of fare may happen by external theft of revenue by outside criminals, internal theft of cash by employees, or evasion of fare payments by users (avoidance of full or partial fare payment). Vuchic, 2005.

- Transit property security (Vandalism): Vandalism is the malicious damaging or destruction of property without a direct beneficiary and driven by antisocial behaviour. Vandalism can be tackled by the application of systematic and vigorous action (Vuchic, 2005).

2.1.5 Bus Transit

"Buses are without question the workhorses of the transit world" (Grava 2004, p 301). All cities in the world with public transportation have a bus component, and figures in terms of size of fleet, passengers transported, and vehicle kilometers accumulated in a worldwide spectrum convey the prevalence of buses in comparison to all transit modes (Grava 2004).

Conventional Bus Transit operates with large rubber tired individually driven vehicles on the street in mixed traffic according to set schedules on fixed routes under different fare payment conditions (Grava 2004).

2.1.5.1 Overall characteristics (Advantages and disadvantages)

According to Koski (1979), the advantages of Bus Transit, are:

- Relative ease of adjustment to meet changing travel patterns.
- Comparatively low capital costs.
- Relatively short time to inaugurate or expand systems.
- Proven, relatively trouble-free technology.
- Ease of bypassing barriers (accidents, unexpected events) along the route.

According to Koski (1979), the disadvantages of Bus Transit, are:

- Lower capacity in high-volume corridors.
- Limited ability to reduce labour costs in high-volume corridors.
- Susceptibility to delays from other vehicles (except when running on busways)
- Less visibility of the available services and coverage within the network.

According to Koski (1979), Bus transit uses three types of buses: Standard (About 11-12 meters long, 2.4-2,6 meters wide, 41 to 53 seating passengers), Minibuses, and High capacity. Also bus design can be upgraded by providing lower floor, wider doors, wheelchair lifts, among other features to make them more accessible.

Since the driver's wage is the most expensive single item regarding operational expenditure, despite its higher initial cost, standard and higher capacity buses allow for savings in labour costs in middle and high volume routes (Koski, 1979). Minibuses can only play important roles where manoeuvrability, and physical conditions are an issue, or passenger volumes are always low (Koski, 1979)

Facilities

According to Koski (1979, p 123), bus transit systems require some key facilities such as:

- Administrative office: May or not be together with maintenance facilities.
- Bus storage: For parking and storing the buses while not operating.
- Servicing bases (routinary): Fueling, interior cleaning, exterior washing, removal of ticket receipts.
- Maintenance bases: Engine overhauls, repair of malfunctioning equipment or interior furnishings, and body painting.

A servicing base together with a maintenance base compose a "division", and every division may support and dispatch 200 to 300 buses on routes assigned to it according to planned schedules (Koski, 1979).

According to Koski (1979), there is a trade-off between the savings produced by the centralization of services, and the increase of "deadhead mileage[5]" produced between the "service division" location and the start of in-service trips. In that sense all divisions must be carefully located in relationship to the transit routes network in a way that minimizes deadhead mileage. The middle ground solution to it consists on provide routine services and bus storage in all divisions, and concentrate maintenance functions in certain divisions only (Koski, 1979).

Other important facilities that should not be overlooked are waiting shelters, stations, and bus stop signs, with high emphasis on their usefulness, clarity of design and attractiveness (Koski, 1979).

Bus networks planning and design

In fixed-route bus transit, one of the most *important factors* in providing quality and adequacy of service is the planning and design of the network. Though specific types of networks can be identified, in practice networks use a combination of attributes from different types (Koski, 1979). Here the main types are briefly described:

Radial networks

According to Koski (1979), this pattern of network serves mainly work trips to city centers. A relation has also been found between older cities and radial bus networks replacing phased out street car lines (Koski, 1979).

Image 2: Radial routes network scheme
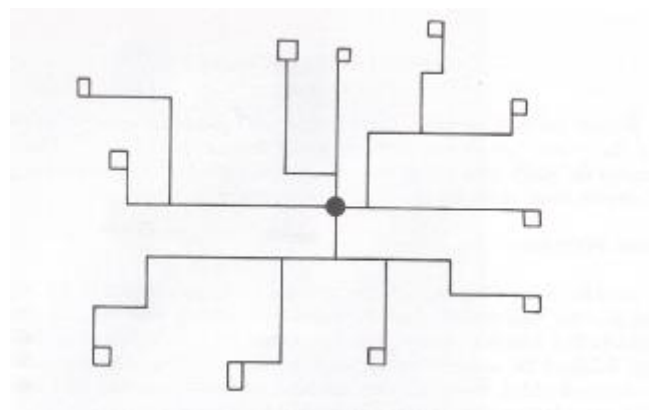
Source: Koski (1979)

Grid networks

According to Koski (1979), they are composed of straight parallel routes spaced at regular intervals, and crossed by a group of routes of similar characteristics, being it easily understandable by users. They require an evenly distributed network of arterial streets and little geographical or topographical interferences. A grid can allow users to reach almost any point in the network with only one transfer being advantageous in contexts where activity centers are scattered, and frequent headways allow random connections (Koski, 1979).

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[5] Not operating miles traveled outside the assigned routes. It is produced when buses "come from" or "go to their" service divisions before or after operations.

Image 3: Grid routes network
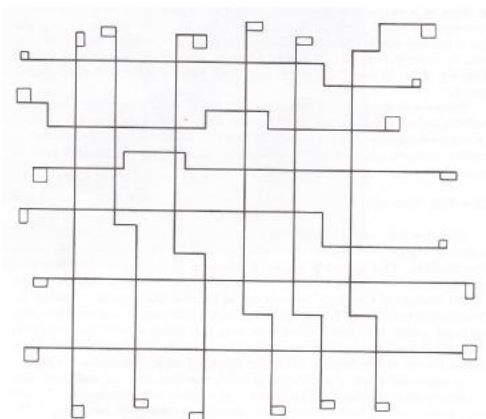
Source: Koski (1979)

Radial criss-cross networks

It combines features of radial and grid networks by criss-crossing the lines and having them converge into different centers of activity. Users still can have transfer opportunities in the points where lines criss-cross to access intermediate destinations (Koski, 1979).

Image 4: Radial criss-cross network
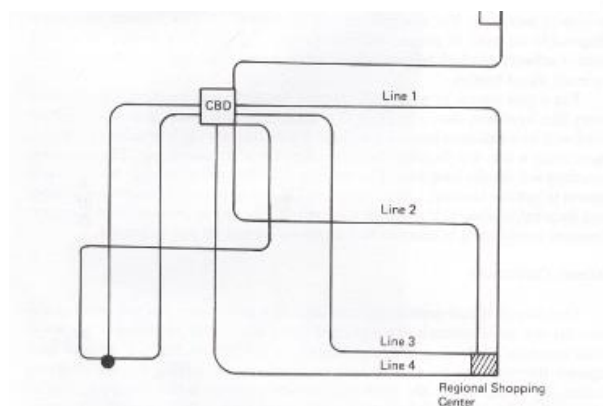
Source: Koski (1979)

Trunk-Feeder networks

It is based on a major transit line operated with bus or rail on a high volume corridor, and complemented by a feeder network that supports a higher level of service in the overall system (Koski, 1979).

Image 5: Trunk feeder network
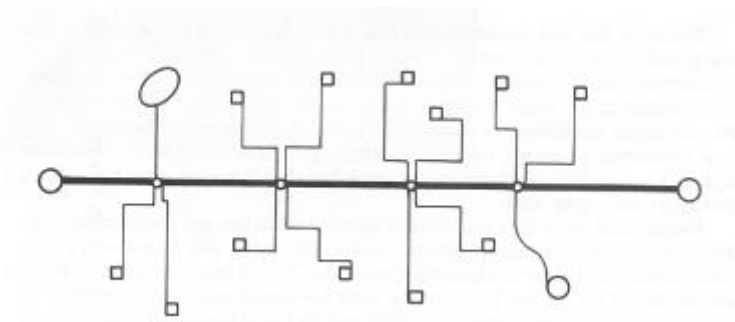
Source: Koski (1979)

According to Koski (1979), there are several detailed factors to take into consideration when route planning regardless of the type of network such as:

- Establishing objectives in terms of service standards,
- Use of demographic data,
- Mapping of major activity canters,
- Liaison with local and regional planning agencies,
- Residential developments must be noted,
- Influence on street standards and safety considerations,
- Ease of pedestrian access,
- Operational measures to overcome financing constraints,
- Devising marketing strategies,
- Consider current travel patterns and modelling,
- Provision of convenient and transfer connections,
- Simplicity and clarity of the network,
- Scheduling considerations,
- Political support, sensitivity, and coordination

Bus operation important aspects

About scheduling, one of the most important operation functions, they are usually adopted from standards of minimum Level of Service (LOS) in formal policies, the need to handle certain passenger loads or a combination of both (Koski, 1979). In typical systems headways longer than 30 minutes are not acceptable, and it is desirable that headways spaced more than 10 minutes come repetitively in numbers evenly divisible into 60 so they can be easily remembered by users (Koski, 1979).

According to Koski (1979), there are other important considerations regarding scheduling are the "peak-to-base" ratio, which reflects the imbalances on the distribution of passengers travel demand along the day between peak and base periods; and the application of "staggered work hours" for drivers.
Another important aspect regarding operation, is fare collection. From the literature reviewed the following main fare schemes have been identified:

- *Flat fares* consist on charging a uniform fare regardless of the length of ride, being the simplest in terms of user's understandability (Koski, 1979).
- *Zone fares* consist on charging a basic fare within a large central zone, and additional charges for outer zones travelled (Koski, 1979).
- *Fares free zones* can be set up in CBDs to facilitate boarding and alighting in congested areas, and have users pay when entering and exiting buses inbound and outbound (Koski, 1979).
- *Check-in/ Check-out fares* consists on accurate fares based on the distance traveled, and calculated by modern automated integrated ticketing means which register the user's entrance and exit (ITAS-KIT, 2014).

Even though conventional buses may lack glamour compared to other transit modes (Koski, 1979), they are still a major mode of public transportation in the European context (Beck and Norconsult, 2014), for which special attention to their opportunities for service improvement, and development should be given (Koski, 1979).

2.1.6 Transit Quality of Service (QOS) / Service Quality

It is a set of qualitative elements of service affecting passengers, such as convenience of using transit, riding, comfort, aesthetics, and cleanliness. It is part of level of service (Vuchic, 2005, p 629).

It is the standard of service required by the authority, in terms of "comfort and safety within the vehicles, time taken to cover the routes, and convenience and existence of supporting infrastructure" (Dell'olio et al 2011 p 217, Molinero et al 1997).

Quality of service represent an important concept in understanding the ways in which customers appraise service provision (Morton, 2016, p 200).

2.1.6.1 Transit desired QOS

It is the standard of service desired by the users, in terms of waiting time, cleanliness, comfort, bus occupancy, journey time, driver kindness among other factors (Dell'olio et al 2011).

According to the European Committee for Standardization- CEN (2002, p 7), the service quality sought by customers is the level of quality, required by the customer. It can be considered as the sum of a number of weighted quality criteria.

2.1.6.2 Transit perceived QOS

Understanding the perceptions of customers to transit services in terms of quality of service can be useful for service providers in order to retain existing customers as well as attracting potential ones from other modes (Morton, 2016).

Research by different authors on the topic suggest that certain dimensions of service quality are more associated with user's perceptions, among them: frequency, information, service coverage, cleanliness, safety, flexibility, convenience, safety, crowding, staff skills, vehicles conditions, among others (Morton, 2016).

Other authors have a more concise approach, narrowing down their definition of perceived service quality to a few more important aspects. According to Dell'olio et al (2011), it is the standard of service perceived by users, in terms of waiting time, cleanliness, comfort, bus occupancy, journey time, driver kindness among other factors.

Das and Pandit (2014), on their research in the context of India (developing context), use quantitative service quality indicators to assess service quality perceptions like, *waiting time, delay in journey time, boarding and alighting time, adherence to schedule, service hours, distance to bus stop, number of mode transfers, and seat availability.*

According to the CEN (2002, p 7), it is the level of quality perceived by the customer, which depends on his/her own experience of the service from the provider (2002, p 7). The CEN (2002) also establishes in its norm 13816 a set of eight comprehensive quality criteria to assess service quality: *Availability (modes, network, operation), accessibility (internal, external), information, time (Travel time, adherence to schedule or reliability), customer care, comfort (space availability, ride comfort), security and environmental impact.*

2.2 Conceptual Framework

The following diagram synthesizes the main theories and concepts reviewed during this Chapter. The revision of these concepts contributed to identify the main variables and sub-variables that interplay in the nexus between *Transit Governance-Management (Operational focus) and Quality of service (perceived).* In the next section (Chapter 3), the operationalization of this concepts into indicators and measures will be explained.

Diagram 4: Conceptual framework

Management / Governance

Transit Governance / Management

Management organization

Coordination-integration

Regulation

Planning

Operations

Security

Customer care

Enabling infrastructure

Financing

Marketing

Vehicle fleet maintenance

Vehicle fleet renewal

Scheduling

Vehicle fleet operation

Control and Telecom.

Personnel

?

Quality of Service

Service Quality Perceived

Time

Safety

Security

Space availability

Comfort

System's Information

Customer service

Elaboration: C. Simborth. 2017

Chapter 3: Research Design and Methods

In the present chapter, the design of the research is presented. After revising the research questions based on the literature review, the operationalization of the main concepts that define the research variables are fully developed and presented in a detailed table comprising sub variables, indicators, measures, and scales.

Once it is known, what needs to be measured, what are the units of analysis, and what is the nature of the data that needs to be collected; the most appropriate research strategy and methods for data collection were selected and justified. This is followed by a full description of how the field work was organized, and took place in Pristina.

In point 3.8, it is explained how the decisions made enhanced the validity and reliability of the present research work. Finally, the methods for data analysis are explained in 3.9, as well as the reasonable expected outcomes resulting from this thesis.

3.1 Revised research questions

After reviewing the theory and available literature on the main aspects of "Governance and Management" of public transportation, and the different perspectives on which transit "Quality of service" is studied, the concepts are specified and the research question and objective adjusted as follows:

Revised research question:

To what extent Governance-Management (GM) operational factors for BPT service provision, affect the Service Quality Perceived (SQP) in Pristina?

Revised sub questions:

1. What is the measurement of the SQP by users of representative public and private BPT service providers in Pristina? (For L3, L4, L5, L10)

2. What is the most sensitive/influential SQP criteria conducing to the overall BPT SQP in Pristina? (For L3, L4, L5, L10)

3. What and How are the most influential GM operational factors (decisions) affecting positively and negatively the BPT SQP in Pristina? (For L3, L4, L5, L10)

3.2 Operationalization

Operationalization is the transition from theory to empirical research (Van Thiel, 2007, p 43). It is the process in which theoretical concepts are translated into entities that can be observed or measured in the real world, allowing exactly to know what will be studied or measured in quantitative or qualitative terms (Van Thiel, 2007). The operationalization process is spearheaded by the definition of the main variables that shape the research question.

3.2.1 Definitions

The main concepts embodied in the main variables, which structure the research question (main variables) are defined as follows:

3.2.1.1 For the Independent Variable

Governance-management of public transportation (transit)

It is based in two sub concepts, *Transit governance* and *Transit management*:

Transit governance materializes on institutions with ownership over the transit systems, and depending on every case, with competence to **regulate, organize, build and/or operate, and coordinate planning, operation and in some cases financing,** of high quality integrated transit services to satisfy present and potential users' needs, and play a dominant role in the city (Vuchik, 2005).

Transit management incorporates consumer behaviour and clear **consumer oriented activities, as major function within the typical managerial practices** (scheduling, dispatching, operation, maintenance, servicing, control) of transit service provision (Lockwood, 1979).

3.2.1.1 For the Dependent Variable

Service quality perceived

It is based in the concept of Quality of Service or Service Quality:

Quality of service is a set of qualitative elements of service affecting passengers, such as convenience of using transit, riding, comfort, aesthetics, and cleanliness (Vuchic, 2005, p 629), for which the service provider (entity claiming compliance) is responsible (CEN, 2002, p 6).

Service Quality Perceived or Perceived Quality of Service, is the **standard of service perceived by users**, based on a set of criteria like travel time, cleanliness, comfort, bus occupancy, driver kindness among other factors (Dell'olio et al, 2011). It is the level of quality perceived by the customer, which depends on his/her own experience of the service from the provider (CEN, 2002, p 7).

3.2.2 Variables, Sub variables, Indicators

Based on those concepts, the following tables shows a full display of the *variables, sub variables and indicators*, on both, the independent (IV), and the dependent variable (DV) side.

About the Independent Variable (IV) table. A chart has been elaborated according to the available literature by renowned academics and practitioners (Cole, Kelly, Grava, Hovell, Jones, Moran, Koski, Lockwood, Remak, Vuchic, ITAS-KIT, CEN), **considering only the most relevant governance and managerial factors within the** *operations* **domain, that affect service quality** (*Vehicle fleet maintenance and renewal, scheduling, vehicle operations, control, Information and Personnel*). The selection of factors and indicators have been carefully pursued, based on the level of importance in the context of Pristina (technical preliminary interviews to local organizations), the researcher's observation, the literature review, and the existent limitations in terms of time, and data availability.

The availability of data inside the studied organizations in Pristina (Public authority and service providers), will determine if any other factor is excluded or included in the analysis.

Table 2: IV "Governance-management operation factors", operationalization table (Part 1)

VAR	SUB-VAR	INDICATORS	MEASUREMENT UNIT	RANGE OF VALUES	CATEGORICAL INDEXING	NATURE OF DATA	D.C. METHOD
IV / GM OPERATIONAL FACTORS	**Vehicle fleet maintenance**	**Mechanical reliability**	Mean distance between failures (MDBF).	**MDBF** 13,000 Kms (Optimal) or more Between 11,000 - 13,000 Kms Between 9,000 - 11,000 Kms Between 7,000 - 9,000 Kms Less than 7000 Kms	MDBF. **From match standard (5) to very far from standard (1)** 13,000 Kms (Optimal) or more = 5 Between 11,000 - 13,000 Kms = 4 Between 9,000 - 11,000 Kms = 3 Between 7,000 - 9,000 Kms = 2 Less than 7000 Kms = 1	Quantitative	-semi-structured interview -Content analysis of maintenance reports (If available).
		Selection of maintenance strategy / methods	Score	**Maintenance strategy applied** A - Predictive B - Preventive C - Reactive	Ordinal values based on Maintenance strategy applied. **From sophisticated A (5) to traditional C (1)** A > 5 B > 3 C > 1	Qualitative	-semi-structured interview -Content analysis of maintenance reports (If available).
		Daily servicing	Score	**Daily service categories and intervals:** -**Full:** Daily int./ext. cleaning/washing, fueling, routine check-up (tires, brakes) -**Moderate:** Only int. cleaning, fueling, vehicles routine check-up -**Poor:** Fueling	Ordinal values based on Daily servicing category applied. From full (5) to poor C (1) Full > 5 Moderate > 3 Poor > 1		
		Maintenance service categories and intervals	Score	**Maintenance service categories and intervals** Daily Services Service A - (12,500 Kms) Service B - (50,000 Kms) Service C - (100,000 Kms) Service D - (400,000 Kms)	Ordinal values based on proximity intervals to standardized benchmark. **From match standard (5) to very far from standard (1)** Match standard > 5 +/- Up to 2000 kms far > 4 +/- Up to 4000 kms far > 3 +/- Up to 6000 kms far > 2 +/- Up to 8000 or more kms far > 1	Qualitative / Quantitative	-semi-structured interview -Content analysis of maintenance reports (If available).
	Vehicle fleet renewal	**Vehicle ages**	Age of buses	**Age of buses ranges:** Typical life - (10-12 years) Maximum life - (13-20 years) Beyond maximum life - (+ 20 years)	Ordinal values based on the "age of buses range" in which current bus fleet are. **From beyond maximum life (1) to typical or optimal (5)** Age within "typical/optimal life" range > 5 Age within "maximum life" range > 3 Age within "beyond maximum life" range > 1	Quantitative	-semi-structured interview
		Maximum life length	Number of operational years per bus	**Buses life length ranges:** Typical life - (10-12 years) Maximum life - (13-20 years) Beyond maximum life - (+ 20 years)	Ordinal values based on Buses maximum life length ranges. **From typical or optimal (5) to beyond maximum life (1)** 10-12 years > 5 13-20 years > 3 + 20 years > 1	Quantitative	-semi-structured interview

Elaboration: Cesar Simborth. 2017

Table 3: IV "Governance-management operation factors", operationalization table (Part 2)

VAR	SUB-VAR	INDICATORS	MEASUREMENT UNIT	RANGE OF VALUES	CATEGORICAL INDEXING	NATURE OF DATA	D.C. METHOD
GM OPERATIONAL FACTORS	Scheduling and Operation	Demand responsiveness (Ratio)	Ratio (# of spaces offered per day and total daily demand/ridership)	Ratio ranges: Over 1 (spaces are oversupplied) 1 (spaces are tightly supplied) Below 1 (spaces are undersupplied)	Ratio ranges. From oversupplied (5) to undersupplied (1): Over 1 (oversupplied) >5 1 (even) >3 Below 1 (undersupplied) >1	Quantitative	-semi-structured interview
		Demand responsiveness (Headway)	Headway	Headway PH (Time between buses in the peak hour): Upto 5' 6 to 10' 11 to 20' 21 to 30' More than 30'	Headways ranges (peak hour). From very convenient (5) to very inconvenient (1): Upto 5' > 5 6 to 10' > 4 11 to 20' > 3 21 to 30' > 2	Quantitative	-semi-structured interview
		Frequency	Number of vehicles / peak hour	Number of buses per peak hour ranges. 12 to more 6 to 11 4 to 5 2 to 3 1	From very infrequent (5) to very frequent (1) 12 to more > 5 6 to 11 > 4 4 to 5 > 3 2 to 3 > 2 1 > 1	Quantitative	-semi-structured interview
	Control of operations	Vehicle monitoring functionality (AVL, other)	Degree of existence of operational attributes	Range of values: Full existence Partial existence Non-existent	From Fully existent (5) to Non existent (1) Full existence > 5 Partial existence > 3 Non-existent > 1	Qualitative	-semi-structured interview
		Intersections bus priority signaling	Degree of existence of operational attributes	Range of values: Full existence Partial existence Non-existent	From Fully existent (5) to Non existent (1) Full existence > 5 Partial existence > 3 Non-existent > 1	Qualitative	-semi-structured interview
	IT / Telematics	Automated data collection	Degree of existence of operational attributes	Range of values: Full existence Partial existence Non-existent	From Fully existent (5) to Non existent (1) Full existence > 5 Partial existence > 3 Non-existent > 1	Qualitative	-semi-structured interview
		Passenger information provision (Electronic, online, other)	Degree of existence of operational attributes	Range of values: Full existence Partial existence Non-existent	From Non existent (1) to Full existence (5). Full existence > 5 Partial existence > 3 Non-existent > 1	Qualitative	-semi-structured interview
	Personnel	Selection standards	Degree of existence of operational attributes	Range of values: Full existence Partial existence Non-existent	From Fully existent (5) to Non existent (1) Full existence > 5 Partial existence > 3 Non-existent > 1	Qualitative	-semi-structured interview
		Level of training	Degree of preparation of operations personnel	Range of values: -Fully prepared -Partially prepared (Experience or proffesional training) -Non-prepared	From Fully prepared (5) to Non prepared (1) Fully prepared > 5 Partially prepared (Experience or proffesional training) > 3 Non-prepared > 1	Qualitative	-semi-structured interview

Elaboration: Cesar Simborth. 2017

Based on these **specific indicators, their measurement units, and the nature of the data** to be obtained, the **methods and instruments for data collection were selected** (shown in the last column of tables 2 and 3). They are explained in sections 3.3 (Research Strategy) and 3.4 (Data collection methods).

The list of selected specific indicators, also offered a close guide for the formulation of the questions of the research instruments for the IV data collection process (interview manuals, information requirements guide) which are presented in **Annex 01**.

About the **Dependent Variable (DV) table.** The chart provided is comprehensive, and considers a set of **7 quality criteria** (*Time, safety, security, space availability, comfort, system's information, and customer service*) that according to the available literature by renowned academics and expert institutions (Dell'olio , Das, Morton, Pandit, Vuchic, CEN, and SIMUS) represent the customer view and service attributes most noticed by users.

Besides the literature review, other aspects that counted on the selection of indicators were the researcher's observations in the context of Pristina (expert and user perspective), and the relevance of their association with the operational aspects of the system. The data collection process and later analysis will may suggest later minor adjustments. The DV variable operationalization is fully displayed in tables 4,5 and 6 (next pages).

Table 4: DV "Service Quality Perceived" operationalization table (Part 1)

VAR	SUB-VAR (SQP CRITERIA)	INDICATORS	MEASUREMENT UNIT	LIKERT SCALE (VALUES)	USERS OBSERVATIONS ORDINAL CODING (COMPLEMENTARY)	NATURE OF DATA	D.C. METHOD
DV	Service Quality Perceived - SQP — Time	Perception of "Waiting time"	Score (Ordinal values based on perceived satisfaction with the time for...)	From "Very Satisfactory" (5) to "Very unsatisfactory" (1) 5 - Very Satisfied 4 – Satisfied 3 - Nor satisfied, nor unsatisfied 2 – Unsatisfied 1 - Very unsatisfied	Average waiting time (From very reduced time to very long time): (5) 0-5' (4) 6-10' (3) 11-20' (2) 20-30' (1) 30'- more	Quantitative (numerical ordinal values)	Questionnaire
		Boarding-Alighting time	Score (Ordinal values based on perceived satisfaction with the time for...)	From "Very Satisfactory" (5) to "Very unsatisfactory" (1) 5 - Very Satisfied 4 – Satisfied 3 - Nor satisfied, nor unsatisfied 2 – Unsatisfied 1 - Very unsatisfied	Average B/A time (From very reduced time to very long time): (5) Upto 20" (4) 21-40" (3) 41-60" (1 min.) (2) 61-80" (1 min. 20 sec.) (1) More than 80" (1 min. 20 sec.)	Quantitative (numerical ordinal values)	Questionnaire
		On board time	Score (Ordinal values based on perceived satisfaction with the time for...)	From "Very Satisfactory" (5) to "Very unsatisfactory" (1). 5 - Very Satisfied 4 – Satisfied 3 - Nor satisfied, nor unsatisfied 2 – Unsatisfied 1 - Very unsatisfied	Average on bord travel time on this line (From very short to very long): (5) Upto 10' (4) Between 11-20' (3) Between 21-30' (2) Between 30-45' (1) More than 45'	Quantitative (numerical ordinal values)	Questionnaire
		Adherence to schedule	Score (Ordinal values based on perceived satisfaction with the arrival of buses as for timetable)	From "Very Satisfactory" (5) to "Very unsatisfactory" (1) 5 - Very Satisfied 4 – Satisfied 3 - Nor satisfied, nor unsatisfied 2 – Unsatisfied 1 - Very unsatisfied	Average delay on arrival as per schedule (From very short to very long): (5) Buses arrive between 0 to 2 min. late (4) Buses arrive between 2 to 3 min. late (3) Buses arrive between 3 to 4 min. late (2) Buses arrive between 4 to 5 min. late (1) Buses arrive more than 5 min. late	Quantitative (numerical ordinal values)	Questionnaire
	Safety	Accidents on the road	Score (Ordinal values based on perceived ratio of ocurrence of accidents).	From Infrequent (5) to Very frequent (1) 5 - Very infrequent 4 - Infrequent 3 - Nor frequent, nor infrequent 2 – Frequent 1 - Very frequent		Quantitative (numerical ordinal values)	Questionnaire
	Security	Thefts on bus stops	Score (Ordinal values based on perceived ratio of ocurrence of thefts).	From Infrequent (5) to Very frequent (1) 5 - Very infrequent 4 - Infrequent 3 - Nor frequent, nor infrequent 2 – Frequent 1 - Very frequent		Quantitative (numerical ordinal values)	Questionnaire
		Thefts on board	Score (Ordinal values based on perceived ratio of ocurrence of thefts).	From Infrequent (5) to Very frequent (1) 5 - Very infrequent 4 - Infrequent 3 - Nor frequent, nor infrequent 2 – Frequent 1 - Very frequent		Quantitative (numerical ordinal values)	Questionnaire

Elaboration: Cesar Simborth. 2017

Table 5: DV "Service Quality Perceived" operationalization table (Part 2)

VAR	SUB-VAR (SQP CRITERIA)	INDICATORS	MEASUREMENT UNIT	LIKERT SCALE (VALUES)	USERS OBSERVATIONS ORDINAL CODING (COMPLEMENTARY)	NATURE OF DATA	D.C. METHOD
Service Quality Perceived - SQP	Space availability	Seating space availability	Score (Ordinal values based on perceived satisfaction with the available space for...)	From "Very Satisfactory" (5) to "Very unsatisfactory" (1). 5 - Very Satisfied 4 – Satisfied 3 - Nor satisfied, nor unsatisfied 2 – Unsatisfied		Quantitative (numerical ordinal values)	Questionnaire
		Standing space availability	Score (Ordinal values based on perceived satisfaction with the available space for...)	From "Very Satisfactory" (5) to "Very unsatisfactory" (1) 5 - Very Satisfied 4 – Satisfied 3 - Nor satisfied, nor unsatisfied 2 – Unsatisfied 1 - Very unsatisfied		Quantitative (numerical ordinal values)	Questionnaire
	Comfort	Vehicle design	Score (Ordinal values based on perceived satisfaction with the vehicle...)	From "Very Satisfactory" (5) to "Very unsatisfactory" (1) 5 - Very Satisfied 4 – Satisfied 3 - Nor satisfied, nor unsatisfied 2 – Unsatisfied 1 - Very unsatisfied		Quantitative (numerical ordinal values)	Questionnaire
		Vehicle interior cleanliness	Score (Ordinal values based on perceived satisfaction with the vehicle...)	From "Very Satisfactory" (5) to "Very unsatisfactory" (1) 5 - Very Satisfied 4 – Satisfied 3 - Nor satisfied, nor unsatisfied 2 – Unsatisfied 1 - Very unsatisfied		Quantitative (numerical ordinal values)	Questionnaire
		Vehicle exterior cleanliness	Score (Ordinal values based on perceived satisfaction with the vehicle...)	From "Very Satisfactory" (5) to "Very unsatisfactory" (1) 5 - Very Satisfied 4 – Satisfied 3 - Nor satisfied, nor unsatisfied 2 – Unsatisfied 1 - Very unsatisfied		Quantitative (numerical ordinal values)	Questionnaire
		Vehicle condition	Score (Ordinal values based on perceived satisfaction with the vehicle...)	From "Very Satisfactory" (5) to "Very unsatisfactory" (1). 5 - Very Satisfied 4 – Satisfied 3 - Nor satisfied, nor unsatisfied 2 – Unsatisfied 1 - Very unsatisfied	User's observation of the physical condition of buses on this service/line (From very good to very bad): (5) Seats, body, handles and devices seem to be in good shape (4) Seats, body, handles and devices seem to be fairly good (3) Seats, body, handles and devices seem deteriorated but work (2) Seats, body, handles and devices seem deteriorated with failures (1) Seats, body, handles and devices seem to be in poor condition	Quantitative (numerical ordinal values)	Questionnaire

Elaboration: Cesar Simborth. 2017

Table 6: DV "Service Quality Perceived" operationalization table (Part 3)

VAR	SUB-VAR (SQP CRITERIA)	INDICATORS	MEASUREMENT UNIT	LIKERT SCALE (VALUES)	USERS OBSERVATIONS ORDINAL CODING (COMPLEMENTARY)	NATURE OF DATA	D.C. METHOD
Service Quality Perceived - SQP		Vehicle condition	Score (Ordinal values based on perceived satisfaction with the vehicle...)	From "Very Satisfactory" (5) to "Very unsatisfactory" (1). 5 - Very Satisfied 4 – Satisfied 3 - Nor satisfied, nor unsatisfied 2 – Unsatisfied 1 - Very unsatisfied	User's observation of the physical condition of buses on this service/line (From very good to very bad): (5) Seats, body, handles and devices seem to be in good shape (4) Seats, body, handles and devices seem to be fairly good (3) Seats, body, handles and devices seem deteriorated but work (2) Seats, body, handles and devices seem deteriorated with failures (1) Seats, body, handles and devices seem to be in poor condition	Quantitative (numerical ordinal values)	Questionnaire
	System's Information	Availability of system's information on bus stops	Score (Ordinal values based on perceived satisfaction with the availability of information on ...)	From "Very Satisfactory" (5) to "Very unsatisfactory" (1) 5 - Very Satisfied 4 – Satisfied 3 - Nor satisfied, nor unsatisfied 2 – Unsatisfied 1 - Very unsatisfied	User's observation of the availability of information on bus stop (From full information to not available): (5) Available timetables, itineraries, maps, connections, arrivals (4) Available timetables, maps, arrivals (fairly ok) (3) Available timetables, itineraries, (fairly incomplete) (2) Available timetables (incomplete) (1) Not available or Inexistent	Quantitative (numerical ordinal values)	Questionnaire
		Availability of system's information on board	Score (Ordinal values based on perceived satisfaction with the availability of information on ...)	From "Very Satisfactory" (5) to "Very unsatisfactory" (1) 5 - Very Satisfied 4 – Satisfied 3 - Nor satisfied, nor unsatisfied 2 – Unsatisfied 1 - Very unsatisfied	User's observation of the availability of information on board (From full information to not available): (5) Available timetables, itineraries, maps, connections, arrivals (4) Available timetables, maps, arrivals (fairly ok) (3) Available timetables, itineraries, (fairly incomplete) (2) Available timetables (incomplete) (1) Not available or Inexistent	Quantitative (numerical ordinal values)	Questionnaire
		Availability of system's information online	Score (Ordinal values based on perceived satisfaction with the availability of information on ...)	From "Very Satisfactory" (5) to "Very unsatisfactory" (1) 5 - Very Satisfied 4 – Satisfied 3 - Nor satisfied, nor unsatisfied 2 – Unsatisfied 1 - Very unsatisfied	User's observation of the availability of information online (From full information to not available): (5) Available timetables, itineraries, maps, connections, arrivals (4) Available timetables, maps, arrivals (fairly ok) (3) Available timetables, itineraries, (fairly incomplete) (2) Available timetables (incomplete) (1) Not available or Inexistent	Quantitative (numerical ordinal values)	Questionnaire
	Customer service	Staff preparation and level of training (skills)	Score (Ordinal values based on perceived satisfaction with the staff ...)	From "Very Satisfactory" (5) to "Very unsatisfactory" (1) 5 - Very Satisfied 4 – Satisfied 3 - Nor satisfied, nor unsatisfied 2 – Unsatisfied 1 - Very unsatisfied		Quantitative (numerical ordinal values)	Questionnaire
		Staff kindness (customer orientation, initiative)	Score (Ordinal values based on perceived satisfaction with the staff ...)	From "Very Satisfactory" (5) to "Very unsatisfactory" (1) 5 - Very Satisfied 4 – Satisfied 3 - Nor satisfied, nor unsatisfied 2 – Unsatisfied 1 - Very unsatisfied		Quantitative (numerical ordinal values)	Questionnaire

Elaboration: Cesar Simborth. 2017

Based on these specific indicators, **their measurement units, and the nature of the data** to be obtained, the **methods and instruments for data collection were selected (questionnaires, interviews)**. They will be explained in sections 3.3 and 3.4 (Research Strategy and Data collection methods respectively). The list of selected specific indicators, also offered a close guidance for the formulation of questions of the research instruments for the DV data collection process (bus users questionnaire) presented in **Annex 01**.

3.3 Research strategy

A **case study** strategy was chosen because, there are *several variables involved* (GM operational factors, service quality criteria) in the research, and a limited number of cases or units of analysis (bus operators).

About the variables, there are several **causal factors (Independent variables) within the "governance and managerial operational domain"** (Vehicle maintenance, vehicle renewal, scheduling and operations, information and telematics, and personnel), **that affect several other perceived service quality criteria on the dependent variable side** (Time, safety, security, space availability, comfort, system's information and customer service) within each of the services provided in the domain of the units of analysis (cases). The selection of the "case study" strategy is justified, because, the **extent of the relations** between the *independent variables* and the *dependent variables* needs to be *known, described*, *and explained* (Van Thiel 2007) with a focus on "Transit operations".

About the cases. Not all the 25 bus service operators (running 29 bus routes in the Municipality) will be studied, but only the **three most representative in the urban area:** the **public** municipal company ("Trafiku Urban"), and **02 private** operators ("Germia tours", and "24 Yjet"), for which the number of units of analysis is limited to **03 cases (3 operators).** New primary data will be obtained for the purpose of this research.

Image 6: Map of lines 3,4,5,10

Edition: Cesar Simborth. 2017, Source: http://prishtinabuses.info/
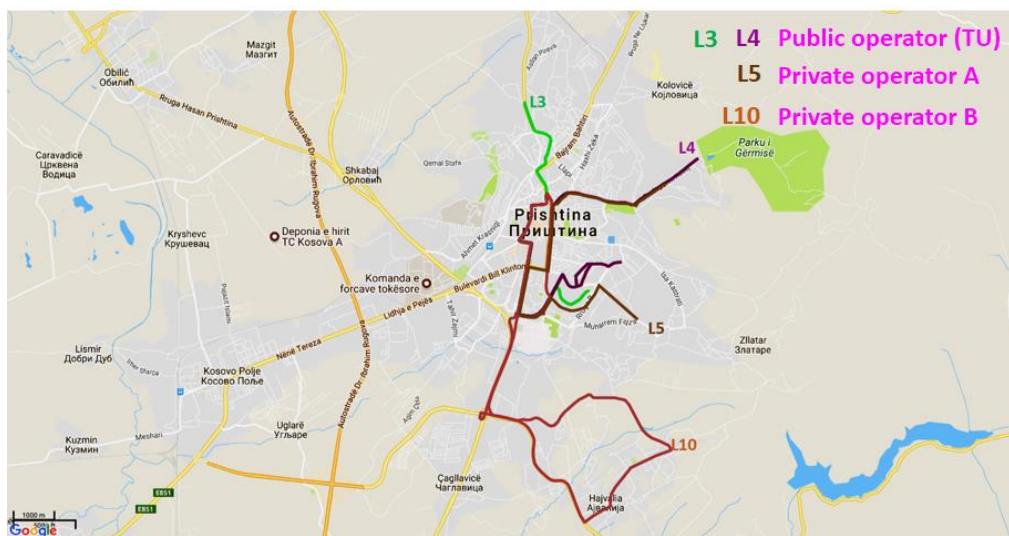
These representative operators were selected since the bus lines (services) they operate, are according to the Public Authority's perception (Unit of Traffic and Transport of the Municipality of Pristina), presumed to be among the "best" and "worst" of the network:

For "Case 1", Line 4, and Line 3 were selected to be studied (presumed to be a **positive**[6], and a **negative**[7] service.

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[6] A **positive** line is defined here as a transit service which is easily identified (by the authority, and local experts) as being **above** the perceived system's overall average quality of service.

[7] A **negative** line is defined here as a transit service which is easily identified (by the authority, and local experts) as being **below** the perceived system's overall average quality of service.

For "Case 2", Line 5 was selected to be studied (presumed to be a negative service).

For "Case 3", Line 10 was selected to be studied (presumed to be a positive service).

From the 03 cases (units of analysis) to be studied, comparisons will be made on the detailed perception of quality by users of different Public and Private services.

3.3.1 Description of the cases

3.3.1.1 Case 1 (Public operator - TU)

"Trafiku Urban" is the public transportation Municipal company (Public), in charge of the operation of Lines 1,2,3,4,and 17, in the city of Pristina (Urban area). The services chosen for this research are:

Line 03 (B.Diellit – K.Trimave) whose operation is outsourced by Trafiku Urban to 16 small individual subcontractors (owning and operating a bus each), which transport an average of 7,000 passengers a day (Bervatovci, 2017). For a visual impression of Line 03, see annex 4 (Photographic dossier of bus lines studied).

Line 04 (B.Diellit-P.Germise) whose operation is directly fulfilled by Trafiku Urban. The company reports directly to a "Municipal board of directors" (Not the Directorate of Public Services like Private Operators) which is in charge of the "Top management" of the company. The company has an executive director and an independent organization to provide full operation to their services. The company transports in L4 an average of 11,000 passengers a day (Bervatovci, 2017). For a visual impression of Line 03, see annex 4 (Photographic dossier of bus lines studied).

It is worth mentioning that line 04 was from January 2017, subject to a full bus vehicle renewal, in the framework of the Pristina Urban Transport Project (PUTP) that the Municipality is undertaking. Studying this line would allow the Municipality to know first-hand, what their users are thinking, and how they are rating the upgraded service, in comparison to the other non-upgraded services.

Image 7: Map of L3
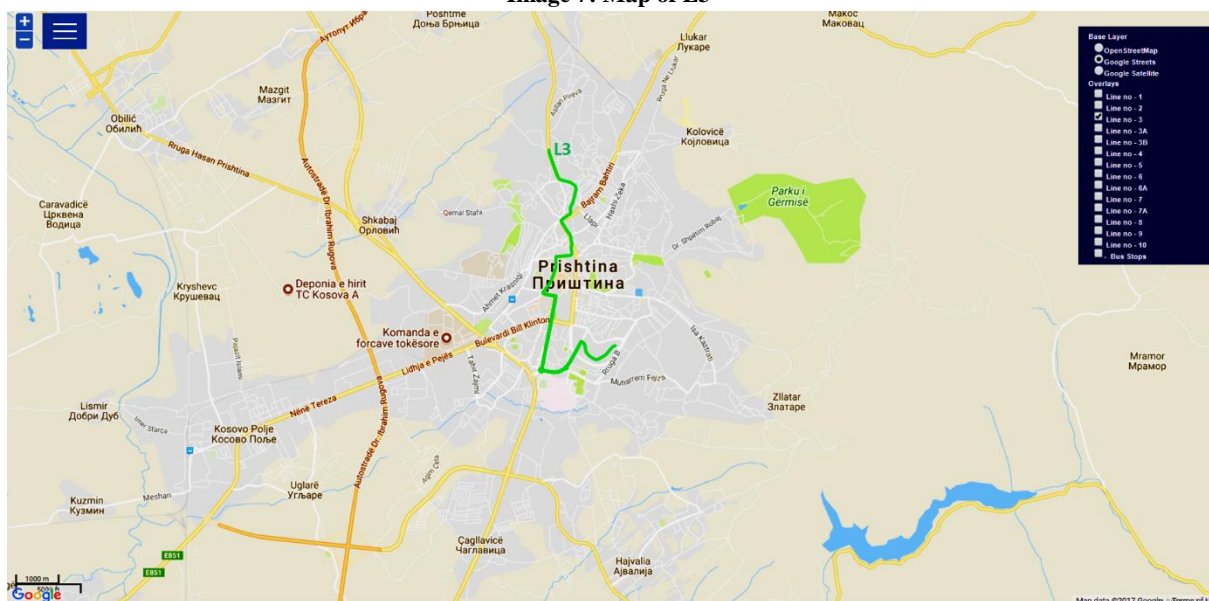
Edition: Cesar Simborth. 2017, Source: http://prishtinabuses.info/

Edition: Cesar Simborth. 2017, Source: http://prishtinabuses.info/
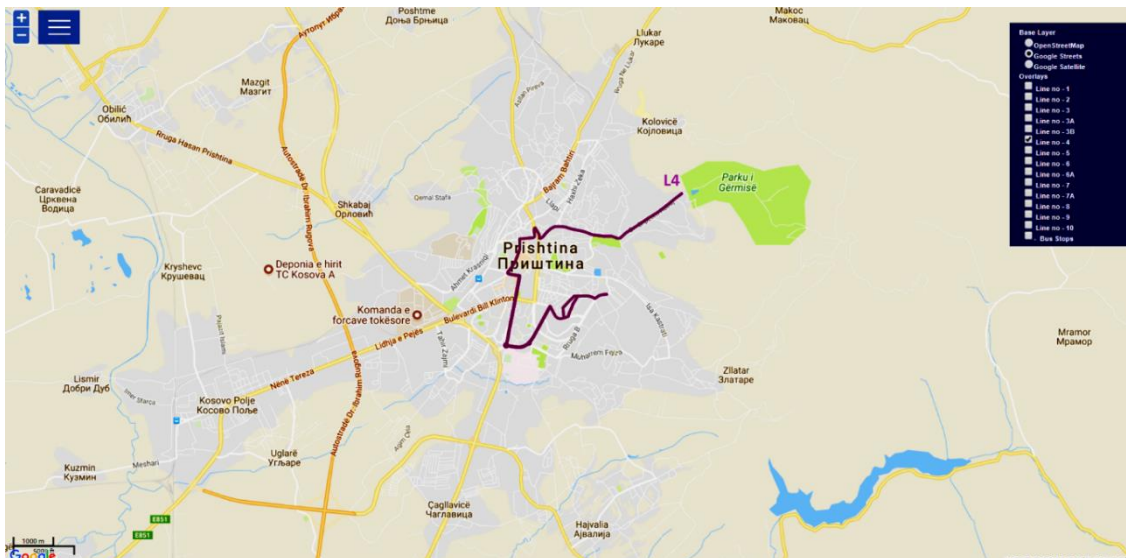
3.3.1.2 Case 2 (Private operator A):

"Germia Tours", is one of the 02 private companies, in charge of the operation of Line 05 in the city of Pristina (Urban area).

Line 05 (Sofali-B.Diellit) was chosen for this research, and its operation is directly fulfilled by "Germia Tours", together with "Ulpiana", the second operator. Line 05 has an average of 3,500 passengers a day (Gashi, 2017). For a visual impression of Line 05, see annex 4 (Photographic dossier of bus lines studied).

Germia Tours, as well as all of the other private operators that hold responsibility over the privately operated lines in Pristina, is given a renewable "Work permit" directly by the Municipality.

The Directorate of Public Services of the Municipality provides private operators, a set of "Operating standards" which include: Frequencies, route alignment, type of buses, and tariffs.

Image 9: Map of L5

Edition: Cesar Simborth. 2017, Source: http://prishtinabuses.info/
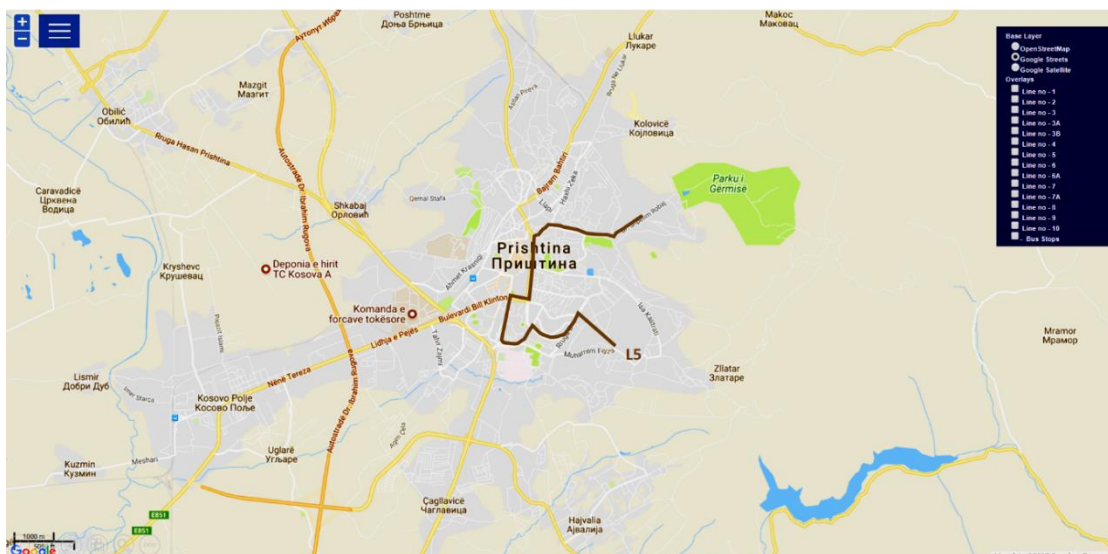
3.3.1.3 Case 3 (Private operator B):

"24 Yjet", is the only private company, in charge of the operation of Line 10 in the city of Pristina (Urban area).

Line 10 (Hajvali-Prishtine) was chosen for this research, and its operation is directly fulfilled by "24 Yjet". Line 10 has an average of 2,500 passengers a day (Sinani, 2017). For a visual impression of Line 10, see annex 4 (Photographic dossier of bus lines studied).

"24 Yjet", as well as all of the other private operators that hold responsibility over the private operation of the lines in Pristina, is given a renewable "Work permit" directly by the Municipality.

The company is also given by the Directorate of Public Services of the Municipality, a set of "Operating standards" which include: The frequencies, the route alignment, the type of buses, and the tariff to be charged to users.

Image 10: Map of L10

Edition: Cesar Simborth. 2017, Source: http://prishtinabuses.info/
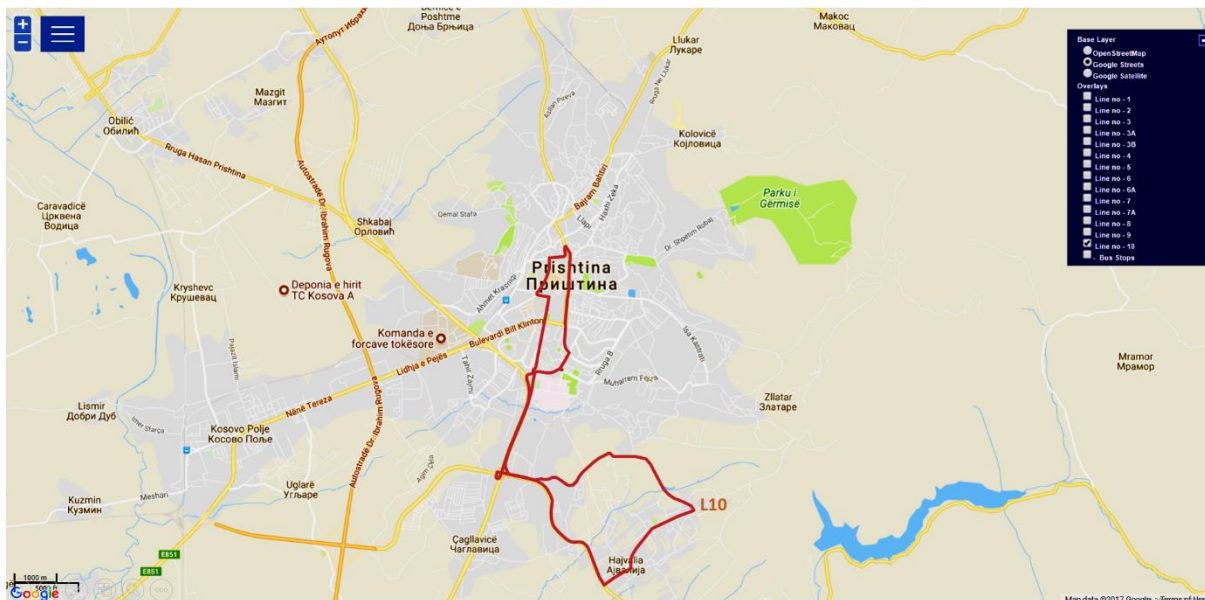
3.4 Data Collection Methods

In the methodological literature, a distinction is commonly made between *qualitative and quantitative* methods, however in practice, *those terms refer to the nature of the data, rather than the method used to gather it* (Van Thiel, 2007, p 58).

For the purpose of this research, the **data collection methods are mixed**, however there will be 02 predominant data collection methods. First, for the **DV, a representative number of closed questionnaires with fixed scores and ordinal values** (Likert scales) needs to be done with public transport passengers (quantitative information) in order to generalize results about the Service Quality Perceived per line and operator studied. Secondly, for the **IV, semi-structured interviews were used** (qualitative and quantitative information) since the information needs to be gathered from a few key people within a few organizations. As it can be seen in the operationalization tables 2,3,4,5, and 6 (section 3.2.2), the indicators and the nature of the data to be collected, determines de "Data collection methods".

According to Van Thiel (2007), *a case study strategy can use the following mixed methods* for data collection, depending on the context, and the nature of the data that needs to be collected for a study: questionnaires, interviews, content analysis, and even observations.

3.4.1 Independent variable side

3.4.1.1 Semi-structured interviews

On the Independent variable side, the predominant selected method was semi-structured interviews to the following organizations:

Municipality of Pristina

- Chief of Transport and Traffic, Directorate of Public Services.
- Coordinator, Pristina Sustainable Urban Mobility Plan.

Municipal transit company "Trafiku Urban" (Operating lines 3 and 4):

- Director
- Chief of operations
- Chief of vehicle maintenance

Private companies "Germia tours" (Operating lines 5):

- Director
- Chief of operations
- Chief of vehicle maintenance

Private companies "24 Yjet"(Operating lines 10):

- Director
- Chief of operations
- Chief of vehicle maintenance

The **research instruments (interview manuals)** have been elaborated according to the selected specific indicators presented in section 3.2 (Operationalization). The research instruments can be found in **Annex 01**.

3.4.1.2 Other complementary methods

Complementarily, **content analysis** of the following available information was done:

Municipality of Pristina statutory documents, reports and background information[8]:

- Updated CAD Plan of the network of bus routes and stops/stations.
- Sustainable Urban Mobility Plan incipient report.
- Directorate of Public Services "Service standards" for Public and Private operators (Frequencies, headways, required type of vehicles, minimum size of bus fleet).
- Background information (List of operators per line, estimated number of riders per line, estimated kilometres run per line a day, service hours per line).

Public and private operators:

- Available data of passengers per route,

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[8] Some of these pieces of information were also asked to "Bus operators" during the interviews, however, asking the Municipality for reports and official BPT operation system's information allowed to triangulate sources, and verify the accuracy of the information among organizations.

- Schedules, hours of operation.
- Agreement, contract or statutory regulation between the Municipality and operators.
- Vehicle fleet specifications and procedures manuals.
- Vehicle fleet maintenance reports.

3.4.2 Dependent variable side

3.4.1.1 Questionnaires

On the dependent variable side, the predominant method will be **questionnaires with fixed scores and ordinal values** (Likert scales from 5 to 1) for assessing the Service Quality perceived by users of the 04 lines selected. The questionnaires will measure the SQP of every line using 7 service quality criteria (Time, safety, security, space availability, comfort, system's information, and customer service), and 18 derived indicators (See table 4, page 25, "DV SQP operationalization") that shaped the SQP questionnaire. According to Van Thiel (2007), questionnaires can allow to obtain first hand comprehensive information effectively.

The **research instruments (questionnaires)** have been elaborated according to the selected specific indicators presented in section 3.2 (Operationalization). The research instruments can be found in **Annex 01.**

It is important to mention that the SQP questionnaire was elaborated to be read in 02 languages, English, and Albanian. The Albanian part was elaborated by a local transport engineer form the Municipality (MSc. Liridon Sejdiu), and the field surveying was pursued by a team of 04 local bilingual Master's students from University of Pristina, who were trained prior the fieldwork, and supervised at all times during the fieldwork, by the researcher.

3.4.1.1 Other complementary methods

Complementarily **field observations** of the operations in all lines were done and registered (notes and photography) by the researcher, in order to better correlate and interpret the users' responses afterwards, during the analysis process.

3.5 Sample size and selection

3.5.1 Independent variable: GM operational factors

Since the research aim of this research work is to explain how **governance and managerial operational factors** for BPT service provision affecting the service quality perceived in Pristina, the selection of units of study on the IV side, will be **purposive.**

As introduced in section 3.3, the selection of the sample will be focused on the **Public Authority (The Municipality of Pristina)** and the **Operators (Public and private)** that deliver the service.

Since the case study strategy chosen has the potential to provides interesting comparisons of *public versus private* service provision in Pristina, as well as comparisons between *presumably positive and negative perceived services*, a **quota sample** of 04 lines (L3,L4,L5,L10) and 03 representative transit operators (Trafiku Urban, Germia Tours, and 24 Yjet) was determined. A **snowball** enquire with municipal experts from the department of Transport and Traffic in

the Directorate of Public Services of the Municipality, and a local expert was pursued[9] to help determine the purposive quota sample on the IV side.

3.5.1.1 Public authority, Municipality of Pristina (Relevant to all cases)

The first respondent organization to consider on the **IV** side, is the Public Authority, specifically the Department of Transport and Traffic within the Directorate of Public Services (DPS) of the Municipality of Pristina. This entity gives consent to operate to all private operators, and establish the service provision operational standards **for all bus lines in the system** (Frequencies, headways, required type of vehicles, minimum size of bus fleet), including the publicly operated, for which it is a sort of a key "umbrella respondent". The following interviews were obtained:

- Mr. Habib Qorri, Chief of Transport and Traffic–DPS (habib.qorri@rks-gov.net), Interpreter: MSc. Eng. (Transport) Liridon Sejdiu.
- Mrs. Vjollca Podvorica, Coordinator Pristina Sustainable Urban Mobility Plan.

3.5.1.2 Case 1- IV respondent (Trafiku Urban: L3, L4):

For the **Independent Variable,** the respondent was the company **"Trafiku Urban" (Lines 03 and 04),** from which 03 interviews were obtained:

- Mr. Halil Mustafa, Executive Director Trafiku Urban (halil.mustafa@trafikurban-pr.com), Interpreter: B. Arch. Drita Hyseni
- Mr. Kujtim Bervatovci, Chief of Transport Operations – Trafiku Urban (kujtim.berbatovci@trafikurban-pr.com), Interpreter: MSc. Eng. (Transport) Liridon Sejdiu.
- Mr. Agim Krasniqi, Chief of Technical Maintenance–Trafiku Urban (agim.krasniqi@trafikurban-pr.com), Interpreter: MSc. Eng. (Transport) Liridon Sejdiu.

3.5.1.3 Case 2- IV respondent (Germia tours: L5):

For the **Independent Variable,** the respondent was the company **"Germia Tours" (Line 05)** from which 03 interviews were obtained:

- Interview 1 to: Mr. Nazim Gashi, Shareholder of Germia Tours, Interpreter: Eng. (Transport) MSc. Liridon Sejdiu (Middle and lower level management).
- Interview 2 to: Mr. Nazim Gashi, Shareholder of Germia Tours, Interpreter: Eng. (Transport) MSc. Liridon Sejdiu (operations).
- Interview 3 to: Mr. Nazim Gashi, Shareholder of Germia Tours, Interpreter: Eng. (Transport) MSc. Liridon Sejdiu (maintenance).

It is important to explain that in most small companies in Pristina, the owners or Shareholders of small companies are experienced multipurpose workers in the Public Transport business. They drive, do technical mechanic check-ups, or charge transit fares on board (Ticket selling) as a way to avoid money leakages and reduce operational costs.

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[9] During May 01 and June 9th, preliminary interviews were pursued with the following professionals (also public transport users) to enquire about the services (lines) which could presumably be perceived as "positive or negative" by the community:

-Mr. Habib Qorri (Chief of transport, Directorate of Public Services Municipality of Prishtina) and Mr. Liridon Sejdiu (Transport engineer, Directorate of Public Services).

-MSc. Esmali Sylejmani (Local transport engineer specialized on public transport modelling).

3.5.1.4 Case 3 – IV respondent (24 Yjet: L10):

For the **Independent Variable,** the respondent was the company **"24 Yjet" (Line 10)** from which 03 interviews were obtained:

- Mr. Hafiz Metolli, Director of "24 Yjet", Interpreter: Eng. (Transport) MSc. Liridon Sejdiu.
- Mr. Sinani, Manager of operations "24Yjet", Interpreter: Eng. (Transport) MSc. Liridon Sejdiu.
- Mr. Agim, Manager of parking and maintenance "24Yjet", Interpreter: Eng. (Transport) MSc. Liridon Sejdiu.

3.5.2 Dependent variable: Service Quality Perceived

Since the nature of the data to be collected for the DV is mostly quantitative (numerical scores), and results need to be **generalized** for each case (service providers and lines operated), a **probabilistic** sample selection approach was chosen.

A representative sample of random users will be surveyed with Service Quality Perceived questionnaires in bus stops, and inside the buses of the selected lines and operators.

Size of the population / number of respondents (users-passengers)

The Municipality of Pristina has a surface of 523 km2 which comprise 43 sub territorial units called neighbourhoods (urban zone), and villages (rural zone). The urban alone comprises 77.687 km2, in 34 urban neighbourhoods where reside 161,751 inhabitants or 81% of the Municipality's population (ASK, 2013). With that information, the average urban density can be estimated in *2,100 Inhabitants per square kilometre*.

About the number of users of bus lines 3, 4, 5, and 10, who will be surveyed (questionnaire) for measuring the dependent variable data, the sample size will be estimated based on the amount of bus public transport riders[10] along the lines. This number will be estimated based on the average number of residents living (urban density) in the influence area[11] of each of the lines:

- Public operator (Trafiku Urban):
  Line 03: 8 km (length), 7.04 km2 (influence area)
  Line 04: 9 km (length), 7.84 km2 (influence area)

- Private Operator "Germia tours":
  Line 05: 8 km (length), 7.04 km2 (influence area)

- Private Operator "24 Yjet":
  Line 10: 12 km (length), 10.24 km2 (influence area)

Then, the population living around lines 03, 04, 05 and 10 can be estimated using the average urban density (*2,100 inhabitants per square kilometre*) multiplied by the influence area along

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[10] The Municipality of Pristina does not have a public transportation passengers model or systematized detailed information about their number of passengers per line within the network (private operators are not obliged to report their passenger ridership to the Authority). They are working now that as part of the studies for the Sustainable Urban Mobility Plan (SUMP) introduced in Chapter 1.

[11] The influence area of the lines is estimated on a radius of 400 m around the bus stops (Grava S, 2004)

the lines. This rough number of population can be subject to a **level of stratification** based on two factors, "independent transit ridership age" and "transit modal share".

The "**independent transit ridership age**" for the purpose of this work, will be considered after 14 years, which almost coincide with the end of the basic education period (6 to 15 years old), and also matches the demographic data "categorization by age" and the data split available in the Kosovo Agency for Statistics (KAS, 2011). According to the latter a 74.2% of the population is over 14 years old in Pristina. Based on this a *independent transit ridership age factor* of **0.74** will be applied to the number of residents along the lines to estimate the number of independent transit riders (customers) to be surveyed.

About the "**transit modal share**" factor, it will allow to precise the proportion of residents actually using the service. As for that, in a recent survey (Berisha, 2016) it was found out that a 55.5% of random respondents use public transportation as their regular mode of transport. Based on this a *modal share factor* of **0.55** will be applied to the number of residents along the lines to estimate the number of regular riders.

Then the number of users (customers) per line and operator will be estimated as follows:

- Public operator (TU):
  Line 03: 14,784 residents x 0.74 (*independent transit ridership age*) x 0.55 (*modal share factor*) = 6,017 users
  Line 04: 16,464 residents x 0.74 (*independent transit ridership age*) x 0.55 (*modal share factor*) = 6,700 users
- Private Operator A:
  Line 05: 14,784 residents x 0.74 (*independent transit ridership age*) x 0.55 (*modal share factor*) = 6,017 users
- Private Operator B:
  Line 10: 21,504 residents x 0.74 (*independent transit ridership age*) x 0.55 (*modal share factor*) = 8,752 users

- **Total estimated number of users (customers) for Operators TU, A and B:**
  Lines 03, 04, 05, and 10: **27,486 users**

Then, a sample size calculator[12] was used to determine the **total size of the sample of users** (customers) to be surveyed with a confidence level of **95%,** and a margin of error (Confidence interval) of **5%** with the following results:

<div align="center">

Box 1: Sample size calculator

Determine Sample Size

Confidence Level: ● 95% ○ 99%

Confidence Interval: 5

Population: 27486

Calculate   Clear

Sample size needed: 379

Source: https://www.surveysystem.com/sscalc.htm

</div>

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[12] Creative Research Systems sample size calculator: https://www.surveysystem.com/sscalc.htm

- Total size of the sample of users (customers) for all operators:
  Lines 03, 04, 05, and 10: **380 users** (rounded)

Proportional distribution (based on the number of users):

The table 7 (on the right), shows the proportion (percentage) of users per line in relation to the total number of riders along the 04 lines.

The sub-table below shows the size of the samples per line, based on the same percentages. Being as follows:

- Public operator (TU):
  Line 03: 83 respondents
  *Line 04: **93 respondents***
- Private Operator (Germia tours):
  Line 05: 83 respondents
- Private Operator (24 Yjet):
  Line 10: 121 respondents

  *Total: **380 users***

Table 7: Sample distribution per line

	Users	%
Line 03	6,017	21.9
Line 04	6,700	24.4
Line 05	6,017	21.9
Line 10	8,752	31.8
Total	27,486	100

	Sample	%
Line 03	83	21.9
Line 04	93	24.4
Line 05	83	21.9
Line 10	121	31.8
Total	380	100

Elaboration: C. Simborth. 2017

It is important to mention that during the data collection process, it was discovered that L4 had 16% more passengers than the ones estimated theoretically in the study, for which the **L4 sample was readjusted an increased.** Lines 03, 05, and 10 had in reality, close to 45% less passengers than the ones estimated here, however, the researcher decided not to reduce significantly the size of the sample for those lines, to increase the level of confidence. In the end the size of the sample **surveyed in the field** was as follows:

- Public operator (TU):
  Line 03: 83 respondents
  *Line 04: **108 respondents***
- Private Operator (Germia tours):
  Line 05: 83 respondents
- Private Operator (24 Yjet):
  Line 10: 121 respondents

  *Total: **402 users (size of the sample surveyed)***

3.6 Field work and data collection process

3.6.1 Independent variable: GM operational functions

3.6.1.1 Semi-structured interviews

In order to contact the organizations involved with the governance and management of the operations in L3, L4, L5 and L10, a solid contact with the Municipality (Public Authority) had to be established. In that regard, the following key connections were generated:

- Mrs. Fitore Pacolli-Dalipi, Chief of the mayor's cabinet, high ranking official within the Municipality, who offered the Municipality support, and assigned a person inside the Municipality to facilitate the researcher's networking and access to information.

- Mr. Habib Qorri, Chief of Transport and Traffic within the Directorate of Public Services of the Municipality, who participated in the sampling process snowball discussions and provided with due anticipation key background information about the BPT system's management and the operators.

- Mrs. Vjollca Podvorica, Coordinator, Pristina Sustainable Urban Mobility Plan in the Municipality, who facilitated the researchers contact with local operators, and several institutions involved with the ongoing city reforms through the first SUMP workshop[13] in which the researcher participated.

- Ms. Drita Hyseni, local consultant in the special DEMOS project inside the Directorate of Public Services of the Municipality, who facilitated the researchers' contact with local operators, and follow up inside the Municipality[14].

- Mr. Liridon Sejdiu, local consultant (Transport engineer) in the special DEMOS project inside the Directorate of Public Services of the Municipality, who participated in the sampling process snowball discussions, and assisted providing professional interpretation (English Albanian) during the interviews.

The contact with these 05 stakeholders was the foundational base to plan, organize, and execute the data collection process on the IV side (semi structured interviews). All interviews happened in the weeks of **June 26-30** and **July 3 to 7**. See the detailed schedule in Annex 1 (Section A.1.3 Fieldwork schedule).

In the following lines, the data collection process results are summarized:

Municipality of Pristina

- Mr. Habib Qorri, Chief of Transport and Traffic–DPS (habib.qorri@rks-gov.net), Interpreter: MSc. Eng. (Transport) Liridon Sejdiu:
  The interview was about the technical aspects of the current bus system's planning, management and operations, contractual-statutory relations with operators, the quality of service requirements, and the characteristics of the operation.

- Mrs. Vjollca Podvorica, Coordinator Pristina Sustainable Urban Mobility Plan:
  The interview was about the current reforms and their expected outcomes, timelines, perceptions on the evolution of the system based on current findings.

The two interviews were done in June 23rd, and June 28th respectively. The detailed reports[15] of all interviews are in the Annex 02: Semi structured interview Reports.

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[13] The SUMP stakeholder workshop was an important event hosted by the Municipality in May 25th, where all public, private, the academia, and non-governmental organizations involved with the city's Transport and Mobility participated to discuss about the key urban mobility issues and challenges in Pristina.

[14] The support regarding follow up inside the Municipality was very important to contact non-English speaking city officials and local operators.

[15] All interviews have been recorded (Audio). An "Interview report" has been produced for each of them, containing all the relevant qualitative and numerical information, that was used in the data analysis.

Image 11: Interviews with Mr. Habib Qorri, Municipality of Pristina

Photo: Drita Hyseni. 2017

Municipal transit company "Trafiku Urban" (Operating lines 3 and 4):

- Mr. Halil Mustafa, Executive Director, Executive Director Trafiku Urban (halil.mustafa@trafikurban-pr.com), Interpreter: B. Arch. Drita Hyseni:
  The interview was about middle and lower level management, Trafiku Urban modernization process, personnel training and recruitment.

- Mr. Kujtim Bervatovci, Chief of Transport Operations – Trafiku Urban (kujtim.berbatovci@trafikurban-pr.com), Interpreter: MSc. Eng. (Transport) Liridon Sejdiu:
  The interview was about the company's technical practices of management and operations for service delivery.

- Mr. Agim Krasniqi, Chief of Technical Maintenance–Trafiku Urban (agim.krasniqi@trafikurban-pr.com), Interpreter: MSc. Eng. (Transport) Liridon Sejdiu:
  The interview was about the company's technical practices and procedures regarding bus fleet maintenance.

The three interviews were done in June 29th, and July 5th respectively. The detailed reports of all interviews are in the Annex 02: Semi structured interview Reports.

Photos: Drita Hyseni. 2017

Private company "Germia tours" (Operating lines 5)

- Mr. Nazim Gashi, Shareholder of Germia Tours, Interpreter: Eng. (Transport) MSc. Liridon Sejdiu:
  The interview was about middle and lower level management, personnel training and recruitment, and future perspectives of the company.

- Mr. Nazim Gashi, Shareholder of Germia Tours, Interpreter: Eng. (Transport) MSc. Liridon Sejdiu:
  The interview was about the company's technical practices of management and operations for service delivery.

- Mr. Nazim Gashi, Shareholder of Germia Tours, Interpreter: Eng. (Transport) MSc. Liridon Sejdiu:
  The interview was about the company's technical practices and procedures regarding bus fleet maintenance.

The three interviews were done in July 7th respectively. The detailed reports of all interviews are in the Annex 02: Semi structured interview Reports.

Image 15: Interview with bus operator, Germia Tours

Image 14: Interview with Nazmi Gashi, Germia tours

Photos: Drita Hyseni. 2017

Private companies "24 Yjet"(Operating lines 10):

- Mr. Hafiz Metolli, Director of "24 Yjet", Interpreter: Eng. (Transport) MSc. Liridon Sejdiu.
  The interview was about middle and lower level management, personnel training and recruitment, and future perspectives of the company.

- Mr. Sinani, Manager of operations "24Yjet", Interpreter: Eng. (Transport) MSc. Liridon Sejdiu.
  The interview was about the company's technical practices of management and operations for service delivery.

- Mr. Agim, Manager of parking and maintenance "24Yjet", Interpreter: Eng. (Transport) MSc. Liridon Sejdiu.
  The interview was about the company's technical practices and procedures regarding bus fleet maintenance.

The three interviews were done in June 29th respectively. The detailed reports of all interviews are in the Annex 02: Semi structured interview Reports.

Image 16: Interviews with "24 Yjet"

Photo: Liridon Sejdiu. 2017

3.6.1.2 Other complementary methods

During the interviews, the Municipality of Pristina was asked for statutory documents, reports and background information that helped triangulate sources, and verify the accuracy of the information provided by the private and public bus operators.

In the end, it was found out that some of the information in the Municipality domain was not up to date with the latest operators' practices, like for instance the number of buses in the operating companies, as well as the number of passengers transported. Both demand responsive aspects that are very dynamic in any Public Transport systems.

3.6.2 Dependent variable: Service Quality Perceived

3.6.2.1 Questionnaires

The **Service Quality Perceived (SQP) questionnaires** with bus transit users (customers) for all lines and operators selected, were conducted on typical working days, during the following weeks: June 27-30, July 3-7, and July 10 to 14. The questionnaires were filled in bus stops and inside buses (on board).

The questionnaires were prepared in one single format in English/Albanian. The Albanian part was translated by MSc. Eng. (Transport) Liridon Sejdiu, a local bilingual Transport Engineer from the Municipality, who also assisted in Interpreting during the interviews to bus operators.

It is important to mention that one of the challenges of the fieldwork on the DV side, was the "**Language**" factor. Even though the questionnaires were also in Albanian; given the extension of it (37 questions distributed along 03 sections), the high number of respondents (402), the need for accuracy and completeness while answering, and the occurrence of doubts or clarification requests by bus users (respondents); a need for "respondents' assistance" was clearly identified. Since the respondents have a different language than the researcher (Albanian), and English is not yet widely spoken fluently as a second language in Kosovo, a local team was needed to be structured.

A group of 5 bilingual Master's students (English - Albanian) from the Faculty of Architecture and Engineering of University of Pristina (one of the partnering institutions of Erasmus University Rotterdam under the Erasmus plus exchange program), was recruited: 04 surveyors, and 01 supervision assistant. All under the researcher's leadership and coordination.

The team was trained during the week prior the start of fieldwork. During the training a detailed explanation of the study and their positive implications on complementing the ongoing reforms of the Municipality was delivered. A detailed explanation of the questionnaire in English was done, and a review of the Albanian version of the questionnaire was done with the team to detect possibly unclear questions prior the start of the study.

Image 17: Fieldwork team
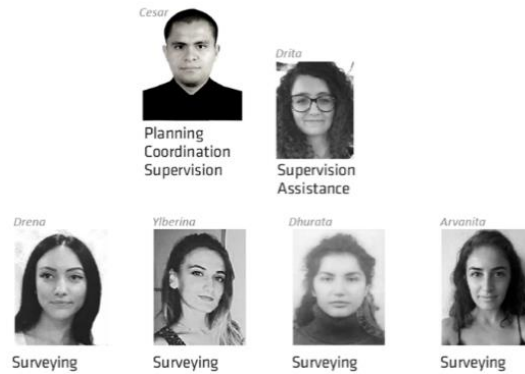
Image 18: Session of training for the fieldwork team

Photo: Drita Hyseni. 2017

As part of the training, a mock-up session on the field was undertaken. It allowed surveyors to experience hands on the real task beforehand, encounter possible challenges while approaching strangers, and face real questions and reactions from respondents to the questions. All of that, was discussed with the team afterwards, in a classroom. This also allowed the researcher to time surveyors and respondents while answering the questionnaires (useful for the fieldwork time planning process).

Image 19: Fielwork mock up

Photo: C. Simborth. 2017

Credentials were designed and printed and identifiable shirts of one of the local sponsoring institution (University of Pristina) were obtained in order to make respondents easily aware of the organizations involved.

Image 20: Fieldwork credentials

The following "Works shifts" considering a "rotative personnel distribution" criteria was pursued. All surveyors became familiar with all lines and operators (L3,L4,L5,L10), as well as the supervisors.

Also, a balanced between peak and non-peak hours (50-50%) was tried to maintain. Though the clarification was made for surveyors, to only survey **frequent users** of the line, and ask passengers to rate the service based on **their overall usual experience** (not specifically based on the ongoing trip).

Table 8: Fieldwork team, bus line distribution

FIELDWORK TEAM - USERS SERVICE QUALITY PERCEIVED SURVEY - BUS LINE DISTRIBUTION

	Names	Week 27-30					Week 3-7					Week 3-7				
		26	27	28	29	30	3	4	5	6	7	10	11	12	13	14
1	Cesar Simborth	Random	Random	Random	Random	Random	Random	Random	Random	Random	Random	Random	Random	Random	Random	Random
2	Drita Hyseni	Random	Random	Random	Random	Random	Random	Random	Random	Random	Random	Random	Random	Random	Random	Random
3	Arvanita Nura			9	10	10	14	12	12			20	8			
4	Dhurata Avdiu		10		10	11	26	19	10			9				
5	Drenushë Lamaj		10	9		16	16	15	13			16				
6	Ylberina Tërnava		4	5		10	12	16	15			22	8	13	16	
	Subtotal (questionnaires)		24	23	20	47	68	62	50	0		67	16	13	16	0	0
					DH	L		DH	L							
					90	92		112	83							

		TARGET			UP TO DATE
Line 3	Number of questionnaires filled during the day	Line 3	83	Line 3	83
Line 4	Number of questionnaires filled during the day	Line 4	104	Line 4	108
Line 5	Number of questionnaires filled during the day	Line 5	83	Line 5	83
Line 10	Number of questionnaires filled during the day	Line 10	121	Line 10	128
			391		402

Elaboration: C. Simborth. 2017

Table 9: Fieldwork team, schedule distribution

FIELDWORK TEAM - USERS SERVICE QUALITY PERCEIVED SURVEY - TIME / SCHEDULE DISTRIBUTION

Names		26	27	28	29	30	3	4	5	6	7	10	11	12	13	14
			Week 27-30					**Week 3-7**					**Week 10-14**			
1	Cesar Simborth		3.45-6 pm	5.45-8 pm	3.45-6 pm	5.45-8 pm	8.45-11 am	3.45-6 pm	5.45-8 pm	3.45-6 pm	5.45-8 pm	3.45-6 pm	9.45-12	7- 9.15 am	9.45-12	7- 9.15 am
2	Drita Hyseni		3.45-6 pm	5.45-8 pm	3.45-6 pm	5.45-8 pm	8.45-11 am	3.45-6 pm	5.45-8 pm	3.45-6 pm	5.45-8 pm	3.45-6 pm	9.45-12	7- 9.15 am	9.45-12	7- 9.15 am
3	Arvanita Nura		3.45-6 pm	5.45-8 pm	3.45-6 pm	5.45-8 pm	8.45-11 am	3.45-6 pm	5.45-8 pm	3.45-6 pm	5.45-8 pm	3.45-6 pm	9.45-12	7- 9.15 am	9.45-12	7- 9.15 am
4	Dhurata Avdiu		3.45-6 pm	5.45-8 pm	3.45-6 pm	5.45-8 pm	8.45-11 am	3.45-6 pm	5.45-8 pm	3.45-6 pm	5.45-8 pm	3.45-6 pm	9.45-12	7- 9.15 am	9.45-12	7- 9.15 am
5	Drenushë Lamaj		3.45-6 pm	5.45-8 pm	3.45-6 pm	5.45-8 pm	6.45-11 am	3.45-6 pm	5.45-8 pm	3.45-6 pm	5.45-8 pm	3.45-6 pm	9.45-12	7- 9.15 am	9.45-12	7- 9.15 am
6	Ylberina Tërnava		3.45-6 pm	5.45-8 pm	3.45-6 pm	5.45-8 pm	8.45-11 am	3.45-6 pm	5.45-8 pm	3.45-6 pm	5.45-8 pm	3.45-6 pm	3.45-6 pm	3.45-6 pm	9.45-12	7- 9.15 am

*Paint it in light red in case there is an schedule issue any day (unavailability)

Done

Elaboration: C. Simborth. 2017

During the fieldwork, surveyors assisted respondents in reading the questions for them in Albanian, and clarifying any doubt. The researcher was supervising at all times the course of the study in the buses to assist 2 surveyors per shift (a supervision assistant was in a different bus with the other 2 surveyors), clarifying doubts and making any correction about the process if necessary. Communication and tracking of the whole team was done using a local number, and online data using the "Google share location" feature. The team of surveyors shared at all times their location with the supervisors via GPS in a Google Maps platform.

Image 21: Collage of fieldwork scenes (DV questionnaires)

Photos: C. Simborth. 2017

The daily progress for all lines studied was not even, since the interviews (IV data collection) with the operators had to be confirmed prior the start of "passengers' questionnaires" on that line (DV data collection). Not all operators had the same availability, for which some lines questionnaires were done first and faster than others. In the end, **all 402 questionnaires were obtained within the 03 weeks planned.** See detailed Gantt diagram in Annex 01 (A1.3 Fieldwork schedule).

Image 22: 402 physical questionnaires

Photo: C. Simborth 2017

3.6.2.2 Other complementary methods

Complementarily **field observations** of the bus operations in all lines were done and registered (notes and photography) by the researcher, in order to better correlate and interpret the users' responses afterwards, during the analysis process.

3.7 Validity and reliability

The chosen strategy would lead **internal validity**, since It requires the use of clearly defined and **exclusive measurement instruments** that cannot be used to measure other theoretical constructs, **allowing to measure what needs to be measured** (Van Thiel, 2007, p 49).

In other words, the design of the **"Semi structured interview manuals" (IV)** was carefully done, based on the list of 15 indicators derived from the following GM operational functions: *Maintenance, vehicle renewal, scheduling and operation, control of operations, information, and personnel.*

About the **"questionnaires" (DV)**, they consist of 03 sections and 36 questions:

- The **first section** (10 questions) are bus users-passengers' background complementary information (*frequency of use, genre, age, trip purpose, time of trip, need for transfer, alternative modes*) are fit to the specified indicators).

- The **second section** (8 questions) is based on the bus users' objective observations about the service regarding: *Time, comfort, and information*. This as a way to make respondents reflect objectively about the service before responding subjectively, and to obtain complementary information.
- The **third and main section** (19) is based on the SQP 19 indicators (See operationalization in section 3.2) selected to study the bus users' subjective perception (Likert scale satisfaction scores). The 19 indicators are derived from the 7 selected[16] service quality criteria.

Both main research instruments (IV and DV), lead to internal validity since they are **exclusive to the case studied** in Pristina**, and allow to measure what needs to be measured.**

About the DV (Service Quality Perceived), there is a need to achieve **external validity** since the results need to be generalized for each of the bus lines studied[17] (L3, L4, L5, L10). Hence, a representative sample of random users will have to be surveyed (fill quantitative fixed score questionnaires) to determine the overall Service Quality Perceived of every line and operator (unit of analysis).

Box 2: Summary of the research design

Elaboration: C. Simborth. 2017

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[16] The selection of the SQP criteria was based on the literature review and their adaptation to the context of Pristina. This adaptation was informed by the researcher's observations and knowledge acquired in Pristina. The researcher moved to Pristina 2 months prior the start of data collection.

[17] The SQP obtained from a sample of users from a specific line, needs to be generalized for the whole universe of users of the line.

3.8 Data analysis methods

The empirical data on the DV side (The 402 users' questionnaires assessing the SQP four bus lines and three operators) will be the spearhead of the whole "Data analysis process", given the **high importance** that the **quality of service of a BPT system, understood and interpreted from the users' perspective** has on this study.

In that sense, the *first level of analysis*, focuses on understanding the SQP on the DV side for all cases. Then a *second level of analysis* (inferential), consists in understanding the nature and cause of the relations inside the DV side, in other words, what perceived quality criteria is being more influential to the overall SQP of users?

Once those key SQP aspects are identified, the connection with the IV was done. Since the explanation to those levels of users' satisfaction or dissatisfaction (obtained through statistics) lay on decisions made by the operators or the Public Authority (Municipality). There is when the qualitative information coming from the interviews to organizations, help explain the nature of the relations between the IV and the DV. Further inferential analysis on this level was also possible, to help explain the extent of the relations, while the research questions are also answered. The "diagram 5" (below) helps introduce the overall **data analysis process**. More detail about it, is given in the following sections (3.8.1, and 3.8.2), and in the early sections of Chapter 4.

Diagram 5: Data analysis process scheme

Elaboration: C. Simborth. 2017
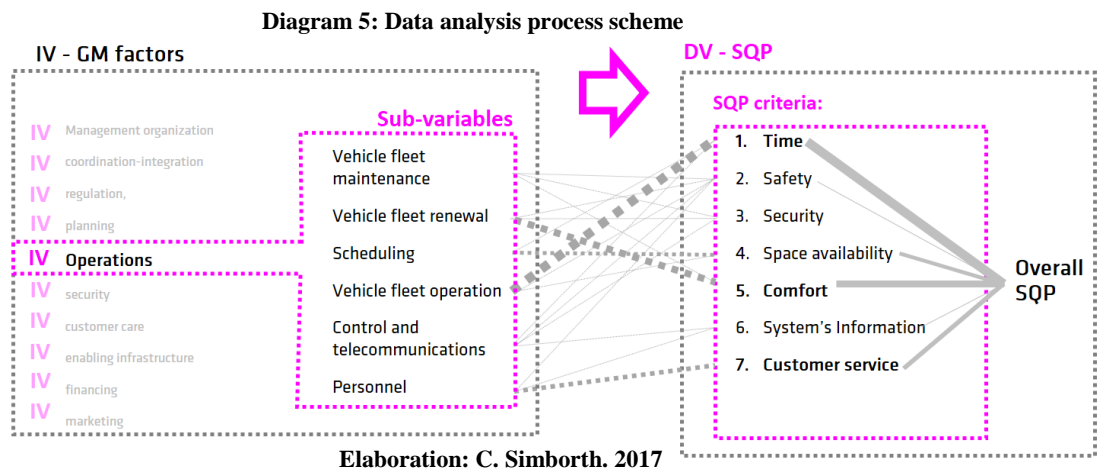
3.8.1 Dependent variable side

When analysing quantitative data, there are 03 phases: *Data collection, data ordering, and data analysis* itself (Van Thiel, 2007).

About data collection, on the independent variable side all sub variables (perceived service quality criteria) and indicators will be measured in numerical scores (ordinal values), as shown in the tables in 3.3.2 (Variables, sub variables, indicators).

About **data ordering,** the users' Service Quality Perceptions, was measured in the **third section** of the questionnaire (as mentioned in section 3.7) using "Likert scales" with already[18] coded values going from 5 (*very satisfactory, very high, maximum qualitative score*) to 1 (*very unsatisfactory, very poor, minimum qualitative score*). See table 4, page 25 (DV operationalization).

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[18] The "Likert scales" coding was defined during the operationalization (Section 3.2).

Table 10: DV Likert scales coding (values) sample

VAR	SUB-VAR (SQP CRITERIA)	INDICATORS	MEASUREMENT UNIT	LIKERT SCALE (VALUES)
Service Quality Perceived - SQP	Time	Perception of "Waiting time"	Score (Ordinal values based on perceived satisfaction with the time for…)	From "Very Satisfactory" (5) to "Very unsatisfactory" (1) 5 - Very Satisfied 4 – Satisfied 3 - Nor satisfied, nor unsatisfied 2 – Unsatisfied 1 - Very unsatisfied
		Boarding-Alighting time	Score (Ordinal values based on perceived satisfaction with the time for…)	From "Very Satisfactory" (5) to "Very unsatisfactory" (1) 5 - Very Satisfied 4 – Satisfied 3 - Nor satisfied, nor unsatisfied 2 – Unsatisfied 1 - Very unsatisfied
		On board time	Score (Ordinal values based on perceived satisfaction with the time for…)	From "Very Satisfactory" (5) to "Very unsatisfactory" (1). 5 - Very Satisfied 4 – Satisfied 3 - Nor satisfied, nor unsatisfied 2 – Unsatisfied 1 - Very unsatisfied
		Adherence to schedule	Score (Ordinal values based on perceived satisfaction with the arrival of buses as for timetable)	From "Very Satisfactory" (5) to "Very unsatisfactory" (1) 5 - Very Satisfied 4 – Satisfied 3 - Nor satisfied, nor unsatisfied 2 – Unsatisfied 1 - Very unsatisfied
	Safety	Accidents on the road	Score (Ordinal values based on perceived ratio of ocurrence of accidents).	From Infrequent (5) to Very frequent (1) 5 - Very infrequent 4 - Infrequent 3 - Nor frequent, nor infrequent 2 – Frequent 1 - Very frequent

Elaboration: C. Simborth. 2017

As a complement, the **second** section of the questionnaire include users' objective observations, which were coded into ordinal values going from 5 (*depending on the users' observations of a set of attributes*) to 1 (*Depending on the users' observation according to a set of attributes)* in the questionnaires. See sample table.

Table 11: DV users' observations' ordinal coding

VAR	SUB-VAR (SQP CRITERIA)	INDICATORS	USERS OBSERVATIONS ORDINAL CODING (COMPLEMENTARY)
Service Quality Perceived - SQP	Time	Perception of "Waiting time"	User's observation of the average waiting time (From very reduced time to very long time): (5) 0-5' (4) 6-10' (3) 11-20' (2) 20-30' (1) 30'- more
		Boarding-Alighting time	User's observation of the average B/A time (From very reduced time to very long time): (5) Upto 20" (4) 21-40" (3) 41-60" (1 min.) (2) 61-80" (1 min. 20 sec.) (1) More than 80" (1 min. 20 sec.)
		On board time	User's observation of the average on bord travel time on this line (From very short to very long): (5) Upto 10' (4) Between 11-20' (3) Between 21-30' (2) Between 30-45' (1) More than 45'
		Adherence to schedule	User's observation of the average length of delay on arrival to bus stop as per schedule (From very short to very long): (5) Buses arrive between 0 to 2 min. late (4) Buses arrive between 2 to 3 min. late (3) Buses arrive between 3 to 4 min. late (2) Buses arrive between 4 to 5 min. late (1) Buses arrive more than 5 min. late

Elaboration: C. Simborth. 2017

The **first** section of the questionnaires (Background information) was coded during the "data filling process" (database) using nominal values (See sample in table 12).

Table 12: Background information coding (DV questionnaires)

	1.BACKGROUND INFORMATION								
	1 Use of transit: Days per (5,4,3,2,1/ scale)	2 Bus line (3,4,5,10 / nominal)	3 Period of day (P=1, O-P=2 / Nominal)	4 Trip Purpose (W=1, St=2, Rec=3, Sh=4, O=5 / Nominal)	5 Transfer (Y=1, N=2 / Nominal)	6 If not bus. Other mode? (Y=1, N=2/ Nominal)	7 What mode? (P-Car=1, Sh-Tax=2, Tax=3, Bike=4, Walk=5 / Nominal)	8 Gender (M=1, F=2 / Nominal)	9 Age (Scale)
1	5	4	2	1	2	1	2	2	57
2	5	4	2	2	2	2		2	18
3	5	4	1	3	2	2		1	65
4	5	4	1	4	2	2		1	65
5	5	4	1	1	2	1	3	2	19
6	5	4	2	3	2	1	1	2	45
7	5	4	2	1	1	1	2	2	42
8	5	4	2	2	2	2		1	23
9	5	4	1	1	2	1	2	2	20
10	5	4	2	2	1	2		1	17
11	5	3	1	1	2	1	2	1	38
12	5	3	1	1	2	1	2	1	25
13	5	3	1	1	2	1	1	1	52
14	3	3	1	1	2	2		2	23
15	5	3	1	2	2	1	3	2	16
16	5	3	1	1	1	1	2	2	58

Elaboration: C. Simborth. 2017

In the end, after all the data collected from the field through **the questionnaires** (three sections and 36 questions) was screened, organized and digitalized, it was **inputted into one single matrix in IBM SPSS V.24 for analysis.** The matrix was arranged by respondents (rows) and variables and indicators (columns), and a process of data inspection, to track for possible data filling errors, missing values declaration was pursued. See sample of the built matrix.

Table 13: SPSS data matrix (data view)

	Order_resp	Use_Transit	Bus_Line	Period_day	Trip_Purpose	Transfer	Other_mode	Specify_other	Gender	Age	Waiting_time	Board_Alight_time	On_board_time
1	1	5.0	4.0	2.0	1.0	2.0	1.0	2.0	2.0	57.0	5.0	4.0	4.0
2	2	5.0	4.0	2.0	2.0	2.0	2.0	999.0	2.0	18.0	4.0	4.0	2.0
3	3	5.0	4.0	1.0	3.0	2.0	2.0	999.0	1.0	65.0	5.0	3.0	4.0
4	4	5.0	4.0	1.0	4.0	2.0	2.0	999.0	1.0	65.0	3.0	5.0	3.0
5	5	5.0	4.0	1.0	1.0	2.0	1.0	3.0	2.0	19.0	5.0	5.0	5.0
6	6	5.0	4.0	2.0	3.0	2.0	1.0	1.0	2.0	45.0	5.0	5.0	4.0
7	7	5.0	4.0	2.0	1.0	1.0	1.0	2.0	2.0	42.0	3.0	3.0	2.0
8	8	5.0	4.0	2.0	2.0	2.0	2.0	999.0	1.0	23.0	5.0	5.0	4.0
9	9	5.0	4.0	1.0	1.0	2.0	1.0	2.0	2.0	20.0	4.0	3.0	5.0
10	10	5.0	4.0	2.0	2.0	1.0	2.0	999.0	1.0	17.0	4.0	4.0	4.0
11	11	5.0	3.0	1.0	1.0	2.0	1.0	2.0	1.0	38.0	4.0	5.0	3.0
12	12	5.0	3.0	1.0	1.0	2.0	1.0	2.0	1.0	25.0	3.0	1.0	1.0
13	13	5.0	3.0	1.0	1.0	2.0	1.0	1.0	1.0	52.0	4.0	5.0	5.0
14	14	3.0	3.0	1.0	1.0	2.0	2.0	999.0	2.0	23.0	3.0	3.0	5.0
15	15	5.0	3.0	1.0	2.0	2.0	1.0	3.0	2.0	16.0	4.0	4.0	4.0
16	16	5.0	3.0	1.0	1.0	1.0	1.0	2.0	2.0	58.0	3.0	4.0	5.0
17	17	5.0	3.0	1.0	1.0	2.0	1.0	2.0	1.0	32.0	4.0	5.0	4.0
18	18	4.0	3.0	1.0	2.0	2.0	2.0	999.0	2.0	20.0	4.0	4.0	4.0
19	19	5.0	3.0	1.0	1.0	1.0	1.0	2.0	2.0	23.0	4.0	5.0	4.0
20	20	5.0	3.0	2.0	2.0	2.0	1.0	2.0	2.0	21.0	4.0	5.0	3.0
21	21	5.0	3.0	2.0	2.0	2.0	2.0	999.0	1.0	16.0	4.0	4.0	4.0
22	22	3.0	3.0	2.0	2.0	2.0	2.0	999.0	1.0	20.0	4.0	5.0	3.0
23	23	5.0	3.0	2.0	1.0	2.0	2.0	999.0	2.0	22.0	3.0	5.0	3.0
24	24	5.0	3.0	2.0	1.0	2.0	2.0	999.0	2.0	25.0	3.0	2.0	2.0
25	25	5.0	3.0	2.0	2.0	2.0	2.0	999.0	2.0	20.0	5.0	5.0	2.0

Elaboration: C. Simborth. 2017

Table 14: SPSS data matrix (variable view)

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1	Order_resp	Numeric	10	0	Original order of respondents	None	999	8	▤ Right	⬈ Scale
2	Use_Transit	Numeric	10	1	1.Use of transit: Days per working week (5 to 1)	None	999.0	8	▤ Right	⬈ Scale
3	Bus_Line	Numeric	10	1	1.Bus line (3,4,5,10)	{3.0, Line 3}...	999.0	8	▤ Right	⬥ Nominal
4	Period_day	Numeric	10	1	1.Period of day (P=1, O-P=2)	{1.0, Peak ti...	999.0	8	▤ Right	⬥ Nominal
5	Trip_Purpose	Numeric	10	1	1.Trip Purpose (W=1, St=2, Rec=3, Sh=4, O=5)	{1.0, Work}...	999.0	8	▤ Right	⬥ Nominal
6	Transfer	Numeric	10	1	1.Transfer (Y=1, N=2)	{1.0, Yes}...	999.0	8	▤ Right	⬥ Nominal
7	Other_mode	Numeric	10	1	1.If not bus. Other mode? (Y=1, N=2)	{1.0, Yes}...	999.0	8	▤ Right	⬥ Nominal
8	Specify_other	Numeric	10	1	1.What mode? (P-Car=1, Sh-Tax=2, Tax=3, Bike=4, Walk=5)	{1.0, Private...	999.0	8	▤ Right	⬥ Nominal
9	Gender	Numeric	10	1	1.Gender (M=1, F=2)	{1.0, Male}...	999.0	8	▤ Right	⬥ Nominal
10	Age	Numeric	10	1	1.Age	None	999.0	8	▤ Right	⬈ Scale
11	Waiting_time	Numeric	10	1	2.Waiting time (5 to 1)	{1.0, More th...	999.0	8	▤ Right	⬛ Ordinal
12	Board_Alight_time	Numeric	10	1	2.Board/Alight time (5 to 1)	{1.0, More th...	999.0	8	▤ Right	⬛ Ordinal
13	On_board_time	Numeric	10	1	2.On board time (5 to 1)	{1.0, More th...	999.0	8	▤ Right	⬛ Ordinal
14	Bus_delay	Numeric	10	1	2.Bus delay (5 to 1)	{1.0, More th...	999.0	8	▤ Right	⬛ Ordinal
15	Bus_condition	Numeric	10	1	2.Bus physical condition (5 to 1)	{1.0, Seats, ...	999.0	8	▤ Right	⬛ Ordinal
16	Info_bus_stop	Numeric	10	1	2.Information in bus stop (5 to 1)	{1.0, Not av...	999.0	8	▤ Right	⬛ Ordinal
17	Info_bus	Numeric	10	1	2.Information in bus (5 to 1)	{1.0, Not av...	999.0	8	▤ Right	⬛ Ordinal
18	Info_online	Numeric	10	1	2.Information online/app (5 to 1)	{1.0, Not av...	999.0	8	▤ Right	⬛ Ordinal
19	Waiting_time_P	Numeric	10	1	3.Waiting time P (5 to 1)	{1.0, Very un...	999.0	8	▤ Right	⬛ Ordinal
20	Board_Alight_time_P	Numeric	10	1	3.Board/Alight time P (5 to 1)	{1.0, Very un...	999.0	8	▤ Right	⬛ Ordinal
21	On_board_time_P	Numeric	10	1	3.On board time P (5 to 1)	{1.0, Very un...	999.0	8	▤ Right	⬛ Ordinal
22	Adherence_Schedule_P	Numeric	10	1	3.Adherence to schedule P (5 to 1)	{1.0, Very un...	999.0	8	▤ Right	⬛ Ordinal
23	Safety_road_P	Numeric	10	1	3.Safety on the road P (5 to 1)	{1.0, Very un...	999.0	8	▤ Right	⬛ Ordinal
24	Security_bus_stop_P	Numeric	10	1	3.Security in bus stops P (5 to 1)	{1.0, Very fr...	999.0	8	▤ Right	⬛ Ordinal
25	Security_bus_P	Numeric	10	1	3.Security in buses P (5 to 1)	{1.0, Very fr...	999.0	8	▤ Right	⬛ Ordinal
26	Seat_space_P	Numeric	10	1	3.Seat. space availability P (5 to 1)	{1.0, Very un...	999.0	8	▤ Right	⬛ Ordinal
27	Standing_space_P	Numeric	10	1	3.Stand. Space availability P (5 to 1)	{1.0, Very un...	999.0	8	▤ Right	⬛ Ordinal
28	Bus_design_P	Numeric	10	1	3.Bus design P (5 to 1)	{1.0, Very un...	999.0	8	▤ Right	⬛ Ordinal
29	Bus_Int_clean_P	Numeric	10	1	3.Bus int. cleanliness P (5 to 1)	{1.0, Very un...	999.0	8	▤ Right	⬛ Ordinal
30	Bus_ext_clean_P	Numeric	10	1	3.Bus ext. cleanliness P (5 to 1)	{1.0, Very un...	999.0	8	▤ Right	⬛ Ordinal
31	Bus_condition_P	Numeric	10	1	3.Bus overall condition P (5 to 1)	{1.0, Very un...	999.0	8	▤ Right	⬛ Ordinal
32	Info_bus_stop_P	Numeric	10	1	3.Information in bus stop P (5 to 1)	{1.0, Very un...	999.0	8	▤ Right	⬛ Ordinal
33	Info_bus_P	Numeric	10	1	3.Information in bus P (5 to 1)	{1.0, Very un...	999.0	8	▤ Right	⬛ Ordinal

Elaboration: C. Simborth. 2017

The first level of analysis then would consist on using *descriptive statistics* to find out the SQP of the lines and operators studied.

Inferential statistics are helpful to find out if **presumed relations** among different factors are present or not (Van Thiel, 2007). For instance, if focus is given to the relations inside the SQP of the bus services (DV side), a presumption can be made that for the users, **some SQP criteria** (*Time, comfort, Customer service*) is more important, and so, more contributing to the **overall SQP** than others. A regression analysis can help ascertain if those relations are statistically present, as well as the significance of the relation (Van Thiel, 2007).

Diagram 6: Relations inside SQP (DV side)
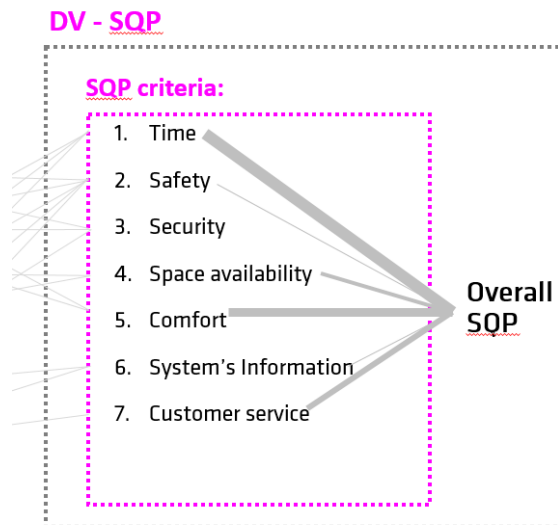
Elaboration: C. Simborth. 2017

The second level of analysis, consisted in using *inferential statistics* (Multi Linear Regression) to find out what are the most sensitive/influential SQP criteria conducing to the overall BPT SQP. The influential SQP criteria on the DV side, then were related directly to the operators' qualitative responses (IV side) to seek further explanations. This process is developed in detail in Chapter 4.

Further MLR analysis between the IV and the DV could also be possible[19] and was pursued, to find out the overall significance and extent to which GM operational factors (IV side) are affecting the overall SQP (DV side), while the research questions were also addressed. This process is developed in detail in Chapter 4.

3.8.2 Independent variable side

When analysing qualitative data, there are 03 phases: *Data collection, data ordering, and data analysis* itself. Although they not always occur in sequence, and the process tends to be iterative or cyclical (Van Thiel, 2007).

About **data collection**, on the independent variable side all sub variables (bus operational factors) and indicators were measured during through the semi-structured interviews, using qualitative (*characteristics of the operation*) and quantitative (*continues values with fixed units of measurement*) terms, as shown in the tables in 3.3.2 (Variables, sub variables, indicators)

About **data ordering**, the data obtained through the interviews was recorded and structured in a set of "**Interview reports**" were all the qualitative and quantitative information about the different GM operational functions that the organizations fulfill is organized per line and operator. The interview reports are shown in detail in Annex 2 (Semi-structured interview reports). The interview reports were used to **explain directly** the decisions made every bus line-operator about the SQP criteria (DV side), that was identified as significant through inferential statistics pursued in the DV side. This process is explained with further detail in Chapter 4.

According to Mason (2002), a process of categorization is pursued to organize the data collected (Qualitative or Quantitative) in classificatory categories (Mason, 2002). Since there was an academic motivation/curiosity to complement the previous analysis with inferential statistics (regression analysis) between both the IV and DV side, the IV interview reports data and information (Quantitative and qualitative) were categorized into ordinal numerical values. The IV categorization process is explained in detail in the following section (*3.8.2.1 Complementary IV quantitization and categorization process*).

Once the data collected from operators was categorized into ordinal values, it was also transferred to **one single (IV and DV) matrix in IBM SPSS V.24,** arranged by respondents (rows) and variables and indicators (columns), and using as the connecting attribute the number of "Bus line". The complementary inferential analysis pursued (MLR) was conducted to find out the significance and extent to which the overall GM operational factors affect the overall SQP (DV side). This process allowed to respond the main research question and is developed in detail in Chapter 4.

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[19] It is important to remember that in order to make the IV data statistically analysable and relatable to the DV on SPSS, it had to be quantitized and categorized numerically. This process is explained in detail in section 3.8.2.1.

3.8.2.1 Complementary IV quantitization and categorization process

As a way to make the data obtained from operators (qualitative and numerical) more interpretable, and relatively comparable among lines and operators, a process of categorization was pursued. This process was done based on two criteria. First, the researcher's interpretation of what would be a "*bus service provision managerial & operational appropriateness*" informed by the specialized literature (European norms, standards, manuals, guides, service quality research), in the context of Pristina. And second, based on the existence (full, partial, or null) of certain attributes in the operation.

It is important to mention that from the specialized literature, it would seem that the process of "benchmarking" for urban bus systems' operation in the world, still faces challenges (comparable measurement methods, comparable indicators utilized) for which there is not yet a set of "international" benchmarks for bus operation that could be utilized "everywhere". In that sense, **the categorization process proposed by the researcher in this work**, was produced only with the purpose of making the "Operators" and "Public Authority" responses (data) in the context of Pristina, (GM operational decisions) interpretable and comparable in relative terms, with a technical context-based logic with some degree of conceptual backup. Hence is not yet scientific or empirical (not verified).

The process of categorization is explained per indicator as follows:

"Selection of maintenance strategies / methods"

According to Vuchic (2005), maintenance strategies can be predictive, preventive, and reactive. As part of the "Vehicle fleet maintenance" function, the "Selection of maintenance strategy" sub function consists on the operator's choice or regular practice of one of the described maintenance strategies. Ordinal categorical values go from the most sophisticated, where vehicle's technology predicts their service and parts replacement automatically (5), through standard preventive practices where vehicle parts are replaced as per planned service intervals (3), and to the most traditional strategies where operators simply react to failures and replace the necessary parts (1):

- Predictive > 5
- Preventive > 3
- Reactive   > 1

"Daily servicing"

As part of the "Vehicle fleet maintenance" function, the "Vehicles daily servicing" sub function consists on the different set of services vehicles receive prior the daily start of operations in Pristina. Ordinal categorical values are based on the completeness of range of services buses receive. From "full", where daily interior cleaning, exterior washing, fuelling, and routine check-ups (tires, brakes) occur (5), through "moderate" practices where only interior cleaning, fuelling, vehicles, and partial routine check-up occur (3), to the most basic "poor" daily servicing, where only fuelling occurs (1):

- Full   > 5
- Moderate   > 3
- Poor   > 1

"Vehicle ages"

According to Vuchic (2005), the typical life of a bus goes up to 10 to 12 years, however while well-maintained and serviced a bus maximum life can be extended from 13 to 20 years. As part of the "Vehicle fleet renewal function", the "Vehicle age" sub function consists on

the current age of buses in Pristina. Ordinal categorical values are based on the "age of buses range" in which the current bus fleets are operating in Pristina. From "vehicle ages" within the "typical" life range of 0 to 12 years old (5), through "vehicle ages" within the "maximum or extended" life range of 13 to 20 years (3), and to the "vehicle ages" "beyond" the maximum life range (1):

- Vehicle ages within "typical" life range   > 5
- Vehicle ages within "maximum" life range   > 3
- Vehicle ages "beyond" maximum life" range > 1

"Maximum life length"

According to Vuchic (2005), the typical life of a bus goes between 10 to 12 years, however while well-maintained and serviced a bus maximum life can be extended from 13 to 20 years. As part of the "Vehicle fleet renewal function", the "Maximum life length" sub function consists on the determination (resulting from planning or usual practices) of the buses "maximum life length" by operators in Pristina. Ordinal categorical values are based on the range on which the maximum age of the buses lays. From "maximum life length" within the "typical" range of 10 to 12 years old (5), through "maximum life length" within the "maximum or extended" life range of 13 to 20 years (3), and to the "maximum life length" "beyond" the maximum life range (1):

- Maximum life length within "typical" life range   > 5
- Maximum life length within "maximum" life range   > 3
- Maximum life length "beyond" maximum life" range > 1

"Demand responsive ratio"

As part of the "Scheduling and operations" function, the "Demand responsive ratio sub-function consists on the arrangement of dispatched buses, and offered spaces, together with convenient frequencies and waiting times to respond to passenger demands during the full day operating hours in Pristina. Ordinal categorical values are based on the ratio of "Offered spaces" to "daily demand/ridership". From ratio "above 1" (5), ratio "even" (3), to ratio "below 1":

- Over 1   >5
- Even 1   >3
- Below 1   >1

"Demand responsive headway"

As part of the "Scheduling and operations" function, the "Demand responsive headway" sub-function consists on a well-spaced headway between dispatched buses to offer users enough frequent buses and available spaces, to respond to the passenger demand during the maximum peak hour in Pristina. Ordinal categorical values are based on the length of the headway. From "Very short" or up to 5 minutes (5), "short" or from 6 to 10 minutes (4), "intermediate" or from 11 to 20 minutes (3), "long" or from 21 to 30 minutes (2), to "very long" or beyond 30 minutes (1):

- Up to 5'   > 5
- 6 to 10'   > 4
- 11 to 20'   > 3
- 21 to 30'   > 2
- More than 30'   > 1

"Vehicle monitoring "

As part of the "Control of operations" function, the "Vehicle monitoring" sub function consists on; controlling, monitoring and evaluating, the operation of buses on the street, and the fulfillment of the line's operating standards (headways, schedules, speed, staff behavior, service, coverage) in Pristina. Ordinal categorical values are based on the existence of this attribute. From "Full existence" (5), through "partial existence" where some activities are present (3), to "non-existence" at all of any vehicle monitoring practice (1).

- Full existence   > 5
- Partial existence   > 3
- Non-existent   >

"Intersections bus priority signalling"

As part of the "Control of operations" function, the "Intersections bus priority signalling" sub function consists on; providing the operation of buses on the street, with a degree of bus priority (special phase on traffic lights at intersections, protected bus lanes, busways) in the context of Pristina. Ordinal categorical values are based on the existence of this attribute. From "Full existence" where bus priority is provided along the full route alignment (5), through "partial existence" when there are bus-prioritized segments of the alignment (3), to "non-existence" at all of this attribute (1).

- Full existence   > 5
- Partial existence   > 3
- Non-existent   > 1

"Automated data collection"

As part of the "User Information Technologies / telematics" function, the "Automated data collection" sub function consists on; the operators provision of any automated mechanism to collect data and information about the service provided with accuracy (counts of passengers per hour/per day, revenue from tickets per hour/per day, count of boarding passenger per stop, count of alighting passenger per stop) in the context of Pristina. Ordinal categorical values are based on the existence of this attribute. From "Full existence" where a set of automated and accurate mechanisms are in place (5), through "partial existence" where some automated data collection mechanisms are present (3), to "non-existence" at all of this attribute (1).

- Full existence   > 5
- Partial existence   > 3
- Non-existent   > 1

"Passenger information provision"

As part of the "User Information Technologies / telematics" function, the "Passenger information provision" sub function consists on the operators' provision of information[20] to users about the service (route alignment, bus stops covered, hours of operation, timetables or arrivals information, cost of trip) by different mechanism (physical information inside buses, cellphone applications, websites, or personalized customer assistance) in the context of Pristina. Ordinal categorical values are based on the existence of this attribute. From "Full

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[20] In the context of Pristina, this sub function is under the responsibility of the Public Authority (The Municipality), however, since the researcher observed this attribute as almost inexistent in bus stops or electronic interfaces, there was a possibility that operators, due to his own concern to attract users may be performing any user information function.

existence" where a set of complete information about the service is provided (5), through "partial existence" where limited information about the service is provided (3), to "non-existence" of this attribute (1).

- Full existence   > 5
- Partial existence   > 3
- Non-existent   > 1

"Personnel selection standards"

As part of the "Personnel" function, the "Personnel selection standards" sub function consists on the operators' ownership of a set of "Personnel standards or qualifications" pre-defined for the intake of new personnel (involved with operations) within the company's organizational structure (management, technical, labor) in the context of Pristina. Ordinal categorical values are based on the existence of this attribute. From "Full existence" where the company owns a full set of standards for the intake of new personnel for all operations related areas (5), through "partial existence" where there is a limited set of standards applied to a part of the personnel (3), to "non-existence" of any standard (1).

- Full existence   > 5
- Partial existence   > 3
- Non-existent   > 1

"Personnel level of training"

As part of the "Personnel" function, the "Personnel level of training" sub function consists on the level of preparation (professional training, experience) of operators' personnel involved with operations (management, technical, labor) in the context of Pristina. Ordinal categorical values are based on the existence of this attribute. From "Fully prepared" where all (or most) personnel is professionally trained as well as experienced (5), through "partially prepared" where the basic personnel is either experienced or professionally trained (3), to "non-prepared" where none of the above is present (1).

- Fully prepared   > 5
- Partially prepared > 3
- Non-prepared   > 1

In the following tables, the **assignation of ordinal categorical values per line and operator**, based on the information collected from the semi-structured interviews to organizations, and based on the "categorization process rationale" explained above, is synthetized:

Table 15: IV "GM operational factors" assignation of ordinal categorical values per line and operator (Part 1)

VAR	SUB-VAR	INDICATORS	MEASUREMENT	RANGE OF VALUES	CATEGORICAL INDEXING	L3 PUBLIC OPERATOR	L3 CATEGORICAL VALUES	L4 PUBLIC OPERATOR	L4 CATEGORICAL VALUES	L5 PRIVATE OPERATOR	L5 CATEGORICAL VALUES	L10 PRIVATE OPERATOR	L10 CATEGORICAL VALUES
OPERATIONS	Vehicle fleet maintenance	Mechanical reliability	Mean distance between failures (MDBF).	**MDBF** 13,000 Kms (Optimal) or more / Between 11,000 - 13,000 Kms / Between 9,000 - 11,000 Kms / Between 7,000 - 9,000 Kms / Less than 7000 Kms	MDBF. **From very far from standard (1) to match standard (5)** 13,000 Kms (Optimal) or more = 5 / Between 11,000 - 13,000 Kms = 4 / Between 9,000 - 11,000 Kms = 3 / Between 7,000 - 9,000 Kms = 2 / Less than 7000 Kms = 1	The MDBF is not known.		Bus fleet was entirely renewed and strict maintenance is being carried out.	5	The MDBF is not known.		40,000	5
		Selection of maintenance strategy / methods	Score	**Maintenance strategy applied** A - Predictive / B - Preventive / C - Reactive	Ordinal values based on Maintenance strategy applied. **From traditional C (1) to sophisticated A (5).** A > 5 / B > 3 / C > 1	C-Reactive	1	B - Preventive	3	C-Reactive	1	B - Preventive	3
		Daily servicing	Score	**Daily service categories and intervals:** -**Full:** Daily int./ext. cleaning/washing, fueling, routine check-up (tires,brakes) -**Moderate:** Only int. cleaning, fueling, vehicles routine check-up -**Poor:** Fueling	Ordinal values based on Daily servicing category applied. **From poor C (1) to full (5).** Full > 5 / Moderate > 3 / Poor > 1	Poor	3	Full	5	Poor	3	Full	5
		Maintenance service categories and intervals	Score	**Maintenance service categories and intervals** Daily Services / Service A - (12,500 Kms) / Service B - (50,000 Kms) / Service C - (100,000 Kms) / Service D - (400,000 Kms)	Ordinal values based on proximity intervals to standardized benchmark. **From very far from standard (1) to match standard (5)** Match standard > 5 / +/- Up to 2000 kms far > 4 / +/- Up to 4000 kms far > 3 / +/- Up to 6000 kms far > 2 / +/- Up to 8000 or more kms far > 1	They don't have a preventive strategy. There is no maintenance service intervals.		Average of all service categories rate=(5+3+1+5+5)/5	4	They don't have a preventive strategy. There is no maintenance service intervals.		Average of all service categories rate=(5+3+1+1+5)/5	3
	Vehicle fleet renewal	Vehicle ages	Age of buses	**Age of buses ranges:** Typical life - (10-12 years) / Maximum life - (13-20 years) / Beyond maximum life - (+ 20 years)	Ordinal values based on the "age of buses range" in which current bus fleet are. **From beyond maximum life (1) to typical or optimal (5)** Age within "typical/optimal life" range > 5 / Age within "maximum life" range > 3 / Age within "beyond maximum life" range > 1	Buses are already over 20 years old	1	New buses stared operations in January (0.5 years old)	5	Buses are already 17 years old	3	Buses are already 16 years old	3
		Maximum life length	Number of operational years per bus	**Buses life length ranges:** Typical life - (10-12 years) / Maximum life - (13-20 years) / Beyond maximum life - (+ 20 years)	Ordinal values based on Buses maximum life length ranges. **From beyond maximum life (1) to typical or optimal (5)** 10-12 years > 5 / 13-20 years > 3 / + 20 years > 1	Buses are already over 20 years old	1	Upto maximum 10 to 12 years	5	Buses can be used for 05 years more (Upto 22 years)	1	Buses can be used for 04 years more (Upto 20 years)	3

Elaboration: Cesar Simborth. 2017

Table 16: IV "GM operational factors" assignation of ordinal categorical values per line and operator (Part 2)

VAR	SUB-VAR	INDICATORS	MEASUREMENT	RANGE OF VALUES	CATEGORICAL INDEXING	L3 PUBLIC OPERATOR	L3 CATEGORICAL VALUES	L4 PUBLIC OPERATOR	L4 CATEGORICAL VALUES	L5 PRIVATE OPERATOR	L5 CATEGORICAL VALUES	L10 PRIVATE OPERATOR	L10 CATEGORICAL VALUES
OPERATIONS	Scheduling and Operation	Maximum life length	Number of operational years per bus	Buses life length ranges: Typical life - (10-12 years) Maximum life - (13-20 years) Beyond maximum life - (+ 20 years)	Ordinal values based on Buses maximum life length ranges. From beyond maximum life (1) to typical or optimal (5) 10-12 years > 5 13-20 years > 3 + 20 years > 1	Buses are already over 20 years old	1	Upto maximum 10 to 12 years	5	Buses can be used for 05 years more (Upto 22 years)	1	Buses can be used for 04 years more (Upto 20 years)	3
		Demand responsiveness (Ratio)	Ratio between number of spaces offreed per day and total daily demand/ridership	Ratio ranges: Over 1 (spaces are oversupplied) 1 (spaces are tightly supplied) Below 1 (spaces are undersupplied)	Ratio ranges. From undersupplied (1) to oversupplied (5) Over 1 (oversupplied) >5 1 (even) >3 Below 1 (undersupplied) >1	1.2	5	1.1	5	1.4	5	1.6	5
		Demand responsiveness (Headway)	Headway	Headway PH (Time between buses in the peak hour): Upto 5' 6 to 10' 11 to 20' 21 to 30' More than 30'	Standard headways (peak hour) Upto 5' > 5 6 to 10' > 4 11 to 20' > 3 21 to 30' > 2 More than 30' > 1	10	4	5	5	10	4	20	3
		Frequency	Number of vehicles / peak hour	Number of buses per peak hour ranges. 12 to more 6 to 11 4 to 5 2 to 3 1	From very frequent (1) to very infrequent (5). 12 to more > 5 6 to 11 > 4 4 to 5 > 3 2 to 3 > 2 1 > 1	6	4	12	5	6	4	3	2
	Control of operations	Vehicle monitoring functionality (AVL, other)	Degree of functionality of the available AVL monitoring technology.	Range of values: Full existence Partial existence Non-existent	From Non existent (1) to Full existence (5). Full existence > 5 Partial existence > 3 Non-existent > 1	Partial existence (cellphone communication)	3	Full existence (Control centre + CCTV+GPS on process)	5	1 - Inexistence	1	Partial existence (cellphone communication)	3
		Intersections bus priority signaling	Degree of priority signal control at intersections	Range of values: Full existence Partial existence Non-existent	From Non existent (1) to Full existence (5). Full existence > 5 Partial existence > 3 Non-existent > 1	1 - Non existence	1	1 - Non existence	1	1 - Non existence	1	1 - Non existence	1
	IT / Telematics	Automated data collection	Passenger counts per line per hour/working day (Planning, scheduling)	Range of values: Full existence Partial existence Non-existent	From Non existent (1) to Full existence (5). Full existence > 5 Partial existence > 3 Non-existent > 1	Partial existence (Tickets)	3	Partial existence (Tickets)	3	Partial existence (Tickets)	3	Partial existence (Tickets)	3
		Passenger information provision (Electronic, online, other)	Level of information provided (Routing, bus stops finding, destination finding, schedules, arrivals)	Range of values: Full existence Partial existence Non-existent	From Non existent (1) to Full existence (5). Full existence > 5 Partial existence > 3 Non-existent > 1	Non existence	1	Non existence	1	Non existence	1	Non existence	3
	Personnel	Selection standards	Personnel standards of qualifications	Range of values: Full existence Partial existence Non-existent	From Non existent (1) to Full existence (5). Full existence > 5 Partial existence > 3 Non-existent > 1	Partial existence	3	Full existence	5	Partial existence	3	Partial existence	3
		Level of training	Hours of training per year (per activity)	Range of values: -Fully prepared -Partially prepared (Experience or proffesional training) -Non-prepared	From Non prepared (1) to Fully prepared (5). Fully prepared > 5 Partially prepared (Experience or proffesional training) > 3 Non-prepared > 1	Partially prepared	3	Fully prepared	5	Partially prepared	3	Fully prepared	5

Elaboration: Cesar Simborth. 2017

3.8.3 Expected outcomes

After the observations and data analysis is concluded, the following outcomes are expected:

- Obtain clear explanations about the perception of users, and the most relevant decisions being taken by the Public Authority (Municipality), and representative Service providers (public and private), on operational and managerial regards.

- Have a clear evaluation and description of the current level of Quality of Service, being perceived by users (customers) of representative lines in the network of local buses in Pristina.

- Obtain a clear explanation about the single most influential BPT management & operational decision affecting positively and negatively the BPT service quality perceived in Pristina.

- Obtain a clear explanation about the single most sensitive service quality criteria being affected positively and negatively by management & operational decisions in Pristina.

- Being able to inform and offer recommendations to the Public Authority (Municipality), and representative Service providers (public and private), on operational and managerial decisions that could be made to improve the bus public transport quality of service perceived in Pristina, Kosova.

Chapter 4: Research Findings

The city of Pristina has a Public Transportation service composed by a network of over 30 bus routes, whose operation is under the responsibility of a Public company (05 lines), and a number of small Private companies and subcontractors (Over 25 lines) according to official updated information from the Department of Transport and Traffic of the Municipality (2017).

As described in Chapter 1 of the present work, it has also been reported by the media, the different issues regarding the physical condition of aged buses in the network (KlanKosova, 2015), as well as the lack of information in bus stops (Lajminet Kosovë, 2016). Also it has been reported by international organizations (WB-ECA, 2012) the different issues regarding the economic viability of a number of lines and the lack of integration in the network (fare, operation) which derive in a reduction of the quality of the service that users receive.

The present study consists on measuring the Quality of the Service perceived by users, identify the most relevant service quality criteria in the case of Pristina, and find the explanations to those outcomes, in the Transit Governance and Managerial domain. The aim of the research then, is to find out the extent to what governance-management operational factors for BPT service provision are affecting the Service Quality Perceived (SQP) by users, in Pristina.

To pursue the study, 03 operators and 04 lines (operated by them), were selected:

    i.   Public operator TU: "Trafiku Urban" (Municipal public company), lines 03 and 04 were selected for the study.

    ii.   Private operator A: "Germia Tours" (Private company), line 05 was selected for the study.

    iii.   Private operator B: "24 Yjet" (Private company), line 10 was selected for the study.

The lines were selected based on the general perception about the quality of those services by the Public Authority and the informed opinion of local experts[21]. A assumed as "satisfactory" and "unsatisfactory" service (bus line) was required on the "Public operation", and "Private operation".

The IV was studied by pursuing semi structured interviews to the Public authority and operators, about the different **functions and decisions regarding BPT operations (IV)**, that they make to deliver the service.

The DV was studied, by pursuing subjective (perception) questionnaires with users of the selected lines. They rated their perception of satisfaction, about a series of **Service Quality criteria**[22] **(DV)** in the chosen lines and operators.

The following **"Logical diagram of relations";** elaborated based on the specialized literature review and the site observations made by the researcher on how the public transportation service delivery process works in the context of Pristina; represents the way in which the BPT service provision relevant governance and management **functions (IV side) and the SQP criteria affected by them (DV side)** relate and interact between themselves:

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[21] Even though there are no previous studies about transit "Quality of Service" ever pursued in Pristina, the City officials within the "Transport and Traffic" departments and Local experts have, as informed citizens and policy maker an informed idea about the differences in the services provided by the different companies, and lines in Pristina.

[22] It was explained in Chapter 3 with more detail.
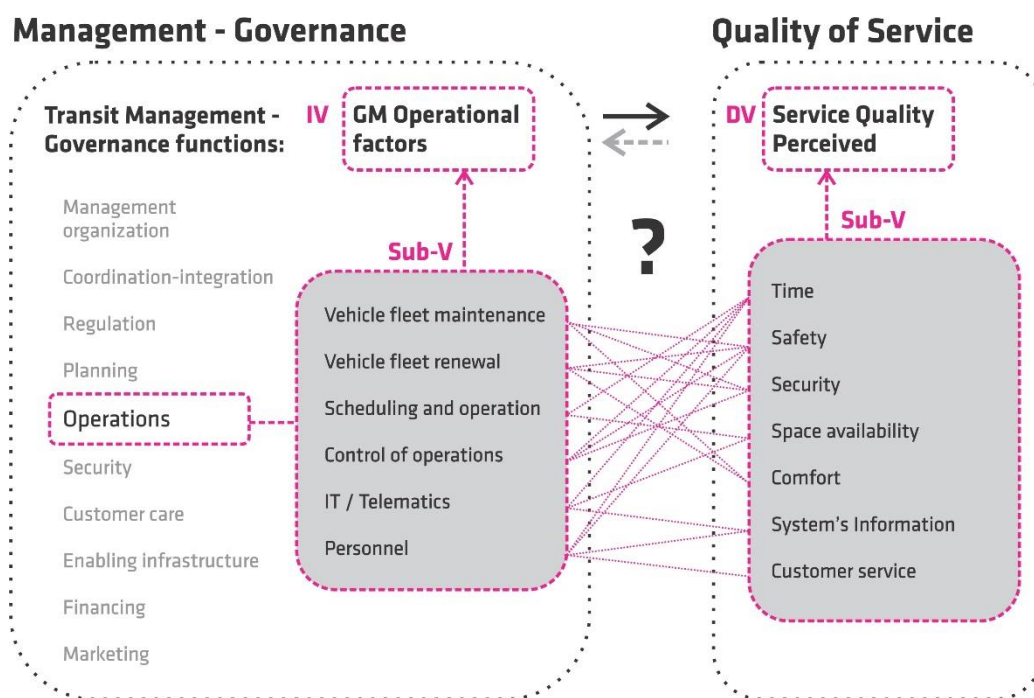
Elaboration: C. Simborth. 2017

For instance, **"Vehicle fleet maintenance"** affects directly on the perception of **"Safety"** in the operation. Well maintained buses, subject to different categories of service (as per planned intervals), repairs, and parts replacement, and mechanically reliable is less likely to break down and experience accidents on the road. Another GM function affecting the perception of **"Safety"** would be **"Personnel"**, since experienced and professionally trained personnel (drivers, mechanics, operation managers) would also be less likely to contribute to the occurrence of mechanical failures and accidents on the road.

Another logical relation happens between **"Vehicle fleet maintenance"** and the perception of **"Security"**. According to Vuchic (2005), a major aspect influencing on "Security inside public transport vehicles", is the cleanliness (daily servicing). If a vehicle looks neat, clean, and right, like "the system" is taking care of it, the environment itself will be discouraging to crime perpetrators. On the contrary if buses look dirty, with the seats broken, and the windows painted with graffities, the feeling that the system have been disrupted would create an atmosphere more likely to foster crime, and make users feel unsecure (Vuchic, 2005).

Also, **"Vehicle fleet maintenance"**, together with **"Vehicle renewal"**, would affect the perception of **"Comfort"** of users. Since within the scope of this research, "Comfort" is determined by the users' perception about the physical "condition of the buses", "internal and external cleanliness", and its "design features".

Another logical relation happens between **"Scheduling and operation";** defined within the scope of this work as the production and fulfilment of schedules and timetables with coherent frequencies and headways, and a number of vehicles on the street, that are able to respond suitably to the existent demand of passengers on the street; and the perception of **"Time"**, and **"Space availability"**. In this sense, a good interaction between a well-planned schedule and timetable, a careful operation (adhered to schedule), and the users' demand, would result in lesser **"waiting time"**, **"on board time"**, **"adherence to schedule"**, and in the end to the perception of a more reliable service able to attend the passengers' needs.

This diagram will be the logical conceptual tool to connect both, the DV and IV side, as the different levels of analysis are pursued within the following sections.

4.1 Data analysis process

The data analysis process, is guided (framed) by the "**Revised Research questions**" (section 3.1), and consistently spearheaded by the **empirical data on the DV side**[23], given the **paramount importance** that the **quality of service of a BPT system,** understood, interpreted and managed acknowledging the **users' perspective** has on this study. The process considered the following **steps (a,b,c, d):**

a. Firstly; find out the **measurement of the SQP** *per line and operator studied,* based on the empirical data collected from the field. For this "descriptive statistics" coming from SPSS are used. This part of the analysis would provide an answer for sub research question number 1.

b. Secondly, find out what are the **most sensitive/influential SQP** criteria conducing to the overall BPT SQP *per line and operator studied,* based on the empirical data collected from the field. For this a **Multiple Linear Regression** (MLR) analysis conducted on the DV side was used to find out the significance and extent to which SQP criteria is affecting the overall SQP score of every line and operator. This part of the analysis would provide an answer for sub research question number 2.

c. Thirdly, find out what and how, are the **most influential GM operational factors** (decisions), affecting positively and negatively the BPT SQP *per line and operator studied*. For this, based on the **"Logical diagram of relations"**, the "GM operational factors" associated to the most significant SQP criteria (resulting from "b") are identified, and then based on the information (qualitative and numerical) obtained from the operators and the public authority (semistructured interviews), explain how those positive and negative relations occur. This part of the analysis would provide an answer for sub research question number 3.

d. Finally, on a more general level (*for all lines and operators studied*), a **Multiple Linear Regression** (MLR) analysis was conducted to find out the significance and extent to which **GM operational factors (IV side) are affecting the overall SQP (DV side).** These results were fed by the previous steps (results of empirical inferential analysis per line and operator) to shape a set of comprehensive explanatory interpretations of the extent to which Governance-Management (GM) operational factors for BPT service provision are affecting the Service Quality Perceived (SQP) in Pristina. This part of the analysis would provide an answer for the **main research question**.

About the step "d", It is important to remember that in order to make the IV data analysable on the same interface (SPSS), it had to be quantitized and categorized numerically in relative terms (not scientific). This process was explained in detail in section 3.8.2.1 (IV Quantitization and categorization).

In the the following section (4.2), the results of the *first level of analysis (descriptive statistics),* are presented per line and operator (Step "a").

In section 4.3, the *second level of analysis (inferential statistics)* is developed. From 4.3.1 to 4.3.4, the results of steps "b", and "c", *per line and operator (L3, L4, L5, and L10), are conveyed and interpreted.* In section 4.3.5, the results of step "d" for all lines and services are described and interpreted.

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[23] The 402 bus users' questionnaires assessing the SQP four the 04 bus lines and 03 operators studied.

4.2 First level of analysis: Descriptive statistics

4.2.1 First level of analysis: Dependent Variable side

The first level of analysis pursued here (exploratory statistics) consists on the use of **"Descriptive statistics"**. In order to make visible and easy to grasp in comparative terms, the characteristics of the SQP criteria for L3, L4, L5, and L10 on the DV side.
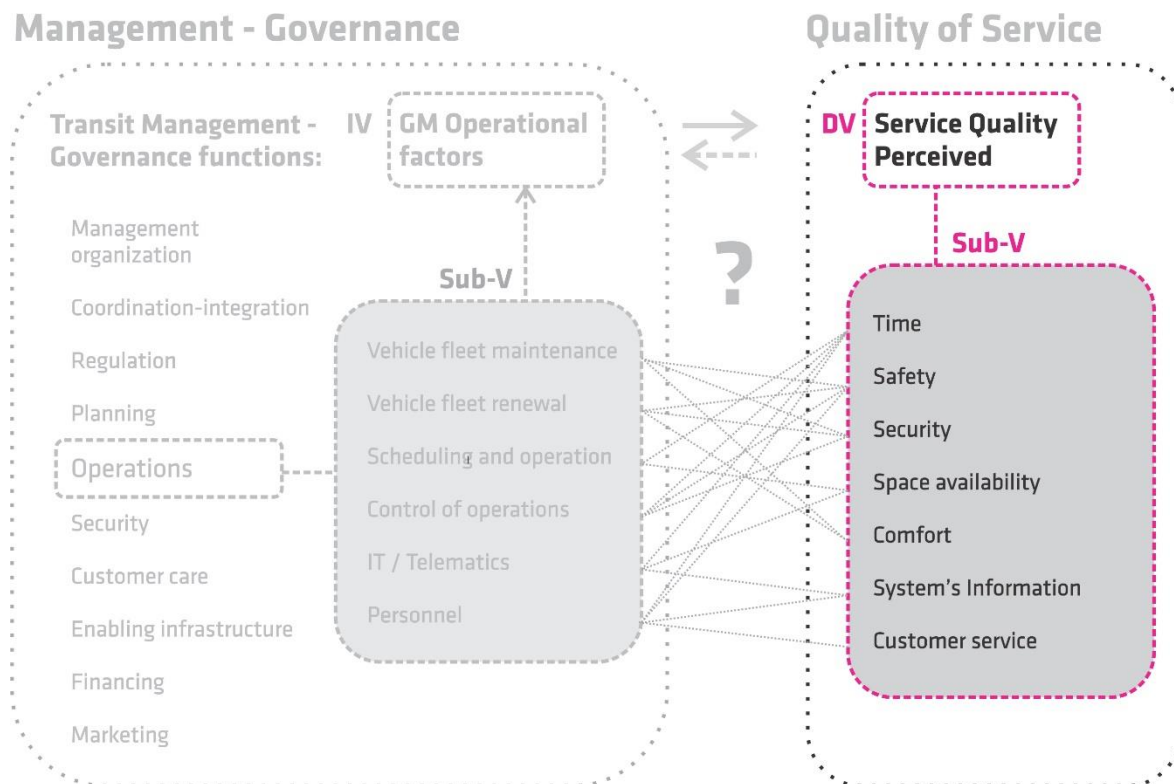
The minimum, maximum, and mean ordinal scores (Likert scale results) per each SQP criteria and sub-criteria for L3, L4, L5, and L10, are fully displayed in Annex 3 (Descriptive statistics detailed results per line and operator). In the next table (Table 17), a comparison among all SQP scores per quality criteria, for all lines and operators can be seen together.

Table 17: DV "Service Quality Perceived" ordinal scores per criteria for Lines 03,04,05,10

COMPARATIVE: L3, L4, L5, L10 - SQP (Bus users)

DV - SERVICE QUALITY PERCEIVED (MEAN SCORES)		N	L3	L4	L5	L10
Time	(i) Waiting time P	402	3.05	3.98	3.44	3.98
	(i) Board/Alight time P					
	(i) On board time P					
	(i) Adherence to schedule P					
Safety	(i) Safety on the road P	402	4.88	4.86	4.98	4.84
Security	(i) Security in bus stops P	402	4.89	4.83	4.98	4.86
	(i) Security in buses P	402	4.78	4.76	4.94	4.73
Space availability	(i) Seat. space availability P	402	3.55	3.87	3.59	3.04
	(i) Stand. Space availability P	402	2.88	3.62	3.30	3.02
Comfort	(i) Bus design P	402	2.53	4.52	2.37	3.75
	(i) Bus int. cleanliness P					
	(i) Bus ext. cleanliness P					
	(i) Bus overall condition P					
System information	(i) Information in bus stop	402	1.59	1.82	1.62	2.23
	(i) Information in bus P					
	(i) Information online/app P					
Customer service	(i) Staff preparation P	402	3.48	4.00	4.12	4.14
	(I) Staff kindness P	402	3.66	4.25	4.27	4.48
DV Overall SQP (Statistical mean)		402	3.53	4.05	3.76	3.91
DV Overall SQP (Direct answer from bus users)		402	2.90	4.38	3.24	4.13

Elaboration: C. Simborth. 2017

With an overall SQP mean score of 4.38, **line 04** obtained the highest score as rated by users. The best SQP rated criteria for the line was the perception of "Comfort" (Directly associated to the conditions of the recently renewed bus fleet), and "Time" (Associated with the time spent during the whole trip, but also with bus delays) with 4.52 and 3.98 respectively. The lowest score for line 04 was the perception of "System information" with 1.82.

The second highest overall SQP score among all lines studied was 4.13 obtained by **line 10**. It calls the attention that even though L10 is operated with very spaced headways (20 to 30 minutes), users rated well the service in the perception of "Time" criterion (3.98). It would seem users know well the timetable, and the company adheres adequately to schedules, for which users seem fairly satisfied. "Customer service" scores (related to how users perceive the personnel preparation and kindness) were also high above their overall mean (4.48).

Line 05 obtained the second to last lowest overall SQP score (3.24), with fair scores on the users' perception of "Customer Service", and "Time" (4.27 and 3.44 respectively). Their lowest scores were rated by users in the criteria of "Comfort" (2.37) and "Information" (1.62). Coherent with the age of their bus fleet, aged around 17 years old.

Line 03 obtained the lowest overall SQP score of (2.9), slightly fair scores on the users' perception of "Customer service", and "Time" (3.6 and 3.05 respectively). Alike Line 05, their lowest scores were rated by users in the criteria of "Comfort" (2.53) and "Information" (1.59). Coherent with the age of their bus fleet, aged already over 20 years old.

All lines were rated high as being perceived as "Safe on the road" (all lines scored greater than or equal to 4.84), and "Secure inside the buses" (all lines scored greater than or equal to 4.73).

It is worth noting that in all DV descriptive statistics tables, the displayed **"DV Overall SQP (Direct answer from bus users)"** corresponds to the **direct overall measurement of the SQP given by users** of every line in the questionnaires[24].

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[24] The adyacent row showing the "DV Overall SQP (Statistical mean)" also in the same tables, icorresponds to the overall score obtained by *computing the mean* of all quality criteria per line and operator, which also confirmed the same hierarchy given by the value offered directly by users (*L4, L10, L5, L3, from the best rated to the worst rated*).

4.2.2 First level of analysis: Independent Variable side

The first level of analysis pursued here (exploratory statistics) consists on the use of **"Descriptive statistics"**. In order to make visible and easy to grasp in "relatively comparative terms", the characteristics of the GM operational functions or decisions for L3, L4, L5, and L10 on the IV side.
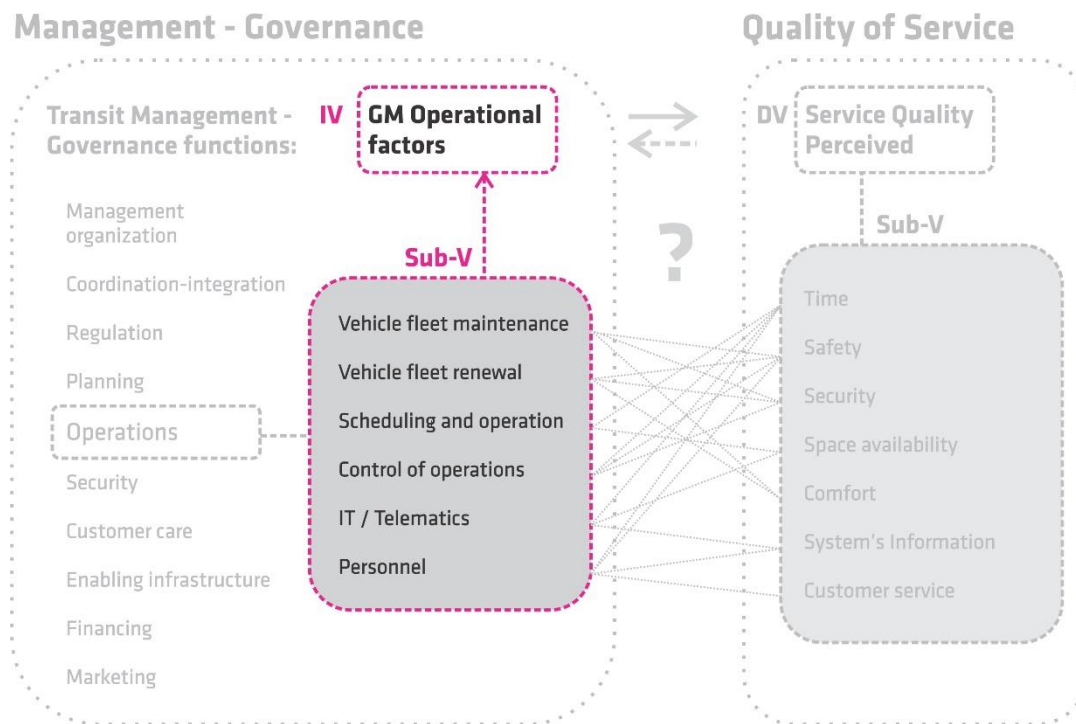
The mean relative categorical scores per each GM function and sub-function for L3, L4, L5, and L10, are fully displayed in Annex 3 (Descriptive statistics detailed results per line and operator). In the next table (Table 18), a comparison among all categorical ordinal values per GM functions and sub-functions, for all lines and operators can be seen together.

Table 18: IV "Governance-management" operational factors categorical values per line

COMPARATIVE: L3, L4, L5, L10

IV - GM OPERATIONAL FACTORS (SCORES)		N	L3	L4	L5	L10
Maintenance	(i) Maintenance strategy.	402	1.00	3.00	1.00	3.00
	(i) Maintenance daily servicing.	402	3.00	5.00	3.00	5.00
V. Renewal	(i) Vehicle ages	402	1.00	5.00	3.00	3.00
	(i) Maximum life lenght of vehicles.	402	1.00	5.00	1.00	3.00
Scheduling & Operation	(i) Demand responsiveness ratio	402	5.00	5.00	5.00	5.00
	(i) Demand responsiveness headway	402	4.00	5.00	4.00	3.00
	(i) Frequency PH **	402	4.00	5.00	4.00	2.00
Control of operations	(i) Vehicle monitoring functionality (AVL, other).	402	3.00	5.00	1.00	3.00
	(i) Intersections bus priority (signaling, control) **	402	1.00	1.00	1.00	1.00
Information IT	(i) Automated data collection (passenger counts).	402	3.00	3.00	3.00	3.00
	(i) Passenger information provision **	402	1.00	1.00	1.00	3.00
Personnel	(i) Personnel selection standards.	402	3.00	5.00	3.00	3.00
	(i) Personnel level of training.	402	3.00	5.00	3.00	5.00
IV Gov. Management Operational factors (i mean score)		402	2.54	4.08	2.54	3.23

Elaboration: C. Simborth. 2017

With a mean of 4.08, **line 04** obtained the highest categorical ordinal value (relative score) among all cases. It is important to mention that the whole bus fleet of L4 was renewed since January 2017, situation that reflected into the line's scores for "Vehicle renewal", and "Maintenance". As a direct consequence of the contractual arrangements for the buses' acquisition with IVECO[25], the maintenance practices of Trafiku Urban, and their personnel have been upgraded (Staff training). Another relevant aspect considered here was the coherence between the detailed varying operations schedules and passengers' demand flow along the day, as it could be known after analysing the organization's responses.

The frequencies and offered traveling spaces along the day, suits and overpasses the current demand of the line. For all of those aspects Line 04 obtained the highest categorical score.

The second highest categorical ordinal value (relative score) was 3.23 obtained by **line 10**. It calls the attention that even though they have very spaced headways (20 to 30 minutes), the operator seems to manage carefully the dispatching of their two typologies of buses (standard and articulated buses) to suit the demand accordingly (offered spaces), and be adherent to schedule.

Also, L10 is operated by a seemingly structured company with staff dedicated to perform different functions in a centralized way (preventive technical maintenance, daily servicing). One aspect that made Line 10 obtained the highest categorical value of 3, in the "Passengers Information" function (where all operators obtained the lowest score (1) since they do not pursue that function), was the fact that L10 operator receive passengers in need of information in their office located in Hajvali, where coincidentally most of their customers live. As it could be known after analysing the organization's responses.

Both, **lines 03 and 05** obtained a categorical ordinal value (relative score) of 2.54, being their highest categorical values, obtained under the function of "Scheduling and operation" since their frequencies, headways and demand responsiveness ratios are managed to offer enough traveling spaces to serve their daily demand of passengers along the day, as it could be known after analysing the organization's responses.

In comparison to the operators of L4 and L10, the operators from **L3 and L5**, do not have dedicated personnel to fulfil maintenance, and daily servicing functions, for which they rely on outsourced services being requested periodically on demand. Also, their bus fleets are comparatively older (Over 17 and 20 years old respectively), as it could be known after analysing the organization's responses.

The detailed categorical assignation of values was explained and presented in section 3.8.2.1 (*Complementary IV quantitization and categorization process*).

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[25] IVECO is the international manufacturer of buses headquartered in Italy, which contracted with Trafiku Urban, for the provision of new buses.

4.3 Second level of analysis: Inferential analysis and interpretation

Diagram 8: Process of analysis (Steps "b", "c", and "d")
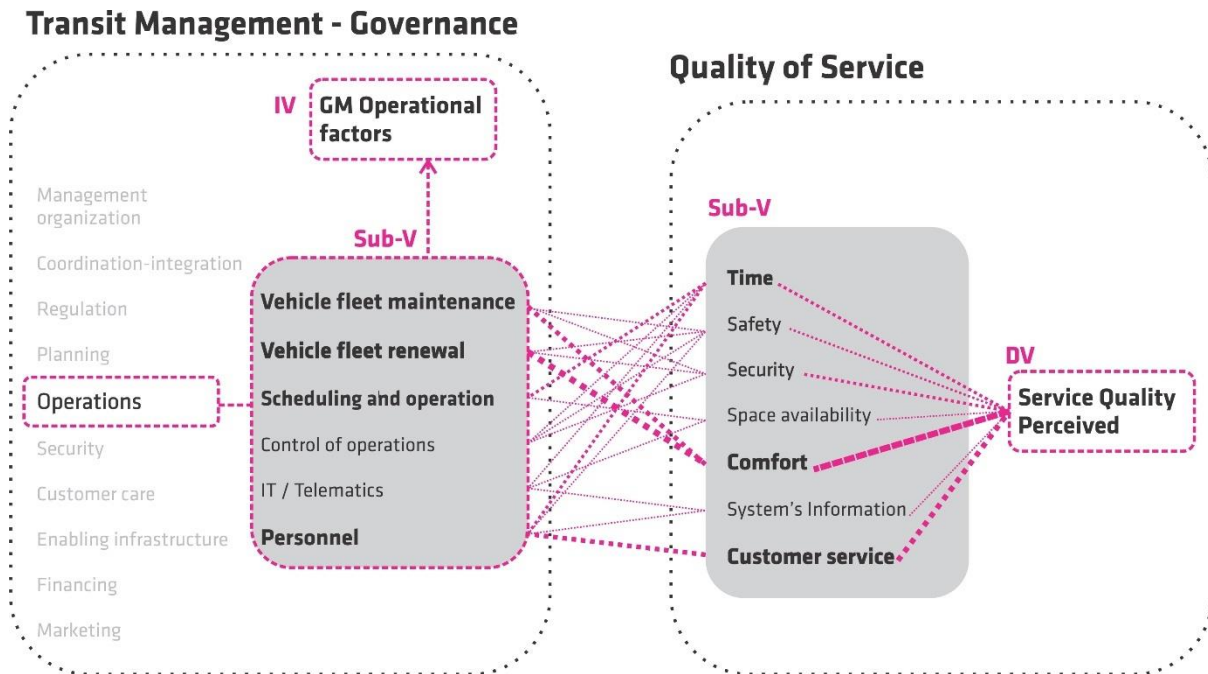
Elaboration: C. Simborth. 2017

In section this section, a *second level of analysis (inferential statistics)* is developed. The most sensitive/influential SQP criteria conducing to the overall BPT SQP per line and operator is obtained through a MLR. The analysis was pursued to predict the overall SQP based on a set of SQP criteria. This provided an answer for the sub research question 2 ("**Step b**" as referred in 4.1).

Also, the most influential GM operational factors (decisions), affecting positively and negatively the most influential SQP criteria, per line and operator, were identified through the "Logical diagram of relations". A direct explanation to those levels of satisfactory and non-satisfactory perception was found in the operators and the public authority responses (semi structured interviews). This provided an answer for the sub research question 3 ("**Step c**" as referred in 4.1).

Finally, the significance and extent to which GM operational factors (IV side) are affecting the overall SQP (DV side) was discovered through a MLR run to predict the overall SQP based on a full set of GM operation (all lines and operators studied), and the interpretation of the previous steps in order to shape a set of comprehensive explanatory interpretations. This provided an answer for the main research question ("**Step d**" as referred in 4.1).

From sections **4.3.1 to 4.3.4,** the results of steps "b", and "c" are conveyed and interpreted (per line and operator).

In section **4.3.5**, the results of step "d" for all lines and services are conveyed and interpreted.

4.3.1 Line 03 / Public operator[26] (TU):

Diagram 9: Process of analysis for L3 (Steps "b" and "c")

L3 (Operator)

IV - GM OPERATIONAL FACTORS

Categ. score	GM functions	GM Sub functions
1.00	Maintenance	Maintenance strategy.
3.00		Maintenance daily servicing.
1.00	V. Renewal	Vehicle ages
1.00		Maximum lenght of vehicles.
5.00	Scheduling & Operation	Demand responsiveness ratio
4.00		Demand responsiveness headway
4.00		Frequency PH **
3.00	Control of operations	Vehicle monitoring functionality (AVL, other).
1.00		Intersections bus priority (signaling, control) **
3.00	Information IT	Automated data collection (passenger counts).
1.00		Passenger information provision **
3.00	Personnel	Personnel selection standards.
3.00		Personnel level of training.

2.54	IV Gov. Management Operational factors (i mean score)

Elaboration: C. Simborth. 2017

L3 (Bus users)

DV - SERVICE QUALITY PERCEIVED

| SQP Criteria	SQP Sub criteria	SQP score
Time	Waiting time P	
	Board/Alight time P	3.05
	On board time P	
	Adherence to schedule P	
Safety	Safety on the road P	4.88
Security	Security in bus stops P	4.89
	Security in buses P	4.78
Space availability	Seat. space availability P	3.55
	Stand. Space availability P	2.88
Comfort	Bus design P	
	Bus int. cleanliness P	
	Bus ext. cleanliness P	2.53
	Bus overall condition P	
System information	Information in bus stop	
	Information in bus P	1.59
	Information online/app P	
Customer service	Staff preparation P	3.48
	Staff kindness P	3.66

Comfort (Beta = 0.59, p =.000). Adjusted R^2 = 0.531

DV Overall SQP (Statistical mean)	3.53
DV Overall SQP (Direct answer from bus users)	2.90

OVERALL SQP

Measurement of the Service Quality Perceived (SQP):

For L3, the overall "SQP" **score is 2.9.** The score was obtained based on empirical data directly collected from users on the field, and calculated with SPSS using "descriptive statistics". The sub-scores per "SQP criteria" can be observed to the right of the "diagram 9" above (lowest and highest scored criteria are highlighted). The maximum, minimum, and mean sub-scores, as well as the total number of respondents can be seen in Annex 3 (Descriptive statistics per line and operator). From the all lines studied, L3 obtained the **lowest overall SQP score** as rated by users. The reasons that explain these results are a consequence of the IV (GM operational factors) and are developed throughout this chapter.

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[26] "Trafiku Urban" is held accountable for the operation of L3, however the company does not operate it directly, it contracts out the operation to 16 individuals who own the buses, and operate the service (See Annex 2: Semi structured interviews reports).

Most sensitive/influential SQP criteria:

In order to find out what is the most significant SQP criteria conducing to the overall SQP (DV side) for L3, a Multi Linear Regression Analysis (MLR) was pursued with the following results:

A MLR was calculated to predict the "**overall SQP**", based on 10 different "**SQP criteria**". For "**Comfort**", a significant regression equation was found ($F(10,72)=10.272, p<.000$), with an R^2 (adjusted) of .531. From the regression analysis pursued on the DV, "Comfort" is the most sensitive-influential SQP criteria conducing to the overall SQP of the line. The relation is strong, significant and have a high extent of causality. **Comfort is affecting the overall SQP of L3 by 60%.** (Step "b").

The perception of "Comfort" is measured based on the view of users of the service elements that can make their travel pleasurable (CEN, 2002). Based on the specialized literature review, and the context of Pristina, within the scope of this research, *the focus is given to "ride comfort" (vehicle design, vehicle condition), and the "ambient conditions" (vehicle interior cleanliness, vehicle exterior cleanliness).* In L3, users perceive buses as aged, deteriorated, with an outdated design, and not entirely clean, which influences to a large extent (60%) their overall SQP.

Most influential GM operational factors affecting SQP:

From the MLR analysis pursued on the SQP (DV side) in step "b", it was found out that the perception of "Comfort" is the most sensitive SQP criteria for L3. In order to find out **what GM operational factors are influencing** on this criterion, we refer back to the "Logical Diagram of Relations", introduced in the beginning of Chapter 04. According to it, it can be observed that "Comfort" is basically being affected by two factors (decisions): "**Vehicle renewal**" (Vehicle ages, Maximum life length of vehicles), and "**Vehicle maintenance**" (Daily servicing, maintenance strategy).

About the first factor, "Vehicle renewal" in L3, it was found out, that buses are already beyond their maximum operational life (over 20 years). About the second factor, "Vehicle maintenance", maintenance methods are reactive, daily servicing is moderate, and there are no dedicated personnel for these activities within the operating sub-contractors (The synthesis of the operators' GM practices was categorized to facilitate its communication in section 3.8.2.1, (Table 15).

It would seem, that as a natural consequence of the factors (IV side) explained above, "**Comfort**", was assigned by users, one of the lowest perception scores (2.53) among all SQP criteria, as it can be seen in "diagram 9" (page 70). It can logically be inferred that the SQP by users of L3, is being **negatively** influenced to a large extent, by "**Vehicle renewal**", and "**Vehicle maintenance**", since they affect (causality) the most significant SQP criterion on the DV side.

Another **negative** influence on the SQP (DV), occurs on the perception of "System information", scored with 1.59 by users. Based on the "Logical Diagram of Relations" we refer to the GM factor (IV) associated with it, "**Passenger information provision**", where operators reported not to fulfil that function.

A **positive** influence on the SQP (DV), occurs on the perception of "Safety on the road" and "Security in buses", where the users assigned scores of 4.88 and 4.78 respectively. Based on the "Logical Diagram of Relations" we refer to the GM factors (IV) associated with it, "**Personnel level of training**" and "**Maintenance daily servicing**", where operators reported having experienced drivers, and a moderate daily servicing (interior cleaning, fuelling and basic routine check-ups). Having safe drivers and moderately clean buses (interior) seems to be affecting positively on the overall SQP of L3.

It is also important to mention for L3, that besides the key "positive" and "negative" influencing "GM factors" (described above) derived from the association to statistically relevant SQP criteria (Comfort, Information, Safety, and Security), there is one more GM factor worth mentioning from the analysis of the collected data. About "**Scheduling and operation**", L3 runs 88 passengers' capacity buses on average every 10.9 minutes during the day, which can be considered quite frequent and convenient for users. Operators are able to provide a higher ratio of "daily spaces offered" to "daily demand/ridership" (1.2) which in the end derives into reduced waiting times (users approach randomly to the bus stop), and availability of space inside buses. These aspects were also highlighted by the users, who assigned to "Time" and "Space availability" scores above the mean and the overall SQP (3.05 and 3.55 respectively). **Step "c".**

4.3.2 Line 04 / Public operator (TU):

Diagram 10: Process of analysis for L4 (Steps "b" and "c")

L4 (Operator)

IV - GM OPERATIONAL FACTORS

Categ. score	GM functions	GM Sub functions
3.00	Maintenance	Maintenance strategy.
5.00		Maintenance daily servicing.
5.00	V. Renewal	Vehicle ages
5.00		Maximum life lenght of vehicles.
5.00	Scheduling & Operation	Demand responsiveness ratio
5.00		Demand responsiveness headway
5.00		Frequency PH **
5.00	Control of operations	Vehicle monitoring functionality (AVL, other).
1.00		Intersections bus priority (signaling, control) **
3.00	Information IT	Automated data collection (passenger counts).
1.00		Passenger information provision **
5.00	Personnel	Personnel selection standards.
5.00		Personnel level of training.

| 4.08 | IV Gov. Management Operational factors (i mean score) |

Elaboration: C. Simborth. 2017

L4 (Bus users)

DV - SERVICE QUALITY PERCEIVED

SQP Criteria	SQP Sub criteria	SQP score
Time	Waiting time P	
	Board/Alight time P	
	On board time P	3.98
	Adherence to schedule P	
Safety	Safety on the road P	4.86
Security	Security in bus stops P	4.83
	Security in buses P	4.76
Space availability	Seat. space availability P	3.87
	Stand. Space availability P	3.62
Comfort	Bus design P	
	Bus int. cleanliness P	
	Bus ext. cleanliness P	4.52
	Bus overall condition P	
System information	Information in bus stop	
	Information in bus P	1.82
	Information online/app P	
Customer service	Staff preparation P	4.00
	Staff kindness P	4.25

| DV Overall SQP (Statistical mean) | 4.05 |
| DV Overall SQP (Direct answer from bus users) | 4.38 |

Time (Beta = 0.285, p=.002).
Adjusted R^2 = 0.451

Comfort (Beta = 0.238, p=.013).
Adjusted R^2 = 0.451

Staff kindness (Beta = 0.19, p=.005).
Adjusted R^2 = 0.451

OVERALL SQP

Measurement of the Service Quality Perceived (SQP):

For L4, the overall "SQP" **score is 4.38.** The score was obtained based on empirical data directly collected from users on the field, and calculated with SPSS by using "descriptive statistics". The sub-scores per "SQP criteria" can be observed to the right of the "diagram 10" above (lowest and highest scored criteria are highlighted). The maximum, minimum, and mean sub-scores, as well as the total number of respondents can be seen in Annex 3 (Descriptive statistics detailed results per line and operator).

From the all lines studied, L4 obtained the **highest overall SQP score** as rated by users. The reasons that explain these results are a consequence of the IV (GM operational factors) and are developed throughout this chapter.

Most sensitive/influential SQP criteria:

In order to find out what are the most significant SQP criteria conducing to the overall SQP (DV side) in L4, a Multi Linear Regression Analysis (MLR) was pursued with the following results:

A MLR was calculated to predict the **overall "SQP" score**, based on 10 different **"SQP criteria"**. For **"Time"**, a significant regression equation was found $(F(10,97)=9.797,p<.002)$, with an R^2 (adjusted) of .451. For **"Comfort"**, a significant regression equation was found $(F(10,97)=9.797,p<.013)$, with an R^2 (adjusted) of .451. For **"Staff kindness"**, a significant regression equation was found $(F(10,97)=9.797,p<.000)$, with an R^2 (adjusted) of .451.

From the correlation and regression analysis pursued on the DV, "Time", "Bus design", and "Staff kindness", are the most sensitive-influential SQP criteria conducing to the overall SQP of the line. The relations are strong, significant and have a high extent of causality. **"Time" is affecting the overall SQP by 29%, "Comfort" is affecting the overall SQP by 28%, and "Staff kindness" is affecting the overall SQP by 19%** (Step "b").

The perception of "Time" is measured based on the aspects of time relevant to the execution of journeys (CEN, 2002). Considering the specialized literature review, and the context of Pristina, within the scope of this research, the focus is given to "journey time" (waiting time, boarding and alighting time, on board time), and the "adherence to schedule" (punctuality against timetable, reliability). In L4, users perceive their "journey time" and "adherence to schedule" level of satisfaction as high, which influences to a fair extent (29%) their overall SQP.

"Bus design" is one of the sub-criteria used to measure the perception of "Comfort". In L4, users perceive the service as comfortable, with emphasis on the design of buses (functional and aesthetic qualities of vehicles), which influences to a fair extent (28%) their overall SQP.

"Staff kindness" is one of the sub-criteria used to measure the perception of "Customer care or service". In L4, users perceive the L4 operations personnel with whom they interact (drivers and ticket sellers) as prepared, and kind, which influences to a fair extent (19%) their overall SQP.

Most influential GM operational factors affecting SQP:

From the MLR analysis pursued on the SQP (DV side) in step "b", it was found out that the perception of "Time", "Comfort", and "Staff kindness", were the most sensitive SQP criteria for L4. In order to find out **what GM operational factors are influencing** on these significant criteria, we refer back to the "Logical Diagram of Relations", introduced in the beginning of Chapter 04. According to it, the following causal relations can be observed:

- The perception of "Time" is basically being affected by three factors (decisions): **"Scheduling and operation"** (Headway, Frequency), **"Control of operations"** (Vehicle monitoring, bus priority signaling), and "**Personnel**" (Selection standards, Level of training).
- The perception of "Comfort" is basically being affected by **"Vehicle renewal"** (Vehicle age, Maximum life), and "**Vehicle maintenance**" (Maintenance strategy, daily servicing).

- The perception of "Staff kindness" is basically being affected by "**Personnel**" (Selection standards, Level of training).

About "**Scheduling and operations**" in L4, it was found out, that 98 passenger buses run with average headways of 8.3 minutes (peak hour headways of 5 mins), **delivering users a frequent service (reduced waiting times).** Also L4 provides a higher ratio of "daily spaces offered" to "daily demand/ridership" (1.1) which derives into availability of space inside buses. About "**Control of operations",** the service has almost full control of operations since the operator has control center (nowadays being renewed) and GPS are being fully installed in buses. About "**Personnel**", the operator has fully prepared (experience and trained) dedicated personnel for driving, operations, control, technical maintenance, and security. Besides the company has statutory selection standards for new personnel. About "**Vehicle renewal**", the whole bus fleet had been renewed in 2017 with standard Euro-6 yellow air-conditioned buses with capacity for 100 passengers produced by the Italian manufacturer IVECO. About "**Vehicle maintenance**", maintenance methods are preventive, and buses receive full daily servicing (Daily interior/exterior cleaning/washing, fueling, tires and breaks routine check-ups). The synthesis of the operators' GM practices was categorized to facilitate its communication in section 3.8.2.1, (Table 15).

It would seem, that as a natural consequence of the factors (IV side) explained above, **"Time", "Comfort", and "Staff kindness"** were assigned by users high perception scores[27], and were significantly related to the overall SQP of L4, as it can be seen in "diagram 10". It can logically be inferred that the SQP by users of L4, is being **positively** influenced to a large extent, by **"Scheduling and operation", "Control of operations", "Personnel", "Vehicle renewal",** and **"Vehicle maintenance",** given the high significance of their affected SQP correlated (causality) criteria in the DV side.

A **negative** influence on the SQP (DV), occurs on the perception of "System information", scored with 1.82 by users. Based on the "Logical Diagram of Relations" we refer to the GM factor (IV) associated with it, "**Passenger information provision**", where operators reported not to fulfil that function.

A **positive** influence on the SQP (DV), also occurs on the perception of "Safety on the road" and "Security in buses", where the users assigned scores of 4.86 and 4.76 respectively. Based on the "Logical Diagram of Relations", we refer to the GM factors (IV) associated with it, "**Personnel level of training**" and "**Maintenance daily servicing**", where the operator reported having prepared dedicated personnel, and performing full daily servicing, as explained before. Having safe drivers and clean buses seems to be affecting positively on the overall SQP of L4, as well (**Step "c"**).

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[27] The scores of "Comfort", and "Staff kindness" were 4.52 and 4.25 (both higher than the statistical mean 4.05). The score of "Time" was 3.98 (slightly below the statistical mean 4.05).

4.3.3 Line 05 / Private operator A

Diagram 11: Process of analysis for L5 (Steps "b" and "c")

L5 (Operator)

IV - GM OPERATIONAL FACTORS

Categ. score	GM functions	GM Sub functions
1.00	Maintenance	Maintenance strategy.
3.00		Maintenance daily servicing.
3.00	V. Renewal	Vehicle ages
1.00		Maximum life lenght of vehicles.
5.00	Scheduling & Operation	Demand responsiveness ratio
4.00		Demand responsiveness headway
4.00		Frequency PH **
1.00	Control of operations	Vehicle monitoring functionality (AVL, other).
1.00		Intersections bus priority (signaling, control) **
3.00	Information IT	Automated data collection (passenger counts).
1.00		Passenger information provision **
3.00	Personnel	Personnel selection standards.
3.00		Personnel level of training.
2.54		**IV Gov. Management Operational factors (i mean score)**

Elaboration: C. Simborth. 2017

L5 (Bus users)

DV - SERVICE QUALITY PERCEIVED

SQP Criteria	SQP Sub criteria	SQP score
Time	Waiting time P	
	Board/Alight time P	3.44
	On board time P	
	Adherence to schedule P	
Safety	Safety on the road P	4.98
Security	Security in bus stops P	4.98
	Security in buses P	4.94
Space availability	Seat. space availability P	3.59
	Stand. Space availability P	3.30
Comfort	Bus design P	
	Bus int. cleanliness P	2.37
	Bus ext. cleanliness P	
	Bus overall condition P	
System information	Information in bus stop	
	Information in bus P	1.62
	Information online/app P	
Customer service	Staff preparation P	4.12
	Staff kindness P	4.27
DV Overall SQP (Statistical mean)		**3.76**
DV Overall SQP (Direct answer from bus users)		**3.24**

Comfort (Beta = 0.446, p =.003). Adjusted R^2 = 0.333

OVERALL SQP

Measurement of the Service Quality Perceived (SQP):

For L5, the overall "SQP" **score is 3.24**. The score was obtained based on empirical data directly collected from users on the field, and calculated with SPSS by using "descriptive statistics". The sub-scores per "SQP criteria" can be observed to the right of the "diagram 11" above (lowest and highest scored criteria are highlighted). The maximum, minimum, and mean sub-scores, as well as the total number of respondents can be seen in Annex 3 (Descriptive statistics detailed results per line and operator).

From the all lines studied, L5 obtained the **second to last lowest overall SQP score** as rated by users. The reasons that explain this result are developed in the following sections.

Most sensitive/influential SQP criteria:

In order to find out what are the most significant SQP criteria conducing to the overall SQP (DV side) in L5, a Multi Linear Regression Analysis (MLR) was pursued with the following results:

A MLR was calculated to predict the **overall "SQP" score**, based on 10 different **"SQP criteria"**. For **"Comfort"**, a significant regression equation was found ($F(10,72)=5.102, p<.000$), with an R^2 (adjusted) of .333. From the correlation and regression analysis pursued on the DV, "Comfort" is the most sensitive-influential SQP criteria conducing to the overall SQP of the line. The relation is strong, significant and have a high extent of causality. **Comfort is affecting the overall SQP by 45%.** (Step "b").

The perception of "Comfort" is measured based on the view of users of the service elements that can make their travel pleasurable (CEN, 2002). Based on the specialized literature review, and the context of Pristina, within the scope of this research, the focus is given to "ride comfort" (vehicle design, vehicle condition), and the "ambient conditions" (vehicle interior cleanliness, vehicle exterior cleanliness). In L5, users perceive buses as aged, deteriorated, with an outdated design, and not entirely clean, which influences to a large extent (45%) their overall SQP.

Most influential GM operational factors affecting SQP:

From the MLR analysis pursued on the SQP (DV side) in step "b", it was found out that the perception of "Comfort" is the most sensitive SQP criteria for L5. In order to find out **what GM operational factors are influencing** on this criterion, we refer back to the "Logical Diagram of Relations", introduced in the beginning of Chapter 04. According to it, it can be observed that "Comfort" is basically being affected by two factors (decisions): **"Vehicle renewal"** (Vehicle ages, Maximum life length of vehicles), and **"Vehicle maintenance"** (Daily servicing, maintenance strategy).

About the first factor, "**Vehicle renewal**" in L5, it was found out, that 7 and 9 meters long buses are already 17 years old (close to reach their maximum operational life), and according to the operator they may still be used for up to 5 more years. About, "**Vehicle maintenance**", maintenance methods are reactive, daily servicing is moderate, and there are no dedicated personnel for these activities within the operating companies (The synthesis of the operators' GM practices was categorized to facilitate its communication in section 3.8.2.1 (Table 15).

It would seem, that as a natural consequence of the factors (IV side) explained above, "**Comfort**", was assigned by users, one of the lowest perception scores (2.37) among all SQP criteria, as it can be seen in "diagram 11" (page 76). It can logically be inferred that the SQP by users of L5, is being **negatively** influenced to a fair extent, by "**Vehicle renewal**", and "**Vehicle maintenance**", since they affect (causality) the most significant SQP criterion on the DV side.

Another **negative** influence on the SQP (DV), occurs on the perception of "System information", scored with 1.62 by users. Based on the "Logical Diagram of Relations" we refer to the GM factor (IV) associated with it, "**Passenger information provision**", where operators reported not to fulfil that function.

A **positive** influence on the SQP (DV), occurs on the perception of "Safety on the road" and "Security in buses", where the users assigned scores of 4.98 and 4.94 respectively. Based on the "Logical Diagram of Relations" we refer to the GM factors (IV) associated with it, "**Personnel level of training**" and "**Maintenance daily servicing**", where operators reported having experienced drivers below 40 years old, and a moderate daily servicing (interior cleaning, fuelling and basic routine check-ups). Having safe drivers and moderately clean buses (interior) seems to be affecting positively on the overall SQP of L5.

It is also important to mention for L5, that besides the key "positive" and "negative" influencing "GM factors" (described above) derived from the association to statistically relevant SQP criteria (Comfort, Information, Safety, and Security), there is one more GM factor worth mentioning from the analysis of the collected data. About "**Scheduling and operation**", L5 runs 50 and 65 passengers' capacity buses every 10 minutes during the 14 hours of operation, which can be considered quite frequent and convenient for users. Operators are able to provide a higher ratio of "daily spaces offered" to "daily demand/ridership" (1.4) which in the end derives into reduced waiting times (users approach randomly to the bus stop), and availability of space inside buses. These aspects were highlighted by the users, who assigned to "Time" and "Space availability" scores above the mean and the overall SQP (3.44 and 3.45 respectively). **Step "c".**

4.3.4 Line 10 / Private operator B

Diagram 12: Process of analysis for L10 (Steps "b" and "c")

L10 (Operator)

IV - GM OPERATIONAL FACTORS

Categ. score	GM functions	GM Sub functions
3.00	Maintenance	Maintenance strategy.
5.00		Maintenance daily servicing.
3.00	V. Renewal	Vehicle ages
3.00		Maximum life lenght of vehicles.
5.00	Scheduling & Operation	Demand responsiveness ratio
3.00		Demand responsiveness headway
2.00		Frequency PH **
3.00	Control of operations	Vehicle monitoring functionality (AVL, other).
1.00		Intersections bus priority (signaling, control) **
3.00	Information IT	Automated data collection (passenger counts).
3.00		Passenger information provision **
3.00	Personnel	Personnel selection standards.
5.00		Personnel level of training.
3.23		**IV Gov. Management Operational factors (i mean score)**

Elaboration: C. Simborth. 2017

L10 (Bus users)

DV - SERVICE QUALITY PERCEIVED

SQP Criteria	SQP Sub criteria	SQP score
Time	Waiting time P	3.98
	Board/Alight time P	
	On board time P	
	Adherence to schedule P	
Safety	Safety on the road P	4.84
Security	Security in bus stops P	4.86
	Security in buses P	4.73
Space availability	Seat. space availability P	3.04
	Stand. Space availability P	3.02
Comfort	Bus design P	3.75
	Bus int. cleanliness P	
	Bus ext. cleanliness P	
	Bus overall condition P	
System information	Information in bus stop	2.23
	Information in bus P	
	Information online/app P	
Customer service	Staff preparation P	4.14
	Staff kindness P	4.48
	DV Overall SQP (Statistical mean)	3.91
	DV Overall SQP (Direct answer from bus users)	**4.13**

Time (Beta = 0.656, p =.000). Adjusted R^2 = 0.52

Comfort (Beta = 0.29, p =.002). Adjusted R^2 = 0.52

OVERALL SQP

Measurement of the Service Quality Perceived (SQP):

For L10, the overall "SQP" **score is 4.13**. The score was obtained based on empirical data directly collected from users on the field, and calculated with SPSS by using "descriptive statistics". The sub-scores per "SQP criteria" can be observed to the right of the "diagram 12" above (lowest and highest scored criteria are highlighted). The maximum, minimum, and mean sub-scores, as well as the total number of respondents can be seen in Annex 3 (Descriptive statistics detailed results per line and operator).

From the all lines studied, L10 obtained the **second highest overall SQP score** as rated by users. The reasons that explain this result are developed in the following sections.

Most sensitive/influential SQP criteria:

In order to find out what are the most significant SQP criteria conducing to the overall SQP (DV side) in L10, a Multi Linear Regression Analysis (MLR) was pursued with the following results:

A MLR was calculated to predict the **overall "SQP" score**, based on 10 different **"SQP criteria"**. For **"Time"**, a significant regression equation was found ($F_{(10,117)}=14.482$, $p<.000$), with an R^2 (adjusted) of .515. For **"Adherence to schedule"**, a significant regression equation was found ($F_{(18,109)}=8.943$, $p<.010$), with an R^2 (adjusted) of .530. For **"Comfort"**, a significant regression equation was found ($F_{(10,117}=14.482$, $p<.000$), with an R^2 (adjusted) of .515.

From the correlation and regression analysis pursued on the DV, **"Time"**, **"Adherence to schedule"**, and **"Comfort"**, are the most sensitive-influential SQP criteria conducing to the overall SQP of the line. The relations are strong, significant and have a high extent of causality. **"Time" is affecting the overall SQP by 66%, "Adherence to schedule" is affecting the overall SQP by 18%, and "Comfort" is affecting the overall SQP by 29%** (Step "b").

The perception of "Time" is measured based on the aspects of time relevant to the execution of journeys (CEN, 2002). Based on the specialized literature review, and the context of Pristina, within the scope of this research, the focus is given to "journey time" (waiting time, boarding and alighting time, on board time), and the "adherence to schedule" (punctuality against timetable, reliability). In L10, users perceive their "journey time" and "adherence to schedule" level of satisfaction as high, which influences to a fair extent (66% and 18% respectively) their overall SQP.

The perception of "Comfort" is measured based on the view of users of the service elements that can make their travel pleasurable (CEN, 2002). Based on the specialized literature review, and the context of Pristina, within the scope of this research, the focus is given to "ride comfort" (vehicle design, vehicle condition), and the "ambient conditions" (vehicle interior cleanliness, vehicle exterior cleanliness). In L10, users perceive the service as relatively "Comfortable", with buses in a relative good condition. All of which influences to a fair extent (29%) their overall SQP.

Although not identified by the statistical analysis, other SQP criteria which seems very influential to the overall SQP are the perception of **"Staff kindness"**, **"Safety"** and **"Security"**, which obtained the highest perception scores above the overall SQP (4.48, 4.84, 4.79 respectively).

Most influential GM operational factors affecting SQP:

From the MLR analysis pursued on the SQP (DV side) in step "b", it was found out that the perception of "**Time**", and "**Comfort**", were the most sensitive SQP criteria for L10. In order to find out **what GM operational factors are influencing** on these significant criteria, we refer back to the "Logical Diagram of Relations", introduced in the beginning of Chapter 04. According to it, the following causal relations can be observed:

- The perception of "Time" is basically being affected by three factors (decisions): **"Scheduling and operation"** (Headway, Frequency), **"Control of operations"** (Vehicle monitoring, bus priority signaling), and "**Personnel**" (Selection standards, Level of training).

- The perception of "Comfort" is basically being affected by two factors (decisions): "**Vehicle renewal**" (Vehicle ages, Maximum life length of vehicles), and "**Vehicle maintenance**" (Daily servicing, maintenance strategy).

About "**Scheduling and operations**" in L10. It was found out, that 100 and 150 passengers' buses run with an average headway of 28.13 minutes along the day, delivering a not very frequent service (relatively long waiting times, inconvenient for random users). However, they are able to provide a higher ratio of "daily spaces offered" to "daily demand/ridership" (1.6) which derives into availability of space inside buses. About "**Control of operations**," the service has a moderate control of operations (cellphone communication). About "**Personnel**", the operator has fully prepared (experience and trained) dedicated personnel for driving, operations, and technical maintenance. About "**Vehicle renewal**", it was found out, that buses are 16 years old, and the company plans to use them for about 04 additional years (until the end of its maximum life length). About "**Vehicle maintenance**", maintenance methods are preventive, and buses receive full daily servicing (Daily interior/exterior cleaning/washing, fueling, tires and breaks routine check-ups). The synthesis of the operator's GM practices was categorized to facilitate its communication in section 3.8.2.1 (table 15).

It would seem, that as a natural consequence of the factors (IV side) explained above, **"Time", and "Comfort"** were assigned by users high perception scores[28], and were significantly related to the overall SQP of L10, as it can be seen in "diagram 12". It can logically be inferred that the SQP by users of L10, is being **positively** influenced to a large extent, by **"Scheduling and operation", "Personnel", and "Vehicle maintenance",** given the high significance of their affected SQP correlated (causality) criteria on the DV side.

A **negative** influence on the SQP (DV), occurs on the perception of "System information", scored with 2.23 by users. Based on the "Logical Diagram of Relations" we refer to the GM factor (IV) associated with it, "**Passenger information provision**", where operators declared that function is in the hands of the Municipality. In spite of that, the operator reported receiving customers in their office in Hajvali and using a facebook interface to interact with users. Although the score rated by users is quite low, it is comparatively higher than those received by the other lines studied within this research,

A **positive** influence on the SQP (DV), also occurs on the perception of "Safety on the road", "Security in buses", and "Customer service" (staff kindness and preparation) where the users assigned scores of 4.84, 4.86, and 4.31 respectively. Based on the "Logical Diagram of Relations", we refer to the GM factors (IV) associated with it, "**Personnel level of training**", and "**Maintenance daily servicing**" where the operator reported having prepared dedicated personnel, and performing full daily servicing, as explained before. Having safe, and kind drivers, and clean mechanically reliable buses seems to be affecting positively on the overall SQP of L10, as well (**Step "c"**).

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[28] The scores of "Time", and "Comfort" were 3.98 and 3.75 (The first slightly higher and the second slightly below the statistical mean 3.91).

4.3.5 All lines and operators

Diagram 13: Process of analysis for all lines and operators (Steps "d")

L3,4,5,10 (Operators)

IV - GM OPERATIONAL FACTORS

Categ. score	GM functions	GM Sub functions
2.2	Maintenance	Maintenance strategy.
4.2		Maintenance daily servicing.
3.1	V. Renewal	Vehicle ages
2.7		Maximum life lenght of vehicles.
5.0	Scheduling & Operation	Demand responsiveness ratio
4.0		Demand responsiveness headway
3.6		Frequency PH **
3.1	Control of operations	Vehicle monitoring functionality (AVL, other).
1.0		Intersections bus priority (signaling, control) **
3.0	Information IT	Automated data collection (passenger counts).
1.6		Passenger information provision **
3.5	Personnel	Personnel selection standards.
4.2		Personnel level of training.

3.23	IV Gov. Management Operational factors (i mean score)

Elaboration: C. Simborth. 2017

L3,4,5,10 (Bus users)

DV - SERVICE QUALITY PERCEIVED

SQP Criteria	SQP Sub criteria	SQP score
Time	Waiting time P	3.67
	Board/Alight time P	
	On board time P	
	Adherence to schedule P	
Safety	Safety on the road P	4.88
Security	Security in bus stops P	4.88
	Security in buses P	4.79
Space availability	Seat. space availability P	3.48
	Stand. Space availability P	3.21
Comfort	Bus design P	3.42
	Bus int. cleanliness P	
	Bus ext. cleanliness P	
	Bus overall condition P	
System information	Information in bus stop	1.86
	Information in bus P	
	Information online/app P	
Customer service	Staff preparation P	3.96
	Staff kindness P	4.21

DV Overall SQP (Statistical mean)	3.84
DV Overall SQP (Direct answer from bus users)	3.76

Center relationships:

Personnel level of training (Beta = .368, p =.000). Adjusted R^2 =.204

Demand resp. headway (Beta = .420, p =.000). Adjusted R^2 =.091

Vehicle ages (Beta = .507, p =.000) Adjusted R^2 = 0.384

Maint. daily servicing (Beta = .823, p =.000). Adjusted R^2 = .521

Personnel level of training (Beta = .207 p =.000). Adjusted R^2 = .05

Vehicle ages (Beta = .115, p =.000) Adjusted R^2 = 0.175

Personnel level of training (Beta = .421, p =.000). Adjusted R^2 = .314
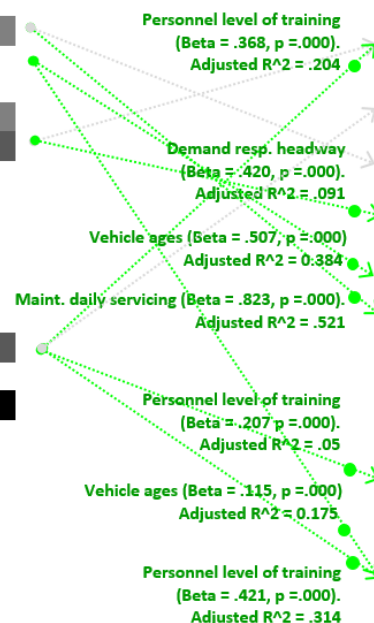
As a way to help provide an overall general answer to the **main research question** (for all lines and operators studied in Pristina), a complementary process of relative "**inferential analysis**", using the "**integrated matrix in SPSS**[29] was pursued**".** The analysis allowed to find out what are the most significant **GM operation functions and sub-functions** (IV) conducing (causality) to the **overall SQP** (DV) for **all lines** in order to help answer the main research question (Step "d"). A Multi Linear Regression Analysis (MLR) was pursued with the following results:

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[29] The "Integrated matrix in SPSS" comprises the DV empirical numerical ordinal data collected from the field questionnaires (Likert scales), and the IV numerical ordinal data (obtained by categorizing numerically the information from semi structured interviews to GM organizations). As explained in section 3.8.2.1

A MLR was calculated to predict the **overall "SQP"** score (DV), based on 13 different **"GM operational sub-functions"** (IV). For "**Vehicle ages"**, a significant regression equation was found (F(3,398)=63.302,p<.000), with an R^2 (adjusted) of .314. For **"Personnel level of training"**, a significant regression equation was found (F(3,398)=63.302,p<.000), with an R^2 (adjusted) of .314.

From the correlation and MLR analysis pursued between the IV and DV, **"Vehicle ages"**, and **"Personnel level of training"**, are the most influential **GM operational sub-functions** conducing to the **overall SQP** generally speaking for the group of lines studied. It can be concluded that the relations are **strong, significant and have a high extent of causality**. "**Vehicle ages" is affecting the overall SQP by 17%, and "Personnel level of training" is affecting the overall SQP by 42%.**

This is coherent with the data collection process on the IV side where:

About "**Vehicle ages",** it was found out, that buses in L3 and L5 (overall SQP worst rated by users), are significantly **old** (17 and 20 years old respectively), in L10 are old (16 years old, although fully daily served, and technically maintained by dedicated personnel), and in L4 (overall SQP best rated by users) are significantly **new.** The contrasting mixed exposure of users to **very old, and very new buses** in the network, made them affect significantly their perception of "Comfort" while travelling in the different lines (Comfort was usually among the *"highest" or "lowest"* scores in every line studied). Since "Comfort" was a significant (causal) criteria for the overall SQP of all lines, it can be inferred that the **"Vehicle ages"** are affecting **positively and negatively to a significant extent the "overall SQP"** of the lines studied**.**

About "**Personnel level of training",** it was found out, in L3 and L5 (overall SQP worst rated by users), that their operations personnel (drivers), was experienced (several years of experience), had a "D" category professional driver's license, and had to be below 40 years old to work there. In L10 (overall SQP second best rated by users), the same driver's license requisite applied for drivers, plus a 01 week supervised driving testing for both typologies of buses (standard and articulated) was necessary for new drivers. The operator of L10 also had permanent personnel for other functions (Finances, operation and management, technical-maintenance), and in L4 (overall SQP best rated by users), the same driver's license requisite applied for drivers, plus the same age restriction mentioned before (below 40 years old). The operator of L4 had fully prepared permanent professional personnel to fulfill different functions (Transport operations, technical maintenance, financial, control, security), and part of the technical personnel (1 mechanics, 02 electricians) was recently trained hand in hand with the bus fleet renewal process**.** Generally speaking we could say that the companies studied had partially prepared (experienced), and fully prepared (experienced and professionally trained) personnel. The interaction of users with experienced and fully prepared personnel (mostly drivers and ticket sellers) when riding along the network, made them affect significantly their perception of "Safety", "Staff kindness", and "Time" (Adherence to schedule) while travelling in the different lines ("Safety" was usually among the *"highest"* scores in every line studied, "Staff kindness" always scored above the overall SQP, and "Time" score was always slightly around the overall SQP). Since "Staff kindness" and "Time" were significant (causal) criteria for the overall SQP for L4 and L10, and "Safety" for all lines studied, it can be inferred that the **"Personnel level of training" GM** operational function is affecting **positively to a fair extent the "overall SQP"** of the lines studied (Step "d").

Complementarily, the following **one to one** "SQP criterion" to "GM operational factor" relations were analyzed for **all lines studied**[30], based on the **researcher's academic curiosity**[31]. A simple Linear Regression (LR) was calculated to predict the following relations:

- Perception of "Comfort" based on "Vehicle age"
- Perception of "Customer service" based on "Personnel level of training"
- Perception of "Time" based on "Personnel level of training"
- Perception of "Space availability" based on "Demand responsive headway"
- Perception of "Comfort" based on "Maintenance daily servicing"

From the simple LR analyses pursued, it was obtained that all relations analyzed here were significant (The resulting significant "p" values and coefficients are synthetized in "diagram 13" in page 82 (pay special attention to the diagonal lines connecting both sides IV and DV). Here a brief summary of the results and their explanatory interpretation:

"**Vehicle age**" has a significant relation (High extent of causality) and is affecting the perception of "**Comfort**" by **51%**. This can be explained by the fact that, most of operators of the lines studied had **very old (L3 and L5),** as well as **very new buses (L4)** buses. Since most of the users' travel experience occurs inside the buses, and from there, they are able to estimate the age, cleanliness, design and physical condition of the buses. This explains why this GM operational decision is significant to this SQP criteria (Comfort).

"**Personnel level of training**" has a significant relation and is affecting the perception of "**Customer service**" by **21%**. This can be explained by the fact that, most of the interactions of users with the operators' personnel, occur inside buses. Where they can easily perceive the "Drivers' level of preparation" both in terms of experience and attitude towards users (kindness). Operators of all lines studied, reported having experienced drivers with a "D" professional category and some (L4, L5, L10) other different requisites (age limit, testing periods, random evaluations). As a result, users rated their perception of "Customer service (staff preparation and kindness)" with scores above the overall SQP (L3, L5 and L10) or just slightly below the mean (L4). The interaction with the ticket seller was also considered in the users' assessment. This explains why this GM operational decision is significant to this SQP criteria (Customer service).

"**Personnel level of training**" has a significant relation (High extent of causality) and is affecting the perception of "**Time**" by **37%**. This can be explained by the fact that, operators of all lines studied, reported having experienced drivers with a "D" professional category and some (L4, L5, L10) other different requisites (age limit, testing periods, random evaluations). As a result, they seem to be doing a satisfactory job timewise (adhering to schedule and managing their time and speed), since users rated their perception of "Time" (while waiting, boarding, alighting, and

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[30] L3, L4, L5, and L10

[31] This complementary relations are also present in the "Logical Diagram of Relations" introduced in the beginning of Chapter 04, so their individual causal effect was of interest for the researcher.

assessing the buses compliance with schedules) above the overall SQP score for L3, L5, and L10, and slightly below the overall SQP score for L4[32]. This explains why this GM operational decision is significant to this SQP criteria (Time).

"**Demand responsive headway**" has a significant relation (High extent of causality) and is affecting the perception of "**Space availability**" by **42%**. This can be explained by the fact that, operators of L3, L4, and L5 dispatch buses with short headways (from 5 to 10 minutes during most hours of operation), which translates into a frequent enough service where users are always able to find an space to travel (seating or standing). This explains why this GM operational decision is significant to this SQP criteria (Space availability).

"**Maintenance daily servicing**" has a significant relation (High extent of causality) and is affecting the perception of "**Comfort**" by **82%**. This can be explained by the fact that, operators of L3 and L5 are providing moderate daily servicing (internal cleaning, fueling, and moderate technical check-ups given their limitations of personnel). Operators of L4 and L10 provide full daily servicing (internal and external cleaning, fueling, and more complete set of technical check-ups since they have dedicated personnel to fulfill those functions). These daily activities have a direct influence on the physical condition of the buses, and so on the perceptions that users have about its cleanliness and overall ambient condition of buses. This explains why this GM operational decision is significant to this SQP criteria (Comfort).

4.3.7 Non-inferential (statistical) interpretations

Not all presumed relations between the IV (GMO factors) and DV (SQP) could be proven by the inferential statistical analysis. The relative categorization process produced in section 3.8.2.1, provided some comparative quantitative insights about how well or not the different functions along the service providing organizations and public authority are being undertaken. From it, 03 GM operational functions relations with the SQP, called the researcher's attention, since they were not highlighted as having significant, regardless their apparent importance in the service provision process:

- Vehicle age – perception of "**Security in buses**".
- Demand responsive ratio – perception of **"Time".**
- Personnel level of training – perception of "**Safety on the road**".

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[32] L4 obtained a SQP "Time" score below the overall SQP, since users did not like the fact that drivers of L4, were very strict to maintain their boarding and alighting timing and sometimes did not wait for "late coming passengers", as it was reported on the field while filling the questionnaires.

"Vehicle age"–"Perception of security in buses" logical interpretation:

L3 and L5 services, were rated as the lowest in SQP by users (2.9 and 3.24) among all lines studied. However, users rated "**Security in buses**" with a top mean score 4.78 and 4.94 respectively. If we go back to the IV side and use the "Logical Diagram of Relations", we would observe the GM operational associated factors, obtained the following relative categorical scores by the researcher:

-Maintenance (Daily servicing): 3 *(Moderate) for L3 and L5.*

-Vehicle renewal (Vehicle age): 1 *(Buses beyond maximum life) for L3 and L5.*

It can be interpreted from these results, that even though buses can be very old, if buses are moderately cleaned (interior) and look right, it can add to the feeling of security inside buses. This relation however, was not found significant by SPSS when analyzed statistically **for all lines**, however it seems to apply for L3, and L5.

"Demand responsive ratio–Perception of time" logical interpretation:

As it can be seen in section 3.8.2.1 (relative categorization process for the IV), all lines studied had a "demand responsiveness ratio" (offered spaces to daily demand/ridership) **higher than 1**. Which means that **the arrangement of bus frequencies and operations on the street for all lines, ends up producing more seating and standing space, than the actual number of passengers that ride on the line throughout the day**.

L3 operate with buses running 10 minutes during 13 service hours a day (80% of the operating hours); **L5** operate with buses running every 10 minutes during all operating hours; and **L4** operate with buses running every 5 to 10 minutes during 14 service hours a day (90% of the operating hours). **Those services are among the most frequent in the bus network of Pristina**, and users rated their waiting time in those lines with fair scores of 2.9, 3.9, and 3.1 (slightly around the overall SQP of the line) among all lines studied, which does not seem outstanding.

Now, If we go back to the IV side and use the "Logical Diagram of Relations", we would observe the GM operational associated factors, obtained the following relative categorical score by the researcher:

-Scheduling of operations (Demand responsive ratio): 5 *(High) for L3, L4, and L5*

-Control of operations (Monitoring): 3, 5, and 1 *(moderate, full, and inexistent) for L3, L4, and L5 respectively.*

-Control of operations (Bus priority signaling): 1 *(inexistent) for L3, L4, and L5 respectively.*

It is also important to mention that when users were asked to rate objectively their "Bus delays" observation in the questionnaire (Second section, question "d"), these were the mean results:

-L3: 2.4 *(4 to 5 minutes late)*

-L4: 3.4 *(3 to 4 minutes late)*

-L5: 3.3 *(3 to 4 minutes late)*

-L10: 3.2 *(3 to 4 minutes late)*

It can be interpreted from all of these results, that even though buses can be very frequent, the **few minutes of delay** that users reported, seems to be affecting their "perception of time" for all lines studied. A clear statistical significant (causal) relation between a highly "demand responding" schedule and frequent operations, that affecting positively on the "perception of time" of users **was not found** by SPSS. The reasons to explain this may lay on the "**Monitoring of operations**" factor, which is inexistent and moderate (traditional cellphone communication) in 02 out of the 03 frequent lines referred here; and in the "**Bus priority signaling**" which was found inexistent for all lines studied.

"Personnel level of training – perception of safety on the road" logical interpretation:

L3 and L5 services, were rated as the lowest in SQP by users (2.9 and 3.24) among all lines studied. However, users rated "**Safety on the road**" for L3 and L5 with the top scores among all lines studied (4.88 and 4.98 respectively). If we go back to the IV side and use the "Logical Diagram of Relations", we would observe the main GM operational associated factor, obtained the following relative categorical score:

-Personnel level of training: 3 *(Experienced)* for L3 and L5

From these results, it can be interpreted that, even though buses can be very old, and the overall service quality of L3 and L5 may be perceived as quite low; having experienced drivers, with "D" category drivers' licenses, and even below 40 years old) can affect positively on the perception of "Safety on the road". This relation however, was not found significant by SPSS when analyzed statistically **for all lines**, however it seems to be relevant for L3, and L5.

Chapter 5: Conclusions and recommendations

Explain to what extent governance-management operational factors for BPT service provision, affect the Service Quality Perceived (SQP) in Pristina is the main objective of this research work. Pristina has a non-integrated bus public transport network governed by the municipality, managed and operated by public and private operators. From the study pursued evidence was found that there are critical concerns (positive and negative) regarding the quality of the service as perceived by users.

In this chapter, the conclusions are presented as a clear summary of the main findings presented in chapter 04, in line with the research questions, and in relation to the conceptual framework covered in the thesis. Finally, recommendations for policy and practice, based on the findings of this research, are provided for the organizations involved with the governance and management of bus public transport operations in Pristina.

5.1 Conclusions

What is the measurement of the SQP by users of representative public and private BPT service providers in Pristina? (For L3, L4, L5, L10)

The SQP for all the cases studied, presented in **hierarchical order**[33] (from the best rated to the worst rated). is:

- Line 4 (*Operated by Trafiku Urban):*   4.38
- Line 10 (*Operated by 24 Yjet*):   4.13
- Line 5 (*Operated by Germia Tours*) :   3.24
- Line 3 (*Operated by Trafiku Urban[34]*):   2.90

- All lines studied (*All operators studied)*: 3.76

Users are sensitive in different degrees to different SQP criteria; hence they contribute more or less to the overall service quality perception. Also, these results are a consequence of the different GM operational practices of the authority and operating companies. It is clear that some companies have been doing better than others in different functions. *All of these explanatory aspects are explained throughout this Chapter.*

The scores are empirically valid because the data collection methods used to obtain them, were adjusted to the context of Pristina, and allowed to measure what needed to be measured. These results are reliable because the measurement instruments were precise. If the process would be repeated consistently the same results would be obtained.

SRQ 2: What is the most sensitive/influential SQP criteria conducing to the overall BPT SQP in Pristina? (For L3, L4, L5, L10)

For L4 **"Time", "Comfort", and "Staff kindness"** were the most sensitive-influential SQP criteria contributing to the overall SQP of the line by **29%, 28%, and 19%** respectively. The relations are strong, significant and have fair extent of causality.

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[33] From now on, the conclusions will be presented, following the hierarchical SQP order displayed here.

[34] "Trafiku Urban" is held accountable for the operation of L3, however the company does not operate it directly, it contracts out the operation to 16 individuals who own the buses, and operate the service.

The perception of "**Time**" is measured based on the aspects of time relevant to the execution of journeys like the journey time, reliability, and punctuality (CEN, 2002). Within the scope of this research, the focus was given to the "journey time" (waiting, boarding, on board), and the "adherence to schedule" (punctuality, reliability). In L4, users declared to be specially satisfied with the "adherence to schedule" of L4 (sub score 4.1).

The perception of "**Comfort**" is measured based on the view of users of the service elements that can make their travel pleasurable while riding and experiencing the ambient conditions (CEN, 2002). According to Vuchic (2005), the design attractiveness and features of new vehicles (air conditioning, large windows, low floor bodies, damage resistant seats) provide higher **"Comfort"** and service quality. In L4, users perceive the service as comfortable, with emphasis on the design of the newly purchased yellow low floor air-conditioned buses (sub score 4.5).

"**Staff kindness**" is one of the sub-criteria used to measure the perception of "Customer care or service" (CEN, 2002). In L4, users declared to be specially satisfied with the level of kindness of drivers and ticket sellers (sub score 4.25).

For L10 (24 Yjet) **"Time", and "Comfort"** were the most sensitive-influential SQP criteria contributing to the overall SQP of the line by **66%, and 29%**. The relations are strong, significant and have fair extent of causality.

In L10, about "**Time**", users declared to be specially satisfied with the "adherence to schedule" of L10 (sub score 4.34), which was the best rated among all lines. This influenced to a high extent their overall SQP.

In L10, users perceived the service as relatively "**Comfortable**", and declared to be specially satisfied with the good condition of buses (sub score 3.9). This speaks of the good maintenance of vehicles regardless of their age (15 years old).

For L5 (Germia tours), **"Comfort"** is the most sensitive-influential SQP criteria contributing to the overall SQP of the line by **45%**. The are strong, significant and have a high extent of causality.

In L5, users perceived buses as old and deteriorated, and specially declared to be not satisfied with the outdated design (sub score 1.8) and the physical condition (sub score 2.2) of buses. The empirical study confirmed the importance of this factor.

For L3 (Trafiku urban[35]), **"Comfort"** is the most sensitive-influential SQP criteria contributing to the overall SQP of the line by **60%**. The relation is strong, significant and have a high extent of causality.

In L3, users perceived buses as old and deteriorated, and declared to be not satisfied with the outdated design (sub score 2.3). The empirical study confirmed the importance of this factor.

For all lines (all operators) studied, **the most sensitive/influential SQP criteria conducing to the overall SQP in Pristina are (hierarchical order) the perception of: "Comfort", "Time", and "Staff kindness"** for the reasons explained above. All of these aspects support the theoretical constructs reviewed in Chapter 2. For a visual appreciation of the services see Annex 4 (Photographic dossier of the bus lines studied).

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[35] "Trafiku Urban" is held accountable for the operation of L3, however the company does not operate it directly, it contracts out the operation to 16 individuals who own the buses, and operate the service.

SRQ 3: What and How are the most influential GM operational factors (decisions) affecting positively and negatively the BPT SQP in Pristina? (For L3, L4, L5, L10)

In L4 (*Trafiku Urban*), the GM operational functions of **"Scheduling and operation"**, **"Control of operations"**, **"Personnel"**, **"Vehicle renewal"**, and **"Vehicle maintenance"**, are affecting **positively** on the following SQP criteria: **"Time", "Comfort", and "Staff kindness"**.

The municipality and the operator produce and implement carefully planned schedules with regular times for different periods of the day, with relatively short headways and frequent buses 16 hours a day, also exercise control of their buses on the street, have recently trained their drivers (and technical personnel) parallelly to the full renewal of its bus fleet. All of this GM operational decisions are having a positive impact on aspects that are strongly relevant for the user (SQP criteria), like the perception of "Time" (journey times, and adherence to schedule), "Comfort" (buses cleanliness, design and physical condition), and "Customer service" (the level of kindness and preparation of the interacting personnel).

In L10 (*24 Yjet*), the GM operational functions of **"Scheduling and operation", "Control of operations", "Personnel", "Vehicle renewal",** and **"Vehicle maintenance",** are affecting **positively** on the following SQP criteria: **"Time", and "Comfort"**

Interestingly, the operator runs a not frequent service (20 to 30 minutes headway), however, its SQP score for perception of "Time" is the same as very frequent services like L4 (3.98). Also L10 seems to be perceived by users (sub score 4.34),as **the most reliable service** (punctual, regular, and adhered to schedule). The operator does not use sophisticated control of operations mechanisms (cell phone communications and eventual field supervisors), but relies in seemingly capable drivers (besides the regular requisites, the company test their new drivers for 1 week before they start revenue operations). The operator also has dedicated technical personnel for daily servicing and regular maintenance functions, which had a positive effect on the users' perception of the buses' physical condition (sub score 3.9), and cleanliness (sub score 3.8).

In L5 (*Germia tours*), the GM operational functions of **"Vehicle renewal"** and **"Vehicle maintenance",** are affecting **negatively** on the following SQP criteria: **"Comfort"**

The operator runs 17 years old 7 to 9 meters long buses (close to reach their maximum operational life), and the vehicle maintenance methods are reactive, daily servicing is moderate, and there are no dedicated personnel for these activities within the operating company. As a result users declared being not satisfied with the physical condition and design of vehicles which in turn affect their perception of "Comfort".

In L3 (*Trafiku Urban[36]*), the GM operational functions of **"Vehicle renewal"** and **"Vehicle maintenance",** are affecting **negatively** on the following SQP criteria: **"Comfort"**

The operator runs over 20 years old (already beyond their maximum operational life), and the vehicle maintenance methods are reactive, daily servicing is moderate, and there are no dedicated personnel for these activities within the operating sub-contractors. As a result, users declared being not satisfied with the design of vehicles which in turn affect their perception of "Comfort".

From the cases studied (all lines and operators), **the most influential GM operational factors affecting positively and negatively the SQP in Pristina are: Vehicle renewal, Vehicle**

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[36] "Trafiku Urban" is held accountable for the operation of L3, however the company does not operate it directly, it contracts out the operation to 16 individuals who own the buses, and operate the service.

maintenance, Personnel, and Scheduling and operation for the reasons explained above. All of these relations are found and support the consistency of the "Conceptual framework" presented in section 2.2.

As side information, it is important that, one of the reason for which "private operators" declared (interviews) are not renewing their bus fleets with brand new buses, is because they do not have long term arrangements with the Municipality (concessions, contracts or alike). They are given a provisional work permit renewable every 6 month. From last year, the Municipality has been pursuing studies in order to plan, reorganize the whole public transport system of Pristina (SUMP and FOPIP studies referred in Chapter 1), and improve its management and operation. This definitions by the public authority need to be done soon, in order to spearhead the participation of the private sector in the right direction. This research work feeds the process of reform.

MRQ: To what extent Governance-Management (GM) operational factors for BPT service provision, affect the Service Quality Perceived (SQP) in Pristina?

As it was found out, *"Scheduling and operation", "Control of operations", "Personnel", "Vehicle renewal", and "Vehicle maintenance"* affect **positively and negatively** different aspects of the users' perception of the quality of the BPT service *("Comfort", "Time", and "Personnel")*, **in different significant ways**, for the cases studied in Pristina. The reasons and decisions made on the "organizations" side (public authority and operators) were already explained.

To help explain the **extent** to which these significant relations occur, a statistical inferential analysis was pursued (MLR) predicting the overall SQP of all respondents, based on a set of relevant GM operational factors[37] (all lines and operators). The results (Reported in detail in section 4.3.5) reveal that **"Vehicle renewal"** (Vehicle ages), and **"Personnel"** (level of training) affect the overall SQP by 17%, and 42% respectively.

Also as a result of the complementary inferential analysis (LR) pursued (See 4.3.5) between individual "one to one" key relations, it was found out that **"Vehicle maintenance"** becomes highly significant to **"Comfort"** (affecting it by 82%)**.** This is quite interesting since it proves that users also may feel satisfied riding in "not new" well maintained buses (Like the case of L10).

While much of the theoretical constructs that speak about "Comfort", focus on the attractive design and features of vehicles like air conditioning, windows, low floor bodies, damage resistant seats (Vuchic, 2005), or wider doors, wheelchair lifts, among other accessibility features (Koski, 1979), the empirical research in Pristina shows that other healthy and less costly management practices like "Vehicle daily servicing" and "Technical maintenance" **can also pay off and have a meaningful impact** in the users' perception of the quality of a bus service (SQP).

Another theoretical link worth bringing into the discussion has to deal with the relation between **"Personnel level of training"** and the **"perception of safety on the road".** According to Vuchic (2005), a major input for a safe transit system is the "Driver training and performance". In point 4.3.7 (non-inferential interpretations), it was made noticeable that some "key relations" worth highlighting in the BPT system of Pristina, and supported by the theory, were not identified by the "Inferential analysis", but still seem to be present. An example of this is the relation between **"Personnel level of training – perception of safety on the road",** where in

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[37] In order to be able to run an statistical analysis using the IV data, the relative categorical values assigned in 3.8.2.1 were used, using a single data matrix in IBM SPSS v.24

most analyzed cases companies declared to have experienced drivers (with "D" category drivers' licenses, among other quality filters), and at the same time users perceived the "drivers preparation" as "Satisfactory" (scores above 4) and services as "Safe on the road" with high scores in most cases.

All these key relations are synthetized in a graphical way in the diagram below (Diagram 14), which now is fed by a new input, **the findings of the empirical research in Pristina**.

Diagram 14: Synthesis of all analyses pursued for all lines and operators
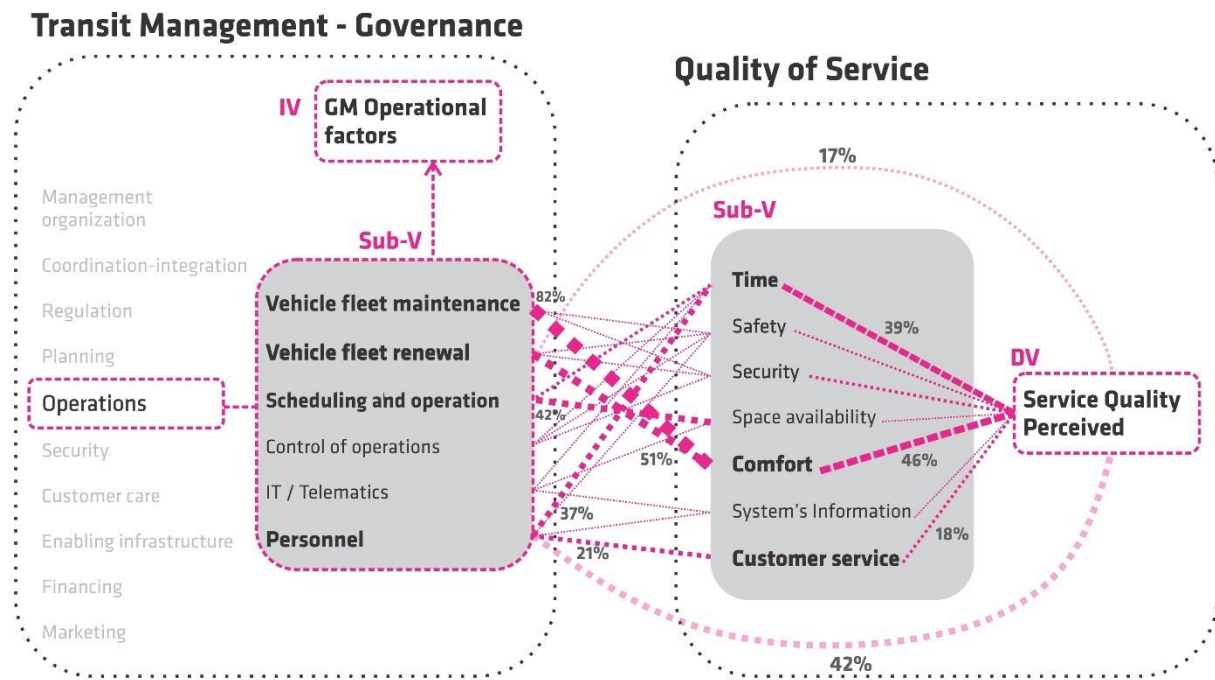
Elaboration: C. Simborth. 2017

"Governance and Management operational factors", which in practical terms are the different functions (focused on operations) that the Public Authority (Municipality) and the Bus Operators fulfil to deliver a BPT service in Pristina, **can make a meaningful difference** in the quality of the service that users perceive (SQP). The decisions made on the "organizations side" can potentially transform the quality of a service, and so the **life** of "users", on the other side.

5.2 Recommendations

The "quality of service" gap between best rated and worst rated operators, as well as their GM operational practices (vehicle renewal, maintenance strategies, availability of technical staff) in Pristina seems to be quite large. If there is a vision to have an "Integrated high quality public transportation system", these differences should be addressed, and the standard maintained throughout the network. Currently, the BPT private provision seems to encounter more challenges to be able to increase their quality.

In line with the European Committee for Standardization (European Union policies), a "customer care" approach (focus on the users), should be incorporated in the Municipal Agenda, while planning, implementing, and managing, its ongoing public transportation reforms. About BPT management, a first priority to increase the quality of the service in

Pristina, may start considering the most sensitive SQP criteria found on this research work: The users' perception of "**Comfort**", "**Time**", and "**Customer care**" (Staff preparation and kindness).

In line with the previous recommendation, the GM practices of the service providing organizations (Public authority and operators), should be upgraded, retrofitted, and strengthened in the areas of "**Vehicle renewal**", "**Vehicle maintenance** (daily and strategic)", "**Personnel** (selection and training)", "**Scheduling and operations**", and "**Control of operations**" (In that order). For which the supporting public policies, and the provision of financing mechanisms should be in place. Quality of Service is not for free[38].

5.3 Suggestions for further research

This research work focused on the "operational" aspects of Governing and Managing the service provision of BPT services, and how they relate, affect or impact in the quality of service that users perceive. However, there are other **critical** transit Governance and Management aspects from which the concern of "Quality of service" could be addressed; like the *Planning, Financial, Regulatory, Institutional, and Infrastructural*; always, with system's integration objectives.

Another space for further research, in line with the European Committee for Standardization (CEN, 2012), lays on the "Quality loop" which considers the different approaches to consider when assessing the "Quality of a transit service": *Perceived, and Sought* (on the customer side); and *Delivered, and Targeted* (on the provider side).

From the two frameworks explained above (The *GM functions* and the *quality loop*), a series of BPT management research topics derive. For instance, we could focus on the *GM Financial factors that affect the quality of service* (*perceived, sought, delivered or targeted*), in Pristina. This topic may be of high relevance in the near future because, since currently transit fares seem to be relatively low[39]; and resulting from the ongoing the studies, the city is likely to redefine its arrangements with the private sector (operators), and start setting new (higher) standards of quality. Which necessarily implies higher operational costs not supported by the current fares.

The main research question of a following relevant research work could be:

> **"To what extent Governance-Management (GM) financial factors for BPT service provision, affect the Service Quality Delivered (SQP) in Pristina?"**

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[38] Given the societal benefits, that an efficient "High quality integrated public transportation system" brings to the city's competitiveness. The steering of this reforms should be on the public-sector hands (Municipality and Central Government).

[39] As it uusually happens in other developing contexts, low-quality transit services are able to subsist on low tariffs. As it can be learnt from the wide range of available experiences in the European context with already modernized high-quality transit systems, integrated transit services with increased quality cost more than what user fares can cover, for which other sources of financing need to be present.

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Annex 1: Data collection instruments and fieldwork schedule

A1.1 Independent variable: Semi-structured interviews (English/Albanian)

General Introduction (To be explained prior all interviews)

The aim of this study is to explain to what extent management and operational factors for bus transit services provision, affect the quality of the service perceived by users, in Pristina. This research is also part of the thesis requirements for the obtainment of the degree of Master's in Urban Management and Development" (Specialization in Managing and Financing Infrastructure), at Erasmus University Rotterdam.

The interviewee is not obliged to answer all the questions, however their full respondency will add to the accuracy of the results, which will be informative for the organizations in charge of governing managing and operating the bus system. The interviewee will be asked for permission to record the interview.

The information given will be used for data analysis, to correlate the managerial and operational processes within the public authority and service providing organizations, with the users' perceptions of the service in terms of a predetermined set of quality criteria. It will allow the involved organizations to know what their users are thinking about the service and based on that make further service adjustments. A copy of the full study will be offered for the interviewee's organization.

Hyrje e përgjithshme

Qëllimi i këtij studimi është të shpjegohet për çfarë shtrirje të menaxhmentit dhe faktorëve të operimit të dispozitave të shërbimeve gjatë lëvizjes së autobusëve, ndikojnë në kualitetin e shërbimit të perceptuar nga shfrytëzuesit në Prishtinë. Ky hulumtim është gjithashtu pjesë e temës së nivelit Master në departamentin menaxhimi dhe zhvillimi urban (specializim në menaxhim dhe financim të infrastrukturës), në universitetin erasmus të Roterdamit.

Të intervistuarit nuk janë të obliguar ti përgjigjen të gjitha pyetjeve, sidoqoftë përgjigja në ato pyetje do të shtojë saktësinë e rezultateve, që do të jetë informuese për organizatat që kanë për detyrë administrimin, mbikëqyrjen dhe operimin e sistemit të autobusëve.

Këto informacione që do të nxirren nga ky hulumtim, mundëson komunën e Prishtinës dhe operatorët(publik dhe privat), e transportit publik në Prishtinë, të kenë dijeni për mendimet dhe perceptimet e shfrytëzuesve në lidhje me shërbimet dhe duke u bazuar në këto të dhëna të bëhen përmirësime aty ku ka nevojë që të jenë të përshtatshme për shfrytëzuesit. Pasi të kompletohet, një kopje e të gjithë hulumtimit do ti dërgohet autoriteteve publike dhe organizatave që ofrojnë shërbime të transportit.

A1.1.1 Interview manual: Deputy major (Lead of the steering committee)/ Chief of major's cabinet, Municipality of Pristina (Steering committee, future vision, political expectations, public transport governance)

    a) Could you explain what is your vision about the Bus Public Transport reforms in Prishtina (studies, projects, actions being developed by the Municipality)?

    b) Could you explain what are your expectations in terms of improvement of the bus transit quality of service delivered to citizens?

    c) What are the functions of the steering committee, and how it is helping to accelerate the reform, how does it operate?

    d) Thank you for the support provided by the Municipality of Prishtina. Explain the work done up to date, the outcomes to achieve through the study, and offer to deliver an electronic copy of it once it is finished by October 2017.

    e) Please feel free to express any opinion or comment about the interview.

A1.1.2 Interview manual: Director of Public Services, Municipality of Pristina (new and existent transport Infrastructure plans, maintenance plans, management of the service, contractual-statutory relations with private operators, quality of service requirements)

    a) What policies the Municipality determine, about the service provided by Private Operators and its overall quality? Could you explain about the functions of the Municipality on this regard?

    b) What policies the Municipality determines, specifically about bus operations?

    c) What is the statutory documentation (Law, municipal ordinance, agreement, contracts) that establishes the Municipality and Private Operators obligations for bus transit service provision? (Ask to share it).

    d) If existing. What are the Service requirements and Quality of Service standards required by the Municipality (Represented by its board of directors) to Private transit operators? (Ask to share the contracts, or detailed set of standards, service requirements for Lines 06 and 10).

    e) Do you assess the service provided by Private Operators? (Ask for available reports focused on Lines 06 and 10).

    f) Thank you for your time. Please feel free to express any opinion or comment about the interview.

A1.1.3 Interview manual: Chief of Transport and Traffic – DPS, Municipality of Pristina (Technical interview focused on the current bus system's planning, management, and operation) – With interpreter

Manuali i intervistës: Shefi i sektorit të transportit dhe trafikut- DSHPMSH, Komuna e Prishtinës (Intervistë teknike e fokusuar në sistemin aktual të planifikimit, menaxhimit dhe operimit të autobusëve) – Me Interpretuesi

    a) *Could you explain and describe briefly, what are the bus transit management & operations functions pursued by the Municipality? (Fare regulation, Route network planning, scheduling, bus fleet control, user information, etc)?*
    A mund të përshkruani me pak fjalë se cilat janë funksionet e menaxhimit dhe operimit të autobusëve që ndiqen nga komuna? (rregullat tarifore, rrjeti i linjave, planifikimi, orari, kontrolli i flotës së autobusëve, informata për shfrytëzues etj.)

    b) Under the existent conditions. Could you explain generally how the overall scheduling procedure takes place, works?
    Sipas kushteve ekzistuese. A mund të shpjegoni në përgjithësi procedurat e caktimit të orarit, dhe si funksionon?

c) What is the daily passengers 'demand/ridership for lines 03, 04, 05 and 10? (Ask for available data per hours of operation).
Sa është numri ditor i udhëtarëve "kërkesa/oferta për linjat 03,04,05 dhe 10? (Të pyetet për të dhëna në dispozicion në intervalet për orë të operimit).

d) What is the total size of the bus fleet (per bus type) for lines 03, 04, 05 and 10? (Ask for a detailed table).
Sa është numri i përgjithshëm i autobusëve (duke i ndarë edhe sipas llojit) për linjat 03,04,05 dhe 10? (Të pyetet për një tabelë të detajuar)

e) What is the capacity (total available seating and standing spaces) per bus type, for lines 03, 04, 05 and 10?
Sa është kapaciteti (vendet në dispozicion për ulje dhe qëndrim) për lloje të autobusëve, për linja 03,04,05 dhe 10?

f) What are the line lengths for lines 03, 04, 05, and 10? (distance between the two terminals along the line alignment)
Sa është gjatësia e rrugëtimit të linjave 03,04,05 dhe 10? (Distanca ndërmjet dy terminaleve përgjatë gjatësisë së linjës)

g) What is the number of buses dispatched in the peak hour (peak hour frequency) for lines 03, 04, 05, and 10?
Sa është numri i autobusëve që lëshohen në qarkullim gjatë orëve kulmore për linjat 03, 04, 05 dhe 10?

h) What is the degree of bus lines transfers' coordination? (Manual or technological means: AVL, CAD). If so, what is the rate of connected scheduled transfers a day?
Sa është shkalla e koordinimit të ndërrimit ndërmjet linjave të autobusëve? (manual ose përshkrim teknologjik (AVL,CAD), nëse po sa është norma e ndërrimeve të orareve të ndërlidhura brenda një dite?

i) Is there anything you would like to add about the process of scheduling?
Mos keni ndonjë gjë për të shtuar rreth procesit të caktimit të orarit?

j) *Under the existent conditions. Could you explain generally how the overall bus fleet control process takes place, works?*
Sipas kushteve ekzistuese. A mund të shpjegoni në përgjithësi si funksionon kontrolli i flotës së autobusëve?

k) *How bus operation in the network is monitored? (AVL, GPS, CCTV, Field inspectors)*
Si monitorohet operimi i autobusëve në rrjet? (AVL,GPS,CCTV, Mbikëqyrës në terren)

l) *Is there any degree of priority signal control for buses at intersections? If so, what is the degree of priority?*
A ka ndonjë prioritet në sinjalizim të trafikut për autobusë në udhëkryqe? Nëse po cila është shkalla e prioritetit?

m) Under the existent conditions. Could you explain generally how the passengers' information process takes place, works (Electronic, online, physical, manual)?
Sipas kushteve ekzistuese. A mund të shpjegoni në përgjithësi si funksionon procesi i informimit të udhëtarëve (elektronike, online, fizikisht)?

n) What is the service information provided to passengers? (Routing, bus stops finding, destination finding, schedules, arrivals, trip planners).
Cili është shërbimi i informatave për udhëtarë? (itinerarin, vendndalimet e busëve, destinacionin, orarin, arritjet, planifikimin e udhëtimeve).

o) How is the referred information provided (bus stops, public facilities, online, cellphone apps,) ? And to what extent is it provided? (Number of equipped bus stops, information points, offices, etc).
Si bëhet shpërndarja e këtyre informacioneve (në vendndalime, objekte publike, aplikacione për telefon)? Dhe deri në çfarë mase bëhet kjo? (Numri i vendndalimeve të pajisura, pikat e informimit, në zyra etj).

p) Thank you for your time. Please feel free to express any opinion or comment about the interview.
Faleminderit për kohën tuaj. Të lutem ndjehu i lirë të shprehësh çdo mendim apo koment rreth intervistës

A1.1.4 Interview manual: Chief-coordinator Prishtina Sustainable Urban Mobility Plan / FOPIP program, Municipality of Pristina (Interview about the expected outcomes of the studies, time lines, perceptions on the evolution of the system based on current findings).

a) Could you explain what are the studies being developed by the international cooperation (SUMP, FOPIP, Others), and what will be their outcomes? (Ask to share the terms of reference, initial reports).

b) Could you explain more about those related to the qualitative and quantitative improvement of the organizations in charge of manage and provide the service (Municipality, Public and Private operators), and the quality of the service provided?

c) Thank you for your time. Please feel free to express any opinion or comment about the interview.

A1.1.5 Interview manual: Director, Trafiku Urban (Interview about middle and lower level management, Trafiku Urban modernization process, personnel training and recruitment). – With interpreter

Manuali i intervistes: Drejtori, Trafiku urban (interviste për nivelin e mesëm dhe të ultë të menaxhimit, procesin e modernizimit të Trafiku urban, rekrutimin dhe trajnimin e personelit) – Me interpretuesi

a) Could you explain how the company is organized? What functions does the company fulfill regarding transit operations?
A mund të shpjegoni mënyrën e organizimit të kompanisë suaj? Cilat funksione i përmbush kompania në lidhje me operimin në transport?

b) If available. What are the selection standards and qualifications required to recruit new operations personnel (operations planning, management, driving, maintenance)?
Nëse është e mundur. Cilat janë standardet dhe kualifikimet që kërkohen për zgjedhjen e personelit të ri (planifikimin e operimit, menaxhim, ngasje, mirëmbajtje)?

c) What is the level of qualifications / preparation, of the current operations personnel (operations planning, management, driving, maintenance)?
Cili është niveli i kualifikimit/përgatitjes i personelit ekzistues (planifikimin e operimit, menaxhim, ngasje, mirëmbajtje)?

d) If it is the case. How the current operations personnel (operations planning, management, driving, maintenance) is trained? How many hours of training do they receive a year? (Ask for a detailed record of hours of training).
Nëse është kështu. Si bëhet trajnimi i personelit ekzistues? Sa orë brenda një viti trajnohen? (Nëse ka ndonjë regjistrim detal të orëve të trajnimit)

e) Thank you for your time. Please feel free to express any opinion or comment about the interview.
Faleminderit për kohën tuaj. Të lutem ndjehu i lirë të shprehësh çdo mendim apo koment rreth intervistës.

A1.1.6 Interview manual: Trafiku Urban, Board of Directors member, Municipality of Pristina (Interview about top level management, Trafiku Urban operational policies, quality of service standards).

g) What policies the Trafiku Urban board of directors determine, about the service provided by Trafiku Urban and its overall quality? Could you explain about the functions of the board?

h) What policies the Trafiku Urban board of directors determine specifically about Trafiku Urban bus operations?

i) What is the statutory documentation (Law, municipal ordinance, agreement) that establishes Trafiku Urban and the Municipality obligations? (Ask to share it).

j) If existing. What are the Service requirements and Quality of Service standards required by the Municipality (Represented by its board of directors) to Trafiku Urban for transit operations? (Ask to share the detailed set of standards, service requirements for Lines 03 and 04).

k) Do you assess the service provided by Trafiku Urban? (Ask for available reports on Lines 03 and 04).

l) Thank you for your time. Please feel free to express any opinion or comment about the interview.

A1.1.7 Interview manual: Chief of operations, Trafiku Urban (Technical interview about management and operations for service delivery) – With interpreter

Manuali i intervistes: Shefi i operimeve, Trafiku Urban (Interviste teknike për menaxhimin dhe operimet e shërbimit të transportit) – Me interpretuesi

f) What is the daily average passengers' demand/ridership for lines 03, and 04? (Ask for available data per hours of operation).
Sa është numri ditor i udhëtarëve "kërkesa/oferta për linjat 03 dhe 04? (Të pyetet për të dhëna në dispozicion në intervalet për orë të operimit)

g) What is the total size of the bus fleet (per bus type) for lines 03, and 04 (Ask for a table)?
Sa është numri i përgjithshëm i autobusëve (duke i ndarë edhe sipas llojit) për linjat 03 dhe 04? (Të pyetet për një tabelë të detajuar)

h) What is the capacity (total available seating and standing spaces) per bus type, for lines 03, and 04?
Sa është kapaciteti (vendet në dispozicion për ulje dhe qëndrim) për lloje të autobusëve, për linja 03 dhe 04

i) What are the line lengths for lines 03, and 04? (distance between the two terminals along the line alignment)
Sa është gjatësia e rrugëtimit të linjave 03 dhe 04? (Distanca ndërmjet dy terminaleve përgjatë gjatësisë së linjës)

j) What is the number of buses dispatched in the peak hour (peak hour frequency) for lines 03, and 04?
Sa është numri i autobusëve që lëshohen në qarkullim gjatë orëve kulmore për linjat 03 dhe 04?

k) *Could you explain generally how the overall bus fleet control process takes place, works?*
A mund të shpjegoni në përgjithësi si funksionon kontrolli i flotës së autobusëve?

l) *How bus operation in the network is monitored? (AVL, GPS, CCTV, Field inspectors). Do you monitor your operations (Lines 03 and 04)?*
Si monitorohet operimi i autobusëve në rrjet? (AVL,GPS,CCTV, Mbikëqyrës në terren).A e bëni monitorimin e operimeve tuaja (linjat 03 dhe 04)

m) *Is there any degree of priority signal control for buses at intersections? If so, what is the degree of priority?*
A ka ndonjë prioritet në sinjalizim të trafikut për autobusë në udhëkryqe? Nëse po cila është shkalla e prioritetit?

n) Under the existent conditions. Could you explain generally how the passengers' information process takes place, works (Electronic, online, physical, manual)? Do you provide any information to your passengers about your offered services, and how? (Lines 03 and 04)?

Sipas kushteve ekzistuese. A mund të shpjegoni në përgjithësi si funksionon procesi i informimit të udhëtarëve (elektronike, online, fizikisht)? A siguroni informata për udhëtarë në lidhje me ofertat e shërbimeve të juaja dhe si e bëni këtë (Linja 03 dhe 04)?

o) Thank you for your time. Please feel free to express any opinion or comment about the interview.
Faleminderit për kohën tuaj. Të lutem ndjehu i lirë të shprehësh çdo mendim apo koment rreth intervistës.

A1.1.8 Interview manual: Chief of vehicle maintenance, Trafiku Urban (Technical interview about maintenance procedures)– With interpreter

Manuali i intervistës: Shefi i mirëmbajtjes së autobusëve, Trafiku Urban (Intervistë teknike për procedurat e mirëmbajtjes) – Me interpretuesi

a) Could you explain generally how the overall bus fleet maintenance procedure takes place?
A mund të shpjegoni në përgjithësi mënyrën e funksionimit të procedurave të mirëmbajtjes së autobusëve?

b) Could you describe what is the maintenance strategy pursued by the company? (Predictive, Preventive, Reactive, Other).
A mund të përshkruani cila është strategjia e mirëmbajtjes që ndiqet nga kompania? (planifikues, parandalues, reagues, të tjerë).

c) Could you describe (if it is the case), what is the daily service provided to the vehicles?
A mund të përshkruani (sipas mundësisë), cili është kontrolli ditor që ju bëhet automjeteve (autobusëve)?

d) Could you describe what are your maintenance service categories (A,B,C,D) and intervals you pursue for maintenance inspections, replacement of parts and repairs?
A mund të përshkruani cilat janë kategoritë e shërbimit të mirëmbajtjes (A,B,C,D) dhe intervalet që i ndiqni për mirëmbajtje, mbikëqyrje, zëvendësim dhe riparim të pjesëve?

Reference table:

	Interval	Unit
Fueling, cleaning, brake inspection	1	Day
Service A	12,500	Km
Service B	50,000	Km
Service C	100,000	Km
Service (D)	400,000	Km

e) What is the measured "Mean distance between failures" (MDBF) indicator the company usually has?
Sa është indikatori "Distanca mesatare ndërmjet dështimeve" që zakonisht e posedon kompania?

f) What is the maximum life length of your bus fleet (Before replacement)? (If possible provide a table with the ages per unit).
Sa është jetëgjatësia maksimale e flotës së autobusëve tuaj (para zëvendësimit)? (Nëse është e mundur të sigurohet një tabelë me vitet për njësi).

g) If it is the case. How do you determine or assess the maximum life length of your bus fleet? (If possible provide a table with the ages per unit).
Nëse është ashtu. Si e përcaktoni ose vlerësoni jetëgjatësinë maksimale të flotës suaj të autobusëve? (nëse është e mundur të sigurohet një tabelë me vitet për njësi)

h) Thank you for your time. Please feel free to express any opinion or comment about the interview.
Faleminderit për kohën tuaj. Të lutem ndjehu i lirë të shprehësh çdo mendim apo koment rreth intervistës

A1.1.9 Interview manual: Director, Private company A – Line 05 (Interview about middle and lower level management, personnel training and recruitment, future perspectives). – With interpreter

Manuali i intervistes: Drejtori, Kompania private A, linja 05 (interviste për nivelin e mesëm dhe të ultë të menaxhimit, rekrutimin dhe trajnimin e personelit dhe perspektivat në të ardhmen) – Me interpretuesi

a) Could you explain how the company is organized? What functions does the company fulfill regarding transit operations?

A mund të shpjegoni mënyrën e organizimit të kompanisë suaj? Cilat funksione i përmbush kompania në lidhje me operimin në transport?

b) If available. What are the selection standards and qualifications required to recruit new operations personnel (operations planning, management, driving, maintenance)?

Nëse është e mundur. Cilat janë standardet dhe kualifikimet që kërkohen për zgjedhjen e personelit të ri (planifikimin e operimit, menaxhim, ngasje, mirëmbajtje)?

c) What is the level of qualifications / preparation, of the current operations personnel (operations planning, management, driving, maintenance)?

Cili është niveli i kualifikimit/përgatitjes i personelit ekzistues (planifikimin e operimit, menaxhim, ngasje, mirëmbajtje)?

d) If it is the case. How the current operations personnel (operations planning, management, driving, maintenance) is trained? How many hours of training do they receive a year? (Ask for a detailed record of hours of training).

Nëse është kështu. Si bëhet trajnimi i personelit ekzistues? Sa orë brenda një viti trajnohen? (Nëse ka ndonjë regjistrim detal të orëve të trajnimit)

e) Thank you for your time. Please feel free to express any opinion or comment about the interview.

Faleminderit për kohën tuaj. Të lutem ndjehu i lirë të shprehësh çdo mendim apo koment rreth intervistës.

A1.1.10 Interview manual: Chief of operations, Private company A – Line 05 (Technical interview about management and operations for service delivery). – With interpreter

Manuali i intervistes: Shefi i operimeve, Kompania private A- linja 05 (Interviste teknike për menaxhimin dhe operimet e shërbimit të transportit) – Me interpretuesi

a) What is the daily average passengers' demand/ridership for line 05? (Ask for available data per hours of operation).

Sa është numri ditor i udhëtarëve "kërkesa/oferta për linjën 05? (Të pyetet për të dhëna në dispozicion në intervalet për orë të operimit).

b) What is the total size of the bus fleet (per bus type) for line 05?

Sa është numri i përgjithshëm i autobusëve (duke i ndarë edhe sipas llojit) për linjën 05? (Të pyetet për një tabelë të detajuar)

c) What is the capacity (total available seating and standing spaces) per bus type, for line 05?

Sa është kapaciteti (vendet në dispozicion për ulje dhe qëndrim) për lloje të autobusëve, për linjën 05 ?

d) What are the line lengths for line 05? (distance between the two terminals along the line alignment)

Sa është gjatësia e rrugëtimit për linjën 05? (Distanca ndërmjet dy terminaleve përgjatë gjatësisë së linjës)

e) What is the number of buses dispatched in the peak hour (peak hour frequency) for line 05?

Sa është numri i autobusëve që lëshohen në qarkullim gjatë orëve kulmore për linjën 05?

f) *Could you explain generally how the overall bus fleet control process takes place, works?*

A mund të shpjegoni në përgjithësi si funksionon kontrolli i flotës së autobusëve?

g) *How bus operation in the network is monitored? (AVL, GPS, CCTV, Field inspectors). Do you monitor your operations (Line 05)?*

Si monitorohet operimi i autobusëve në rrjet? (AVL,GPS,CCTV, Mbikëqyrës në terren).A e bëni monitorimin e operimeve tuaja (linjën 05)

h) *Is there any degree of priority signal control for buses at intersections? If so, what is the degree of priority?*

A ka ndonjë prioritet në sinjalizim të trafikut për autobusë në udhëkryqe? Nëse po cila është shkalla e prioritetit?

i) Under the existent conditions. Could you explain generally how the passengers' information process takes place, works (Electronic, online, physical, manual)? Do you provide any information to your passengers about your offered services, and how? (Line 05)?

Sipas kushteve ekzistuese. A mund të shpjegoni në përgjithësi si funksionon procesi i informimit të udhëtarëve (elektronike, online, fizikisht)? A siguroni informata për udhëtarë në lidhje me ofertat e shërbimeve të juaja dhe si e bëni këtë (Linjën 05)?

j) *If available. What are the selection standards and qualifications required for the new operations personnel (operations planning, driving, maintenance)?*

Nëse është e mundur. Cilat janë standardet dhe kualifikimet që kërkohen për zgjedhjen e personelit të ri (planifikimin e operimit, menaxhim, ngasje, mirëmbajtje)?

k) *What is the level of qualifications / preparation, of the current operations personnel (operations planning, driving, maintenance)?*

Cili është niveli i kualifikimit/përgatitjes i personelit ekzistues (planifikimin e operimit, menaxhim, ngasje, mirëmbajtje)?

l) *If it is the case. How the current operations personnel (operations planning, driving, maintenance) is trained (company supported programs, others)?*

Nëse është kështu. Si bëhet trajnimi i personelit ekzistues? Sa orë brenda një viti trajnohen? (Nëse ka ndonjë regjistrim detal të orëve të trajnimit)

m) Thank you for your time. Please feel free to express any opinion or comment about the interview.

Faleminderit për kohën tuaj. Të lutem ndjehu i lirë të shprehësh çdo mendim apo koment rreth intervistës

A1.1.11 Interview manual: Chief of vehicle maintenance, Private company A – Line 05 (Technical interview about maintenance procedures). – With interpreter

Manuali i intervistës: Shefi i mirëmbajtjes së autobusëve, Kompania private A- linja 05 (Intervistë teknike për procedurat e mirëmbajtjes) – Me interpretuesi

i) Could you explain generally how the overall bus fleet maintenance procedure takes place?

A mund të shpjegoni në përgjithësi mënyrën e funksionimit të procedurave të mirëmbajtjes së autobusëve?

j) Could you describe what is the maintenance strategy pursued by the company? (Predictive, Preventive, Reactive, Other).

A mund të përshkruani cila është strategjia e mirëmbajtjes që ndiqet nga kompania? (planifikues, parandalues, reagues, të tjerë)

k) Could you describe (if it is the case), what is the daily service provided to the vehicles?

A mund të përshkruani (sipas mundësisë), cili është kontrolli ditor që ju bëhet automjeteve (autobusëve)?

l) Could you describe what are your maintenance service categories (A,B,C,D) and intervals you pursue for maintenance inspection, replacement of parts and repairs?

A mund të përshkruani cilat janë kategoritë e shërbimit të mirëmbajtjes (A,B,C,D) dhe intervalet që i ndiqni për mirëmbajtje, mbikëqyrje, zëvendësim dhe riparim të pjesëve?

Reference table:

	Interval	Unit
Fueling, cleaning, brake inspection	1	Day
Service A	12,500	Km
Service B	50,000	Km
Service C	100,000	Km
Service (D)	400,000	Km

m) What is the measured "Mean distance between failures" (MDBF) indicator the company usually has?
Sa është indikatori "Distanca mesatare ndërmjet dështimeve" që zakonisht e posedon kompania?

n) What is the maximum life length of your bus fleet (Before replacement)? (If possible provide a table with the ages per unit).
Sa është jetëgjatësia maksimale e flotës së autobusëve tuaj (para zëvendësimit)? (Nëse është e mundur të sigurohet një tabelë me vitet për njësi)

o) If it is the case. How do you determine or assess the maximum life length of your bus fleet? (If possible provide a table with the ages per unit).
Nëse është ashtu. Si e përcaktoni ose vlerësoni jetëgjatësinë maksimale të flotës suaj të autobusëve? (nëse është e mundur të sigurohet një tabelë me vitet për njësi)

p) Thank you for your time. Please feel free to express any opinion or comment about the interview.
Faleminderit për kohën tuaj. Të lutem ndjehu i lirë të shprehësh çdo mendim apo koment rreth intervistës.

A1.1.12 Interview manual: Director, Private company B – Line 10 (Interview about middle and lower level management, personnel training and recruitment, future perspectives). – With interpreter

Manuali i intervistes: Drejtori, Kompania private A, linja 10 (interviste për nivelin e mesëm dhe të ultë të menaxhimit, rekrutimin dhe trajnimin e personelit dhe perspektivat në të ardhmen) – Me interpretuesi

a) Could you explain how the company is organized? What functions does the company fulfill regarding transit operations?
A mund të shpjegoni mënyrën e organizimit të kompanisë suaj? Cilat funksione i përmbush kompania në lidhje me operimin në transport?

b) If available. What are the selection standards and qualifications required to recruit new operations personnel (operations planning, management, driving, maintenance)?
Nëse është e mundur. Cilat janë standardet dhe kualifikimet që kërkohen për zgjedhjen e personelit të ri (planifikimin e operimit, menaxhim, ngasje, mirëmbajtje)?

c) What is the level of qualifications / preparation, of the current operations personnel (operations planning, management, driving, maintenance)?
Cili është niveli i kualifikimit/përgatitjes i personelit ekzistues (planifikimin e operimit, menaxhim, ngasje, mirëmbajtje)?

d) If it is the case. How the current operations personnel (operations planning, management, driving, maintenance) is trained? How many hours of training do they receive a year? (Ask for a detailed record of hours of training).
Nëse është kështu. Si bëhet trajnimi i personelit ekzistues? Sa orë brenda një viti trajnohen? (Nëse ka ndonjë regjistrim detal të orëve të trajnimit)

e) Thank you for your time. Please feel free to express any opinion or comment about the interview.

Faleminderit për kohën tuaj. Të lutem ndjehu i lirë të shprehësh çdo mendim apo koment rreth intervistës.

A1.1.13 Interview manual: Chief of operations, Private company B – Line 10 (Technical interview about management and operations for service delivery). – Interpreter

Manuali i intervistes: Shefi i operimeve, Kompania private A- linja 10 (Interviste teknike për menaxhimin dhe operimet e shërbimit të transportit) – Me interpretuesi

a) What is the daily average passengers' demand/ridership for line 10? (Ask for available data per hours of operation).
Sa është numri ditor i udhëtarëve "kërkesa/oferta për linjën 6? (Të pyetet për të dhëna në dispozicion në intervalet për orë të operimit).

b) What is the total size of the bus fleet (per bus type) for line 10?
Sa është numri i përgjithshëm i autobusëve (duke i ndarë edhe sipas llojit) për linjën 6? (Të pyetet për një tabelë të detajuar)

c) What is the capacity (total available seating and standing spaces) per bus type, for line 10?
Sa është kapaciteti (vendet në dispozicion për ulje dhe qëndrim) për lloje të autobusëve, për linjën 10 ?

d) What are the line lengths for line 10? (distance between the two terminals along the line alignment)
Sa është gjatësia e rrugëtimit për linjën 10? (Distanca ndërmjet dy terminaleve përgjatë gjatësisë së linjës)

e) What is the number of buses dispatched in the peak hour (peak hour frequency) for line 10?
Sa është numri i autobusëve që lëshohen në qarkullim gjatë orëve kulmore për linjën 10?

f) *Could you explain generally how the overall bus fleet control process takes place, works?*
A mund të shpjegoni në përgjithësi si funksionon kontrolli i flotës së autobusëve?

g) *How bus operation in the network is monitored? (AVL, GPS, CCTV, Field inspectors). Do you monitor your operations (Line 10)?*
Si monitorohet operimi i autobusëve në rrjet? (AVL,GPS,CCTV, Mbikëqyrës në terren).A e bëni monitorimin e operimeve tuaja (linjën 10)

h) *Is there any degree of priority signal control for buses at intersections? If so, what is the degree of priority?*
A ka ndonjë prioritet në sinjalizim të trafikut për autobusë në udhëkryqe? Nëse po cila është shkalla e prioritetit?

i) Under the existent conditions. Could you explain generally how the passengers' information process takes place, works (Electronic, online, physical, manual)? Do you provide any information to your passengers about your offered services, and how? (Line 10)?
Sipas kushteve ekzistuese. A mund të shpjegoni në përgjithësi si funksionon procesi i informimit të udhëtarëve (elektronike, online, fizikisht)? A siguroni informata për udhëtarë në lidhje me ofertat e shërbimeve të juaja dhe si e bëni këtë (Linjën 10)?

j) *If available. What are the selection standards and qualifications required for the new operations personnel (operations planning, driving, maintenance)?*
Nëse është e mundur. Cilat janë standardet dhe kualifikimet që kërkohen për zgjedhjen e personelit të ri (planifikimin e operimit, menaxhim, ngasje, mirëmbajtje)?

k) *What is the level of qualifications / preparation, of the current operations personnel (operations planning, driving, maintenance)?*
Cili është niveli i kualifikimit/përgatitjes i personelit ekzistues (planifikimin e operimit, menaxhim, ngasje, mirëmbajtje)?

l) *If it is the case. How the current operations personnel (operations planning, driving, maintenance) is trained (company supported programs, others)?*
Nëse është kështu. Si bëhet trajnimi i personelit ekzistues? Sa orë brenda një viti trajnohen? (Nëse ka ndonjë regjistrim detal të orëve të trajnimit)

m) Thank you for your time. Please feel free to express any opinion or comment about the interview.
Faleminderit për kohën tuaj. Të lutem ndjehu i lirë të shprehësh çdo mendim apo koment rreth intervistës

A1.1.14 Interview manual: Chief of vehicle maintenance, Private company B – Line 10 (Technical interview about maintenance procedures) – With interpreter

Manuali i intervistës: Shefi i mirëmbajtjes së autobusëve, Kompania private A- linja 10 (Intervistë teknike për procedurat e mirëmbajtjes) – Me interpretuesi

a) Could you explain generally how the overall bus fleet maintenance procedure takes place?
A mund të shpjegoni në përgjithësi mënyrën e funksionimit të procedurave të mirëmbajtjes së autobusëve?

b) Could you describe what is the maintenance strategy pursued by the company? (Predictive, Preventive, Reactive, Other).
A mund të përshkruani cila është strategjia e mirëmbajtjes që ndiqet nga kompania? (planifikues, parandalues, reagues, të tjerë)

c) Could you describe (if it is the case), what is the daily service provided to the vehicles?
A mund të përshkruani (sipas mundësisë), cili është kontrolli ditor që ju bëhet automjeteve (autobusëve)?

d) Could you describe what are your maintenance service categories (A,B,C,D) and intervals you pursue for maintenance inspection, replacement of parts and repairs?
A mund të përshkruani cilat janë kategoritë e shërbimit të mirëmbajtjes (A,B,C,D) dhe intervalet që i ndiqni për mirëmbajtje, mbikëqyrje, zëvendësim dhe riparim të pjesëve?

Reference table:

	Interval	Unit
Fueling, cleaning, brake inspection	1	Day
Service A	12,500	Km
Service B	50,000	Km
Service C	100,000	Km
Service (D)	400,000	Km

e) What is the measured "Mean distance between failures" (MDBF) indicator the company usually has?
Sa është indikatori "Distanca mesatare ndërmjet dështimeve" që zakonisht e posedon kompania?

f) What is the maximum life length of your bus fleet (Before replacement)? (If possible provide a table with the ages per unit).
Sa është jetëgjatësia maksimale e flotës së autobusëve tuaj (para zëvendësimit)? (Nëse është e mundur të sigurohet një tabelë me vitet për njësi)

g) If it is the case. How do you determine or assess the maximum life length of your bus fleet? (If possible provide a table with the ages per unit).
Nëse është ashtu. Si e përcaktoni ose vlerësoni jetëgjatësinë maksimale të flotës suaj të autobusëve? (nëse është e mundur të sigurohet një tabelë me vitet për njësi)

h) Thank you for your time. Please feel free to express any opinion or comment about the interview.
Faleminderit për kohën tuaj. Të lutem ndjehu i lirë të shprehësh çdo mendim apo koment rreth intervistës.

A1.2 Dependent variable: Service quality perceived questionnaire (English / Albanian)

General Introduction

The aim of this study is to explain to what extent management and operational factors for bus transit services provision, affect the quality of the service perceived by users, in Pristina. This research is also part of the researcher's thesis requirements for the obtainment of the degree of Master's in Urban Management and Development" (Specialization in Managing and Financing Infrastructure), at Erasmus University Rotterdam.

The questionnaire is **anonymous.** The respondents are not obliged to answer all the questions, however their full respondency will add to the accuracy of the results.

Once completed, a copy of the full study will be delivered to the public authority, and service providing organizations. The information responded here will allow the Municipality of Prishtina (Public Authority), and the Bus service providing organizations (Public and Private) to know what their users are thinking or perceiving about the service, and based on that make further service adjustments to benefit users.

Hyrje e përgjithshme

Qëllimi i këtij studimi është të shpjegohet për çfarë shtrirje të menaxhmentit dhe faktorëve të operimit të dispozitave të shërbimeve gjatë lëvizjes së autobusëve, ndikojnë në kualitetin e shërbimit të perceptuar nga shfrytëzuesit në Prishtinë. Ky hulumtim është gjithashtu pjesë e temës së nivelit Master në departamentin menaxhimi dhe zhvillimi urban (specializim në menaxhim dhe financim të infrastrukturës), në universitetin erasmus të Roterdamit.

*Intervista do të jetë **anonime**. Të intervistuarit nuk janë të obliguar ti përgjigjen të gjitha pyetjeve, sidoqoftë përgjigja në ato pyetje do të shtojë saktësinë e rezultateve.*

Pasi të kompletohet, një kopje e të gjithë hulumtimit do ti dërgohet autoriteteve publike dhe organizatave që ofrojnë shërbime të transportit. Këto informacione që do të nxirren nga ky hulumtim, mundëson komunën e Prishtinës dhe operatorët(publik dhe privat), e transportit publik në Prishtinë, të kenë dijeni për mendimet dhe perceptimet e shfrytëzuesve në lidhje me shërbimet dhe duke u bazuar në këto të dhëna të bëhen përmirësime aty ku ka nevojë që të jenë të përshtatshme për shfrytëzuesit.

FIRST SECTION: General information about the traveller and trip / *PYETJA E PARË: Informacione të përgjithshme për udhëtarin dhe udhëtimin*

a) **Frequency of use:** How many days a week do you use the transit buses? / *c) Frekuenca e përdorimit: Sa ditë në javë e shfrytëzoni transportin publik?*

- ☐ 5 or more / *5 e më shumë*
- ☐ 4
- ☐ 3
- ☐ 2
- ☐ 1 or very rarely (**Thanks, close the questionnaire**) / *1 ose shumë rrallë (**Faleminderit, mbylle pyetësorin**)*

b) **What bus line are you waiting for? / *Cilën linjë të autobusit jeni duke pritur?:*** 03, 04, 06, 10

c) **Is this the bus line you use frequently?** (Refer to question "c") / *A është kjo linjë të cilën e përdorni më së shpeshti? (Pyetja "c")*

- ☐ Yes / *Po*
- ☐ No (**Thanks, close the questionnaire**) / *Jo (**Faleminderit, mbylle pyetësorin**)*

d) **Questionnaire time / *Kohëzgjatja e intervistës:***
-Start time / *Koha e fillimit:* _____
-End time / *Koha e mbarimit:* _____

e) **Period / *Periudha:***
- ☐ Morning peak time (7-8am) / *Ora kulmore gjatë mëngjesit (7-8am),*
- ☐ Night peak time (4–5:30pm) / *Ora kulmore gjatë pasditës (4–5:30pm),*
- ☐ Off-peak hours / *Jashtë orës kulmore:* _____

f) **What is the purpose of your trip? / *Cili është qëllimi i udhëtimit tuaj?***
- ☐ Work / *Pune*
- ☐ Study / *Studime*
- ☐ Recreation / *Rekreacion*
- ☐ Shopping / *Shoping*
- ☐ Other / *Tjetër:* _____

Origin of trip / *Fillimi i udhëtimit:*_____ , Destination of trip / *Destinimi:* _____

g) **Do you need to transfer? / *A do ju duhet ta ndërroni linjën?***
- ☐ Yes / *Po* (To what line? / *Në cilën linjë?* _____)
- ☐ No / *Jo*

h) **If not the bus. Would you be able to make this trip in other mode of transportation? / *Nëse jo me autobus, a do të mundeshit ta bënit këtë udhëtim me ndonjë formë tjetër të transportit?***
- ☐ No   /   Jo   (Why?   /   Pse? _____)
- ☐ Yes / *Po* (Which one?: Shared taxi, taxi, private car, bike, motorcycle, Other: _____) / *(Cilën formë?: Taksi të përbashkët, taksi, veturë, biçikltë, motoçikltë, tjetër: _____)*

i) **Gender / *Gjini***
- ☐ Male / *Mashkull*
- ☐ Female / *Femër*

j) **Age / *Mosha:*** ____

SECOND SECTION: Transit users' observations about the service /*Pjesa e dytë: Vërejtjet e shfrytëzuesve të transportit për shërbimin e ofruar*

Time / *Koha*

Please let us know your observations about the service by answering the following questions/ *Të lutem na tregoni vërejtjet tuaja për shërbimet duke u përgjigjur në pyetjet në vijim:*

a) **Please estimate on average. For how long do you usually wait (in the bus stop) for this bus? (In minutes)/***Ju lutem vlerësoni një mesatare. Për kohën e pritjes në vendndalim për këtë autobus (në minuta)***:**
  - ☐ Upto 5' /*deri në 5 min*
  - ☐ 6 to 10' /*6 deri 10 min*
  - ☐ 11 to 20' /*11 deri 20 min*
  - ☐ 21 to 30'/*21 deri 30 min*
  - ☐ More than 30'/*më shumë se 30 min*

b) **Please estimate on average. For how long does the bus usually stop for passengers to board and alight? (In seconds) /***Ju lutem vlerësoni një mesatare. Sa është koha e qëndrimit të autobusit në vendndalim (në sekonda)***:**
  - ☐ Upto 20"/ *deri 20 sek*
  - ☐ 21-40" / *21 deri 40 sek*
  - ☐ 41-60" (1 min.) / *41 deri 60 sek*
  - ☐ 61-80" (1 min. 20 sec.) / *61-80 sek*
  - ☐ More than 80" (1 min. 20 sec.)/ *më shumë se 80 sek*

c) **Please estimate on average. How much time do you usually spend on board while doing this trip? (In minutes) /***Ju lutem vlerësoni një mesatare. Sa është koha e udhëtimit në autobus deri në destinacionin tuaj (në minuta)***:**
  - ☐ Upto 10' / *deri 10 min*
  - ☐ 11-20' / *11-20 min*
  - ☐ 21-30' / *21-30 min*
  - ☐ 30-45' / *30-45 min*
  - ☐ More than 45' / *më shumë se 45 min*

d) **Please estimate on average. How much time do buses usually delay (<u>time beyond schedule</u>)on arriving to bus stops/***Ju lutem vlerësoni një mesatare. Sa është koha e vonesës së autobusit duke u bazuar në orar.*
  - ☐ Upto 2' minutes late/ *deri 2 min me vonesë*
  - ☐ 2' to 3' minutes late/ *2 deri 3 min me vonesë*
  - ☐ 3' to 4' minutes late/ *3 deri 4 min me vonesë*
  - ☐ 4' to 5' minutes late / *4 deri 5 min me vonesë*
  - ☐ More than 5' minutes late / *Më shume se 5 min me vonesë*

Comfort / *Komoditeti*

Please let us know your observations about the service by answering the following questions/*Të lutem na tregoni vërejtjet tuaja për shërbimet duke u përgjigjur në pyetjet në vijim*

    a) **Please estimate on average. What is the overall physical condition of the buses on this line?/*Të lutem vlerëso në përgjithësi. Cila është gjendja e përgjithshme fizike e autobusëve të kësaj linje? (Body, steps, seats, body, handles, devices)***:

        ☐ Seats, body, handles and devices seem to be in good shape /
Ulëset, trupi, mbajtëset për qëndrim dhe pajisjet janë në gjendje të mirë

        ☐ Seats, body, handles and devices seem to be fairly good/
Ulëset,trupi,mbajtëset për qëndrim shihen të jenë në gjendje përafërsisht të mire.

        ☐ Seats, body, handles and devices seem deteriorated but work /
Ulëset,trupi, mbajtëset për qëndrim dhe pajisjet janë në gjendje të përkeqësuar por funksionojnë

        ☐ Seats, body, handles and devices seem deteriorated with failures /
Ulëset,trupi, mbajtëset për qëndrim dhe pajisjet janë të përkeqësuara dhe jashtë funksionit

        ☐ Seats, body, handles and devices seem to be in poor condition /
Ulëset,trupi, mbajtëset për qëndrim dhe pajisjet janë në gjendje jo të mire.

System's Information / *Sistemi i informimit*

Please let us know your observations about the service by answering the following questions/ *Të lutem na tregoni vërejtjet tuaja për shërbimet duke u përgjigjur në pyetjet në vijim:*

    a) **Please estimate. What is the Information about this line, available in bus stops? / *Ju lutem vlerësoni, për cilat informacione njoftoheni nga kjo linjë në vendndalime për bus?***:

        ☐ Fare costs, timetables, itineraries, maps, connections, arrivals, vehicle direction /
Çmimi I biletës, orari, itinerari, harta,arritjet,drejtimi I autobusit

        ☐ Fare costs, timetables, itineraries, maps, arrivals /
Çmimi I biletës, orari, itinerari, harta,arritjet

        ☐ Fare costs, Timetables, itineraries / *Çmimi I biletës, orari, itinerari,*

        ☐ Timetables / *Orari*

        ☐ Not available or Inexistent / *Nuk është i mundshëm ose nuk ekziston*

    b) **Please estimate. What is the Information about this line, available in inside buses?/ *Ju lutem vlerësoni, për cilat informacione njoftoheni nga kjo linjë në autobus?***:

        ☐ Fare costs, timetables, itineraries, maps, connections, arrivals, vehicle direction /
Çmimi I biletës, orari, itinerari, harta,arritjet,drejtimi I autobusit

        ☐ Fare costs, timetables, itineraries, maps, arrivals /
Çmimi I biletës, orari, itinerari, harta,arritjet

        ☐ Fare costs, Timetables, itineraries / *Çmimi I biletës, orari, itinerari.*

        ☐ Timetables / *Orari*

        ☐ Not available or Inexistent / *Nuk është i mundshëm ose nuk ekziston*

    c) **Please estimate. What is the Information about this line, available online or in cellphone applications?/ *Ju lutem vlerësoni, për cilat informacione njoftoheni nga kjo linjë përmes internetit apo aplikacione në telefon?* :**

        ☐ Fare costs, timetables, itineraries, maps, connections, arrivals, vehicle direction /
Çmimi I biletës, orari, itinerari, harta,arritjet,drejtimi I autobusit

        ☐ Fare costs, timetables, itineraries, maps, arrivals/
Çmimi I biletës, orari, itinerari, harta,arritjet

        ☐ Fare costs, Timetables, itineraries / *Çmimi I biletës, orari, itinerari*

        ☐ Timetables /*Orari*

        ☐ Not available or Inexistent / *Nuk është i mundshëm ose nuk ekziston*

THIRD SECTION: Quality of Service perception (Users' scoring) / *PJESA E DYTË: Perceptimi i kualitetit të shërbimit (Vlerësimi i shfrytëzuesve)*

Criteria 1: Time / *Kriteri 1 : Koha*

About the bus public transport service in Line __ , how satisfied are you with the following aspects? Please score the service as for your perception in this regard from 1 to 5. / *Për transportin publik të autobusëve të linjës __ , sa jeni të kënaqur me pikat në vijim? Të lutem vlerëso sipas pikëpamjes tënde nga 1 deri 5.*

    e) **Waiting time in bus stops /** *Koha e pritjes në vendndalim***:**
- ☐ 5 - Very Satisfied / *Shumë i kënaqur*
- ☐ 4 – Satisfied / *kënaqur*
- ☐ 3 - Nor satisfied, nor unsatisfied / *Mesatar*
- ☐ 2 – Unsatisfied / *I pakënaqur*
- ☐ 1 - Very unsatisfied / *Sumë i pakënaqur*

    f) **Boarding and alighting time (Time buses spend in bus stops) /** *Koha e hyrjes dha daljes nga autobusi në vendndalim* **:**
- ☐ 5 - Very Satisfied / *Shumë i kënaqur*
- ☐ 4 – Satisfied / *kënaqur*
- ☐ 3 - Nor satisfied, nor unsatisfied / *Mesatar*
- ☐ 2 – Unsatisfied / *I pakënaqur*
- ☐ 1 - Very unsatisfied / *Sumë i pakënaqur*

    g) **On board time (travel time inside buses) /** *Koha e udhëtimit në autobus***:**
- ☐ 5 - Very Satisfied / *Shumë i kënaqur*
- ☐ 4 – Satisfied / *kënaqur*
- ☐ 3 - Nor satisfied, nor unsatisfied / *Mesatar*
- ☐ 2 – Unsatisfied / *I pakënaqur*
- ☐ 1 - Very unsatisfied / *Sumë i pakënaqur*

    h) **Adherence to schedule (bus stop arrival of buses as for timetable) /** *Respektimi i orarit (arritja e autobusit në vendndalim sipas orarit të përcaktuar):*
- ☐ 5 - Very Satisfied / *Shumë i kënaqur*
- ☐ 4 – Satisfied / *kënaqur*
- ☐ 3 - Nor satisfied, nor unsatisfied / *Mesatar*
- ☐ 2 – Unsatisfied / *I pakënaqur*
- ☐ 1 - Very unsatisfied / *Sumë i pakënaqur*

Criteria 2: Safety / *Kriteri 2: Siguria*

About the bus public transport service in Line __ , how satisfied are you with the following aspects? Please score the service as for your perception in this regard from 1 to 5. / *Për transportin publik të autobusëve të linjës __ , sa jeni i kënaqur me pikat në vijim? Të lutem vlerësoje sipas pikëpamjes tënde nga 1 deri 5.*

    a) **Occurrence of accidents on the road (involving buses) /** *Rastet e aksidenteve në rrugë (përfshirë autobusët)***:**
- ☐ 5 - Very infrequent (not occurring, rare) / *Shumë rrallë (nuk ndodhin)*
- ☐ 4 - Infrequent / *Rrallë*
- ☐ 3 - Nor frequent, nor infrequent / *Mesatar*
- ☐ 2 – Frequent / *Shpesh*
- ☐ 1 - Very frequent / *Shumë shpesh*

Criteria 3: Security / *Kriteri 3: Sigurimi*

About the bus public transport service in Line __ , how satisfied are you with the following aspects? Please score the service as for your perception in this regard from 1 to 5. / *Për transportin publik të autobusëve të linjës __ , sa jeni të kënaqur me pikat në vazhdim? Të lutem vlerëso sipas pikëpamjes tënde nga 1 deri 5.*

 a) Occurrence of thefts on the bus stops / *Rastet e vjedhjeve në vendndalime për bus***:**
  ☐ 5 - Very infrequent (not occurring, rare) / *Shumë rrallë (nuk ndodhin)*
  ☐ 4 - Infrequent / *Rrallë*
  ☐ 3 - Nor frequent, nor infrequent / *Mesatar*
  ☐ 2 – Frequent / *Shpesh*
  ☐ 1 - Very frequent / *Shumë shpesh*

 a) Occurrence of thefts on board (Inside buses) / *Rastet e vjedhjeve në autobus* **:**
  ☐ 5 - Very infrequent (not occurring, rare) / *Shumë rrallë (nuk ndodhin)*
  ☐ 4 - Infrequent / *Rrallë*
  ☐ 3 - Nor frequent, nor infrequent / *Mesatar*
  ☐ 2 – Frequent / *Shpesh*
  ☐ 1 - Very frequent / *Shumë shpesh*

Criteria 4: Space availability / *Kriteri 4: Hapësirat e lira* **:**

About the bus public transport service in Line __ , how satisfied are you with the following aspects? Please score the service as for your perception in this regard from 1 to 5. / *Për transportin publik të autobusëve të linjës __ , sa jeni të kënaqur me pikat në vazhdim? Të lutem vlerëso sipas pikëpamjes tënde nga 1 deri 5.*

 a) Seating space availability inside buses / *Ulëset e lira në autobus* **:**
  ☐ 5 - Very Satisfied / *Shumë i kënaqur*
  ☐ 4 – Satisfied / *kënaqur*
  ☐ 3 - Nor satisfied, nor unsatisfied / *Mesatar*
  ☐ 2 – Unsatisfied / *I pakënaqur*
  ☐ 1 - Very unsatisfied / *Sumë i pakënaqur*

 b) Standing space availability inside buses / *Hapësirat e lira për qëndrim në këmbë në autobus***:**
  ☐ 5 - Very Satisfied / *Shumë i kënaqur*
  ☐ 4 – Satisfied / *kënaqur*
  ☐ 3 - Nor satisfied, nor unsatisfied / *Mesatar*
  ☐ 2 – Unsatisfied / *I pakënaqur*
  ☐ 1 - Very unsatisfied / *Sumë i pakënaqur*

Criteria 5: Comfort / *Criteria 5: Komoditeti*

About the bus public transport service in Line __ , how satisfied are you with the following aspects? Please score the service as for your perception in this regard from 1 to 5. / *Për transportin publik të autobusëve të linjës __ , sa jeni të kënaqur me pikat në vazhdim? Të lutem vlerëso sipas pikëpamjes tënde nga 1 deri 5.*

 b) Bus design (Functional and aesthetic qualities of vehicles) / *Dizajni i autobusit (kualiteti funksional dhe estetik i autobusit)***:**
  ☐ 5 - Very Satisfied / *Shumë i kënaqur*
  ☐ 4 – Satisfied / *kënaqur*
  ☐ 3 - Nor satisfied, nor unsatisfied / *Mesatar*
  ☐ 2 – Unsatisfied / *I pakënaqur*
  ☐ 1 - Very unsatisfied / *Sumë i pakënaqur*

c) **Bus interior cleanliness / *Pastërtia e brendshme e autobusit***:
- ☐ 5 - Very Satisfied / *Shumë i kënaqur*
- ☐ 4 – Satisfied / *kënaqur*
- ☐ 3 - Nor satisfied, nor unsatisfied / *Mesatar*
- ☐ 2 – Unsatisfied / *I pakënaqur*
- ☐ 1 - Very unsatisfied / *Sumë i pakënaqur*

d) **Bus exterior cleanliness / *Pastërtia e jashtme e autobusit***:
- ☐ 5 - Very Satisfied / *Shumë i kënaqur*
- ☐ 4 – Satisfied / *kënaqur*
- ☐ 3 - Nor satisfied, nor unsatisfied / *Mesatar*
- ☐ 2 – Unsatisfied / *I pakënaqur*
- ☐ 1 - Very unsatisfied / *Sumë i pakënaqur*

e) **Overall physical condition of buses (Body, steps, seats, body, handles, devices) / *Gjendja e përgjithshme fizike e autobusëve (Ulëset, pjesa e qëndrimit në këmbë, pajisjet)***:
- ☐ 5 - Very Satisfied / *Shumë i kënaqur*
- ☐ 4 – Satisfied / *kënaqur*
- ☐ 3 - Nor satisfied, nor unsatisfied / *Mesatar*
- ☐ 2 – Unsatisfied / *I pakënaqur*
- ☐ 1 - Very unsatisfied / *Sumë i pakënaqur*

Criteria 6: System's Information / *Kriteri 6: Sistemi i informimit*

About the bus public transport service in Line ___ , how satisfied are you with the following aspects? Please score the service as for your perception in this regard from 1 to 5. / *Për transportin publik të autobusëve të linjës ___ , sa jeni të kënaqur me pikat në vazhdim? Të lutem vlerëso sipas pikëpamjes tënde nga 1 deri 5.*

d) **Availability of Information in bus stops (Fare costs, timetables, itineraries, maps, connections, arrivals, vehicle direction) / *Disponueshmëria e Informimit në vendndalim (tarifa e biletave, orari, itinerari, harta, vendndodhja e busëve në kohë reale)***:
- ☐ 5 - Very Satisfied / *Shumë i kënaqur*
- ☐ 4 – Satisfied / *kënaqur*
- ☐ 3 - Nor satisfied, nor unsatisfied / *Mesatar*
- ☐ 2 – Unsatisfied / *I pakënaqur*
- ☐ 1 - Very unsatisfied / *Sumë i pakënaqur*

e) **Availability of Information inside buses (Fare costs, timetables, itineraries, maps, connections, arrivals, vehicle direction) / *Disponueshmëria e Informimit brenda në autobusë (Çmimi i biletës, orari, itinerari, harta, arritjet, drejtimin e autobusit)***:
- ☐ 5 - Very Satisfied / *Shumë i kënaqur*
- ☐ 4 – Satisfied / *kënaqur*
- ☐ 3 - Nor satisfied, nor unsatisfied / *Mesatar*
- ☐ 2 – Unsatisfied / *I pakënaqur*
- ☐ 1 - Very unsatisfied / *Sumë i pakënaqur*

f) **Availability of Information online, cellphone applications (Fare costs, trip planner timetables, itineraries, maps, connections, arrivals) / *Disponueshmëria e Informimit në kohë reale, aplikacionet në telefon (Çmimi i biletës, orari i planifikimi të udhëtimit, itinerari, harta dhe arritjet)***:
- ☐ 5 - Very Satisfied / *Shumë i kënaqur*
- ☐ 4 – Satisfied / *kënaqur*
- ☐ 3 - Nor satisfied, nor unsatisfied / *Mesatar*
- ☐ 2 – Unsatisfied / *I pakënaqur*
- ☐ 1 - Very unsatisfied / *Sumë i pakënaqur*

Criteria 7: Customer service / *Kriteri 7: Shërbimi për konsumator*

About the bus public transport service in Line __ , how satisfied are you with the following aspects? Please score the service as for your perception in this regard from 1 to 5 / *Për transportin publik të autobusëve të linjës __ , sa jeni të kënaqur me pikat në vazhdim? Të lutem vlerëso sipas pikëpamjes tënde nga 1 deri 5.*

    a) **Staff preparation and level of training (skills) /** *Përgatitja e stafit dhe niveli i përgaditje***:**
- ☐ 5 - Very Satisfied / *Shumë i kënaqur*
- ☐ 4 – Satisfied / *kënaqur*
- ☐ 3 - Nor satisfied, nor unsatisfied / *Mesatar*
- ☐ 2 – Unsatisfied / *I pakënaqur*
- ☐ 1 - Very unsatisfied / *Sumë i pakënaqur*

    b) **Staff kindness (customer orientation, initiative) /** *Mirësjellja e stafit (orientimit të konsumatorit dhe iniciativës)***:**
- ☐ 5 - Very Satisfied / *Shumë i kënaqur*
- ☐ 4 – Satisfied / *kënaqur*
- ☐ 3 - Nor satisfied, nor unsatisfied / *Mesatar*
- ☐ 2 – Unsatisfied / *I pakënaqur*
- ☐ 1 - Very unsatisfied / *Sumë i pakënaqur*

Overall perception / *Pikëpamjet e përgjithshme*

About the bus public transport service in Line __ , how satisfied are you with the overall service? Please score the service as for your perception in this regard from 1 to 5. / *Për transportin publik të autobusëve të linjës __ , sa jeni të kënaqur me shërbimet në përgjithësi? Të lutem vlerëso sipas pikëpamjes tënde nga 1 deri 5*

    a) **Overall perceived satisfaction /** *Kualiteti në pikëpamje të përgjithshme***:**
- ☐ 5 - Very Satisfied / *Shumë i kënaqur*
- ☐ 4 – Satisfied / *kënaqur*
- ☐ 3 - Nor satisfied, nor unsatisfied / *Mesatar*
- ☐ 2 – Unsatisfied / *I pakënaqur*
- ☐ 1 - Very unsatisfied / *Sumë i pakënaqur*

A1.3 Fieldwork schedule

GANTT DIAGRAM - DATA COLLECTION / FIELDWORK

Activities	June 21-23	June 26-30	July 3-7	July 10-14
INTERVIEWS				
Trafiku Urban (Lines 3,4)		▓	▓	
Private companies (Line 5)		▓	▓	
Private companies (Line 10)		▓	▓	
Transport and Traffic – DPS (Municipality)	▓			
Public Services -DPS (Municipality)				▓
SUMP - FOPIP Coordination (Municipality)	▓			
TU Board (Municipality)				▓
Political leaders of transport (Municipality)				▓
Complementary content analysis (data)				
Documents / Reports collection	░	░	░	
Content analysis				░
QUESTIONNAIRES (FIELD SURVEYS)				
Training personnel	▓			
Data collection on bus stops / buses		▓	▓	▓
Complementary field observations		░	░	░

SEMI STRUCTURED INTERVIEW SCHEDULES

	Interviewees	Date *Suggested / **Fixed**
OPERATOR	**Trafiku Urban - TU:**	
	1 Director: Mr. Hali Mustafa (I)	June 21-23 or June 26-30 **Fixed day: June 29**
	2 Chief of operations: Mr. Kujtim Bervatovci (I)	June 21-23 or June 26-30 **Fixed day: July 5**
	3 Chief of vehicle maintenance (I)	June 21-23 or June 26-30 **Fixed day: July 5** **Fixed day: June 29, July 5th**
OPERATOR	**Private operator Line 05**	
	4 Director (I)	June 21-23 or June 26-30 **Fixed day: July 7**
	5 Chief of operations (I)	June 21-23 or June 26-30 **Fixed day: July 7**
	6 Chief of vehicle maintenance (I)	June 21-23 or June 26-30 **Fixed day: July 7**
OPERATOR	**Private operator Line 10**	
	7 Director (I)	June 21-23 or June 26-30 **Fixed day: June 29**
	8 Chief of operations (I)	June 21-23 or June 26-30 **Fixed day: June 29**
	9 Chief of vehicle maintenance (I)	June 21-23 or June 26-30 **Fixed day: June 29**
PUBLIC AUTHORITY	**Municipality of Pristina**	
	10 Chief of Transport and Traffic – DPS: Mr. Habib Qorri (I)	July 10-14 **Fixed day: June 23**
	11 Coordinator Prishtina SUMP / FOPIP (Int. Coop. Studies): Mrs. Vjollca Podvorica.	July 10-14 **Fixed day: June 28**

(I) Required interpreter

Annex 2: Semi-structured interviews reports

A1.1.3 Interview report: Chief of Transport and Traffic – DPS, Municipality of Pristina (Technical interview focused on the current bus system's planning, management, and operation) – With interpreter

Manuali i intervistës: Shefi i sektorit të transportit dhe trafikut- DSHPMSH, Komuna e Prishtinës (Intervistë teknike e fokusuar në sistemin aktual të planifikimit, menaxhimit dhe operimit të autobusëve) – Me Interpretuesi

Interview to: Mr. Habib Qorri, Chief of Transport and Traffic / DPS, Municipality of Pristina (habib.qorri@rks-gov.net), Interpreter: Eng. (Transport) MSc. Liridon Sejdiu

q) *Could you explain and describe briefly, what are the bus transit management & operations functions pursued by the Municipality? (Fare regulation, Route network planning, scheduling, bus fleet control, user information, etc)?*
A mund të përshkruani me pak fjalë se cilat janë funksionet e menaxhimit dhe operimit të autobusëve që ndiqen nga komuna? (rregullat tarifore, rrjeti i linjave, planifikimi, orari, kontrolli i flotës së autobusëve, informata për shfrytëzues etj.)

The transport and traffic unit (within the Directorate of Public Services) is in charge of: Planning and designing the network (routes),

- Designing the schedules (minimum service standards for service provision) for the network (routes).
- Planning the operation of the public lines (Operated by Trafiku Urban).
- Coordinate with other units inside the Directorate of Public Services and the Directorate of public Works, the elaboration of new transport Infrastructure plans, and existent transport infrastructure maintenance plans.
- The Directorate of Public Services is also part of the Board that manages Trafiku Urban (TU). It is represented by the Director, Mr. Gent Begolli.
- The functions of the TU board of directors and TU itself are regulated by laws 03/L-087, and 04/L-111

r) Under the existent conditions. Could you explain generally how the overall scheduling procedure takes place, works?
Sipas kushteve ekzistuese. A mund të shpjegoni në përgjithësi procedurat e caktimit të orarit, dhe si funksionon?

Bus lines in Pristina operate from 6am to 10pm with different schedules. The Transport and traffic unit has general passengers information obtained from superficial field studies. Based on that they determine the minimum service schedules.
Right now they are working on more detailed studies under the "Sustainable Mobility Plan".

s) What is the daily passengers 'demand/ridership for lines 03, 04, 05 and 10? (Ask for available data per hours of operation).
Sa është numri ditor i udhëtarëve "kërkesa/oferta për linjat 03,04,05 dhe 10? (Të pyetet për të dhëna në dispozicion në intervalet për orë të operimit).

The average estimated daily passengers ridership for lines 03, 04, 05 and 10 is:
- Line 03: 3,000 pax/day
- Line 04: 7,800 pax/day
- Line 05: 2,500 pax/day
- Line 10: 2,500 pax/day

t) What is the total size of the bus fleet (per bus type) for lines 03, 04, 05 and 10? (Ask for a detailed table).
Sa është numri i përgjithshëm i autobusëve (duke i ndarë edhe sipas llojit) për linjat 03,04,05 dhe 10? (Të pyetet për një tabelë të detajuar)

The estimated size fleet for lines 03, 04, 05 and 10 is:
- Line 03: 12 buses
- Line 04: 21 buses
- Line 05: 8 buses
- Line 10: 5 buses

The Municipality asks operators to respect the schedules. If the bus operators require to purchase more buses to fullfill the minimun standards, they can aquire more.

u) What is the capacity (total available seating and standing spaces) per bus type, for lines 03, 04, 05 and 10?
Sa është kapaciteti (vendet në dispozicion për ulje dhe qëndrim) për lloje të autobusëve, për linja 03,04,05 dhe 10?

The estimated capacity for bus fleet for lines 03, 04, 05 and 10 is:
- Line 03: 12 buses x 75 pax (35 seating, 40 standing)
- Line 04: 21 buses x 75 pax (35 seating, 40 standing)
- Line 05: 08 buses x 75 pax (45 seating, 80 standing)
- Line 10: 05 buses x 125 pax (45 seating, 80 standing)

v) What are the line lengths for lines 03, 04, 05, and 10? (distance between the two terminals along the line alignment)
Sa është gjatësia e rrugëtimit të linjave 03,04,05 dhe 10? (Distanca ndërmjet dy terminaleve përgjatë gjatësisë së linjës)

The line lengths for lines 03, 04, 05 and 10 is:
- Line 03: 8 km
- Line 04: 9 km
- Line 05: 8 Km
- Line 10: 12 Km

w) What is the number of buses dispatched in the peak hour (peak hour frequency) for lines 03, 04, 05, and 10?

Sa është numri i autobusëve që lëshohen në qarkullim gjatë orëve kulmore për linjat 03, 04, 05 dhe 10?

The peak hour frequency for lines 03, 04, 05 and 10 is:
- Line 03: 06 buses/hour
- Line 04: 12 buses/hour
- Line 05: 06 buses/hour
- Line 10: 02 buses/hour

The bus operators are not authorized to make any change in the schedules. If operators need to readjust the schedules (increase or decrese frequencies), they have to request it to the Municipality.

x) What is the degree of bus lines transfers' coordination? (Manual or technological means: AVL, CAD). If so, what is the rate of connected scheduled transfers a day?
Sa është shkalla e koordinimit të ndërrimit ndërmjet linjave të autobusëve? (manual ose përshkrim teknologjik (AVL,CAD), nëse po sa është norma e ndërrimeve të orareve të ndërlidhura brenda një dite?

There is not any transfer coordination in the current operation. This attribute will be introduced after the SUMP and Pristina Urban Transport Project ongoing studies are concluded.

y) Is there anything you would like to add about the process of scheduling?
Mos keni ndonjë gjë për të shtuar rreth procesit të caktimit të orarit?
No.

z) *Under the existent conditions. Could you explain generally how the overall bus fleet control process takes place, works?*
Sipas kushteve ekzistuese. A mund të shpjegoni në përgjithësi si funksionon kontrolli i flotës së autobusëve?
The Municipality sends to the field uniformed municipal inspectors to check itineraries and frequencies.

aa) *How bus operation in the network is monitored? (AVL, GPS, CCTV, Field inspectors)*
Si monitorohet operimi i autobusëve në rrjet? (AVL,GPS,CCTV, Mbikëqyrës në terren)
The Municipality sends to the field uniformed municipal inspectors to check itineraries and frequencies.

bb) *Is there any degree of priority signal control for buses at intersections? If so, what is the degree of priority?*
A ka ndonjë prioritet në sinjalizim të trafikut për autobusë në udhëkryqe? Nëse po cila është shkalla e prioritetit?
No, there are some busways in Bulevardi Klinton avenue, but they are not fully respected.

cc) Under the existent conditions. Could you explain generally how the passengers' information process takes place, works (Electronic, online, physical, manual)?
Sipas kushteve ekzistuese. A mund të shpjegoni në përgjithësi si funksionon procesi i informimit të udhëtarëve (elektronike, online, fizikisht)?

Currently, there is not an ongoing users' information process. It will start hapening after Pristina Urban Transport Project studies are concluded, since many changes are expected to happen in the system (routes planning, operation, infrastructure).

dd) What is the service information provided to passengers? (Routing, bus stops finding, destination finding, schedules, arrivals, trip planners).
Cili është shërbimi i informatave për udhëtarë? (itinerarin, vendndalimet e busëve, destinacionin, orarin, arritjet, planifikimin e udhëtimeve).

The Municipality has placed bus routes maps on the bus stops which have shelters.
Also the Municipality requires operators to have inside the buses, information about their itineraries, schedules and a map of the route, however they do not comply and enforcement is also not very strict.
The information about the tariffs is usually provided by the ticket sellers inside the buses.
It has also been reported that new private developments along the city have taken out bus stop signs along their properties when constructing new buildings and access to their properties.

ee) How is the referred information provided (bus stops, public facilities, online, cellphone apps,)? And to what extent is it provided? (Number of equipped bus stops, information points, offices, etc).
Si bëhet shpërndarja e këtyre informacioneve (në vendndalime, objekte publike, aplikacione për telefon)? Dhe deri në çfarë mase bëhet kjo? (Numri i vendndalimeve të pajisura, pikat e informimit, në zyra etj).

It has been explained in the previous questions.
Additionally the Municipality is planning as part of their future reforms to grant a concession for the implementation of bus stops including information on exchange for the exploitation of advertisement.

ff) Thank you for your time. Please feel free to express any opinion or comment about the interview.
Faleminderit për kohën tuaj. Të lutem ndjehu i lirë të shprehësh çdo mendim apo koment rreth intervistës

A1.1.4 Interview report: Chief-coordinator Sustainable Urban Mobility Plan-SUMP / FOPIP program, Municipality of Pristina (Interview about the expected outcomes of the studies, time lines, perceptions on the evolution of the system based on current findings).

Interview to: Mrs. Vjollca Podvorica, Local project coordinator SUMP

d) Could you explain what are the studies being developed by the international cooperation (SUMP, FOPIP, Others), and what will be their outcomes? (Ask to share the terms of reference, initial reports).
The studies being developed with funds from the International Cooperation (Czech Republic) related to the Pristina Urban Transport Project are:
- SUMP: Sustainable Urban Mobility Plan
- FOPIP: Financial and Operational Performance Improvement and Corporate Development Programme
- PSC: Public Service Contracting studies

e) Could you explain more about those related to the qualitative and quantitative improvement of the organizations in charge of manage and provide the service (Municipality, Public and Private operators), and the quality of the service provided?
FOPIP: Financial and Operational Performance Improvement and Corporate Development Programme
PSC: Public Service Contracting studies

f) What is the modal split for Public Transport in Pristina?
The modal split or share for public transportation is 23% according to the house survey study done by Mott McDonald for the Municipality (2017).

g) Thank you for your time. Please feel free to express any opinion or comment about the interview.

A1.1.5 Interview report: Executive Director, Trafiku Urban (Interview about middle and lower level management, Trafiku Urban modernization process, personnel training and recruitment). – With interpreter

Manuali i intervistes: Drejtori, Trafiku urban (interviste për nivelin e mesëm dhe të ultë të menaxhimit, procesin e modernizimit të Trafiku urban, rekrutimin dhe trajnimin e personelit) – Me interpretuesi

Interview to: Mr. Halil Mustafa, Executive Director Trafiku Urban (halil.mustafa@trafikurban-pr.com), Interpreter: B. Arch. Drita Hyseni

p) Could you explain how the company is organized? What functions does the company fulfill regarding transit operations?
A mund të shpjegoni mënyrën e organizimit të kompanisë suaj? Cilat funksione i përmbush kompania në lidhje me operimin në transport?

The company has 03 actioner, and is ruled by a Board of Directors composed by 04 members, and an Executive Director (Mr. Halil Mustafa).
Besides the Administrative functions of the company, in relation to operations, Trafiku Urban fulfills regarding transit operations the following functions:
- Transport operations
- Technical maintenance
- Control
- Security

q) If available. What are the selection standards and qualifications required to recruit new operations personnel (operations planning, management, driving, maintenance)?
Nëse është e mundur. Cilat janë standardet dhe kualifikimet që kërkohen për zgjedhjen e personelit të ri (planifikimin e operimit, menaxhim, ngasje, mirëmbajtje)?
For drivers, a "D" category professional Driver's License is required, and also being under 40 years.
For chairing the Transport and Technical departments, they require a professional degree on the area of specialty (Transport and Mechanics' engineer). All of these requirements are regulated by the company's statute.

r) What is the level of qualifications / preparation, of the current operations personnel (operations planning, management, driving, maintenance)?

Cili është niveli i kualifikimit/përgatitjes i personelit ekzistues (planifikimin e operimit, menaxhim, ngasje, mirëmbajtje)?

Their drivers, have a "D" category professional Driver's License.

They have professionals working in the Transport and Technical departments (Transport and Mechanics' engineers), financial and administrative areas. Some even with Master's degrees.

s) If it is the case. How the current operations personnel (operations planning, management, driving, maintenance) is trained? How many hours of training do they receive a year? (Ask for a detailed record of hours of training).

Nëse është kështu. Si bëhet trajnimi i personelit ekzistues? Sa orë brenda një viti trajnohen? (Nëse ka ndonjë regjistrim detal të orëve të trajnimit)

In the context of the new public transport reforms being undertaken by the Municipality (Bus renewal), 03 workers have recently been trained by the bus manufacturing company (IVECO), in the technical department (1 mechanics, 02 electricians).

t) Thank you for your time. Please feel free to express any opinion or comment about the interview.

Faleminderit për kohën tuaj. Të lutem ndjehu i lirë të shprehësh çdo mendim apo koment rreth intervistës.

A1.1.7 Interview report: Chief of operations, Trafiku Urban (Technical interview about management and operations for service delivery) – With interpreter

Manuali i intervistes: Shefi i operimeve, Trafiku Urban (Interviste teknike për menaxhimin dhe operimet e shërbimit të transportit) – Me interpretuesi

Interview to: Mr. Kujtim Bervatovci, Chief of Transport Operations – Trafiku Urban (kujtim.berbatovci@trafikurban-pr.com), Interpreter: Eng. (Transport) MSc. Liridon Sejdiu

u) What is the daily average passengers' demand/ridership for lines 03, and 04? (Ask for available data per hours of operation).

Sa është numri ditor i udhëtarëve "kërkesa/oferta për linjat 03 dhe 04? (Të pyetet për të dhëna në dispozicion në intervalet për orë të operimit)

For line 03: 6,000 to 8,000 paying passengers a day
For line 04: 10,000 to 12,000 paying passengers a day

v) What is the total size of the bus fleet (per bus type) for lines 03, and 04 (Ask for a table)?

Sa është numri i përgjithshëm i autobusëve (duke i ndarë edhe sipas llojit) për linjat 03 dhe 04? (Të pyetet për një tabelë të detajuar)

Line 03: 16 standards uses (12 meters)
Line 04: 20 standard buses (12 meters)

w) What is the capacity (total available seating and standing spaces) per bus type, for lines 03, and 04?

Sa është kapaciteti (vendet në dispozicion për ulje dhe qëndrim) për lloje të autobusëve, për linja 03 dhe 04

Operator TU - "Trafiku Urban"	Number of buses	Capacity (seating)	Capacity (standing)	Capacity (total)
Line 03 (standard buses)	16	50,54,43	50,32,34	100, 87, 77
Line 04 (standard buses)	20	35	63	98

x) What are the line lengths for lines 03, and 04? (distance between the two terminals along the line alignment)
Sa është gjatësia e rrugëtimit të linjave 03 dhe 04? (Distanca ndërmjet dy terminaleve përgjatë gjatësisë së linjës)

Line 03: 8.5 Kms
Line 04: 13.5 Kms

y) What is the number of buses dispatched in the peak hour (peak hour frequency) for lines 03, and 04?
Sa është numri i autobusëve që lëshohen në qarkullim gjatë orëve kulmore për linjat 03 dhe 04?
- Line 03:
  06 buses per hour (Headway 10 minutes)
- Line 04: 13.5 Kms
  12 buses per hour (Headway 5 minutes)

z) Could you explain generally how the overall bus fleet control process takes place, works?
A mund të shpjegoni në përgjithësi si funksionon kontrolli i flotës së autobusëve?

They control the dispatching times on the terminal (start and end) points of the lines. They also have inspectors on the road who perform the following functions:
- Ask passenger for tickets
- Check their drivers' operation
- Check the cleaning of the buses

aa) How bus operation in the network is monitored? (AVL, GPS, CCTV, Field inspectors). Do you monitor your operations (Lines 03 and 04)?
Si monitorohet operimi i autobusëve në rrjet? (AVL,GPS,CCTV, Mbikëqyrës në terren).A e bëni monitorimin e operimeve tuaja (linjat 03 dhe 04)

There is operation monitoring in the following degrees:
- Line 03:
  Cellphone communication
- Line 04:
  CCTV monitoring (not on real time)
  GPS is being progressively installed

There is a control center in the process of being renewed.

bb) Is there any degree of priority signal control for buses at intersections? If so, what is the degree of priority?
A ka ndonjë prioritet në sinjalizim të trafikut për autobusë në udhëkryqe? Nëse po cila është shkalla e prioritetit?

No

cc) Under the existent conditions. Could you explain generally how the passengers' information process takes place, works (Electronic, online, physical, manual)? Do you provide any information to your passengers about your offered services, and how? (Lines 03 and 04)?

Sipas kushteve ekzistuese. A mund të shpjegoni në përgjithësi si funksionon procesi i informimit të udhëtarëve (elektronike, online, fizikisht)? A siguroni informata për udhëtarë në lidhje me ofertat e shërbimeve të juaja dhe si e bëni këtë (Linja 03 dhe 04)?

They do not provide information for passengers, only to their personnel.

dd) Thank you for your time. Please feel free to express any opinion or comment about the interview.

Faleminderit për kohën tuaj. Të lutem ndjehu i lirë të shprehësh çdo mendim apo koment rreth intervistës.

A1.1.8 Interview report: Chief of vehicle maintenance, Trafiku Urban (Technical interview about maintenance procedures)– With interpreter

Manuali i intervistës: Shefi i mirëmbajtjes së autobusëve, Trafiku Urban (Intervistë teknike për procedurat e mirëmbajtjes) – Me interpretuesi

Interview to: Mr. Agim Krasniqi, Chief of Technical Maintenance–Trafiku Urban (agim.krasniqi@trafikurban-pr.com), Interpreter: Eng. (Transport) MSc. Liridon Sejdiu

q) Could you explain generally how the overall bus fleet maintenance procedure takes place?

A mund të shpjegoni në përgjithësi mënyrën e funksionimit të procedurave të mirëmbajtjes së autobusëve?

Line 03:

- The maintenance is provided by 16 individual contractors who own the buses and operate the service (outsourced operation and maintenance).
- All bus operators are obligated by National Law to have a technical control up to date every 06 months.

Line 04:

- They have implemented new maintenance procedures.
- 03 employees from the "Technical maintenance" department have been trained by the bus manufacturer (IVECO).
- The bus manufacturer provides the bus maintenance under a have a 02 years maintenance guarantee. IVECO has qualified professionals from Croatia based in the Balkans (Zagreb, Croatia) to provide the service for Trafiku Urban.
- Failures are reported to the bus manufacturer since they have a 05 years full parts replacement (whole vehicle) guarantee.

r) Could you describe what is the maintenance strategy pursued by the company? (Predictive, Preventive, Reactive, Other).

A mund të përshkruani cila është strategjia e mirëmbajtjes që ndiqet nga kompania? (planifikues, parandalues, reagues, të tjerë).

Line 03
- Individual contractors are in charge. There is not a strict monitoring of that since new buses are expected to come soon in September.

Line 04
- For the new buses, there is a programmed checkup for oil, filters, and pressure, every 10,000 and 21,600 (06 months) Kilometers of service.
- Every 40,000 kilometers there is a major checkup also programmed in advance. Most of new buses are on the 20,000 kilometers of service.
- A bus runs 150 kilometers every day.

s) Could you describe (if it is the case), what is the daily service provided to the vehicles? A mund të përshkruani (sipas mundësisë), cili është kontrolli ditor që ju bëhet automjeteve (autobusëve)?

There is a daily checkup to control: Cleanliness of buses, the level of oil, level of fuel, level of water, signalization system (lights), and breaks.
External washing is done 02 times a week per bus. If a bus requires it, it can be washed more regularly.
All the service is done in the Trafiku Urban facilities.

t) Could you describe what are your maintenance service categories (A,B,C,D) and intervals you pursue for maintenance inspections, replacement of parts and repairs? A mund të përshkruani cilat janë kategoritë e shërbimit të mirëmbajtjes (A,B,C,D) dhe intervalet që i ndiqni për mirëmbajtje, mbikëqyrje, zëvendësim dhe riparim të pjesëve?

Reference table:

Trafiku Urban – L4	Interval	Unit
Daily: Checkup for cleanliness, oil, fuel, water, lights, and breaks	1	Day
Service A: Checkup for oil, filters, and pressure	10,000	Km
Service B: First main service: Oil, filters, air, engine service	40,000	Km
Service C: Second main service	100,000	Km
Service D: Full replacement of buses	400,000	Km

u) What is the measured "Mean distance between failures" (MDBF) indicator the company usually has?
Sa është indikatori "Distanca mesatare ndërmjet dështimeve" që zakonisht e posedon kompania?
They don't know it. Buses are new so they have not registered their MDBF.

v) What is the maximum life length of your bus fleet (Before replacement)? (If possible provide a table with the ages per unit).
Sa është jetëgjatësia maksimale e flotës së autobusëve tuaj (para zëvendësimit)? (Nëse është e mundur të sigurohet një tabelë me vitet për njësi).

Line 03:
Buses are over 20 years old.

Line 04:
Buses are 0.5 years old.
Maximum life length 10 years

w) If it is the case. How do you determine or assess the maximum life length of your bus fleet? (If possible provide a table with the ages per unit).
Nëse është ashtu. Si e përcaktoni ose vlerësoni jetëgjatësinë maksimale të flotës suaj të autobusëve? (nëse është e mundur të sigurohet një tabelë me vitet për njësi)
According to the manual, the life length of the new buses is about 10 years. They believe they could be extended 05 or 06 more years if in good condition (future assessment).

x) Thank you for your time. Please feel free to express any opinion or comment about the interview.
Faleminderit për kohën tuaj. Të lutem ndjehu i lirë të shprehësh çdo mendim apo koment rreth intervistës

A1.1.9 Interview report: Director, Private company A – Line 05 (Interview about middle and lower level management, personnel training and recruitment, future perspectives). – With interpreter

Manuali i intervistes: Drejtori, Kompania private A, linja 05 (interviste për nivelin e mesëm dhe të ultë të menaxhimit, rekrutimin dhe trajnimin e personelit dhe perspektivat në të ardhmen) – Me interpretuesi

Interview to: Mr. Nazim Gashi, Actioner of Germia Tours, Interpreter: Eng. (Transport) MSc. Liridon Sejdiu

f) Could you explain how the company is organized? What functions does the company fulfill regarding transit operations?
A mund të shpjegoni mënyrën e organizimit të kompanisë suaj? Cilat funksione i përmbush kompania në lidhje me operimin në transport?
Line 05 is operated by 02 companies: Ulpiana, and Germia Tours
- Ulpiana: 06 buses, 21 actioners, 12 drivers
- Germia Tours: 04 buses, 20 actioners, 8 drivers
The actioners work as ticket sellers, so they don't require additional personnel.
Mechanic and technical services, as well as bus servicing (washing, fueling) are outsourced.

g) If available. What are the selection standards and qualifications required to recruit new operations personnel (operations planning, management, driving, maintenance)?
Nëse është e mundur. Cilat janë standardet dhe kualifikimet që kërkohen për zgjedhjen e personelit të ri (planifikimin e operimit, menaxhim, ngasje, mirëmbajtje)?
For new drivers, a "D" category professional Driver's License is required, plus driving experience, and age below 40 years.

h) What is the level of qualifications / preparation, of the current operations personnel (operations planning, management, driving, maintenance)?
Cili është niveli i kualifikimit/përgatitjes i personelit ekzistues (planifikimin e operimit, menaxhim, ngasje, mirëmbajtje)?

Existent drivers, have a "D" category professional Driver's License, plus driving experience, and age below 40 years.

i) If it is the case. How the current operations personnel (operations planning, management, driving, maintenance) is trained? How many hours of training do they receive a year? (Ask for a detailed record of hours of training).
Nëse është kështu. Si bëhet trajnimi i personelit ekzistues? Sa orë brenda një viti trajnohen? (Nëse ka ndonjë regjistrim detal të orëve të trajnimit)
No information about it.

j) Thank you for your time. Please feel free to express any opinion or comment about the interview.
Faleminderit për kohën tuaj. Të lutem ndjehu i lirë të shprehësh çdo mendim apo koment rreth intervistës.

A1.1.10 Interview report: Chief of operations, Private company A – Line 05 (Technical interview about management and operations for service delivery). – With interpreter

Manuali i intervistes: Shefi i operimeve, Kompania private A- linja 06 (Interviste teknike për menaxhimin dhe operimet e shërbimit të transportit) – Me interpretuesi

Interview to: Mr. Nazim Gashi, Actioner of Germia Tours, Interpreter: Eng. (Transport) MSc. Liridon Sejdiu

n) What is the daily average passengers' demand/ridership for line 05? (Ask for available data per hours of operation).
Sa është numri ditor i udhëtarëve "kërkesa/oferta për linjën 05? (Të pyetet për të dhëna në dispozicion në intervalet për orë të operimit).

The average ridership for line 05 is between 3,000 and 3,100 to passengers a day (Number obtained from the total number of tickets sold a day) in regular times (University academic period).
Every bus transports on average about 300 passengers a day.
According to a driver of Germia Tours (Mr. Agron Musa, Cel. 044284771), each bus operates the line 08 times per day (From terminal to terminal, 8 km).

o) What is the total size of the bus fleet (per bus type) for line 05?
Sa është numri i përgjithshëm i autobusëve (duke i ndarë edhe sipas llojit) për linjën 05? (Të pyetet për një tabelë të detajuar)

Germia Tours and Ulpiana (both operating Line 05) have 04 Minibuses (7 meters), and 06 Buses (9 meters).

p) What is the capacity (total available seating and standing spaces) per bus type, for line 05?
Sa është kapaciteti (vendet në dispozicion për ulje dhe qëndrim) për lloje të autobusëve, për linjën 05 ?

Germia Tours / Ulpiana (Line 05)	Number of buses (per type)	Capacity (seating)	Capacity (standing)	Capacity (total)
Minibuses (7 meters)	4	20	30	50
Buses (9 meters)	6	25	40	65
TOTAL	10			

q) What are the line lengths for line 05? (distance between the two terminals along the line alignment)
Sa është gjatësia e rrugëtimit për linjën 05? (Distanca ndërmjet dy terminaleve përgjatë gjatësisë së linjës)
8 kilometers

r) What is the number of buses dispatched in the peak hour (peak hour frequency) for line 05?
Sa është numri i autobusëve që lëshohen në qarkullim gjatë orëve kulmore për linjën 05?
06 buses per hour (Headway: 10 minutes).
The peak hours are:
- From 7 to 8 hours.
- From 16 to 17 hours
- From 19 to 18 hours

s) *Could you explain generally how the overall bus fleet control process takes place, works?*
A mund të shpjegoni në përgjithësi si funksionon kontrolli i flotës së autobusëve?
There is no centralized control of operations by the company. Rarely the Municipality send inspectors on the field.

t) *How bus operation in the network is monitored? (AVL, GPS, CCTV, Field inspectors). Do you monitor your operations (Line 05)?*
Si monitorohet operimi i autobusëve në rrjet? (AVL,GPS,CCTV, Mbikëqyrës në terren).A e bëni monitorimin e operimeve tuaja (linjën 05)
There is no monitoring of operations by the company. Sometimes the Municipality send inspectors on the field.

u) *Is there any degree of priority signal control for buses at intersections? If so, what is the degree of priority?*
A ka ndonjë prioritet në sinjalizim të trafikut për autobusë në udhëkryqe? Nëse po cila është shkalla e prioritetit?
No

v) Under the existent conditions. Could you explain generally how the passengers' information process takes place, works (Electronic, online, physical, manual)? Do you provide any information to your passengers about your offered services, and how? (Line 05)?
Sipas kushteve ekzistuese. A mund të shpjegoni në përgjithësi si funksionon procesi i informimit të udhëtarëve (elektronike, online, fizikisht)? A siguroni informata për udhëtarë në lidhje me ofertat e shërbimeve të juaja dhe si e bëni këtë (Linjën 05)?

Inside the buses, there is a timetable (Next to the drivers' seat). Outside the buses (windshield) there is a summarized description of the itinerary.

w) *If available. What are the selection standards and qualifications required for the new operations personnel (operations planning, driving, maintenance)?*
Nëse është e mundur. Cilat janë standardet dhe kualifikimet që kërkohen për zgjedhjen e personelit të ri (planifikimin e operimit, menaxhim, ngasje, mirëmbajtje)?
For new drivers, a "D" category professional Driver's License is required, plus driving experience, and age below 40 years.

x) *What is the level of qualifications / preparation, of the current operations personnel (operations planning, driving, maintenance)?*
Cili është niveli i kualifikimit/përgatitjes i personelit ekzistues (planifikimin e operimit, menaxhim, ngasje, mirëmbajtje)?
Existent drivers, have a "D" category professional Driver's License, plus driving experience, and age below 40 years.

y) *If it is the case. How the current operations personnel (operations planning, driving, maintenance) is trained (company supported programs, others)?*
Nëse është kështu. Si bëhet trajnimi i personelit ekzistues? Sa orë brenda një viti trajnohen? (Nëse ka ndonjë regjistrim detal të orëve të trajnimit)
No information about it.

z) Thank you for your time. Please feel free to express any opinion or comment about the interview.
Faleminderit për kohën tuaj. Të lutem ndjehu i lirë të shprehësh çdo mendim apo koment rreth intervistës

A1.1.11 Interview report: Chief of vehicle maintenance, Private company A – Line 05 (Technical interview about maintenance procedures). – With interpreter

Manuali i intervistës: Shefi i mirëmbajtjes së autobusëve, Kompania private A- linja 05 (Intervistë teknike për procedurat e mirëmbajtjes) – Me interpretuesi

Interview to: Mr. Nazim Gashi, Actioner of Germia Tours, Interpreter: Eng. (Transport) MSc. Liridon Sejdiu

y) Could you explain generally how the overall bus fleet maintenance procedure takes place?
A mund të shpjegoni në përgjithësi mënyrën e funksionimit të procedurave të mirëmbajtjes së autobusëve?
Mechanic and technical services, as well as bus servicing (washing, fueling) are outsourced.

z) Could you describe what is the maintenance strategy pursued by the company? (Predictive, Preventive, Reactive, Other).
A mund të përshkruani cila është strategjia e mirëmbajtjes që ndiqet nga kompania? (planifikues, parandalues, reagues, të tjerë)

Parts replacement happens when they identify its failure/damage. After a part fail in a bus, they replace it also on the other buses since it is likely to fail/damage within the following days (Reactive).

Every month (About 1,800 kilometers) the vehicles have a mechanic control (Oil, filters).

aa) Could you describe (if it is the case), what is the daily service provided to the vehicles?
A mund të përshkruani (sipas mundësisë), cili është kontrolli ditor që ju bëhet automjeteve (autobusëve)?

Every day level there is a checkup (oil, water), and interior cleaning
Exterior washing is done 01 time a week in an external car wash (outsourced service).
Fueling is done every 02 days (100 liters).

bb) Could you describe what are your maintenance service categories (A,B,C,D) and intervals you pursue for maintenance inspection, replacement of parts and repairs?
A mund të përshkruani cilat janë kategoritë e shërbimit të mirëmbajtjes (A,B,C,D) dhe intervalet që i ndiqni për mirëmbajtje, mbikëqyrje, zëvendësim dhe riparim të pjesëve?
Every month (About 1,800 kilometers) the vehicles have a mechanic control (Oil, filters).

cc) What is the measured "Mean distance between failures" (MDBF) indicator the company usually has?
Sa është indikatori "Distanca mesatare ndërmjet dështimeve" që zakonisht e posedon kompania?
The MDBF is unknown.
Parts replacement happens when they identify its failure/damage. After a part fail in a bus, they replace it also on the other buses since it is likely to fail/damage within the following days.

dd) What is the maximum life length of your bus fleet (Before replacement)? (If possible provide a table with the ages per unit).
Sa është jetëgjatësia maksimale e flotës së autobusëve tuaj (para zëvendësimit)? (Nëse është e mundur të sigurohet një tabelë me vitet për njësi)

In 2006, they bought buses manufactured in year 2000 (06 years old at the time). Buses are now 17 years old. The respondent is unable to estimate the maximum life length of the buses.
According to a driver of Germia Tours (Mr. Agron Musa, Cel. 044284771), the buses may still be used for up to 5 more years (22 years).

ee) If it is the case. How do you determine or assess the maximum life length of your bus fleet? (If possible provide a table with the ages per unit).
Nëse është ashtu. Si e përcaktoni ose vlerësoni jetëgjatësinë maksimale të flotës suaj të autobusëve? (nëse është e mundur të sigurohet një tabelë me vitet për njësi)
No information

ff) Thank you for your time. Please feel free to express any opinion or comment about the interview.

Faleminderit për kohën tuaj. Të lutem ndjehu i lirë të shprehësh çdo mendim apo koment rreth intervistës.

A1.1.12 Interview report: Director, Private company B "24 Yjet" – Line 10 (Interview about middle and lower level management, personnel training and recruitment, future perspectives). – With interpreter

Manuali i intervistes: Drejtori, Kompania private B, linja 10 (interviste për nivelin e mesëm dhe të ultë të menaxhimit, rekrutimin dhe trajnimin e personelit dhe perspektivat në të ardhmen) – Me interpretuesi

Interview to: Mr. Hafiz Metolli, Director of "24Yjet", Interpreter: Eng. (Transport) MSc. Liridon Sejdiu

f) Could you explain how the company is organized? What functions does the company fulfill regarding transit operations?
A mund të shpjegoni mënyrën e organizimit të kompanisë suaj? Cilat funksione i përmbush kompania në lidhje me operimin në transport?

The company has 24 actioners, and is ruled by "Board of directors" composed by 05 members. Representing different functions/sectors of the company (Finances, Operation and management, Technical-Maintenance).
Schedules are given by the Municipality, and the company assigns and administer the fleet to fulfill the service standards. The company also select their working personnel and determine their work schedules.
The company operates under a short term (6 months to 1 year) work permit, which makes it unable to do larger investments.

g) If available. What are the selection standards and qualifications required to recruit new operations personnel (operations planning, management, driving, maintenance)?
Nëse është e mundur. Cilat janë standardet dhe kualifikimet që kërkohen për zgjedhjen e personelit të ri (planifikimin e operimit, menaxhim, ngasje, mirëmbajtje)?

For new drivers, a "D" category professional Driver's License is required, plus testing for 01 week in the two types of buses operated by the company (12 meters standard, 18 meters articulated).

h) What is the level of qualifications / preparation, of the current operations personnel (operations planning, management, driving, maintenance)?
Cili është niveli i kualifikimit/përgatitjes i personelit ekzistues (planifikimin e operimit, menaxhim, ngasje, mirëmbajtje)?

They are currently satisfied with the level of preparation of their personnel, given their accumulated experience, in some cases over 13 years.

i) If it is the case. How the current operations personnel (operations planning, management, driving, maintenance) is trained? How many hours of training do they receive a year? (Ask for a detailed record of hours of training).
Nëse është kështu. Si bëhet trajnimi i personelit ekzistues? Sa orë brenda një viti trajnohen? (Nëse ka ndonjë regjistrim detal të orëve të trajnimit)

The company provides training for the technical and operations personnel only when newer buses are acquired. The company purchases 2 to 3 newer second hand buses every year.

j) Thank you for your time. Please feel free to express any opinion or comment about the interview.
Faleminderit për kohën tuaj. Të lutem ndjehu i lirë të shprehësh çdo mendim apo koment rreth intervistës.

A1.1.13 Interview report: Chief of operations, Private company B "24 Yjet" – Line 10 (Technical interview about management and operations for service delivery). – Interpreter

Manuali i intervistes: Shefi i operimeve, Kompania private A- linja 10 (Interviste teknike për menaxhimin dhe operimet e shërbimit të transportit) – Me interpretuesi

Interview to: Mr. Sinani, Manager of operations "24Yjet", Interpreter: Eng. (Transport) MSc. Liridon Sejdiu

n) What is the daily average passengers' demand/ridership for line 10? (Ask for available data per hours of operation).
Sa është numri ditor i udhëtarëve "kërkesa/oferta për linjën 6? (Të pyetet për të dhëna në dispozicion në intervalet për orë të operimit).

The average ridership for line 10 is 2,000 to 3,000 passengers a day (Number obtained from the total number of tickets sold a day).
In the peak hour (7 to 8am) 400 to 500 passengers use the service in regular times (University academic period).

o) What is the total size of the bus fleet (per bus type) for line 10?
Sa është numri i përgjithshëm i autobusëve (duke i ndarë edhe sipas llojit) për linjën 6? (Të pyetet për një tabelë të detajuar)

The company has a bus fleet of 15 buses: 7 standard buses (12 meters), 8 articulated buses (18 meters).

p) What is the capacity (total available seating and standing spaces) per bus type, for line 10?
Sa është kapaciteti (vendet në dispozicion për ulje dhe qëndrim) për lloje të autobusëve, për linjën 10 ?

Operator B - "24 Yjet"	Number of buses (per type)	Capacity (seating)	Capacity (standing)	Capacity (total)
Standard buses	7	30 to 40	60 to 70	100
Articulated buses	8	50	100	150
TOTAL	15			

q) What are the line lengths for line 10? (distance between the two terminals along the line alignment)
Sa është gjatësia e rrugëtimit për linjën 10? (Distanca ndërmjet dy terminaleve përgjatë gjatësisë së linjës)
12 kilometers

r) What is the number of buses dispatched in the peak hour (peak hour frequency) for line 10?
Sa është numri i autobusëve që lëshohen në qarkullim gjatë orëve kulmore për linjën 10?
03 to 04 buses per hour depending on the local traffic conditions (Headway: 20 minutes).
The peak hours are:
- From 7 to 8 hours.
- From 12 to 13 hours.
- From 16 to 17 hours.

s) Could you explain generally how the overall bus fleet control process takes place, works?
A mund të shpjegoni në përgjithësi si funksionon kontrolli i flotës së autobusëve?
The company control their operations by cellphone communication.

t) How bus operation in the network is monitored? (AVL, GPS, CCTV, Field inspectors). Do you monitor your operations (Line 10)?
Si monitorohet operimi i autobusëve në rrjet? (AVL,GPS,CCTV, Mbikëqyrës në terren).A e bëni monitorimin e operimeve tuaja (linjën 10)
The company monitors their operations by cellphone communication, and the use of eventual field supervisors. The company does not use GPS, AVL or CCTV mechanisms.

u) Is there any degree of priority signal control for buses at intersections? If so, what is the degree of priority?
A ka ndonjë prioritet në sinjalizim të trafikut për autobusë në udhëkryqe? Nëse po cila është shkalla e prioritetit?
No

v) Under the existent conditions. Could you explain generally how the passengers' information process takes place, works (Electronic, online, physical, manual)? Do you provide any information to your passengers about your offered services, and how? (Line 10)?
Sipas kushteve ekzistuese. A mund të shpjegoni në përgjithësi si funksionon procesi i informimit të udhëtarëve (elektronike, online, fizikisht)? A siguroni informata për udhëtarë në lidhje me ofertat e shërbimeve të juaja dhe si e bëni këtë (Linjën 10)?

The Municipality is in charge of it. They provide users information about ticket prices, itineraries, and the line alignments (maps) in bus stops.
The company (24 yjet) provides some information through facebook, and also receive customers in their office. Outside the buses (windshield) there is a summarized description of the itinerary.

w) If available. What are the selection standards and qualifications required for the new operations personnel (operations planning, driving, maintenance)?
Nëse është e mundur. Cilat janë standardet dhe kualifikimet që kërkohen për zgjedhjen e personelit të ri (planifikimin e operimit, menaxhim, ngasje, mirëmbajtje)?

For the drivers, a "D" category professional Driver's License is required, plus testing for 01 week in the two types of buses operated by the company (12 meters standard, 18 meters articulated).

x) What is the level of qualifications / preparation, of the current operations personnel (operations planning, driving, maintenance)?
Cili është niveli i kualifikimit/përgatitjes i personelit ekzistues (planifikimin e operimit, menaxhim, ngasje, mirëmbajtje)?

They are currently satisfied with the level of preparation of their personnel, given their accumulated experience, in some cases over 13 years.

y) If it is the case. How the current operations personnel (operations planning, driving, maintenance) is trained (company supported programs, others)?
Nëse është kështu. Si bëhet trajnimi i personelit ekzistues? Sa orë brenda një viti trajnohen? (Nëse ka ndonjë regjistrim detal të orëve të trajnimit)

The company provides training for the technical and operations personnel only when newer buses are acquired. The company purchases 2 to 3 newer second hand buses every year.

z) Thank you for your time. Please feel free to express any opinion or comment about the interview.
Faleminderit për kohën tuaj. Të lutem ndjehu i lirë të shprehësh çdo mendim apo koment rreth intervistës

A1.1.14 Interview report: Chief of vehicle maintenance, Private company B "24 Yjet" – Line 10 (Technical interview about maintenance procedures) – With interpreter

Manuali i intervistës: Shefi i mirëmbajtjes së autobusëve, Kompania private A- linja 10 (Intervistë teknike për procedurat e mirëmbajtjes) – Me interpretuesi

Interview to: Mr. Agim, Manager of parking and maintenance "24Yjet", Interpreter: Eng. (Transport) MSc. Liridon Sejdiu

i) Could you explain generally how the overall bus fleet maintenance procedure takes place?
A mund të shpjegoni në përgjithësi mënyrën e funksionimit të procedurave të mirëmbajtjes së autobusëve?
The Technical-Maintenance area of the company has 10 employees who work in 02 shifts.
The Technical-Maintenance of the bus fleet has 03 main functions: Washing-cleaning, Mechanic (Repairs), and Technical checkups (fuel, oil).

j) Could you describe what is the maintenance strategy pursued by the company? (Predictive, Preventive, Reactive, Other).

A mund të përshkruani cila është strategjia e mirëmbajtjes që ndiqet nga kompania? (planifikues, parandalues, reagues, të tjerë)

They do regular checkups when the vehicles are parked, they assess the condition of the bus and based on them, they replace the parts (Preventive-Reactive).

Every bus has a manual where the procedures for maintenance are established. They try to follow those procedures.

k) Could you describe (if it is the case), what is the daily service provided to the vehicles?
A mund të përshkruani (sipas mundësisë), cili është kontrolli ditor që ju bëhet automjeteve (autobusëve)?
At 5am start the first shift (one hour before the start of the service), then the following functions are pursued in all buses:
- Interior cleaning
- External washing
- Level of fuel and oil checkup
- Tires air pressure
- Fueling

l) Could you describe what are your maintenance service categories (A,B,C,D) and intervals you pursue for maintenance inspection, replacement of parts and repairs?
A mund të përshkruani cilat janë kategoritë e shërbimit të mirëmbajtjes (A,B,C,D) dhe intervalet që i ndiqni për mirëmbajtje, mbikëqyrje, zëvendësim dhe riparim të pjesëve?

Operator B - "24 Yjet"	Interval	Unit
Daily: Cleaning, tires checkup, fuel/oil inspection	1	Day
Service A: Oil check, change of filters, change of direction system	10,000	Km
Service B: Change of break system,	40,000	Km
Service C: They do a detailed inspection	50,000	Km
Service D: Full replacement of buses	400,000	Km

m) What is the measured "Mean distance between failures" (MDBF) indicator the company usually has?
Sa është indikatori "Distanca mesatare ndërmjet dështimeve" që zakonisht e posedon kompania?
40,000 Kms. They buy original parts and know every how long they will fail.

n) What is the maximum life length of your bus fleet (Before replacement)? (If possible provide a table with the ages per unit).
Sa është jetëgjatësia maksimale e flotës së autobusëve tuaj (para zëvendësimit)? (Nëse është e mundur të sigurohet një tabelë me vitet për njësi)
They operate second hand buses for 4 to 5 years. In 2016, they bought buses manufactured in year 2001 (15 years old at the time). Buses are now 16 years old.

o) If it is the case. How do you determine or assess the maximum life length of your bus fleet? (If possible provide a table with the ages per unit).
Nëse është ashtu. Si e përcaktoni ose vlerësoni jetëgjatësinë maksimale të flotës suaj të autobusëve? (nëse është e mundur të sigurohet një tabelë me vitet për njësi)

It depends on the mechanic assessment and physical condition of the buses. Based on the information provided in the previous question, the maximum life length of their buses can get then to be as old as 20 or 21 years.

p) Thank you for your time. Please feel free to express any opinion or comment about the interview.
Faleminderit për kohën tuaj. Të lutem ndjehu i lirë të shprehësh çdo mendim apo koment rreth intervistës.

Annex 3: Descriptive statistics detailed results per line and operator

A3.1 Dependent variable: Service Quality Perceived per line and operator

Table 19: DV descriptive statistics for L3

L3 - SQP questionnaires results (Bus users)

DV - SERVICE QUALITY PERCEIVED (MEAN SCORES)		N	Min.	Max.	Mean (per SQP criteria)
Time	(i) Waiting time P	83	1.0	4.5	3.05
	(i) Board/Alight time P				
	(i) On board time P				
	(i) Adherence to schedule P				
Safety	(i) Safety on the road P	83	3.0	5.0	4.88
Security	(i) Security in bus stops P	83	3.0	5.0	4.89
	(i) Security in buses P	83	2.0	5.0	4.78
Space availability	(i) Seat. space availability P	83	1.0	5.0	3.55
	(i) Stand. Space availability P	83	1.0	5.0	2.88
Comfort	(i) Bus design P	83	1.0	4.5	2.53
	(i) Bus int. cleanliness P				
	(i) Bus ext. cleanliness P				
	(i) Bus overall condition P				
System information	(i) Information in bus stop	83	1.0	4.0	1.59
	(i) Information in bus P				
	(i) Information online/app P				
Customer service	(i) Staff preparation P	83	1.0	5.0	3.48
	(I) Staff kindness P	83	1.0	5.0	3.66
DV Overall SQP (Statistical mean)		83			3.53
DV Overall SQP (Direct answer from bus users)		83			2.90

Table 20: DV descriptive statistics for L4

L4 - SQP questionnaires results (Bus users)

DV - SERVICE QUALITY PERCEIVED (MEAN SCORES)		N	Min.	Max.	Mean (per SQP criteria)
Time	(i) Waiting time P	108	2.5	5.0	3.98
	(i) Board/Alight time P				
	(i) On board time P				
	(i) Adherence to schedule P				
Safety	(i) Safety on the road P	108	1.0	5.0	4.86
Security	(i) Security in bus stops P	108	1.0	5.0	4.83
	(i) Security in buses P	108	1.0	5.0	4.76
Space availability	(i) Seat. space availability P	108	1.0	5.0	3.87
	(i) Stand. Space availability P	108	1.0	5.0	3.62
Comfort	(i) Bus design P	108	2.3	5.0	4.52
	(i) Bus int. cleanliness P				
	(i) Bus ext. cleanliness P				
	(i) Bus overall condition P				
System information	(i) Information in bus stop	108	1.0	3.7	1.82
	(i) Information in bus P				
	(i) Information online/app P				
Customer service	(i) Staff preparation P	108	1.0	5.0	4.00
	(I) Staff kindness P	108	1.0	5.0	4.25
DV Overall SQP (Statistical mean)		108			4.05
DV Overall SQP (Direct answer from bus users)		108			4.38

Table 21: DV descriptive statistics for L5

L5 - SQP questionnaires results (Bus users)

DV - SERVICE QUALITY PERCEIVED (MEAN SCORES)		N	Min.	Max.	Mean (per SQP criteria)
Time	(i) Waiting time P	83	1.3	4.8	3.44
	(i) Board/Alight time P				
	(i) On board time P				
	(i) Adherence to schedule P				
Safety	(i) Safety on the road P	83	4.0	5.0	4.98
Security	(i) Security in bus stops P	83	4.0	5.0	4.98
	(i) Security in buses P	83	4.0	5.0	4.94
Space availability	(i) Seat. space availability P	83	2.0	5.0	3.59
	(i) Stand. Space availability P	83	1.0	5.0	3.30
Comfort	(i) Bus design P	83	1.0	5.0	2.37
	(i) Bus int. cleanliness P				
	(i) Bus ext. cleanliness P				
	(i) Bus overall condition P				
System information	(i) Information in bus stop	83	1.0	3.0	1.62
	(i) Information in bus P				
	(i) Information online/app P				
Customer service	(i) Staff preparation P	83	2.0	5.0	4.12
	(I) Staff kindness P	83	2.0	5.0	4.27
DV Overall SQP (Statistical mean)		83			3.76
DV Overall SQP (Direct answer from bus users)		83			3.24

Table 22: DV descriptive statistics for L10

L10 - SQP questionnaires results (Bus users)

DV - SERVICE QUALITY PERCEIVED (MEAN SCORES)		N	Min.	Max.	Mean (per SQP criteria)
Time	(i) Waiting time P	83	1.8	5.0	3.98
	(i) Board/Alight time P				
	(i) On board time P				
	(i) Adherence to schedule P				
Safety	(i) Safety on the road P	83	3.0	5.0	4.84
Security	(i) Security in bus stops P	83	2.0	5.0	4.86
	(i) Security in buses P	83	1.0	5.0	4.73
Space availability	(i) Seat. space availability P	83	1.0	5.0	3.04
	(i) Stand. Space availability P	83	1.0	5.0	3.02
Comfort	(i) Bus design P	83	1.3	5.0	3.75
	(i) Bus int. cleanliness P				
	(i) Bus ext. cleanliness P				
	(i) Bus overall condition P				
System information	(i) Information in bus stop	83	1.0	4.3	2.23
	(i) Information in bus P				
	(i) Information online/app P				
Customer service	(i) Staff preparation P	83	1.0	5.0	4.14
	(I) Staff kindness P	83	2.0	5.0	4.48
DV Overall SQP (Statistical mean)		83			3.91
DV Overall SQP (Direct answer from bus users)		83			4.13

A3.2 Independent variable: GM function and sub-function per line and operator

Table 24: IV descriptive statistics for L3

L3 - Responsible operator: Trafiku Urban (outsourc. Serv.)

IV - GM OPERATIONAL FACTORS (SCORES)		N	Mean
Maintenance	(i) Maintenance strategy.	83	1.00
	(i) Maintenance daily servicing.	83	3.00
V. Renewal	(i) Vehicle ages range.	83	1.00
	(i) Maximum life lenght of vehicles.	83	1.00
Scheduling & Operation	**(i) Demand responsiveness ratio**	83	**5.00**
	(i) Demand responsiveness headway	83	**4.00**
	(i) Frequency PH **	83	**4.00**
Control of operations	(i) Vehicle monitoring functionality (AVL, other).	83	3.00
	(i) Intersections bus priority (signaling, control) **	83	1.00
Information IT	(i) Automated data collection (passenger counts).	83	3.00
	(i) Passenger information provision **	83	1.00
Personnel	(i) Personnel selection standards.	83	3.00
	(i) Personnel level of training.	83	3.00
IV Gov. Management Operational factors (i mean score)		83	**2.54**

** Municipal functions (Public Authority)

Table 23: IV descriptive statistics for L4

L4 - Responsible operator: Trafiku Urban

IV - GM OPERATIONAL FACTORS (SCORES)		N	Mean
Maintenance	(i) Maintenance strategy.	108	3.00
	(i) Maintenance daily servicing.	108	**5.00**
V. Renewal	**(i) Vehicle ages range.**	108	**5.00**
	(i) Maximum life lenght of vehicles.	108	**5.00**
Scheduling & Operation	**(i) Demand responsiveness ratio**	108	**5.00**
	(i) Demand responsiveness headway	108	**5.00**
	(i) Frequency PH **	108	**5.00**
Control of operations	**(i) Vehicle monitoring functionality (AVL, other).**	108	**5.00**
	(i) Intersections bus priority (signaling, control) **	108	1.00
Information IT	(i) Automated data collection (passenger counts).	108	3.00
	(i) Passenger information provision **	108	1.00
Personnel	**(i) Personnel selection standards.**	108	**5.00**
	(i) Personnel level of training.	108	**5.00**
IV Gov. Management Operational factors (i mean score)		108	**4.08**

** Municipal functions (Public Authority)

Table 25: IV descriptive statistics for L5

L5 - Responsible operator: Germia tours / Ulpiana (Private)

IV - GM OPERATIONAL FACTORS (SCORES)		N	Mean
Maintenance	(i) Maintenance strategy.	83	1.00
	(i) Maintenance daily servicing.	83	3.00
V. Renewal	(i) Vehicle ages range.	83	3.00
	(i) Maximum life lenght of vehicles.	83	1.00
Scheduling & Operation	(i) Demand responsiveness ratio	83	5.00
	(i) Demand responsiveness headway	83	4.00
	(i) Frequency PH **	83	4.00
Control of operations	(i) Vehicle monitoring functionality (AVL, other).	83	1.00
	(i) Intersections bus priority (signaling, control) **	83	1.00
Information IT	(i) Automated data collection (passenger counts).	83	3.00
	(i) Passenger information provision **	83	1.00
Personnel	(i) Personnel selection standards.	83	3.00
	(i) Personnel level of training.	83	3.00
IV Gov. Management Operational factors (i mean score)		83	**2.54**

** Municipal functions (Public Authority)

Table 26: IV descriptive statistics for L10

L10 - Responsible operator: 24 Yjet (Private)

IV - GM OPERATIONAL FACTORS (SCORES)		N	Mean
Maintenance	(i) Maintenance strategy.	128	3.00
	(i) Maintenance daily servicing.	128	5.00
V. Renewal	(i) Vehicle ages range.	128	3.00
	(i) Maximum life lenght of vehicles.	128	3.00
Scheduling & Operation	(i) Demand responsiveness ratio	128	5.00
	(i) Demand responsiveness headway	128	3.00
	(i) Frequency PH **	128	2.00
Control of operations	(i) Vehicle monitoring functionality (AVL, other).	128	3.00
	(i) Intersections bus priority (signaling, control) **	128	1.00
Information IT	(i) Automated data collection (passenger counts).	128	3.00
	(i) Passenger information provision **	128	3.00
Personnel	(i) Personnel selection standards.	128	3.00
	(i) Personnel level of training.	128	5.00
IV Gov. Management Operational factors (i mean score)		128	**3.23**

** Municipal functions (Public Authority)

Annex 4: Photographic dossier of bus lines studied

Line 3

Image 23: Interior bus L3

**Image 24: Front view bus L3**

Line 4:

Image 25: Front view buses L4 (Germise park)

Image 27: Boarding L4 (Cathedral bus stop)

Image 26: Interior bus L4

Line 5:

Image 28: Exterior view of bus L5

Image 30: Front side of bus L5

Image 29: Interior of bus L5

Line 10:

Image 31: Interior of bus L10

Image 33: Boarding L10 (Cathedral bus stop)

Image 32: Bus L10 running through Avenue Agim Ramadan

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