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INTERDEPENDENCE BETWEEN REBRANDING OF PUBLIC TRANSPORT SYSTEM AND TRANSIT MARKETING PERFORMANCE

– Moscow Transport case

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The fast moving world requires fast and adequate reaction to the changes in the environment. The field of public transport is not an exception. Moscow is the center of Russia in economic, cultural and political sense, which is why the internal transport system plays a vital role not only in connecting parts of the city, but also in economic development of the region.

With the new rebranding program started in 2014, citizens obtained completely new perception of public transport in the capital. New brand image, services and features were introduced, new levels of comfort were obtained according to standards of living in megapolis. It gave new possibilities for businesses as well.

The main idea of this work – is the search of interconnection between the new brand of the transport system in Moscow and the effect of these changes on the marketing initiatives. Advertising market has changed over past 2 years in sense of new advertising formats and strict regulations from the government.

Passenger flow, as the potential audience, was analyzed, revealing current trends of volume raise, along with tendencies of passenger traffic distribution between means of transportation.

KEYWORDS:

Public transport, rebranding, transit marketing, Moscow, transport system, passenger flow;

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LIST OF ABBREVIATIONS (OR) SYMBOLS

Avg.	Average
BMSTU	Bauman Moscow State Technical University
CEO	Chief executive officer
FOV	Field-of-view
GLONASS	Global Navigation Satellite System
GRP	Gross Rating Point
ITS	Intelligent Transport Systems
JSC	Joint-stock company
LLC	Limited Liability Company
MCC	the Moscow Central Circle
OOH	Out-of-Home
OTS	Opportunity to see
PJSC	Public joint-stock company
ROI	Return on investment
RUB	Russian ruble
SUE	State Unitary Enterprise
ТАТ (Russian)	Троллейбус, Автобус, Трамвай (Trolleybus, Bus, Tram)
ЦОДД (Russian)	Центр Огранизации Дорожного Движения (the Center of Traffic Organization)

1 INTRODUCTION

The world is always changing nowadays. The environment around people, life styles, standards, people's needs – all change at some point. That is why people should always be able to adapt fast enough in order not to lose the comfort. This also covers the business world. With the raising impact of consumerism as well as with new standards and expectation of services, companies (no matter if they are government owned or private ones) should always fulfill customer's needs.

The sector of public transportation is essential for big, developing cities, especially when a capital of the country, a huge economic, political and cultural center is taken as a case. One of the main role of public transport is sustainable urban development. In particular, the public transport system significantly improves traffic safety and provides a significant conservation of natural and financial resources, comparing with private vehicles. It is hard to imagine life inside the city without the transport system, as it can be seen and understood as "blood system" connecting all parts of the city with each other. It also represents the quality of life and infrastructure in the city. That is why new services and ideas should be introduced inside that system to make life comfortable for each citizen.

1.1 Motivation

The decision to research the area of public transport can be easily explained. Millions of people use public transport every day. People do expect the certain level of the service and comfort during daily trips, especially when these trips are always connected with rush hours, stress, timing and many other factors, which are critical for modern citizens.

The impact of the transport system in Moscow on the life of citizens is enormous. Passenger traffic is one of the biggest in the world. According to Moscow news channel "Москва 24" (Moskva 24) in 2014 (January – August), the volume of people using ground transport exceeded 1 billion people. Daily ridership on ground transportation in 2013 was 5.5 million people with the slight increase by 6% in 2014 – 5.85 million people. (www.m24.ru, 2016) Almost 2.5 billion people use Moscow metro annually, and this number is rapidly growing. (ИА Финмаркет, 2015) As can be seen from the data above, Moscow transport system is vital for a big amount of population. From marketing perspective, the audience exceeds millions of people on a daily basis.

With such huge market, the transport system has huge potential for both transport organizers and stakeholders. Analyzing statistical data along with the theoretical base, it is possible to discover interdependence between the organization of transportation in Moscow and the behavior of passengers and advertisers.

As the process of rebranding happened couple of years ago and is still on going, I believe that the information obtained from this research will contain the most recent information representing the real state of the transport organization in the city.

1.2 Structure of the thesis

This work is divided into two main semantic parts: rebranding of public transport and the theory of transit marketing. Even though these topics cover different aspects of marketing, I have the right to believe that they can be combined due to their close relation and connection.

First of all, new brand of Moscow Transport will be examined, with structuration of initiatives and changes. As the result, reader will get a clear picture of the new brand, as well as the reader will be able to watch how rebranding resulted in marketing filed, how it influenced regulations in this market. Later in the work, it will be possible to analyze passenger flows in order to see the behavior of users (their perception of the new brand, structural changes in volumes), as the reflection of these initiatives.

Rebranding - is "*the act of changing the way that an organization, business company, or product appears to the public*". (Cambridge Dictionary, 2016) This field of marketing, being relatively new, develops even nowadays. However, rebranding should never be understood unilaterally. What in fact is rebranding. It is not just simple change of the logo or slogan, in contrast, it is a deep internal process of developing the new way of thinking of the company, invention or introduction of new services to the market and public, and of course last but not least – is redesigning of corporate property and features (which include logos, advertisement, slogans etc.) in order to keep company up to date with fast moving and changing world and standards of service and design.

Transit marketing being part of Out-of-Home media advertising includes various advertising venues that reach primarily local audiences. (O'Guinn, Thomas Clayton; Allen, Chris T.; Semenik, Richard J.; Scheinbaum, Angeline Close;, 2015) This is quite

popular form of marketing around the globe, represented by ads in metro stations (tunnels), on taxis, buses, inside metro cars and so on.

Introduction of the new design and the new system in public transport system directly influences the advertising area, as new types of ads appear, companies and agencies start thinking of new ways to promote their products so that they can adapt to changes and reach maximum of potential customers. In addition, the rebranding of the transport system is presented by its main goal – to increase ridership; advertising agencies and businesses set this goal likewise. Higher service standards lead to the high quality of content in ads – people start perceiving the advertisement in a new different and modern way. Therefore, by combining these two parts into one research I expect to gain the better picture of this problem and I hope that this can also lead to deeper analysis of the data.

1.3 Objectives and research questions

The main objectives of the **first part** will be 1) understanding of the reasons for the change of brand, 2) systematization of the development process of Moscow transport chain, and as a result – 3) forecasts and future prospects. Main questions in this part are:

> **RQ 1.1** What is the main reason for this initiation, what is the trigger? Who initiated this program?

In this part of the research, it was planned to chronologically observe the development of the idea of the rebranding of the transport system in Moscow. The structure of the whole transport system was revealed by naming all means of transportation and services offered for citizens and their hierarchical order and interrelation.

> **RQ 1.2** Which new services and innovations were introduced to the public, and what was the reaction (feedback)?

> **RQ 1.3** How did this strategic move result in the financial and marketing sense? Were there any improvements and what capabilities were discovered for stakeholders?

Statistical data and official reports was used in order to give a clear picture that provides information about costs, profits of the ground transport and metro. The collaboration of stakeholders and transport system was also considered.

RQ 1.4 What are future prospects and space for further development?

The main questions covered in the **second part** of the research is connected with the marketing efficiency of the rebranding initiative. Statistical data, gathered from different sources led to a clear vision on the situation in the advertisement market in this particular (transit) field. Furthermore, the comparison will take place. As there are two major means of transportation in Moscow (ground transport and metro), it is vital to compare their marketing capacities in a sense of passenger flow.

These main questions are:

RQ 2.1 What forms of transit marketing are presented in Moscow market now and how the rebranding of the system managed to develop advertising market?

This part of thesis work describes the possible ways to advertise presented by different means of transportation, its integration to the system. The impact of social or cultural messages is also discussed in this fragment.

RQ 2.2 Passenger flow discussion. What is the situation in passenger traffic volumes in public transport, what are the trends and future expectations? How does the volume of traffic open new possibilities and new markets for advertisers?

RQ 2.3 What are the forecasts for the metro passenger carriage volumes in the nearest future?

RQ 2.4 Is there any structural changes in the share of passenger flow between means of transportation?

As the result of the work, the whole idea of the rebranding of Moscow public transport was systematized. The clear picture of new services is shown: what is new, what is reaction, advantages and disadvantages, possibilities to develop in future. The main goal is to discover the connection between introduction of the new brand and the efficiency of transit marketing in Moscow region.

2 LITERATURE OVERVIEW

This research combines materials and methods from different areas of marketing. While the topic of branding already has some research base, conducted by many scientist and professors all over the world, it is still a developing field of science. It also requires the creative side of the problem solution as it is quite flexible in terms of understanding and interpreting.

Transit marketing as a part of marketing developed frequently, and still it has no certain and formulated method of research or calculation that companies can use. It can be easily explained by the nonuniformity and variability of the research subject. There are too many variables, which is hard to state. That is why it is necessary to combine all possible research methods for this particular filed of marketing and use them as a complex of initiatives to determine the efficiency and effectiveness of a marketing campaign.

2.1 Rebranding

Brand – is *"unique design, sign, symbol, words, or a combination of these, employed in creating an image that identifies a product and differentiates it from its competitors. Over time, this image becomes associated with a level of credibility, quality, and satisfaction in the consumer's mind."* (BusinessDictionary.com, 2016)

Nowadays many companies use rebranding for a change of their corporate identity. In order to carry out this process there must be important reasons. I believe that on any segment of the market, competition plays a major role; it is usually seen as the driver of the development of any business. With the intention of rising above competitors, a company must have the most effective brand image, representing all the advantages of company itself, its product or service.

2.1.1 Reasons for changes (RQ 1.1)

Rebranding as phenomena was analyzed by various studies. However the main problem in this case that there is no particular idea about why rebranding occurs. Many specialists in this field have different vision on this problem, introducing new factors for this situation. Two main directions can be named as the cause of corporate rebranding: external and

internal reasons. Internal rebranding causes name desire to upgrade business perception and image, the change in structure as main reasons for these activities, while external factors are represented by competition, changes in market etc. (Tevi & Otubanjo, 2013)

Structured causes of the rebranding in companies can be found in table 1, according to different authors.(Goi & Goi, 2011) Anyway, the main aim of the rebranding process is to become closer to the target audience of a product or service, to meet the changing realities of the market and to improve overall competitiveness of the organization.

Table 1. Causes of rebranding

Authors	Boyle (2002)	Lomax et al (2002)	Gambles and Schuster (2003)	Kaikati and Kaikati (2003)	Rosenthal (2003)	Causon (2004)	Stuart and Muzellec (2004)	Muzellec and Lambkin (2006)
Internal drivers		Corporate structural change	Changes in the image of the service		Upgrading	Unite the organization behind one brand. Align the culture. Re-establish and re-energize position. Embed the new vision, mission and values	Mergers. Acquisitions and divestitures, Image is outdated. New focus or vision. New socially responsible image	Change in ownership structure. Change in corporate strategy
External drivers	Increasing disturbance and competitive environment.	Concern over external perceptions of the organization and its activities		Economic slow down			Shifts in the marketplace. Change in the economic and legal conditions	Change in external environment. Change in competitive position

However rebranding should not be misunderstood as just *"the practice of building anew a name representative of a differentiated position in the mind frame of stakeholders and a distinctive identity from competitors".* (Ahonen, 2008) In this case, it is used only as a process of changing the name, which is not always represents the case. Usually change of name leads to a dramatic loss of the customer base and all values that the old name had. Rebranding is more deep and more complex process: new heritage is built as well as new customers begin to appear, building new connections. Rebranding - it is also a unique tool for interaction with potential clients and partners. By the moment when the company decides to rebrand, it must already hold a qualitative change in its professional activities, which includes the increase in quality, introduction of new services etc.

2.1.2 Evolution Theory Perspective framework

One of the most popular and developed theories of rebranding remains **an Evolution Theory Perspective** where company is referred to a biological organism and rebranding plays role of evolution. Darwin's Theory of Evolution by Natural Selection was used as the basis of the analysis. Knowing the idea of Darwin's research it is easy to understand why rebranding is compared with natural evolution of the company, where competition plays the role of trigger, the main environmental factor.

But in contrast, from Natural Selection theory, corporate rebranding has two way: **evolutionary** and **revolutionary**. The evolutionary framework is the process where two parties take action with constant feedback from environment and stakeholders while building new brand equity. This process is less rapid comparing to revolutionary, but the brand image is adopted fully by the end of the process as no dramatic changes occur. Figure 1 graphically illustrates the idea of this framework. (Tevi & Otubanjo, 2013)

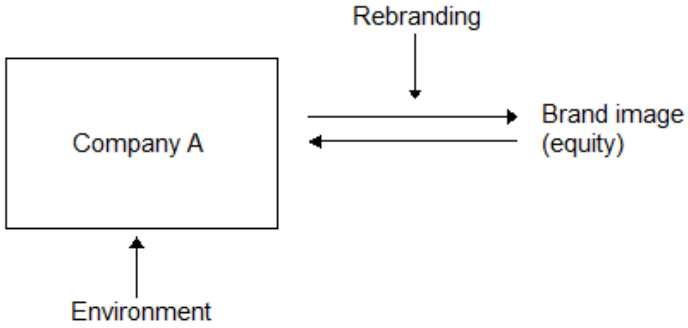


Figure 1. The evolutionary rebranding framework

As mentioned above, the revolutionary framework is characterized by transferring of equity from one company to brand new, and by establishing a new one. After that the process is the same as in the evolutionary path: development of new image and constant feedback (Figure 2) (Tevi & Otubanjo, 2013). One of the disadvantages of such fast and radical changes is that the stakeholders do not have time to get used to the new brand.

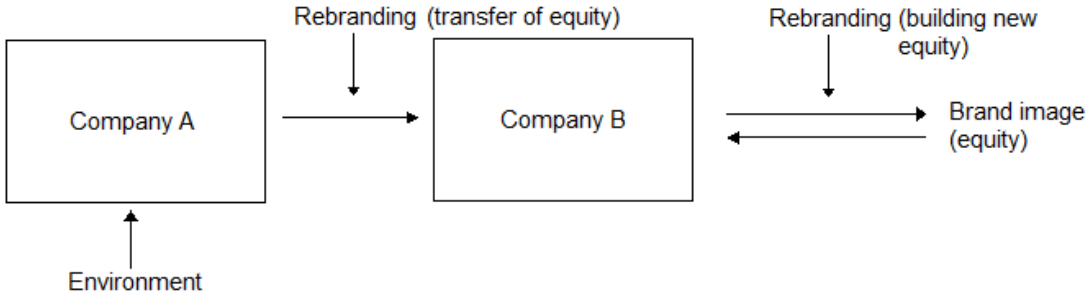


Figure 2. The revolutionary rebranding framework

2.1.3 Stages of rebranding

For clarity, it is necessary to have a clear vision on when rebranding usually occurs in the brand life cycle. It is common knowledge that can be out of date, not corresponding to modern trends. That is why among the most important reasons to rebrand I leave competition and relevance of the company. On Figure 3, designed by Russian scientists (Gukova & Patueva, 2009), one can observe the introduction of rebranding strategy.

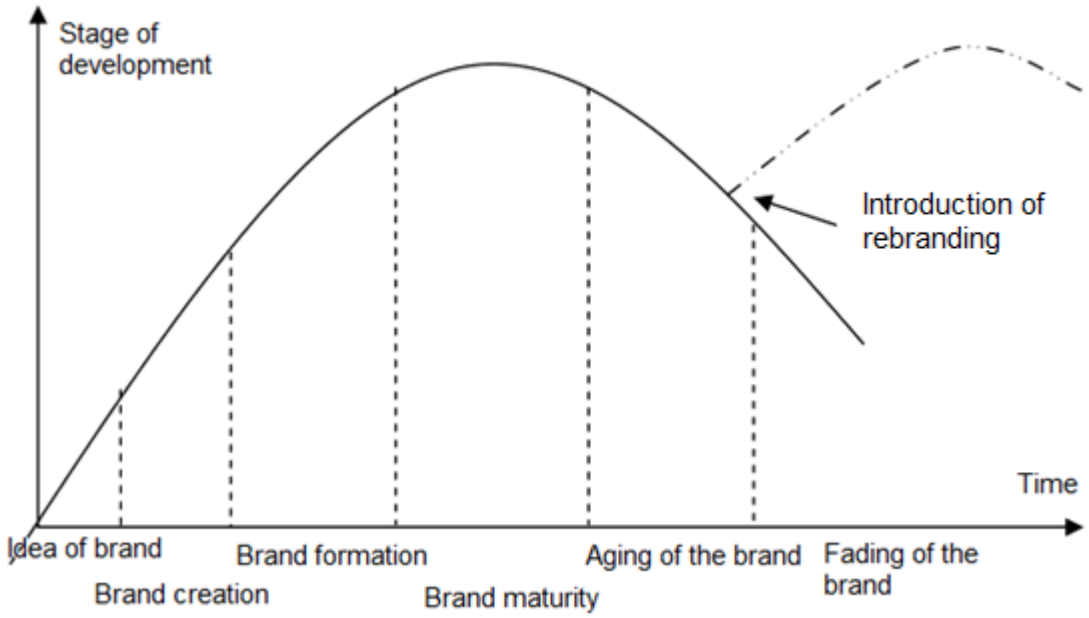


Figure 3. Brand life cycle

Changing needs of the audience blurs existing brand position. At the same time, increased competition, the appearance of new players and innovative products in the market, the development of new distribution channels and new ways of promotion force marketers to go back to the origins of the development of the brand and start all over again. Meanwhile, many CEOs and directors of marketing are not satisfied with attempts at the rebranding process of their companies. Quite often huge marketing investments, aimed at the repositioning of the product, do not pay off, do not lead to a long-awaited growth of the market and do not improve the brand image.

The main aim of the rebranding of the company is to get closer to the target audience of the product, meet the changing realities of the market and improving overall competitiveness of the company's goods or services. Companies often fail because of the inability to focus on an achievable brand position, being eager to reach the imaginary unattainable position in the market. Very often their desire to reach ambitious goals

exceeds the real possibilities of the brand. Sometimes the imaginary new position is so far from the current brand perception, which cannot be a realistic goal of the new positioning.

In every process, the most important and crucial stages are analysis and feedback. Figure 4 describes the process of rebranding inside of the enterprise. (Ahonen, 2008)

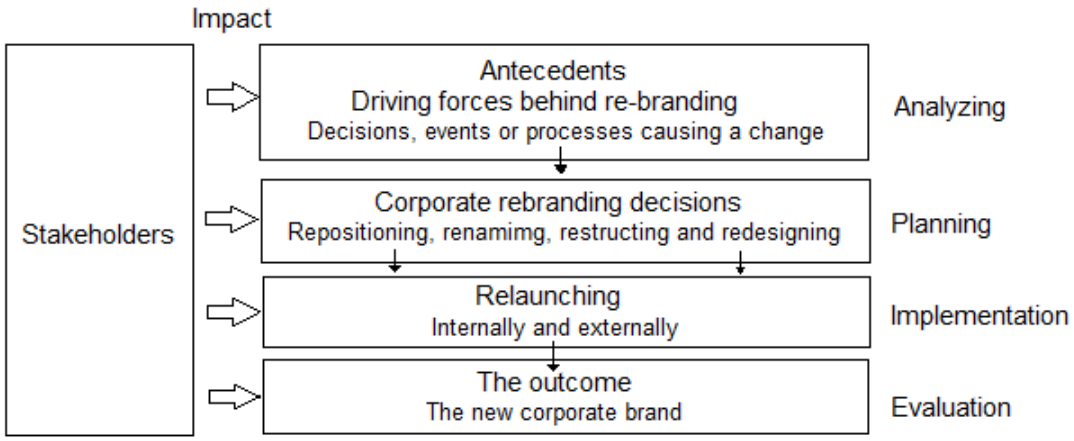


Figure 4. Corporate Rebranding Process: A Preliminary Theoretical Framework

Analyzing always must be the first stage of the process. This phase includes internal and external decisions, events and triggers which cause changes inside the company. It is important to make sure that the company has actual and full vision of their customer segment. Each customer has personal perception towards different brands and when to use them. As a result of the acquisition of experience and the use of the goods consumers form a certain set of marks that are relevant to a particular situation.

Thus, when it comes to the repositioning of the brand it is very important for a marketer not only to identify the necessary functional and emotional needs of the target audience (who are motivated to buy), but also to understand the situation of use of the goods, where needs are identified. The combination of customer needs and the situation of use of the goods is called **frame of reference** (McKinsey & Company, 2013).

Planning consists of smaller sub actions such as repositioning, renaming, redesigning adding new services and so on. In addition it is decided the level of changes at this stage: from minor to major changes. It is necessary to build the right ”bridge” between two main concepts: the brand image in the eyes of the audience and what actually company tries to build as a result of repositioning. The consumer is the one who can measure how strong this ”bridge” is.

"Bridges" between the actual and target the perception of the brand is best built on the emotional benefits or features of goods that are valued by the consumer. Emotional benefits of the brand form loyalty of the target audience and allow to the brand to reposition itself on the related markets in similar product categories.

Implementation is reflected by the relaunching of the new image, designed before. This was discussed before (see Figures 1-2).

Evaluation is on the most important stages as it consists mainly of feedback. Once the new position of the brand developed, marketers must ensure the possibility of the new brand promises. Three main rules should be taken into consideration:

1) Marketers should discover ”signals” on which the consumer understands that the brand keeps its promises during purchase. The term "signal" refers to the characteristics, features and the results of the use of the goods, which may be noticeable and measurable by any consumer.
2) Specialist should develop campaigns for supporting their products in order to keep promises.
3) Control programs over the execution of the program identified "signals" should be developed. The introduction of strict quality control allows collecting permanently and processing of information about the level of customer satisfaction, and will make it possible to respond quickly to the negative experience and to take corrective measures.

Very often, the company's brand cannot immediately comply with the new positioning of its characteristics. Also, it takes time and resources to update the product or service, the development of new support programs and so forth. In this case, many marketers are developing intermediate positioning. Intermediate positioning is based on characteristics which a brand can achieve at the moment.

In this situation, the vector of development of the brand is as follows: current positioning $\rightarrow$ intermediate positioning $\rightarrow$ new positioning.

2.1.4 Rebranding as a marketing tool in Russia

Rebranding is relatively the new tendency in Russian markets. Business operations in Russia can be characterized as struggle with external factors, and that is why it is

important for marketers to realize that marketing initiatives, including rebranding, is a perfect tool for strengthening positions in the market.

As the repositioning of the whole company is extremely expensive, labor- and time-consuming process, not all companies are ready for changes; they whether try to survive with current assets, try to adapt, or reposition their particular products.

When we speak about complex structural renovation of business, only the biggest enterprises or government owned organizations could afford such initiatives. All these actions take place, first of all, in order to regain positions of the organization and attract more and more new customers. Popularization of governmental services is a huge trend in Russian Federation now, which can be explained with higher competition on the market, political causes (such as import substitution) and simple desire to be up to date, as many of the brands has not changed since Soviet times.

Among the biggest and the most noticeable changes, it can be high-lightened cases of:

- PJSC VimpelCom (in 2005);
- Sberbank of Russia (2009);
- PJSC Rostelecom (2011).
- PJSC Aeroflot – Russian Airlines (2003);
- JSC Russian Railways (RZD) (2007);

Moreover, in 2014 Moscow Transport decided to go the same path and renovate its corporate idea and brand, which will be discussed in chapter 3 – Moscow Transport case.

2.2 Out-of-Home marketing: transit advertising

Out-of-Home media primarily aimed to reach specific local audiences. This is one of the strongest advantages of this form of advertising, as it is geographically flexible and advertisers can decide themselves where to spread their message by different local areas with specific audience.

It can be simply defined as any outdoor advertisement. The numerous forms of out-of-home media can be available in big cities, for example:

- Outdoor boards (electronical or traditional);
- Transit (inside and out);
- Mobile billboards;
- Wild postings;
- Aeral advertising etc. (Blakeman, 2014)

With a growing role of public transportation in city life, transit advertisrment is becoming more popular for advertising agencies as the strong channel between companies and potential customers. It has a huge creative base, e. g. there is broad potential for designing and introducing new ways to advertise, moving from traditional stickers on buses to the digital era. The city of Moscow is not an exception with the adoption of the new digital advertisement, which will be examined deeper in next paragraph.

Advertising on transport is carried out on the basis of contracts with the owners of vehicles or companies having property rights on these vehicles. In this case the advertisers usually do not interact with the owners of vehicles directly; operating agencies are the owners of the contracts for the placement of the transit advertisement, which have special rights on the implementation of specific advertisement media or bound by the advertising space owners. These agencies also carry out servicing and recycling of promotional materials.

It should be noted that in Russian Federation in the segment of transit marketing, government agencies use more complex, than in the advertising industry as a whole, administrative regulation. Outdoor advertising is regulated not only by the federal law "On Advertising" (Federal Law "On Advertising" dated 13.03.2006 N 38-FZ, 2006), but also by the individual decisions of the regional and municipal authorities. Cases of limiting the spread of advertising on vehicles to ensure safety are determined by the authorities, entrusted with the control of traffic safety.

2.2.1 Forms of transit advertising campaigns

The transit advertisement is divided into two main groups:

1) Outdoor transit advertising – is placed on the outer surfaces of the vehicle, as well as on the special permanent or temporary structures located outside the transport infrastructure.
2) Indoor transit advertising – is located inside the vehicle, as well as on special permanent or temporary structures located within the transport infrastructure.

Vehicles, used for advertising, can be divided into the following main groups:

- Public ground transport;
- Metro;
- Commercial transport;
- Railway;
- Aviation;
- Personal transport.
- Water transport;
- Taxi;

Public ground transport in Moscow is represented by buses, trams, trolleybuses, minibus taxis and transport infrastructure, while metro is represented by metro stations, trains, Moscow Monorail, the MCC and metro infrastructure. The private sector is mainly represented by taxis, corporate transport, delivery etc. The private and commercial sector in this research work will not be examined.

Commenting of the research question, aimed to give clear vision of forms of transit marketing (RQ 2.1), as discussed before in this paragraph, the outer surface and the inner space is used for advertisement placement. Ads placed on the outside of vehicles have the form of stickers, which are divided into two main groups: 1) Roof advertising - is placed on the vehicle roof; 2) onboard advertising - placed on the sides of the vehicle (on the back, front and side).

The advertisement placed inside of the vehicles can be divided into three main groups, according to the advertising message transmission channel: 1) Video advertising in the transport cabin – ads on the video screens and displays in various formats; 2) Audio advertising; 3) Static advertising in the transport cabin – advertising boards, posters, leaflets, stickers of various formats.

Transport infrastructure include railway stations, metro stations, airports, bus stations, gas stations. Buildings, premises and adjacent territory of the mentioned facilities refer to advertising space. Advertising outside these buildings and in the adjacent areas of the enterprises is placed on special permanent or temporary structures, and, as a rule, does not differ from outdoor advertising elsewhere. (Journal "Индустрия рекламы" (Advertising Industry), 2008)

2.2.2 Advantages and disadvantages of transit marketing

Transit advertising effectiveness is a result of many factors, so the planning and implementation of advertising campaigns require from the advertiser knowledge of its individual features. Precisely selected transit advertising format guarantees the attention of the target audience to its content, and a considerable variety of advertising media can form an ad placement program so as to ensure the greatest number of contacts with the advertising message, and therefore the greater memorability.

Advertising on transport affects almost all sectors of the population. Not only pedestrians and passengers, but also the drivers of vehicles are paying attention to colorful vehicles, when we speak about ground transport. Due to its ability to move within the city, this type of advertising covers a much larger audience of potential consumers of the advertised product that gives him an advantage in numbers over other types of outdoor advertising. For instance, average speed of trolleybus on the route during rush hour is 20-30 km/h, which provides the high-quality perception of advertising information for both pedestrians and other participants of traffic. Moreover, the size of the advertising surface in this type of advertising is much bigger than in many other advertising platforms in the city. For example, the external surface area of one trolleybus is 77 sq.m. (long vehicle) or 59 sq.m. (short vehicle), and the advertising area is about 60%, which makes this advertising surface one of the largest and most prominent in the city. This greatly expands the possibilities for creating spectacular and memorable design.

This type of advertising provides advertisers with more freedom in their advertising targeting consumer categories. Depending on the characteristics of the goods, promotion on transport can be concentrated in a certain area of the city, where there are centers of sales of the product; or it can cover the city completely, if branding is necessary. This is achieved by selecting optimal routes by means of transport involved in the campaign. Similarly, the orientation of the advertising is available on the level of welfare of the potential buyer. Advertising can be targeted at consumers with average incomes by placing it in the “sleeping areas” of the city, or at audience with more money by issuing transport, passing by the most "expensive" city streets.

Advertising on transport is much cheaper. Studies show that the cost of a visual contact with the advertising, placed on urban ground transport, is the lowest among other types of advertising exposure.

At the same time, the presence of a variety of different advertising media, including transit advertising, leads to the "advertising noise", especially in the big cities: the user can "get lost" in the huge information flow and miss the advertising message. However, advertising, placed in the salons of public transport, can hold the attention of the recipient for a long time due to the absence of other stimulus. A significant proportion of the cost of such advertising takes an installation of the image on the side of the vehicle. Therefore, the standard contract term for placing advertising board is six months, at the minimum - three months.

One of the problems while the exploitation of the advertisement can be dirt in autumn – winter-spring period. Dirt simply can change its image and worsen the perception of advertising, but also can close up important information that companies are trying to convey to the consumer - the phone numbers or addresses of shops. Therefore, all these factors must be considered when developing advertising board layout: the most important text is desirable to have higher.

Table 2. Comparison of advantages and disadvantages of transit advertising

Advantages	Disadvantages
Wide coverage. In Russia, public transport is traditionally the most popular means of transportation, so it has a well-developed infrastructure.	**Lack of selectivity.** Transit advertising is almost does not reach certain audience segments, thus it cannot be aimed at consumers of a particular sex, age, occupation, education, and so on.
Coverage of local markets combined with a high frequency of ad impressions. Transit advertising is used as an effective means of influencing the mass audience of the local markets, where selectivity does not play a significant role. In conjunction with the outdoor advertising, it provides wide coverage of the mobile population in the local markets in a relatively short period of time. This transit advertising provides a high level of frequency when it enters the mobile population.	**Transience and pithiness of the message.** Transit advertising is used to transfer simple and short messages as complex or long messages will not be proceeded by the audience.
Flexibility. An advertiser can choose to advertise the vehicles used by the representatives of its target audience, which results in partial selectivity and significantly improve the effectiveness of advertising.	**Reaching only of specific audiences** for advertisements placed in public means of transport (e.g.: working men and women who use public transport).
High levels of exposure. Advertisements placed in the salons of public transport, can hold the attention of the recipient for a long time.	**Limited advertising space.** Size is a key factor of attracting attention, however, transit advertising, except for certain formats, does not allow the large size media advertising information.
The low cost of advertising exposure. The cost of advertising contracts in form of transit advertising refers to less expensive distribution channels of advertising. Thus, as a significant number of people in Russia use public transportation, this form provides a low cost of advertising per user.	**The need for frequent monitoring.** Despite the relatively low cost of advertising exposure, the use of transit advertising is often associated with relatively high costs of maintenance of the promotional materials. Need for constant monitoring and replacement of ads that are spoiled, erased or damaged in any other way. The cost of this service is usually included in the total advertising budget.

Source: (Journal "Индустрия рекламы" (Advertising Industry), 2008)

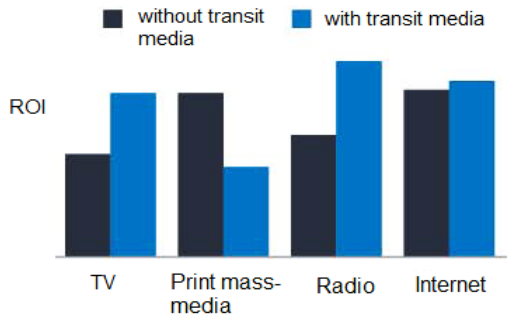
Also it should be noted that, as a rule, the use of the advertisement does not entail a direct increase in sales. This advertising works well for winning customer loyalty, for increasing brand awareness and maintaining a favorable image of the company. Sales grow only when this tool is combined with other forms of advertising campaigns.

2.2.3 Analytics: transit campaigns in numbers

There are five of the most important requirements for transit advertising:

1) To ensure the coverage of the modes of transport used by the target audience of the advertiser;
2) To be often on sight;
3) To attract attention to itself;
4) To be concise and easily perceived in the process of movement;
5) To be clear to mass audience.

Because of these requirements and relatively low selectivity, transit advertising is used primarily as an aid in the framework of complex advertising campaigns to support advertisements placed in other media. Such a complex effect can significantly increase the performance efficiency of an advertising campaign.



Picture 1. Efficiency of transit media and ROI

According to “ESPAR-Analytic”, transit marketing campaigns are an essential element of the media mix. High awareness and ad recall (70%) results in high ROI number. (ESPAR-Analytics, 2014) In the research, conducted by the agency, transit media is seen as efficient as billboards, but at the same time is cheaper. For example, one-month campaign, aimed to reach 100 GRP per day would need 193 billboards all over the city (reach 1+ = 79.8%, frequency = 37.6), which would cost approximately 8 million RUB. While transit advertisement on the bus would only require 113 vehicles (reach 1+ = 78.1%, frequency = 38.4) with 3.850 million RUB. (ESPAR-Analytics, 2014)

Market reach is the estimated number of the potential customers it is possible to reach through an advertising medium or a promotional campaign. (BusinessDictionary.com, 2016)

Frequency – in the context of advertising, is the number of times a person is exposed to an advertisement or the number of times an advertisement is repeated through a specific medium over a specific time period. (InvestorWords, 2016)

$$GRPs = Reach * Frequency$$ *Equation 1. GRP calculations*

$$Reach = \frac{GRPs}{Frequency}$$ *Equation 2. Reach calculation*

$$Frequency = \frac{GRPs}{Reach}$$ *Equation 3. Frequency calculation*

Source: (Klever, 2009)

Advertising on transport attracts 5 times more attention than static: 90% of the people notice a dynamic image and 19% notice a similar static image. According to TGI-Russia the most noticeable format is the large outdoor advertising - it noticed by 93,9% of the citizens; on transport - 71.3% of the citizens notice it, the brandmauer – by 77.7%. (Synovate Comcon, 2014) Thus, transit media is as effective as the brandmauer advertising format, but at the same time it is more financially reasonable.

Joint National Outdoor Research claims that 100 vehicles are more efficient than 100 billboards or shelters. (JCDecaux, 2016) Study results of “The Momentum Effect” shows that peak of the engagement is 45% higher for moving messages; in addition the memory peak is 33% higher comparing with static messages. Brand saliency is twice as high for a moving message. (APN Outdoor, 2012)

The biggest advantage of the transit advertisement is that it appeals to citizens in various ways. First of all, it is perfectly integrated into city infrastructure and does not ruin the city beauty, as billboards do. In many cities, for example in Moscow in this case, there are strict regulations about the advertisement formats in the city center. The advertisement on the transport can reach population in the highly regulated places due to its mobility and flexibility. Last but not least, advertisement on buses irritate less people than the advertisement in the Internet (76%) or on TV (70%). (ExterionMedia, 2014)

3 MOSCOW TRANSPORT CASE

3.1 Initiation of rebranding

Thoughts on raising the level of service and significance of the transport system appeared long time ago before the changes. Answering on the first research question (RQ 1.1), the idea was born, when bus lanes were introduced to Moscow citizens in 2010 by the initiative of the city major Sergey Sobyanin and his project “City, convenient for life”. September 2014 was the month when the new brand book with the new design for Moscow transport system was introduced to the public. Nowadays, one can see the new rebranded transport in the city. In Moscow, a new visual style of urban transport aims to combine it with the accompanying infrastructure in a united systematized transport system. The development of a new brand was granted to Saatchi & Saatchi agency, which has been working on the design of new tickets before in 2013.

Moscow Transport is huge, government owned organization, and it can be said that it has both, evolutionary (organization faced an urge for changes throughout the time) and revolutionary frameworks (in fact, brand new company was built), according to chapter 2.1.2.

At the heart of corporate brand style, one can see the unique “Moscow’s imprint”, designed specifically for Moscow Transport. This sign reflects respect to the city, its inhabitants and their individual needs, as well as it emphasizes the unity of different modes of transport. Picture 2 represents the final logotype for the new transport system while picture 3 discovers the meaning of the logo idea. (Department of Transport and Road Infrastructure Development, 2014) CEO of Saatchi & Saatchi design agency, Alex Shifrin, describes that the main idea for a rebranding strategy with the combination of new design was evolved from the idea of respect. After numerous of researches it was revealed that citizens, who use public transportation have a need for respect, people

Picture 2. Moscow Transport logo

Picture 3. Moscow Transport detailed logo

describe the situation when they need the feeling of dignity while using public transport. So the main problem is to create the suitable and centralized environment for users.

The main goal is not to have isolated transport projects, but to form them into a single transport system. It is important that all the projects are interrelated and are aimed at improving the quality of service and bringing together all the infrastructure and services in a single transport system. Figure 5 (Department of Transport and Road Infrastructure Development, 2014) combines vision and mission of the new brand, as once again, it is not just a redesign, rebranding equals to the new perception and understanding.

Figure 5. Brand essence - Moscow Transport

The brand was presented at a press conference by Deputy Head of the Department of Transport and Road Infrastructure Development of Moscow Alina Bisembaeva. Each type of urban transport will be assigned its own color under a single concept of brand building "Moscow transport".

In particular, the metro is designated red, trolleybuses, trams and buses (TAT) – blue. Taxi – yellow, commuter trains – gray.

Infrastructure related to pedestrians will be assigned to a brown color, bicycle infrastructure – mint green, parking services – lime and river transport – light blue.

Rebranding is realized in two ways: 1) changes while repair works and service of current vehicles and 2) supply of new vehicles from the manufacturer in a new branded color.

Approximately one week before the official presentation, new buses in new colors started appearing in the city. Before, there was no centralized design for the transport system. Buses were usually green-white, trolleybuses were blue-white, while trams had several color solutions – depending on the manufacturer. The new brand, developed by Saatchi & Saatchi, connects the new common logo, common colors, notifications and even souvenirs.

3.2 Ground transport

3.2.1 TAT (Trolleybus, Bus, Tram)

Picture 4. "Mosgortrans" logo

State Unitary Enterprise “Мосгортранс” (“Mosgortrans”) — is essential in the capital and Europe’s largest operator of ground urban passenger transport. On the daily basis over 5.5 million people use the services of ground transportation during working days.

Picture source: (State Unitary Enterprise "Mosgortrans", 2016)

There are about 9 thousand units of vehicles, including almost 6.4 thousand buses, more than 1.5 thousand trolleybuses and approximately 850 trams. Now SUE “Mosgortrans” serves about 750 routes.

The structure of the enterprise is represented by 25 branches, including 11 bus/trolleybus parks, tram control points with 5 sites and services that provide work of urban passenger transport. Uninterrupted communication, comfort and the constant improvement of the quality of transportation is provided by more than 30 thousand employees.

As was stated before, new buses, trams and trolleybuses were colored with the light blue color with corporate pattern on the sides of the vehicles (Moscow Transport , 2016).

Picture 5. Corporate pattern - Moscow Transport

Redesign took place both in the exterior and the interior of the vehicles. Renovation of old units and the purchase of new ones helped to update the level of comfort and image

of Moscow ground transport. All units are equipped with the GLONASS system, video cameras, and climate control.

Speaking about the introduction of new services, starting from 2015, the installation of wireless internet (Wi-Fi) started. Now there are more than 3000 transport units equipped with the network. According to the SUE “Mosgortrans”, it is planned to install routers in all the vehicles by the end of 2016. Nearly 450 bus stops have Wi-Fi connection.

Information stands were introduced earlier, before the rebranding, but the project failed due to the lack of the support from the government and stakeholders. However after the changes, this idea had its second life and now 531 information stands are situated all over the city in order to make the navigation around the capital more convenient for passengers. As the public transport tends to be more modern in users’ eyes, this service is likely to stay and develop. It is also worth mentioning that transport is integrated into numerous online platforms, including traffic jams applications, timetables and real-time geolocation of the vehicle on the map.

August 2016 showed that there are 21 bus lanes all over the city, allowing for public transport and taxis avoid traffic jams in rush hours for passengers’ convenience. This initiative was accepted by citizens, and Moscow government is planning to organize seven more bus lines in 2016-2017. The information above sums up the answer for RQ 1.2 for this means of transport. Next,

The perception of ground transport changed dramatically, strictly following the new brand essentials which are aimed to raise the respect towards public transport and its users. This covered the field of the advertisement likewise. Even though the advertisement on the sides of the ground vehicles is believed to be less unattractive as, for instance, billboards, not many people agree to this statement. Over the past few years, one could see colorful buses, covered with bright and catchy promotional campaigns; these days new regulations took place, aiming to reduce the amount of advertisement on the ground transport with the purpose of keeping it “clean”, recognizable (the same design) and, of course, due to safety issues.

Picture 6 shows graphically formats offered by the company for advertising agencies; information is retrieved from SUE “Mosgrotrans” guidelines (State Unitary Enterprise "Mosgortrans", 2016). Board sticker is an image 4*0,6m, applied to the outer surface of the left side of the body (only for the transport of large and extra-large capacity) is presented on top left picture. Bottom left picture shows the onboard advertising design -

image 4,5*2,5m (for vehicles with a large and very large capacity), the image 1,5*2,0m (for the transport of medium and low capacity). Advertisement contracts are signed for at least two months. Right top image – smartboard – is the image is applied to the outer surface of the rear end, except for windows. Bottom right image describes a full-size image advertising, which is applied to the outer surface of the vehicle with the possibility of placing images on the glazing elements (no more than 30% of the permitted area of the window). The vehicle is usually provided for a period of six months.

Picture 6. Formats of advertising on buses

The changes occurred in the transport system caused changes in transit advertisement industry respectively (RQ 1.3). Now businesses try to adapt to the new formats of advertisements with more strict regulations and control. Yet, guidelines will help to raise the quality of the content of the advertisement without damaging the brand image of ground transport and without a vivid drop in promotional efficiency.

“Magistral” project

Returning to the research question RQ 1.2, in October 2016 Moscow government introduced the new project “Magistral”, the system of high-way routes for buses, trams and trolleybuses which will connect the city center and major districts. It is planned that public transport will go 2 times more often in the center; the average interval will be reduced from 16 to 8 minutes. (mos.ru - Mayor of Moscow, 2016)

- 17 high-way routes will connect Moscow;
- 370 vehicles will be used in the network;
- Passenger traffic will be increased by 43%.

The main idea of this project is to make ground transport more convenient and essential means of transport for citizens. With new routes there will be no need to switch to the metro, for example, which will allow to save time and money for users. It is positioned to be the fastest and the most frequent routes of the ground network.

3.2.2 Private sector

This subchapter describes one of the most dramatic process of change in the private sector, which is directly the answer to research questions (RQ 1.3, RQ 2.1), covering strategic results in marketing and financial sense for stakeholders (the State and entrepreneurs), at the same time showing the urge for this restructuration.

Before the rebranding process, there was a separate means of transportation in Moscow region – minibus taxis run by private companies with their own routes and pricing policies. It was an independent of centralized Moscow transport system mode of transport, which was operating along with state owned buses, trolleybuses and trams. It had the form of minibuses with low capacity and more frequent routes.

The main difference was that the minibuses could drive faster than a bus due to size and inside policy (it was illegual, but still quite common to request a stop in inappropriate places). That is why they were quite popular, especially in rush hours.

From marketing prospective there was no centralized and systematized regulations or guidelines for advertising, even thought it was one of the main income sources for the companies. While rebranding, the Moscow government decided to get rid of this means of transportation (especially, old ways of management), restructuring the system itself. Private companies were offered to work as they used to with strict regulation from the SUE ”Mosgortrans” and Moscow government itself. Half of the autopark is under the lease. They keep working as private companies nowadays, but the main condition for the operation is to hvae their vehicles renovated and designed according to the brand rules. ”Mosgortrans” and commercial carriers will operate also on a single system of tariffs and benefits for passengers.

With these changes, the image of this transport mode has changed with saving the benefits of faster, comparing with buses, transportation.

3.3 Metro

Picture 7. "Mosmetro" logo

Moscow Metro opened on the 15th of May in 1935 - it is the basis of the transport system of the capital. It securely connects the city center with industrial and residential areas. Currently, the share of the Moscow metro in the transportation of passengers is 56% among other carriers of Moscow.

Radial ring structure of the metro plays the historically formed plan of Moscow. The underground lines, stretching from the city center to the outskirts, provide passengers with reliable and fast transport. The average distance of one trip on the subway is about 14.61 kilometers. The average daily subway services are used by more than 7 million passengers, and during the working week, this figure exceeds 9 million. This is the highest rate in the world. (SUE "Mosmetro", 2016) On a daily basis more than 10 thousand trains pass 12 subway lines, with the total length of 333.3 km with 200 stations. The park consists of more than 5000 cars; more than five hundred trains are formed.

Only Metro provides fast delivery of large numbers of passengers from one area to another in Moscow. More than half of metro stations experience total daily load of more than 50 thousand passengers. The most heavily used today are "Vykhino", "Yugo-Zapadnaya", "Novogireevo", "VDNKH", "Kuzminki", "Rechnoy Vokzal", "Tushinskaya", "Schelkovskaya", "Kitay-Gorod" stations, through which from 100 to 150 thousand people run daily. The average operational speed of the Moscow Metro trains (including stops) is about 41.24 km/h. This provides a high frequency of trains with a minimum interval - 90 seconds. As traffic intensity, reliability and volume of traffic Moscow Metro consistently ranked 1st in the world. It is in the top three metros of the world in almost all other indicators.

The high regularity of movement and reliable operation of the Moscow Metro is achieved through the work of more than 45000th collective, as well as the use of modern technologies and new techniques, which are being implemented including using international best practices of the largest transport companies in the world.

The Moscow metro consists not only of the underground trains themselves, but also of one line of the monorail road in the north of the city and newly opened in September the Moscow Central Circle (the MCC). Speaking about monorail line, opened to the public in 2008, it is a part of Moscow Metro network. It is believed that this project failed due to

low passenger capacity of trains and low speed. Also it should be taken into consideration that there are the same tram routes, which are less expensive (comparing to the volume of investments) and they do not overload the city view. There were many criticism from both public and government representatives. Nowadays this project remains working as one of the tourist spots in the city.

New design

Picture 8. Old and new metro logo

If we face new redesign of Moscow metro system, the color of this mode of transportation was chosen as red, as was stated before in this work. Creative work for development of new metro sign and redesign of its infrastructure was held by Lebedev art-agency – the biggest creative company in Russia. Picture 8 demonstrates old (left) and new (right) logotypes, used by Moscow Metro. (Art. Lebedev Studio, 2016) As can be seen clearly from the picture, redesign caused many arguments and scandals in the society, mentioning that “nothing has been changed” with the huge investment, that art-agency has got. The cost of rebranding exceeded 230 million RUB, and people used to believe that this was the cost only of the new logo. However, the certain amount of money, spent on rebranding is not published. It is important to mention that this money was not used only to create a logo, investment was aimed to redesign the whole metro system of Moscow region.

First changes took place in the new logotype of the metro, which were mentioned above. Next step was to change the image of metro infrastructure according to the common corporate brand of Moscow Transport. Once again, with the help of Saatchi & Saatchi and leading Russian creative agencies, new painted trains were created using the old traditional color of cars (blue) with the addition of corporate pattern (see picture 5) and red accents on the roof. In addition new uniform was offered for the metro staff; many other details followed the same corporate brand – information boards and stands, ticket offices, trash beans, doors and many others. Trade points existing on the territory of the metro were renovated; they are more strictly regulated from now on.

The main idea of changes, as was mentioned many times, is to make the transport system of the capital convenient for citizens. So the development of the integrated ticket system is still in process. Moscow government along with the main carriers work together creating new and flexible ways of paying for the trip. The Main ticket is called “Troyka”, works almost on each mode of transport (ground transport, the metro, commuter trains) and combines different types of tickets inside. System of discounts offers pleasant for

passengers conditions while using public transport. System of integrated and easy payments for the tickets allows passengers find the best option to put money on the card (online-banking, ticket office, mobile apps etc.) Many projects develop mobile payment apps. This information completely reveals the answer to research question RQ 1.2.

Advertisement in metro

As well as in the ground transport case, space provided by metro and connecting facilities, used for advertisement purposes, have faced changes in marketing sense too. New formats of advertising must be created in order to correspond current changes. Information, that covers RQ 2.1, is presented below.

It is fact of common knowledge that advertising remains one of the main sources of income for the public transport system. History of advertising in the Russian metro faced many changes; there were periods of absolute “chaos” in advertising in subway trains; there were also times of more strict regulation, as, for example, in 2014. Picture 9 graphically shows the formats of advertising available on the advertising market at that time. (Advertising Center "Brand Media", 2014) This order was taking place until 2015, when at the beginning of the year main contractor LLC “Avto sell” went bankrupt and Moscow metro had no ad contractor for 1.5 year (Brizgalova, 2016). This period coincided with the time of rebranding.

Picture 9. Formats of advertising in metro before 2014

Now after the competition, the name of the new contractor for next ten years starting from 2017 was named: LLC “Trade Company”. (Ruzmanova, 2016) So in the year 2017 Moscow will face advertising appearance (following RQ 1.3). Many experts are concerned that there might be chaos again in the subway, facing the fact that metro had no advertising money for a long period.

Moscow Metro has completely revised the previous approach to the principles of advertising. Conditions stipulated by the new contract, meant to create an enjoyable and understandable advertising space for passengers, which will be a bright and modern

addition to passenger infrastructure. 100 thousand sq. m. is the limit of advertising space, 20% of which will be social advertising and information about the work of the underground. The share of social advertising, including information about metro and transport system in Moscow, compared with the previous contract, was increased from 5% to 20%. (SUE "Mosmetro", 2016) It is planned that at the stations, as well as in rolling stock new to the Moscow metro types of advertising media will be introduced; for the first time the branding of rolling stock and turnstiles will be implemented. The placing of digital screens in the cars and along the escalator tunnels, of large-format screens and video walls in the hallways of the subway will be installed by expense of a new advertising operator.

The only advertising format in the metro, which did not face any difficulties was mobile advertising. As was brought up before, there is Wi-Fi connection in each train, however so as to connect, a passenger has to watch a short (15-30 sec.) advertising. It is considered as one of the most successful advertising techniques in the transport system, as a great number of passengers use internet in the metro (for comparison – 8.5 million people use the metro per 24 hours). It is a huge flow and a huge potential market.

Social responsibility

A new type of communication appeared in Moscow metro system with the help of changes – social messages. With the support of different organizations, agencies and even countries, Moscow faced new thematic trains (temporary or constant).

Taking into account the amount of passenger flow and the importance of social problems, this can be seen as a great channel for delivering important social messages for all social groups of metro users. Messages can be divided in 3 main groups: 1) social messages; 2) history / memorable events; 3) ecological problems.

Development (RQ 1.4)

"*Passenger traffic in Moscow metro will increase from the current 2.5 billion people to 3.5 billion people a year by 2035*", said Marat Khusnullin, the deputy mayor in the Moscow government in urban policy and the construction, in an interview for "Interfax". (Information Agency "Finmarket", 2015)

"*Total length of the subway lines in 2035 should amount to 650-700 km to ensure a comfortable travelling of the passenger*". Underground development program up to 2020

involves the construction of 160 km of new lines and currently 78 new stations. This will provide the metro within walking distance of more than 90% of Muscovites.

Current plans of the Moscow metro network development have been identified by Resolution of the Moscow Government № 194-ПП dated 04.05.2012 "On the approval of the list of objects of perspective construction of the Moscow Metro in 2012-2020." (Moscow Government, S.S. Sobyanin, 2012)

In accordance with the Resolution, annual plans for length of input lines and the number of annual inputs of the Moscow metro stations are determined only by the final plan of construction volumes in the period up to 2020 (Table 3).

Table 3. Final plan of construction volumes, 2012-2020

Year	Length, km	Number of stations
2012-2020	167.91	80
Avg.	18.7	8.9

3.3.1 МЦК (the MCC)

The Moscow Central Circle (the MCC) is designed to be an integral part of the modern urban transport system, distributing the passenger traffic of the capital.

In total, the Moscow central ring will have 31 transport hubs by 2018. Each will be able to transfer to the ground public transport. On both sides of the railway convenient access roads, reversal areas for buses and new stop sets will be organized. The MCC is planning 17 transfers to metro and 10 transfers to commuter trains. Transfer is free for 90 minutes after the first passage in the metro.

There are 2 stages of the MCC launch. The first stage started in September 2016. 14 direct hubs to metro and 6 transfers to commuter trains were available for Moscow citizens. By 2020 surrounding areas are planned to develop.

Picture 10. The MCC route example

The MCC helps to save time. It can be 3 times faster than the route using only the metro, connecting different parts of the city. For instance, on picture 10 it shows how it is possible to save

time. If one uses metro trains only, it will take 39 minutes (from top red line to the top grey line) with 2 changes of lines. While it will take only 12 minutes by the MCC trains (light blue line) with no changes of lines.

Developing the theme of opportunities, open to stakeholders, it can be stated, that previously abandoned industrial areas will have a new round of development where business and shopping centers, apartment hotels, residential buildings will be built. Thanks to the development of transport infrastructure, the availability of many areas will improve significantly. Citizens will have more than 350 options of transfers when moving around the city.

Approximately 134 pair of trains “Lastochka” will run daily. The max speed of the train is 120 km/h with the capacity of 1200 passengers. Trains are equipped with toilets, climate control, Wi-Fi and are adapted to people with limited mobility.

Only in the first year of operation, the MCC will be able to carry almost 75 million people. Nearly half of them - 34.5 million people - would be passengers of the metro, 20.2 million – of railway transport, 12.7 million – passengers of buses, 7.5 million - the inhabitants of nearby houses. In 2025 passenger traffic will increase to 300 million (RQ 2.3). (Moscow Central Circle, 2016)

3.4 Other infrastructures and services

Picture 11. Commuter trains logo

Commuter trains

Being part of PJSC Russian Railways (RZD), commuter train system did not face dramatic changes in redesign or introduction of brand new services. Most of the changes cover integration into the city infrastructure by integrated ticket policies and connection of the station hubs with the urban transport system.

In five years, passenger traffic in the Moscow railway junction has increased by 35 percent. Trains carry already 650 million people a year.

Renovation of rolling stock took place. Commuter trains are being renovated from 2010. To make the infrastructure more efficient long-term contracts for rail transport services for passengers have been signed between both governments of Moscow and the region. This allowed carriers to form a program to upgrade the rolling stock. It is planned that 40% of the trains will be renovated. (Online Edition m24.ru, 2016)

Taxi

Changes concerning taxi industry took place mostly in regulation of private companies' operations. The number of permits issued by government for taxi activity in Moscow has reached 66 thousand - at the level of the world's megacities and more. Popularity of the official taxi is steadily growing - about 300 thousand Muscovites use their services.

Picture 12. Moscow taxi logo

To make it easier for passengers to distinguish a legitimate carrier, the Department of Transportation has developed a unified standard of the Moscow taxi. It is the yellow color of the vehicle and a yellow license plate, orange identification lamp and checker-belt on the sides of the vehicle. Also inside the vehicle the taximeter must be installed along with information about the driver.

Initiatives to fight illegal carriers are conducted regularly. Over 2016 mobile groups composed of about 4 thousand protocols, more than 2.5 million vehicles of illegal carriers moved to the car pound. (Moscow Transport , 2016)

Taxi services are used daily by more than 260 thousand citizens. The legalization of taxi market opened opportunities to use this mode of transport. Travel by taxi in 2016 cost on average less than 500 RUB. This is 30% below the average bill in 2014 and 25% below in 2015.

Picture 13. Car-sharing logo

The pilot project appeared in city streets – Moscow car-sharing, service for short-tern car rent with 500 cars by the end of 2015.

Biking

Picture 14. Biking logo

Cycling transport infrastructure faced attention and changes more than any other supportive infrastructures. The government questioned the need for bike integration into the city life many years ago. There were many projects and initiatives to create a bike-friendly environment in Moscow. In 2013 citizens experienced first bikes for rent, with sponsors such as Sberbank, Bank of Moscow and VTB Bank. But there were no cycling infrastructure.

With the rebranding, started in 2015, first bike lane appeared; it has 9 km and took place in Boulevard Ring in the city center. Now there are more than 200 km of bike lanes. By May 2015, 150 new rent stations were installed (300 in total). Approximately 880

thousand trips were conducted (8 times more than in 2014). (Moscow Transport, 2015) In August, 5 stations of renting electric bikes were integrated into city life.

The payment system is flexible too. Renting service accepts banking cards as well as transport card “Troika”.

As a part of social responsibility programs there are numerous of events, such as the parade of bikes for example, aimed to raise the popularity of biking services among Moscow citizens.

Parking

Load for automobile roads in Moscow - one of the highest in the world due to many factors:

- Dense historical building up;
- Radial-circular layout of the city;
- 27 sq. m. per vehicle;
- 3.4 million vehicles on roads during working days;
- 4% - time of active vehicle usage;
- 200 thousand new vehicles appear annually. (Department of Transport and Road Infrastructure Development, 2016)

Picture 15. Moscow parking logo

That is why in Moscow paid parking started appearing in different parts of the city. Paid parking changes road behavior, which leads to normalization of city traffic and gives opportunity to develop alternative modes of transport (for instance, installation of bike lanes on the roads would not be possible without parking system changes).

There are 3 circles of parking areas in the city - depending on the closeness to the city center. Up to 15% the speed of traffic raised in the zone of paid parking.

But changes in parking do not only cover paid parking, it also involves intercepts parking for Moscow Metro and commuter transport. In 2015, 1200 new parking spots appeared on interceptive parking places (from 2010 there are 7500 lots in total). This was made with purpose of reducing traffic on the roads by making people use public transport (in this case metro) more. This parking solution if free of charge if user travels uses the metro (passenger should have a ticket with 2 times entry to the metro stations).

ЦОДД (the Center of Traffic Organization)

State Public Institution of Moscow the Center of Traffic Organization of the Moscow Government was created in 1999, but faced structural changes under the new brand too. The facility is funded entirely from the budget of Moscow. The objectives of the creation of institution are to provide it with powers and duties of the coordinator and customer of the city of Moscow to implement strategies, to develop action plans in the field of traffic organization and road safety.

Picture 16. ЦОДД logo

Creation of ITS, which will increase the capacity of urban transport systems is one of the most important goals for modernization of the Center of Traffic Organization. This will allow modeling and assessing the impact on the transport system of new transport objects, new housing and business objects, traffic organization schemes; in addition it will allow to develop the most effective solutions in case of emergencies. Experience that came from many major cities of the world shows that the introduction of ITS can solve problems of:

- Increasing the capacity of the road network; The redistribution of traffic flows from downloaded routes to the areas with a lower volume of traffic; Increase of average speeds;
- Improve environmental conditions and reduce the negative effects on the environment;
- Inform road users about traffic conditions on the city road network.

(Center of Traffic Organization, 2016)

It is planned to create an information portal to monitor the traffic situation and provide operational information services to the city free of charge. This will allow reacting quickly and efficiently on evolving traffic situation in the city, as well as it will help to provide operational information for the planning of the optimal route of movement all participants of city life (RQ 1.4).

4 METHODS OF RESEARCH

4.1 Statistics analysis

Deduction method

With the aim of starting deeper analysis and forecasting it is necessary to discover several vital trends occurring in the market nowadays.

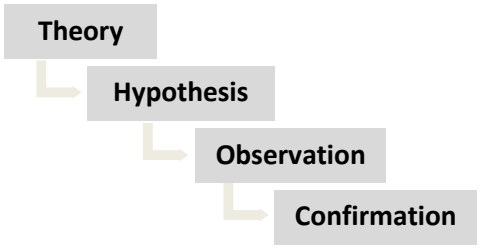


Figure 6. Deductive reasoning

Deductive method is a method of thinking, in consequence of which the logical conclusion reveals where private inference is derived from more general to the more specific (Figure 6 (Trochim, 2016)). It is also a chain of reasoning or arguments where system units are interconnected by logical conclusions. In this work negating approving modus will be used:

$$\frac{A \vee \mathrm{B} \vee \mathrm{C} \ldots, \neg A \neg C \ldots}{B}$$

Equation 4. Negating approving modus

This means that the first premise is A or B, or C ..., the second premise is not A, not C ...; the conclusion: hence, B.

Induction method

Induction method - is a form of generalization that is associated with the anticipation of the results of observations and experiments, based on data provided by a certain experiment (Figure 7 (Trochim, 2016)).

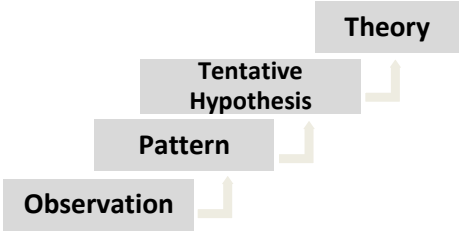


Figure 7. Inductive Reasoning

With the help of deductive and inductive analysis methods it will be possible to reveal starting trends in Moscow transport rebranding process, and understand are those trends have positive or negative character.

Diachronic analysis

Diachronic analysis is a research method, composed of the dismemberment of the evolution process of the studied objects into series of successively replacing each other phases in real historic time and further comparing of these temporary phases of the objects according to certain characteristics in their structure.

In other words it is an analysis of the changes of a certain object structure over time. It is used in order to observe the structural changes occurred in a certain period of time. Thus this method helps to get a bigger picture describing the situation over the time, discovering some dramatic changes, and helping to find out reasons for these changes.

Statistical data for recent years will be used as the basis of this research technique, which will show how the transportation market looked in the past before the rebranding and what changes occurred.

Simple comparative analysis

Comparison is a scientific method of cognition, when already studied and known phenomena (object or objects) is compared with known, previously studied, to determine similarities or differences between them. This algorithm can be used to compare GRP or OTS in Moscow and Saint Petersburg (as the biggest cities in Russian Federation), the state of vehicles and services offered in the past and nowadays etc. It can be seen as a universal method which is essential in research work with the intention of clearly showing the changes which took place.

4.2 Forecasting methods

For more detailed information about methods, please, see Appendix (1).

4.2.1 Expert planning method

Prognostic expert estimates reflect individual judgments of experts on efficiency, resource consumption, security, and development prospects of the object and are usually based on the mobilization of professional experience and intuition. With the help

from experts in the certain field it is possible to gain better vision on the situation, which can be justified by expert's experience and knowledge.

Expert research methods are used in the following cases:

1) When an object or phenomena, either totally or partially cannot be described or transformed into mathematical formalization;
2) In the absence of sufficiently representative and reliable statistics on the characteristics of the object;
3) Under the conditions of great uncertainty of the object's operating environment, especially in the market environment;
4) For the medium and long-term forecasting of new markets, new industries objects exposed to strong influence of innovation etc.

4.2.2 Methods of statistical forecasting

Extrapolation a moving average

Extrapolation a moving average technique is used to predict in cases where the evidence of the dynamic series due to random fluctuations does not allow to detect any tendency of the development process.

The method consists in replacing the actual number of dynamic equations calculations, characterized by significantly lower volatility than conventional data; the average value is calculated by the data groups for a certain period of time shift (Kunin & Rumyanceva, Practical Cost Management Course, 2015).

Exponential smoothing

Exponential smoothing (usage of exponential average) takes into account the differences in weighting coefficients, averaged data, taking into account the decline in the values of these weighting coefficients as data obsolescence. (Kunin, Practical Financial Management Course, 2015)

Linear regression analysis

Linear regression analysis is a branch of mathematical statistics, dedicated to methods of analysis of dependence between a physical quantity with the other.

4.3 Transit marketing research methods

Transit marketing efficiency measurement is a complex process with a big amount of variables, which should always be taken into consideration (they will be discussed later). If the metro is easier in the sense of variables, ground transport is seen as the most complex object of the research. Many specialists all over the world are working now, trying to solve this problem, or better say make it easier, accessible for masses and automatized.

Today it is not enough to understand the meaning of transit advertising intuitively, prognosis and precise calculation is required. Increasingly, there is a question of evaluating the effectiveness of advertising on transport, the possible evaluations comparisons.

The first method of evaluating the effectiveness of advertising on transport was proposed by German researcher M. Drabchinskim in 1998 at the VII International Congress on outdoor advertising in Montreal.

The advertising agency "New Tone" in cooperation with the department of "Economic theory and the foundations of entrepreneurship" in BMSTU STANKIN developed a technique that allows you to evaluate the effectiveness of advertising on transport, and calculate the number of the audience received advertising multiples. Equation 5 shows the simplified version of this formula. (Romat & Senderov, 2013) Effective audience of outdoor advertising is a function of the contact audience, made up of 50% of the total number of pedestrians and drivers passing the object, and 25% of the total number of public transport passengers passing the object. When calculating the effective audience of advertising on transport value of the passenger flow (PP) is taken into account.

$$E = \frac{(A*N)}{2} + \frac{t*m}{4} + \frac{P}{2} + \frac{PP}{2}$$ *Equation 5. Effective audience calculation formula*

Where E is determined as Effective audience;

A*n – number of passengers in cars;

T*m – number of passengers in public transport;

P – pedestrians;

PP – passenger flow;

A, T – vehicles;

n, m – average number of passengers in a vehicle.

The values of effective audience (Equation 6) per hour – Eh, per day – Ed and per month - Em are calculated taking into account the length of the route - t, the residence time of the transport unit on the route - 12 hours and the average number of working days per month - 22 days.

$$Eh = \frac{60}{t}\left(A * \frac{n}{2} + T * \frac{m}{4} + \frac{P}{2}\right) + \frac{PP}{2}$$

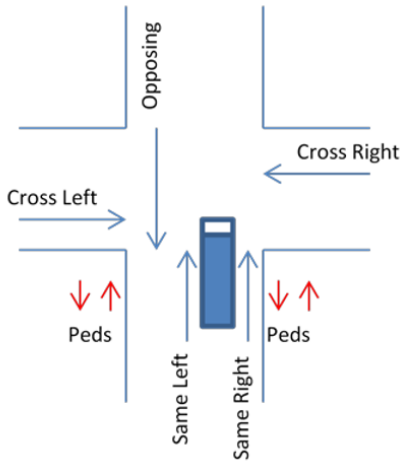
$$Ed = 12Eh;$$

$$Em = 22Ed; \qquad \textit{Equation 6. Effective audience per hour, per day, per month}$$

As seen from equations, it is almost impossible to calculate the average pedestrians and car flows in big cities without modern statistical equipment and software. Many leading advertising agencies and research companies, working in the field of transit marketing offer new ways to observe the efficiency of campaigns proposing new research ideas or software.

Many countries all over the world are involved in the building of the most flexible and actual model of OOH media research. For example, in Spain GeoMetro was funded with the help of leading agencies in 2006 with the aim to study and analyze metro audiences.

Netherlands introduces JIC (a Joint Industry Commission) which works with audience measurement for OOH. Finland has adopted scheme similar to Netherlands' specialists with the name of Visibility of Adjusted Contact model in order to estimate and analyze audience flow in the country using different techniques. Australia created Measurement of Outdoor Visibility and Exposure (MOVE) measurement system in 2010 with the same purpose. It is clear that such kinds of research require huge investments of money, specialists and, of course, statistical data.



Picture 17. OTS Traffic Streams Contributing to Bus Exterior Advertising Audience

As seen from the picture 17 (Federal Transit Administration/Transit Development Corporation, 2009), there are 7 groups of potential audience for ground transport: 1) pedestrians / right; 2) pedestrians / left; 3) same lane left; 4) same line right; 5) cross left; 6) cross right; 7) opposing lane.

Efficiency measurements are usually conducted on the specific route, but still require big volumes of data and dynamic statistics.

Usually the most common research methods involve eye tracking on volunteers, cameras all over the city, data from carriers and government and satellite imaging. That is why it is almost impossible to have the results of the research published, as they require huge investments and are the corporate secret. In the Russian Federation, this problem interested Gallery Company and Transit Media Group (TMG) starting in 2008. Espar Analytics conducted monitoring of the OOH advertisement on public transport according to the request by Gallery Company; the main components of the methodology for assessing on-board advertising audiences were established. In 2014 new complex of initiatives was created – ODAPLAN TRANSPORT. (ESPAR-Analytics; Gallery, 2014) There were 358 calculated routes in Moscow.

- First calculations of the potential audiences for commercial passenger transport;
- The use of the exact coordinates (WGS84); Integration with Web-maps;
- Improved algorithms for calculating the audience; the new software interface.

Methods for assessing audience of OOH advertising

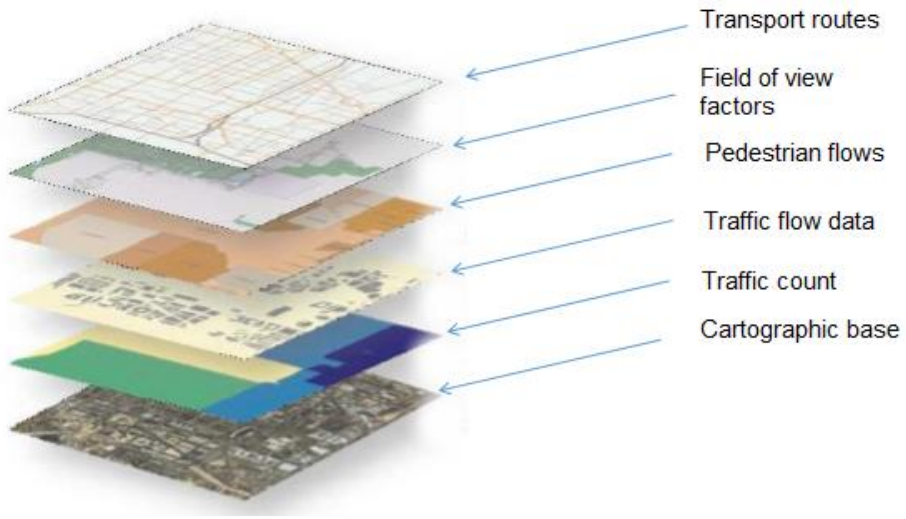
1) *Stationary advertising*: geography + geometry:
    a. **Geography**: the volume of vehicle and pedestrian traffic in the area of the advertisement viewing;
    b. **Geometry**: the quality parameters of the view (FOV length, offset from the direction of travel, steering angle, height, viewing obstacles)
2) *Advertising on transport*: a similar approach + movement of the vehicle, (flow rate and vehicle speed, time spent in the field of view).

So as to have the clear image on the situation, it is required to conduct a system of measurements and calculations:

- The use of geo-information technologies for the analysis of the dual routes of both public transport, car and pedestrian flows to determine the amount of potential audiences;
- Using mathematical modeling methods in the evaluation of the quality of on-board advertising visibility to determine the system of reduction coefficients;
- Calculation of OTS and GRP coefficients for each route;

- The use of mathematical models of the spatial distribution of traffic flows (ODA-Plan) for the calculation of the value of Reach and contact Frequency.

Picture 18 describes all the layers, which should be combined to have actual situation on the examined object for calculations of efficiency of transit media. (ESPAR-Analytics; Gallery, 2014) For each traffic segment (Picture 17) total audience is calculated as the sum over the audience for the three kinds of vehicle sides with the advertisement: left, right and stern.



Picture 18. Geoinformation technology estimating potential audience (geocoding database)

In 2014 the structure of the audience was demonstrated to public in the report (Tables 4 and 5) (ESPAR-Analytics; Gallery, 2014), however there are no more further data available. This can be explained by the launch of the project all over the big cities like Moscow and Saint Petersburg for private companies, which do not publish their research results due to corporate interest.

Table 4. Structure of audience for three vehicle sides, 2014

Advertisement	**Share in Moscow**
Left side	59.2%
Right side	11.6%
Stern	29.2%
Total	100.0%

Table 5. Average GRP raiting, 2014

Advertisement	**Share in Moscow**
Left side	0.49
Right side	0.10
Stern	0.24
Total	**0.83**
Billboard 3*6	**0.51**

At first glance it is clear that transit advertisement on one vehicle reaches more potential audience than one billboard. More observations will be further discussed in the research work.

For more information covering topics of transit efficiency measurements and the design of transit advertising, please see (Federal Transit Administration/Transit Development Corporation, 2009), (Hsieh, 2007) and (Denneen & Company, January 2009).

5 RESEARCH ANALYSIS

5.1 Data analysis

Before starting a research, it is necessary to collect statistical data and discover current trends in the market for better understanding of the situation and for better forecasts in order to answer the research question RQ 2.2. Starting information was provided by Moscow transport organization (Moscow Transport, 2015) and systematized in Table 6.

Table 3. Passenger flow growth from 2010

	Daily passenger flow	Annual passenger flow (365 days)		
	2015	**2010**	**2014**	**2015**
SUE "Mosmetro"	8.5 m	2.35 bn	2.45 bn	2.42 bn
Commuter trains	1.9 m	0.48 bn	0.68 bn	0.68 bn
Other carriers	1.0 m	0.26 bn	0.31 bn	0.34 bn
SUE "Mosgortrans"	6.6 m	2.0 bn	2.20 bn	2.20 bn
Taxi	0.3 m	0.01 bn	0.07 bn	0.1 bn
Total	**18.3 m**	**5.1 bn**	**5.71 bn**	**5.74 bn**

+30 million

+640 million (12%)

As seen from the data above, by passenger flow Moscow Metro is a complete leader, serving more than 46% of traffic in the public transport segment in capital (and 56% of all passenger flow in Moscow). Second place, obviously, was taken by SUE "Mosgortrans" with approximately 36% of passenger flow (Figure 8). This trend is not expected to change, as, first of all, Metro and TAT transport are the biggest government owned carriers with long history, development and investments; besides, these organizations are the only ones capable of provide service for this volume of passengers. Years from 2014 to 2015 are seen as the period of stagnation for TAT (2.20 billion passenger both years); the significant drop of volumes comparing with 2014 happened in 2015 for SUE "Mosmetro" (2.45 → 2.42 billion people).

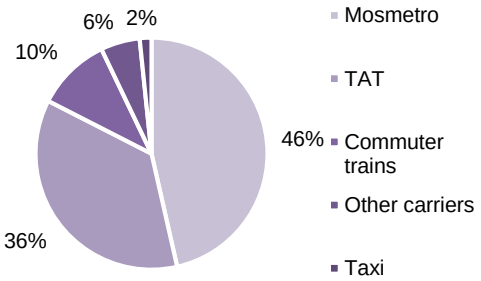


Figure 8. Daily passenger flow, 2015

From 2007 to 2010 reduction of passenger volume took place, which was explained by the increase in traffic congestion in the city. In total, throughout 5 years, public transport managed to increase up to 640 million new passengers per year, which is, of course, a positive trend to a fast growing city.

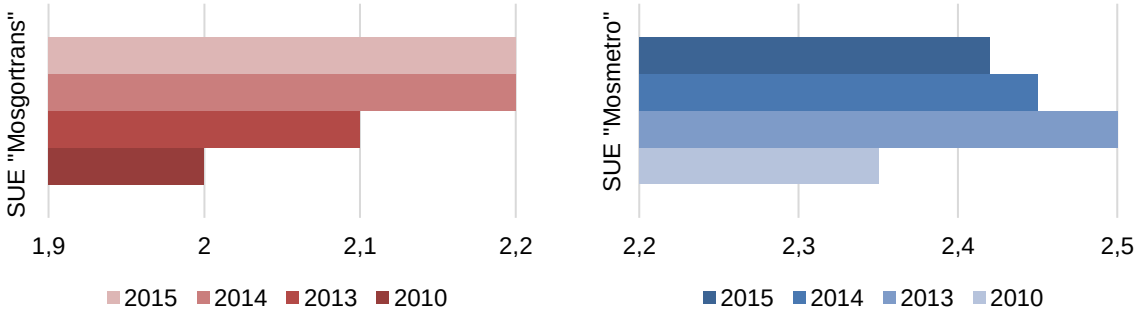


Figure 9. Annual passenger flow, billion people, 2010, 2013-2015

According to Figure 9, public transport resulted in a slight raise in the volumes of passenger traffic throughout last 5-year period, which follows the trend of raising awareness of public transport for population, offered by the city government. From the start of operations till 2009 passenger flow in the Moscow metro was constantly growing; however in the first quarter of 2009 index for the first time dropped by 7% comparing with the same period of 2008, which was the influence of global financial crisis 2008-2009 according to the opinion of Dmitriy Gaev, former head of Metro. (Golovina, 2009) Slight decrease of passengers in 2013-2015 in the metro can be explained by the same reason: economic crisis events in Russian Federation followed by Ukrainian situation and sanctions. Figure 9 clearly shows the decline in traffic volumes from 2.5 billion people annually in 2013 to 2.42 billion users in 2015. (Department of Transport and Road Infrastructure Development, 2013). Hence there is a connection between economic situation in the country and the passenger flow, which should also be taken into consideration by marketers. When country face recession in the labour market due to economic stagnation, working places are dramatically cut. Thus less people travel, as they tend to stay at home (someone loses their jobs) or tend to find jobs close to house with the purpose of reducing costs for travel. That is the reason for changes in passenger behaviour and volumes of traffic.

With the help of diachronic analysis, comparison techniques common trends were revealed:

1) Metro is undisputed leader in volumes of passenger flow in Moscow region (46% of public transport share and 56% of total transport carriages);
2) For the last five years annual flow raised up to 640 million users from the period of 2010-2015;
3) There is the trend and opportunity for passenger flow growth linearly with the growth of the public transport network (especially for the metro system);
4) Crisis events do have impact on passenger behaviour.

5.2 Forecasting

The city of Moscow is seen as one of the busiest cities in the world: congestion, rush-hours, traffic jams, passenger traffic etc. City grows fast, many experts claim that in future there will be transport collapse, as the city will not be able to organize carriage of rapidly increasing population. That is why there is numerous of projects and initiatives, aimed to unload Moscow roads. Rebranding of the public transport system is one of them. Comparing with 2010 there was a reduction of street road network load by 10%. (Moscow Transport, 2015) Average speed raised by 5 km/h in 2015 (2010 – 45 km/h).

As Moscow metro system is one of the most popular means of transport in the capital, it faces high load pressure and it is vital for the city to provide required passenger capacity. This figure is growing, that in 5-7 years would certainly have led to transport collapse. Construction of new stations will reduce the load on the existing Metro network. That is why the metro network expands every year. As was mentioned before, in 2011 Moscow authorities have developed a plan for the development of the Moscow Metro. In the nine years it is planned to build more than 160 kilometers of subway lines and 78 new stations (see Table 3). Thus, the subway will be provided to 93% of the inhabitants of Moscow.

Speaking about the closest forecast expert planning method is the best option to provide data analysis. Table 7 combines forecasts and experts' opinions on the situation with passenger flow and public transport load in 2017-2019 period and level trust to these predictions. 5.74 billion passengers is the annual flow in 2015 (see Table 6).

Table 4. Expert forecasts for 2017-2019

№	Expert	Forecast	Source	Trust coefficient
1	Sobyanin S. S. - mayor	5.8 bn	(ТВЦ, 2014)	0.7

(continue)

Table 7 (continue).

2	Russian Newspaper	5.84 bn	(Russian Newspaper (RG.ru), 2013)	0.3
3	Moscow Government	6.0 bn	(Moscow Government, 2011)	0.5
4	Maxim Liksutov, Head of the Department of Transport	7.3 bn	(Moscow Government, FIFA World Cup 2018, 2016)	0.1
5	Leonid Mednikov, analyst of portal "Yandex.Probki"	6.9 bn	(RIAMO, 2015)	0.5

As was discussed in methodology, the main principle of this method is not to take into consideration the highest and the lowest forecast numbers. In this case, these are №1 (min) and №4 (max). After these changes, formula is such:

$$value_{avg.} = \frac{\sum_{j=1}^{N-2} 3_j \times f_j}{\sum_{j=1}^{N-2} f_j} = \frac{5.84 * 0.3 + 6.0 * 0.5 + 6.9 * 0.5}{0.3 + 0.5 + 0.5} = 6.31$$

As a consequence, referring to this method by putting trust coefficients, by removing the highest and the lowest forecast values, results were obtained: **6.31 billion passengers** – is the forecast result for approximate passenger flow in the period of 2017-2019. This value is within the trend of the passenger traffic growth designated by a large number of experts (RQ 2.2).

However, this technique helps to discover approximate values, revealing trend behavior as well as the planning was done for the total public transport system. For more precise forecasting there are several statistical and mathematical methods, discussed in Chapter 4.2.2. They will be used to analyze Moscow metro passenger flows for the period from 2005 to 2015, and will help to find answers to passenger volumes predictions in future (RQ 2.3). Table 8 contains information, provided by official reports, covering the topic of passenger traffic for last ten years (Department of Transport and Road Infrastructure Development, 2005-2015) (results of operations in 2016 are not yet available).

Table 5. Passenger flow, Mosmetro, 2005-2015

Year	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Traffic, million	2603.2	2475.6	2528.7	2572.9	2392.2	2348.3	2388.8	2463.8	2490.7	2451.3	2424.5

As seen from Figure 10 (graphic representation of Table 8), fluctuation is random during this period of time and it is hard to determine the tendency for process development in the future prospective. There are several time intervals between index growth and index falling. With the help of extrapolation a moving average methodology random deviations will be transformed into the certain tendency.

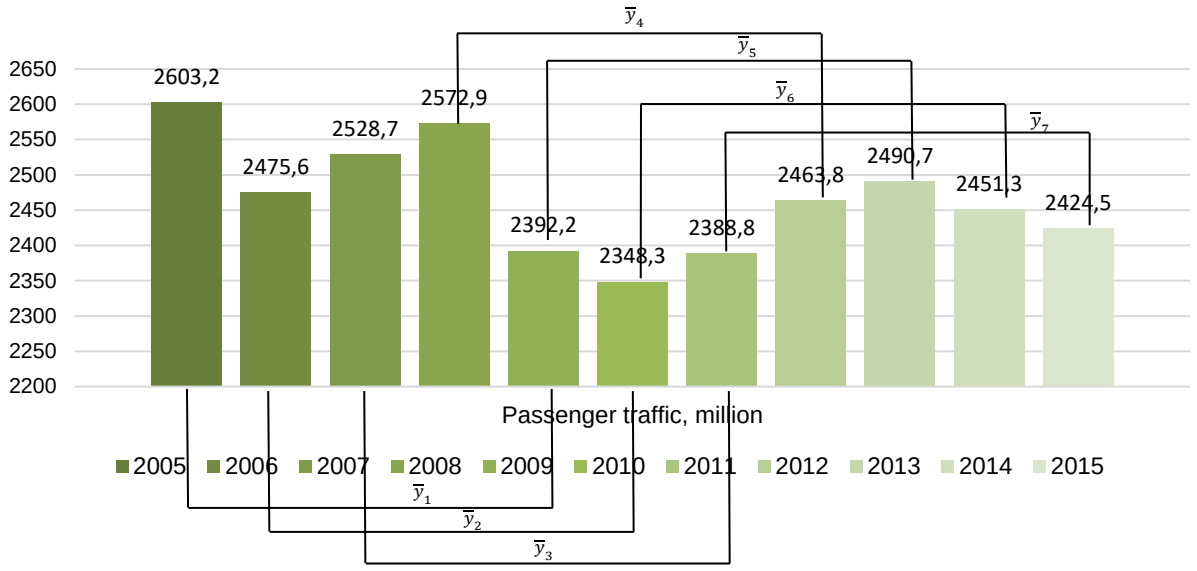


Figure 10. Passenger flow, Mosmetro, 2005-2015

$$\overline{y}_1 = \frac{2603,2+2475,6+2528,7+2572,9+2392,2}{5} = 2514,52;$$

$$\overline{y}_2 = \frac{2475,6+2528,7+2572,9+2392,2+2348,3}{5} = 2463,54;$$

$$\overline{y}_3 = \frac{2528,7+2572,9+2392,2+2348,3+2388,8}{5} = 2446,18;$$

$$\overline{y}_4 = \frac{2572,9+2392,2+2348,3+2388,8+2463,8}{5} = 2433,20;$$

$$\overline{y}_5 = \frac{2392,2+2348,3+2388,8+2463,8+2490,7}{5} = 2416,76;$$

$$\overline{y}_6 = \frac{2348,3+2388,8+2463,8+2490,7+2451,3}{5} = 2428,58;$$

$$\overline{y}_7 = \frac{2388,8+2463,8+2490,7+2451,3+2424,5}{5} = 2443,82;$$

In the case where there is a finer breakdown of statistical data – in this case a year – it becomes more difficult to keep track of changes in the trend of passenger traffic. By using this technique, information was combined in bigger groups (5 years) and trend of decline in volumes of transportation was discovered (Figure 11). This result also proves the fact that passenger flow is dependent on the economic situation (regression in 2009-2011) and how Moscow metro cannot yet return to the volumes of 2005. Another potential reason for the continuing decrease can be the fact that there are a lot of initiatives coming from ground public transport, attracting more people and making transportation more convenient.

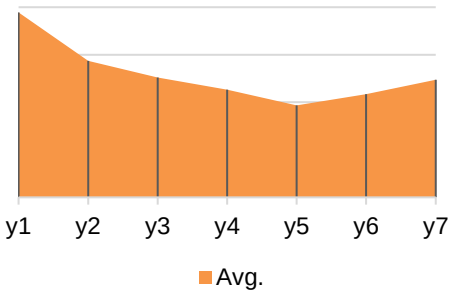


Figure 11. Average passenger flow

Second statistical method is using exponential smoothing formula. In this case, the same statistical data will be used, where **α = 0.7** (last actual value is taken into account) (see Chapter 3.2.2.). Period of the analysis is 2011 (0) – 2015 (4). All calculations are presented below.

Factual data is to be combined with forecasts on Figure 12. As seen from the graph, according to forecasting, there is a probability that passenger flow volume is going to grow for next years (especially in the nearest future). Unquestionably that this method do not consider geopolitical, social and economic situation in the country, conversely it assists to discover possible trends based on historic statistics.

$\overline{y_2} = 0{,}7 * 2463.8 + (1 - 0{,}7) * 2388.8 = 2441.3$

$y_3 := \overline{y_2} = 2441.3 \rightarrow$ forecast for 2014;

$\overline{y_3} = 0{,}7 * 2490.7 + (1 - 0{,}7) * 2441.3 = 2475.9$

$y_4 := \overline{y_3} = 2475.9 \rightarrow$ forecast for 2015;

$\overline{y_4} = 0{,}7 * 2451.3 + (1 - 0{,}7) * 2475.9 = 2458.7$

$y_5 := \overline{y_4} = 2458.7 \rightarrow$ forecast for 2016;

$\overline{y_5} = 0{,}7 * 2424.5 + (1 - 0{,}7) * 2458.7 = 2434.8$

$y_6 := \overline{y_5} = 2434.8 \rightarrow$ forecast for 2017;

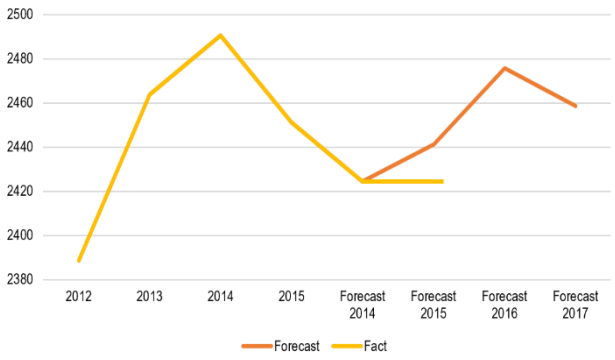


Figure 12. Forecasts, using exponential smoothing method

Last forecasting method involves linear regression analysis, the most complex, effective and reliable. The period of examination is 2011-2015 (5 years). With the data from Table 8 and Figure 10, Table 9 combines all necessary information for calculations.

Table 6. Calculation of parameters for linear regression analysis system

Year	x_i	y_i	$x_i y_i$	x_i^2
2011	1	2388.8	2388.8	1
2012	2	2463.8	4927.6	4
2013	3	2490.7	7472.1	9
2014	4	2451.3	9805.2	16
2015	5	2424.5	12122.5	25
Total	**15**	**12219.1**	**36716.2**	**55**

The system of equations with two unknowns is obtained (see Equation 8); the first equation is multiplied by **-3** in order to simplify the system.

$$\begin{cases} 12219.1 = 5a_0 + 15a_1 (-3) \\ 36716.2 = 15a_0 + 55a_1 \end{cases}$$

$$\begin{cases} -36657.3 = -15a_0 - 45a_1 \\ 36716.2 = 15a_0 + 55a_1 \end{cases}$$

$$58.9 = 10a_1$$

$$\boldsymbol{a_1 = 5.89}$$

$$12219.1 = 5a_0 + 88.35$$

$$12130.75 = 5a_0$$

$$\boldsymbol{a_0 = 2426.15}$$

Having values of $\mathbf{a_1}$ and $\mathbf{a_0}$, they are substituted into the last formula of the system (see Equation 8), where n - is the ordinal number of the forecast period. As the result, forecast values for 2016-2018 were as such:

1) $\mathbf{y_6 = 2461.49;}$
2) $\mathbf{y_7 = 2467.38;}$
3) $\mathbf{y_8 = 2473.27.}$

The behavior of the indicators is presented on the chart, along with forecasted values (Figure 13). According to this technique, slight growth is likely to happen in the nearest future, where in 2018 the volume of passenger traffic will be at the same level as in 2012.

However with structural changes, the distribution of passengers between modes of transport can change the situation of the forecast. Distribution is likely to happen (RQ 2.4).

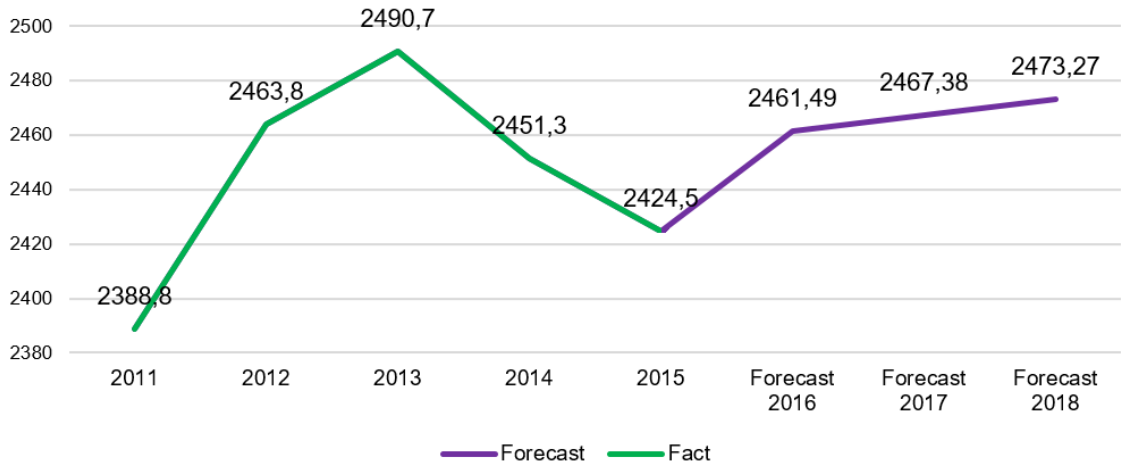


Figure 13. Forecast 2016-2018, using linear regression system

6 CONCLUSIONS AND RECOMENDATIONS

One of the most important conclusions of this work will be the answer to the main question: was the initiating of rebranding a good, and more importantly – successful idea in Moscow region? After discussion in this work, perhaps, the rebranding was *a necessary stage of development* for current city environment and infrastructure, as well as the change of perception was vital with the intention of saving and further increasing passenger flow. New ideas and formats of the public transport system were followed with *mostly positive feedback* from users, which can be seen by the growth of volume indicators after financial crises in 2009 and 2014.

In total, rebranding managed to have a *positive influence* on the field of advertising, answering RQ 1.3, notwithstanding more strict control from the government and new regulated formats of the advertisements themselves. With information covering passenger flow distribution, it might be possible that marketers could also distribute attention from the metro (as it is believed to be effective – due to large volumes; easy to control – easy calculations of the efficiency) to ground transport, as it becomes more and more popular and convenient for citizens.

Influence on marketing field (RQ 1.3)

Passenger flow, as the main audience for marketing campaigns, has been *instantly rising* for recent years, despite several drops in crisis times. This shows that the population of the city grows and the demand for public transportation services grows respectfully. Government understands the situation with high level of traffic concentration, and big amount of changes occurred with the help of rebranding of public transport, which involved also in development of the city infrastructure and introduction of new services (rental services for bikes, vehicles; increased number of parking places; bus lanes etc.) In this research work it was proven that there is a direct dependency between the growth of services offered by carriers and as the result – growth of passenger flow and more active distribution between means of transportation.

One controversial outcome was defined: with the development of service quality and with obtaining new brand essence, new social groups were attracted to public transport. Simply speaking, with raising positive perception of public transport, middle class starts to use it more often, which causes more explicit mixing of layers of the population, which

is a positive tendency for carriers, but more challenging situation for marketers, as this situation makes targeting more complex in transit media.

It can be seen as the potential problem which shades away with the amount of new opportunities. The development of the network as part of therebranding project *leads to new markets*; this can be illustrated by the example of New Moscow, a huge developing territory in the south of the city, which actively integrates into the main city part. Ground transport and metro infrastructure develops their network in the region rapidly. More transport units will allow advertising cheaper, as it is proven fact that transit media is cheaper and more efficient than static billboards, which is a valid argument for the new market. That is the state of advertising industry now, I believe, it can be seen as the development, the step ahead, that appeared only with the help of rebranding (RQ 2.1).

Transit advertising - calculation or intuition?

This question represents the exact idea of transit marketing performance calculations. Efficiency measurements of ad campaigns are extremely complicated and expensive process, as it requires investments, a big amount of valid statistical data. Nowadays, only the biggest advertising agencies or research institutions have all capacity to conduct such researches; they require time sources, money and high-tech equipment. While metro performance is relatively easy to observe, ground transport has a great number of variables, which should be taken into account.

But it is worth its complexity. Transit media is seen as one of the most *effective communication channels among other OOH advertisement formats*; it is also relatively cheaper, which with bigger audience gives almost perfect instrument for promotion. In addition, advertising on transport units allows choosing the most flexible targeting. It is believed to be a necessary part of marketing mix in a big city.

Ground transport vs. metro

After this research, it can be said, that at this point it is hard to compare these two systems, as more integration initiatives take place (answering question RQ 2.4). The main idea of the new brand – is to make transportation for passengers as convenient and comfortable as possible. Nonetheless, there are differences that cannot be denied. With the use of qualitative and quantitative data, this research showed that ground transport system remains to be more targeted and flexible (marketers can target a campaign up to any specific street); and of course less expensive; yet metro has bigger passenger flow volumes, in other words it has bigger audience. So the choice between

these carriers is to be done according to the main objective - to react as many potential customers as possible, to better target or to save money.

But as was mentioned before, there is a chance that the borders will be removed over some time, which means that marketers will have new possibilities to integrate advertising campaigns too (with more complex targeting and performance calculations and planning).

Passenger flow research (RQ 2.2 – RQ 2.3)

With the usage of primary and secondary information available from different sources and from the research itself it can be stated that TAT and metro are undisputed leaders in traffic volumes, comparing with private sector and other means of transportation. There is trend of continuous growth of traffic in future.

Crisis events have influence on passenger behavior - it is proven statistically that during financial crisis in 2009 and political challenges in 2014, passenger flow slightly dropped. Moreover, the metro is starting to lose its passengers by reason of more attractive and convenient services offered by other means of transport. But anyway, passenger traffic is growing rapidly, and it is a fact.

Even though this trend is obvious, as the population of the city grows yearly, and the government must initiate various programs in order to keep the city “moving”, it is more interesting to observe what shape these changes will have in future. For example, at this very moment, Moscow government came up with a great, in my personal opinion, idea of rebranding; they find different and not trivia methods of developing the transport system. This involves the rise of service quality, integration with different systems – so not just simple expansion (which would solve one problem, then again would lead to others), but, very importantly, *simultaneous expansion and development of services and perception*.

Recommendations

The idea of uniting the transport system under one brand is a good sign. There should be no competition inside the network as the main outcome for successful and continuing development – is respect towards customers and initiation of programs aimed to help and support people in megapolis. In light of all current trends, there is a chance that there will be *no division* of means of transport, as it will take shape of one *fully united and integrated* transport system of the city.

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APPENDIX (1) – METHODS OF RESEARCH

Expert planning method

Factors determining the predicted value, represented by the random variables with given probability and correlation characteristics. (Kunin, Practical Financial Management Course, 2015)

$$value_{avg.} = \frac{\sum_{j=1}^{N-2} 3_j \times f_j}{\sum_{j=1}^{N-2} f_j}$$ *Equation 7. Expert planning technique*

Where fj is determined as: = 0.0, if there is *no* trust;
= 0.1, if trust level is *low*;
= 0.3, if trust level is *below average*;
= 0.5, if trust is *average*;
= 0.7, if trust level is *above average*;
= 0.9, if trust level is *high*;
= 1.0, if trust level is *absolute*.

The values of 0.0 and 1.0 are not used. If the trust is absent, so the usefulness of expert opinion is being questioned. Exactly the same principle with a value equal to 1.0; if the trust is absolute, the expediency of using other expert opinions is also absent.

The principle of this method is the "deletion" of the highest and the lowest forecast values. This is done to average the values in the system. Plus, the human factor always plays its role.

Exponential smoothing

$$\overline{y_n} = \alpha y_n + (1-\alpha) * \overline{y_{n-1}}$$

$$y_{n+1} = \overline{y_n}$$ *Equation 8. Exponential smoothing*

α – is a smoothing parameter that characterizes the weight of this observation in the calculation of the exponential average [0; 1].

The larger α is, the more weight of the last value is taken into account. If α = 1, last actual value is taken into account; If α = 0, the last value is not taken into account;

Linear regression analysis

This function must satisfy the conditions to minimize the sum of squared deviations of the actual values of the index yi avg. from yi complying with a line.

$\sum_{i=1}^{n}(y_i - y_{i\,avg.})^2 \longrightarrow \min$ *Equation 9. Conditions to minimize regression*

Parameters $a1$ and $a0$, satisfying this condition are determined by the system of two linear equations with two unknowns. (Kunin & Rumyanceva, Practical Cost Management Course, 2015)

$$\{\sum_{i=1}^{n} y_i = n * a_0 + a_1 * \sum_{i=1}^{n} x_i\}$$

$$\{\sum_{i=1}^{n} x_i y_i = a_0 * \sum_{i=1}^{n} x_i + a_{1*} \sum_{i=1}^{n} x_i^2\}$$

$y = a_0 + a_i * x$ *Equation 10. Linear regression system*