MOBILE DUEL – PRELIMINARY FINDINGS OF THE RUSSIAN OPERATORS' RUSH FOR THE REGIONS

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ABSTRACT

This paper analyses the regional expansion of the leading mobile operators in Russia. The regional level approach applied in this paper enables a more specific analysis on the factors affecting the expansion choices, especially when the national markets are large and fragmented as is the case of Russia. This preliminary research paper aims at (1) to investigate where the leading Russian mobile operators have expanded to; (2) to identify, if the chosen regions differ from those where the companies do not have operations; (3) to analyse the competitive situation in selected regions.

Key Words: Mobile telecommunications, transition economies, Russia, Russian regions, Mobile Telesystems (MTS), Vimpelcom.

1. Introduction

During the past decades, several theories have been generated aiming to explain the phenomenon of foreign direct investment (FDI). For more than two decades, the eclectic theory[1] combining economic theories of monopolistic competition, location and transaction costs has remained as one of the dominant analytical framework for a variety of operationally testable economic theories of the determinants of FDI and the foreign activities of multinational enterprises (MNEs). Besides the eclectic theory, studies based on more behavioral approaches have appeared – with focus on the internationalisation process of the firm (e.g. Johanson and Wiedersheim-Paul, 1975; Johanson and Vahlne 1977; Welch and Luostarinen, 1988).

In this preliminary study, we aim at combining some elements of the traditional FDI and internationalisation theoretical framework with the concept of (mainly) internal expansion of the largest Russian mobile operators. As both of the leading Russian operators are backed up by notable foreign investments, we consider the theoretical framework used to be applicable for critical examination of the companies – from their viewpoint the expansion in Russia is, of course, international. From the viewpoint of Russian mobile operators the expansion has mainly remained within the borders of the Russian Federation[2]. In fact, Elango (1998) has noted that a positive domestic market growth rate encourages managers to focus on domestic

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[1] Dunning's eclectic theory is also known as OLI (Ownership, Location and Internationalization) paradigm. The paradigm sets out to explain the extent, form and pattern of internationalisation production which relies on three distinct sets of advantages. For more information, see f. ex. Dunning (1977, 1980, 1988, 2001).

[2] As an exception it could be mentioned that in June 2002 the leading Russian mobile operator MTS launched operations in Belarus. MTS has announced to begin the construction of a network that will cover Minsk and the Moscow to Brest highway (one of the main routes from Russia to the West). MTS has already paid US$15 million to the Belarus government for a 49% stake in the operator and its GSM licence, and will also pay an additional US$6 million after 2003.

operations. However, he adds that "expanding internationally even when the domestic market is still in growth stages might be advisable for firms", because strong domestic market growth attracts global competitors (Elango, 1998, p.217).

The Russian mobile telecommunications sector provides a great variety of attractive research topics. The country, with a population of some 144 million, is often characterised as one of the most promising countries for future revenues of mobile communications services. At the first glance, the mobile communications business field seems to be quite crowded, as there are over a hundred operators providing mobile services covering almost all of Russia's 89 federal subjects. However, the market is dominated by the three largest operators[3], which are based in Moscow and St. Petersburg. In July 2002, they had a combined customer base of 10.2 million, which brings their share 81% of the total market (J'son, 2002).

In this preliminary study we aim at investigating which regions the two leading Russian mobile operators have expanded to. Besides, we analyse, if the chosen regions differ from those where the companies do not have operations and, moreover, have an inner look at the competitive situation in selected regions. The data used in this study consists mainly of statistical and company level material, which, in turn, sets some limitations for both the accuracy as well as reliability for the results.

The present paper is structured as follows: chapter two provides a theoretical background for the expansion strategies of companies operating in the field of telecommunications with special emphasis on the emerging markets. Based on existing literature, we set up our

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[3] In July 2002 the largest Russian mobile operators were Mobile Telesystems (market share 37.5%), Vimpelcom (29.0%) and Megafon (15.0%). Mobile Telesystems and Vimpelcom are public companies listed at New York Stock Exchange (NYSE). The third operator Megafon is a private company in a consolidation process into a single entity.

hypothesis for this study. The third chapter includes a brief description of the Russian mobile communications market history with focus on the current dominant operators. In the fourth chapter we present the results of the study. The fifth chapter concludes and presents some fruitful topics for further research.

2. The Concept of Mobile Communications Expansion

Due to its apparent novelty, the mobile telecommunications in transitional economies has seldom been a target of academic researches. Gao & Lyytinen (2000) have considered the Chinese telecommunications reforms from a macro perspective. In addition, several studies have been made in the field of telecommunications manufacturing industry in emerging economies (e.g. Sadowski, 2000; Li et al., 2000; Ramamurti, 2000; Tan, 2002).

In order to explain the internationalisation across country markets, it has been hypothesised by Johanson & Vahlne (1977) that firms would enter new markets with successively greater physical distance. Physical distance has been defined as factors preventing or disturbing the flow of information between firm and market, including factors such as differences in language, culture, political systems, level of education, or level of industrial development. Johanson & Wiedersheim-Paul (1975) stated that this physical distance is correlated with geographic distance. Based on the internationalisation theory, we hypothesise that the companies tend to have same principles also in regional expansion inside the country (in Russia):

H1 The operators first expand to the regions near their initial starting region.

One of the basic dimensions identified in Dunning's eclectic paradigm is the size and growth of the host market area. There are still over 130 million people in Russia who do not have mobile phones, but the number of potential clients is limited by purchasing power as in other emerging markets. Thus mobile operators face the dilemma which regions they should expand to with their limited resources. In most articles about international business the size of the potential market is considered as one of the most important factors for international operations. Based on the assumption that operators expand with rationality, we set the following hypothesis:

H2 The operators expand to regions with high demographic and economic potential.

H2a The operators first expand to large urban centers.

H2b The operators enter to regions with high economic performance.

H2c The operators expand to regions with positive investment climate.

There is a substantial body of existing literature on the effects of entry order on performance. In general, researchers have agreed that early movers in a given sector enjoy enduring advantages over late entrants (e.g. Caves and Porter, 1977; Lambkin, 1988) Among others, Pan et al. (1999) have studied the impact of order and mode of market entry into an overseas market. Their researches in emerging (Chinese) market have indicated that early entrants have significantly higher market shares and profitability than late followers. Ramamurti (2000) has studied the effect of specific emerging market factors such as monopoly privileges, political connections and entry-deterring policies into first-mover advantage. He stated that late-movers are exposed to greater regulatory and competitive risks. Also Sarkar et al. (1999) have pointed out that there are substantial first mover learning advantages also in the field of telecommunications. On the base of the literature we hypothesise that:

H3 The first operator in a new region remains as the market leader.

The importance of legislation in internationalisation literature has become more and more stressed. Recently, also Dunning (1995, p.473) has broadened the concept of location (or L factor) of the OLI paradigm and emphasized the need to give more weight to factors like the role of national and regional authorities in influencing the extent and structure of localised centers of excellence.

The telecommunications sector is usually regulated both by general and industry-specific laws. In general these allow the telecommunications industry to grow, but there are some limitations such as unfair treatment of traditional operators vis-à-vis new entrants.

The regulatory issues of mobile telecommunications services in transition economies have been studied in Hungary by Xavier (2000) and in Poland by Dornisch (2000). On the basis of existing literature, the role of the government's intervention through various types of regulation such as licenses is quite decisive factor explaining mobile operators entry strategies (e.g. Gruber and Verboven, 2001). This was underlined by Gruber & Verboven (2001) when they looked the issue from licensing, competition and standardisation viewpoints. Gruber (1999) has stated that allocation of licenses often may induce problems of unfair competition. Parker (2001) has explored the effects of the changing deregulation telecommunications environment and noted that deregulation is in most of the cases likely to boost competition and entry of new players.

Being aware of the certain difficulties of measuring legislative regional differences we, however, try to study, if any links could be found when examining the operators' expanding strategies with regional legislative differences:

H4 The operators go to the regions, where the legislation is investment-friendly.

3. Dueling Operators of the Russian Mobile Telecommunications Sector

On the Russian mobile telecommunications market, the market entry is regulated by licenses. However, the selection of technological standard has been left for market forces by issuing licenses for different standards[4].

The first mobile licenses were issued in 1991, when NMT-450 concessions were handed out to numerous consortia. The first cellular company Delta Telecom, an NMT-450 operator in St. Petersburg, launched its services in September 1991. Since then Russia has granted over 230 mobile licenses to over 140 operators. As a consequence, there are operators covering almost all of Russia's 89 regions. The licenses for mobile operators have been issued on a region-by-region basis, with one operator designated for each of the NMT-450, GSM, and AMPS/D-AMPS standards (New York Times, 2000). However, in the long run the telecommunications ministry has envisaged long-term co-operation with European firms to expand GSM technology throughout Russia over the next ten years (Business Russia, 2001).

Mobile Telesystems (MTS) is the largest mobile operator in Russia with 38% market share and a subscriber base of 4.7 million. MTS was established in 1994 by four Russian telecommunications companies and two foreign investors (Siemens and Deutsche Telekom's affiliation DeTeMobil). In 2000 MTS became listed in the New York Stock Exchange

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[4] In Russia there still exists a great variety of both analogic standards (for example, NMT-450, AMPS) as well as digital standards (GSM 900, GSM 1800, CDMA-800, D-AMPS, US TDMA-800).

(NYSE) through initial public offering (IPO) and raised 353 million dollars for ongoing network development (Euroweek, 2000).

MTS has licenses for 49 regions of Russia, out of which it had launched operations in 35 regions by July 2002. MTS has been the most aggressive in the regional expansion and has acquired many leading regional operators in addition to greenfield launches. Some main historical events of MTS are illustrated in the following (see Figure 1).

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Insert Figure 1. here
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Vimpelcom is the second largest mobile operator in Russia with 29% market share and a subscriber base of 3.6 million. Vimpelcom began its operations in 1994. It was the first Russian company to list in the NYSE already in 1997 (Euromoney, 1997). In 1999 Vimpelcom entered into a strategic relationship with Telenor, a Norwegian telecommunications operator, which acquired 25.7% of Vimpelcom shares (Economist, 2000). In 2001 the Russian Alfa Bank agreed to buy 25% of Vimpelcom and its regional operator Vimpelcom-Region for 220 million dollars (Vimpelcom, 2002).

Vimpelcom licenses cover approximately 70% of Russia's population, including the city of Moscow, which is the company's primary market (Vimpelcom, 2002). In addition, Vimpelcom has expanded into 15 regions outside the Moscow license area mainly by greenfield operations. Some historical phases of Vimpelcom are illustrated in the following figure (see Figure 2).

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To sum up, the dominance of the two leading mobile operators in Russia is quite evident. Together their customer base is over eight million, which represents some two thirds of the total market. In reciprocal competition, MTS has had the leading position in terms of number of subscribers and sales figure. Also, when examining the activity to expand to new regions, MTS has been the most active to expand to regions (see Table 1).

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Insert Table 1. here
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4. Data and Analysis

The Russian mobile sector data used in this analysis consists of regional entry data of leading operators, Mobile Telesystems and Vimpelcom. The data was obtained from the operators' information disclosures and quarterly reports required to be filed by the U.S. Securities and Exchange Commission (SEC) rules. The regional cellular subscription data was obtained from J'Sons (2002), macroeconomic indicators from Goskomstat[5] (2001) and regional Expert ratings from RA-Expert[6] (2002). The database is divided into 87 subjects of the Russian Federation[7]. The results are attached in the appendixes 2 and 3. The results for the hypotheses are presented in the following.

H1 The operators first expand to the regions near their initial starting region.

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[5] The demographic and macroeconomic regional indicators selected for this study are based on the situation in year 2000. (See Appendix 1)

[6] Expert Rating Agency has been rating investment potential and risk of Russian regions annually since 1995. In this study we have exploited the regional potential rating and regional risk rating for legislative risk. (See Appendix 1)

[7] There are 89 federal subjects in Russia, but the data for Chechnya and Nenets autonomous district was not available for this study.

Our first hypothesis dealt with the distance between the operating regions and initial starting point of operations (Moscow). On the basis of descriptive analysis, the regions where the leading mobile companies operate are relatively close to Moscow. The mean distance for regions where MTS is operating was 1,246 kilometers and for Vimpelcom 845 kilometers. This is remarkably less than mean distance of 3,744 km for areas where neither MTS nor Vimpelcom operated. Apparently, the operators tend to expand to regions, which are closer to Moscow rather than to more distant regions. Correlations between both the operators' regional expansion (whether or not they operate on a region) and distance from Moscow are significant at the 0.05 level and the distance from Moscow is statistically different between regions where the companies operate and other regions[8].

Vimpelcom has received all its regional licenses in 1998, so the results clearly point out its expansion preferences. MTS has received licenses at different times and also actively used the acquisition strategy to enter attractive regions where it does not have licenses. Despite the different entry mode strategies the results indicate that operators prefer having a sufficient coverage on a certain geographical regions rather than to expanding methodically to the economically most attractive regions.

H2 The operators expand to regions with high demographic and economic potential.

H2a The operators first expand to large urban centers.

H2b The operators enter to regions with high economic performance.

H2c The operators expand to regions with positive investment climate.

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[8] The Mann-Whitney U test for testing median differences in different groups is used for variables not normally distributed. For normally distributed variables the t-test for differences between means is used. (see Appendix 2 and 3)

Our second hypothesis focused on the business rationality of regional expansion. The first sub-hypothesis about preferring urban regions to rural areas proved to be valid for both operators. Operators seem to prefer populous and urban regions in their expansion. Both the population and the share of urban population in regions where the companies operate are larger than in the regions where they do not. The difference is statistically significant at the 0.05 level.

The hypotheses H2b and H2c are rather problematic. On the other hand, the regions with MTS's presence are significantly different from regions without MTS's presence, if measured by some economic variables (GRP[9], cumulative FDI, number of population below subsistence level, share of population below subsistence level). At the same moment, these variables do not seem to have been significant for regions with Vimpelcom's operations (with the exception of the share of population below subsistence level). However, in the case of both operators, there seems to have been a tendency that the regions where they operate have a large number of SMEs. In the light of investment climate, both companies tend to turn to regions with positive business environment[10].

Although within this study we have not further analysed the regions, one explanation for different results for MTS and Vimpelcom could be found, when looking through the list of the regions, where they are operating in; in the case of Vimpelcom some economically powerful regions, like St. Petersburg, are missing. In Russia the mobile licenses are issued for certain geographical areas and Vimpelcom has not received license for St. Petersburg even it has applied for. In order to find more solid ground for further statements considering the regional

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[9] One peculiarity of the results was that although gross regional product appeared quite significant for MTS, the gross regional product per capita for MTS was not significant.

[10] Expert Rating Agency's rating for regional investment potential (see Appendix 2).

economic performance and investment climate, more tests are needed. However, the results support the hypothesis that mobile operators tend to enter the regions with high economic performance even when they are restricted by license constraint.

H3 The first operator in a new region remains as the market leader.

The results indicate that in six regions out of 15 the first entrant operator has lost its' market leading position to the late entrant[11]. All these regions were located in the Central Federal District. One explanation for the relatively low first mover advantage could be that the analysed regions are not strategically important due to their relatively small size. However, Moscow being one of them gives the results more weight since, based on our calculations, around two thirds of both operators' revenues are coming from the Moscow region.

Interestingly MTS had been the first market entrant in all the fifteen analysed regions. All together Vimpelcom had entered 22 regions out of which in fifteen regions MTS has already had their operations. In six regions Vimpelcom has managed to achieve more subscribers than its competitor despite the later entry in the region (see Figure 3). Thus the results indicate that the first market entrant has an advantage, but first mover advantage is not a crucial for successful operations. On the other hand there could be found temporary operational company-level problems at the regions behind these results of which the authors do not have knowledge.

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[11] The number of regions, where both operators had started their operations, was seventeen. However, in three of them Vimpelcom data was not available (Bryansk, Ivanovo and Kostroma). The analysed regions, in the order of market entry, were Moscow, Moscow Oblast, Smolensk, Kaluga, Vladimir, Tula, Ryazan, Tver, Kostroma, Belgogrod, Lipetsk, Voronezh, Bryansk, Yaroslavl, Novosibirsk, Nizhny Novgorod and Ivanovo.

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Insert Figure 3. here
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H4 The operators go to the regions, where the legislation is investment-friendly.

This hypothesis was tested by using Expert rating agency's ratings for differences in regional legislative risks[12]. However, this variable was not significant in explaining the mobile operators' regional expansion choices. This indicates that legislative differences are relatively small from the operators' point of view. On the other hand the variable used in this occasion maybe was not the most valid one, but the best available proxy to measure regional legislative risks.

5. Discussion and Conclusions

On the basis of our preliminary findings, the most significant factors in the regional expansion of the two leading Russian mobile operators proved to be mainly geographic and demographic. The areas first entered are situated closer to Moscow region (H1) and have a higher number of population as well as share of urban population (H2a) than areas not entered.

In the case of variables measuring the economic performance of the regions (H2b and H2c), the results are more ambiguous with some differences in the findings for MTS and Vimpelcom, and indicate that some economic variables are not (statistically) significant in regional expansion.

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[12] In the regional investment risk rating, regions are rated in order of their performance (best region receives the value 1, while the worst receives the value 89). (See Appendix 1)

We have divided the studied variables into three groups according to the preliminary results (See Table 2).

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Insert Table 2. here
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A very significant factor affecting the results is that licenses are not issued on a nation-wide basis but on a regional basis. This type of license policy has led to a serious disproportion in the telecommunications market. However, besides the legislation and licenses, there are also other factors that limit the competition and the development of the sector. Currently only some one fifth of available radio frequencies are used by civil operators and organisations, while the remaining four fifths of frequencies are used for national security purposes (BISNIS, 2001). These above describer factors set a limit for the operators' regional expansion options since certain regions are not available because of regional license policies.

Although these results are preliminary, there are clear selective elements to be detected in the leading mobile operators' regional expansion. Even though the demographic and geographical aspects seem to have had strong influence in regional expansion decisions, also some economic indicators support the assumption that operators tend to expand in a rational manner. On the other hand the limitations of this study have to be notified; for example, the significance of initial competition situation by other (local) operators in the regions should be examined in further studies in order to achieve more solid results. Similarly, the effects of regional license policy would also require further studies. It could even be assumed that the operators expand more rationally than results indicate if they had permission (licenses) to expand to all attractive regions.

In the end, it is important to realise that though transitional economies are struggling with restructuring and privatisation of fixed line telecommunications sector, they are simultaneously experiencing the emergence of new fast growing private mobile telecommunications sector. In Russia, the leading mobile operators MTS and Vimpelcom have sufficient resources for their regional expansion desires since they both have strong financial resources for their expansion. It seems that the rush for the regions is by no means calming down. It is accelerating.

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Figure 1.   **The Main Events of the MTS History**

GSM License for Moscow	**Acquisition of Telecom XII**

Starting operations in SPb.

Acquisition of BM Telecom

Operations in Belarus

| 1994 | 07/2000 | 11/2000 | 03/2001 | 08/01 | 12/01 | 01/02 | 03/02 | 05/02 | 06/02 |

IPO at NYSE

1 Million Subscribers

2 Million Subscribers

Acquisition of Kuban GSM

3 million Subscribers
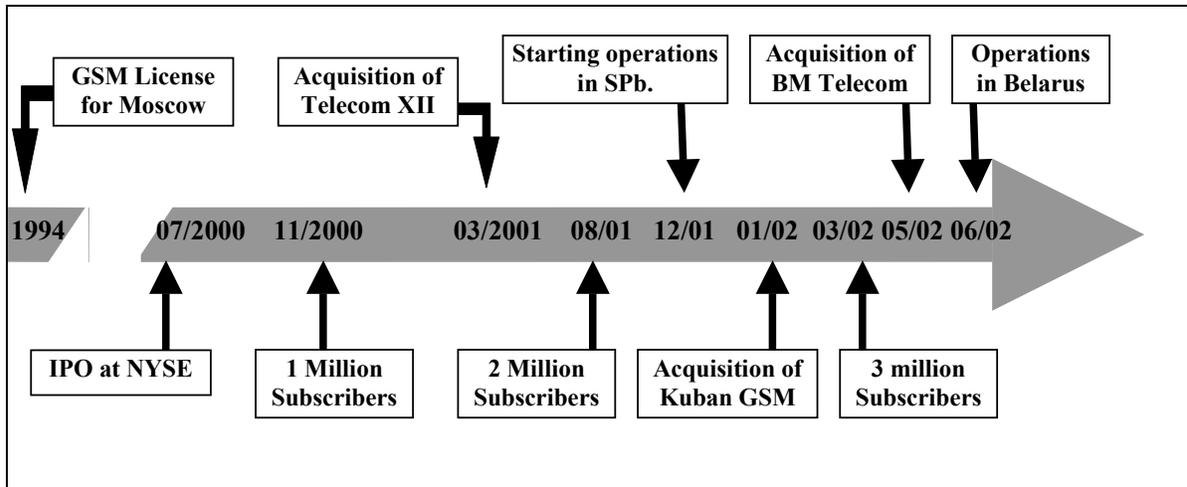
Source: MTS (2002).

Figure 2.   **The Main Events of the Vimpelcom History**

AMPS License for Moscow

GSM License for Moscow

Alfa Group as strategic owner

3 million Subscribers

| 1994 | 1996 | 1999 | 05/1999 | 05/2001 | 01/2002 | 05/2002 |

IPO at NYSE

Telenor partnership

1 Million Subscribers

2 million Subscribers
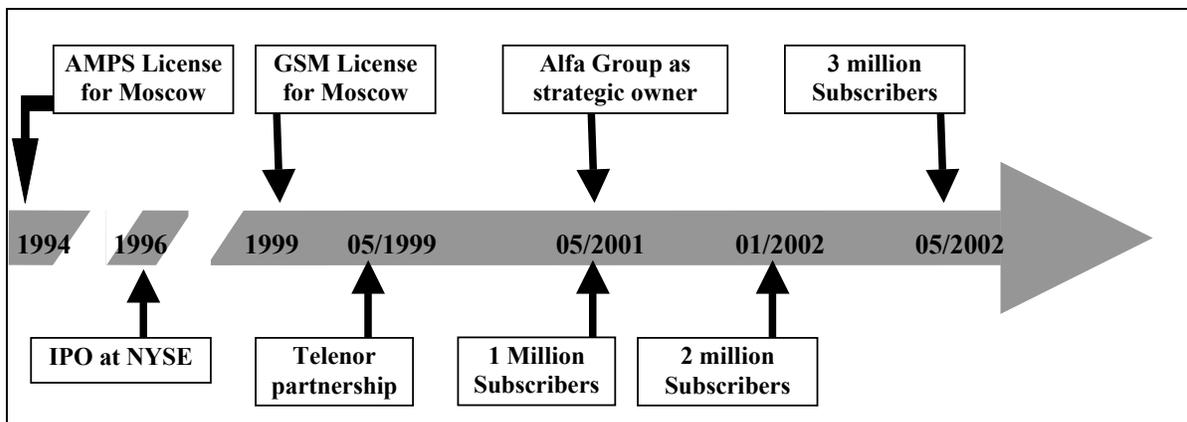
Source: Vimpelcom (2002).
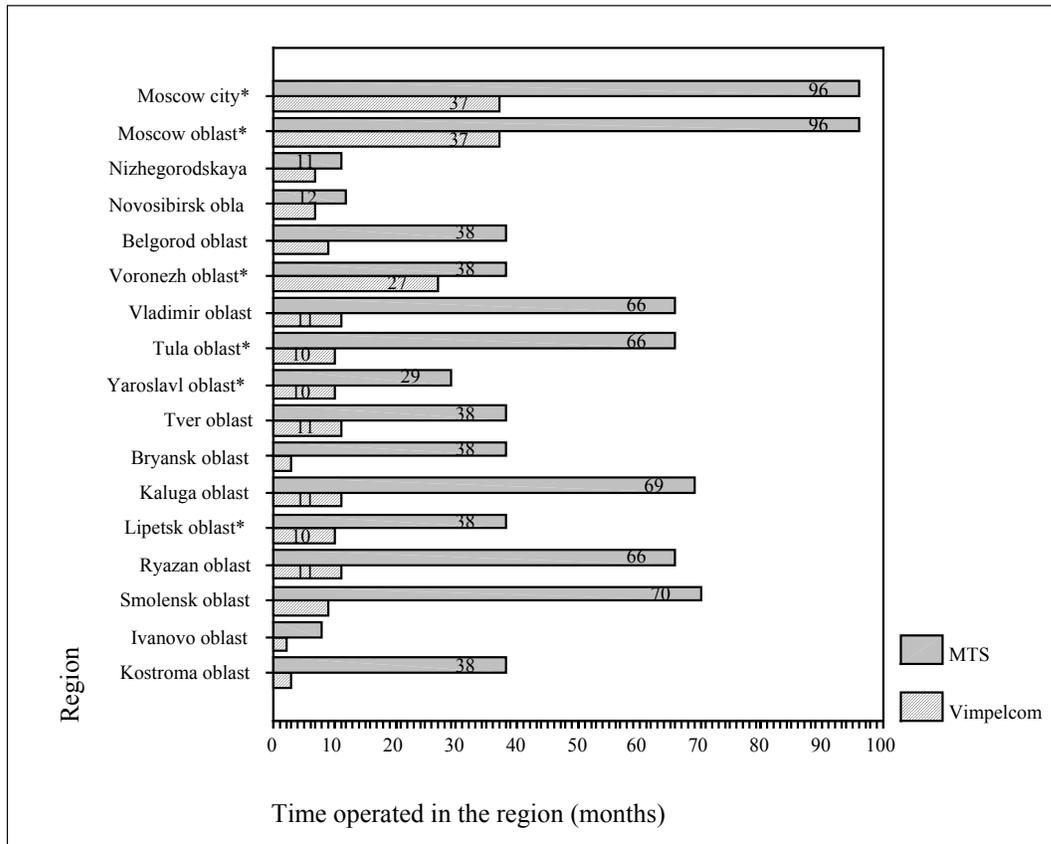
Figure 3.   The Illustration of the Operating Times in the Regions (**.

*) Vimpelcom has entered the region after MTS, but has later achieved the market leading position.
**) The bar width indicates the time operated in the region.

Table 1.   Comparison of MTS and Vimpelcom

Measure	MTS	Vimpelcom
Subscribers (July 2002)	4,685,000	3,630,000
Sales, million USD (2001)	893	428
Licensed population, million	94	100
Active regions	35	22

Source: MTS (2002) and Vimpelcom (2002).

Table 2.   The Statistically Significant Variables in the Operators' Regional Expansion

Variable	Variable Significant for MTS	Variable Significant for Vimpelcom	Variable not significant for companies
Distance from Moscow	x	x	
Number of population in the region	x	x	
Number of urban population	x	x	
Share of urban population	x	x	
Population density	x	x	
Number of SMEs	x	x	
Expert rating for regional investment potential	x	x	
Number of population below subsistence level	x	x	
Cumulative FDI	x		
Gross regional product	x		
Share of population below subsistence level	x		
Number of people in highest income group			x
Regional exports			x
Legislative environment			x
Political environment			x
Gross regional product per capita			x

APPENDIX 1. Summary of Regional Data

Variable[1]	N	Mean	Median	Standard deviation	Min.	Max.
Distance MTS	35	1246	606	1897	0	8533
Distance VIP	22	845	399	1087	0	3482
Distance MTS and VIP	17	478	318	724	0	3191
Distance No MTS no VIP	47	3744	2144	3260	480	12866
Distance All Regions	87	2644	1519	2941	0	12866
Population MTS	35	2204257	1498800	1782346	719400	8546100
Population VIP	22	2476655	1652650	1882684	774500	8546100
Population MTS and VIP	17	2332665	1498800	2096314	774500	8546100
Population No MTS no VIP	47	1161691	919700	1055229	18500	3776800
Population All Regions	87	1684823	1271000	1495411	18500	8546100
Urban population MTS	35	1697643	1118200	1653127	507600	8546100
Urban population VIP	22	1901814	1267400	1812058	512300	8546100
Urban population MTS and VIP	17	1867865	1126200	2042932	512300	8546100
Urban population No MTS no VIP	46	818872	582250	815323	5300	2969500
Urban population All Regions	86	1246184	865950	1298990	5300	8546100
Urban population (%) MTS	35	73.6	71.0	10.4	53.0	100.0
Urban population (%) VIP	22	73.1	73.3	10.5	52.3	100.0
Urban population (%) MTS and VIP	17	74.8	73.9	9.2	62.1	100.0
Urban population (%) No MTS no VIP	46	62.5	65.3	17.2	25.7	91.1
Urban population (%) All Regions	86	67.3	68.3	15.4	25.7	100.0
Pop. density MTS	35	45.2	36.1	54.9	1.9	318.8
Pop. density VIP	22	53.8	39.7	64.8	12.9	318.8
Pop. density MTS and VIP	17	61.7	46.5	72.0	12.9	318.8
Pop. density No MTS no VIP	47	20.0	6.4	23.5	0	84.6
Pop. density All Regions	87	30.6	22.4	40.5	0	318.8
GRP per capita MTS	35	24171	21525	12125	10382	78488
GRP per capita VIP	22	21743	17993	13438	10382	78488
GRP per capita MTS and VIP	17	22538	18099	15086	10382	78488
GRP per capita No MTS no VIP	39	24972	17694	19676	5040	110475
GRP per capita All Regions	79	24241	19183	16001	5040	110475
Pop. under minimum MTS	35	785826.1	648352.8	520629.9	172656	1991241
Pop. under minimum VIP	22	888292.4	784915.5	504159.0	295085	1991241
Pop. under minimum MTS and VIP	17	834479.3	648352.8	547542.3	295085	1991241
Pop. under minimum No MTS no VIP	47	473889.4	350591.4	392753.9	8288	1544414
Pop. under minimum All Regions	87	633712.6	502336.0	477438.8	8288	1991241
Pop. under minimum (%) MTS	35	38.1	35.6	12.6	19.8	67.4
Pop. under minimum (%) VIP	22	39.4	36.8	13.7	23.3	67.4
Pop. under minimum (%) MTS and VIP	17	39.9	38.0	14.3	23.3	67.4
Pop. under minimum (%) No MTS no VIP	47	50.4	46.6	22.2	13.3	96.8
Pop. under minimum (%) All Regions	87	44.7	39.8	19.3	13.3	96.8
Pop. in high income level group MTS	35	216718	28401	711380	1069	4213227
Pop. in high income level group VIP	22	255601	33022	889543	1069	4213227
Pop. in high income level group MTS and VIP	17	296709	18878	1013259	1069	4213227
Pop. in high income level group No MTS no VIP	47	118605	20348	252662	0	1382823
Pop. in high income level group All Regions	87	157916	27346	487145	0	4213227

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[1] In the Table, there regions are categorized on the basis of companies operating there. Values with MTS provide descriptive information about the regions, where MTS is currently operating. Respectively, Regions with Vimpelcom's presence are presented and indicated as "VIP". In addition, we have collected information about the cases, where both of the operators are present and where neither of the operator is present.

Pop. in high income level group (%) MTS	35	5.6	2.2	9.6	0.1	49.3
Pop. in high income level group (%) VIP	22	4.5	1.3	10.3	0.1	49.3
Pop. in high income level group (%) MTS and VIP	17	4.7	1.2	11.6	0.1	49.3
Pop. in high income level group (%) No MTS no VIP	47	9.9	2.7	15.1	0	65.0
Pop. in high income level group (%) All Regions	87	7.8	2.5	12.9	0	65.0
Number of SMEs MTS	34	17056	6674	34574	2540	180010
Number of SMEs VIP	22	18347	7129	37423	2540	180010
Number of SMEs MTS and VIP	17	19789	6270	42629	2540	180010
Number of SMEs No MTS no VIP	46	5166	3331	5913	43	27565
Number of SMEs All Regions	85	10409	4783	22890	43	180010
Exports MTS	35	1373	588	3753	46	22471
Exports VIP	22	1524	436	4708	46	22471
Exports MTS and VIP	17	1740	299	5364	46	22471
Exports No MTS no VIP	39	955	122	2443	,3	14624
Exports All Regions	79	1129	371	3120	,3	22471
FDI cumulative MTS	35	375542	34601	1238544	957	7181568
FDI cumulative VIP	22	449765	30733	1530220	957	7181568
FDI cumulative MTS and VIP	17	565849	26431	1734856	957	7181568
FDI cumulative No MTS no VIP	47	73789	5486	219698	0	1449486
FDI cumulative All Regions	87	194109	19285	809210	0	7181568
Legislation rating MTS	35	40.3	40.0	23.6	1	79
Legislation rating VIP	22	41.0	39.0	24.4	6	83
Legislation rating MTS and VIP	17	40.7	40.0	23.7	6	79
Legislation rating No MTS no VIP	47	48.0	48.0	26.8	3	88
Legislation rating All Regions	87	44.5	45.0	25.7	1	88

APPENDIX 2. T-test for Differences between Means (normally distributed variables)

Group Statistics

	Both MTS and Vimpelcom operating in the region	N	Mean	Std. Deviation	Std. Error Mean
Legislative environment	No	70	45.49	26.23	3.14
	Yes	17	40.65	23.67	5.74
Political environment	No	70	43.41	26.51	3.17
	Yes	17	47.18	21.13	5.12
Urban population (%) of all population	No	69	65.4464	16.1155	1.9401
	Yes	17	74.7706	9.2329	2.2393
Population (%) below subsistence level	No	70	45.9114	20.2264	2.4175
	Yes	17	39.9000	14.3307	3.4757
Population below subsistence level	No	70	584954.99	449718.72	53751.67
	Yes	17	834479.26	547542.30	132798.51

Independent Samples Test (MTS and Vimpelcom operating in the region)

		Levene's Test for Equality of Variances		t-test for Equality of Means						95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Legislative environment	Equal variances assumed	.558	.457	.694	85	.489	4.84	6.97	-9.02	18.69
	Equal variances not assumed			.740	26.419	.466	4.84	6.54	-8.60	18.28
Political environment	Equal variances assumed	2.143	.147	-.544	85	.588	-3.76	6.92	-17.52	9.99
	Equal variances not assumed			-.624	29.580	.537	-3.76	6.02	-16.07	8.55
Urban population (%) of all population	Equal variances assumed	3.465	.066	-2.288	84	.025	-9.3242	4.0749	-17.4275	-1.2209
	Equal variances not assumed			-3.147	43.295	.003	-9.3242	2.9628	-15.2982	-3.3503
Population (%) below subsistence level	Equal variances assumed	2.564	.113	1.155	85	.251	6.0114	5.2063	-4.3401	16.3630
	Equal variances not assumed			1.420	33.413	.165	6.0114	4.2338	-2.5982	14.6211
Population below subsistence level	Equal variances assumed	.767	.383	-1.965	85	.053	-249524.28	126998.64	-502031,60	2983.05
	Equal variances not assumed			-1.742	21.538	.096	-249524.28	143264.40	-547006,39	47957.84

Group Statistics

	MTS operating in the region	N	Mean	Std. Deviation	Std. Error Mean
Legislative environment	No	52	47.40	26.86	3.72
	Yes	35	40.29	23.59	3.99
Political environment	No	52	45.10	26.61	3.69
	Yes	35	42.74	24.01	4.06
Urban population (%) of all population	No	51	62.9569	16.8454	2.3588
	Yes	35	73.6029	10.3885	1.7560
Population (%) below subsistence level	No	52	49.2154	21.7144	3.0112
	Yes	35	38.0829	12.5658	2.1240
Population below subsistence level	No	52	531328.54	420846.22	58360.87
	Yes	35	785826.07	520629.94	88002.52

APPENDIX 2. (Continued)

Independent Samples Test (MTS Operating in the Region)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Legislative environment	Equal variances assumed	1.297	.258	1.272	85	.207	7.12	5.60	-4.01	18.25
	Equal variances not assumed			1.304	79.068	.196	7.12	5.46	-3.74	17.98
Political environment	Equal variances assumed	.613	.436	.420	85	.675	2.35	5.60	-8.78	13.48
	Equal variances not assumed			.429	77.949	.669	2.35	5.49	-8.57	13.27
Urban population (%) of all population	Equal variances assumed	7.037	.010	-3.326	84	.001	-10.6460	3.2004	-17.0103	-4.2817
	Equal variances not assumed			-3.620	83.198	.001	-10.6460	2.9407	-16.4947	-4.7973
Population (%) below subsistence level	Equal variances assumed	12.891	.001	2.737	85	.008	11.1325	4.0673	3.0457	19.2194
	Equal variances not assumed			3.021	83.404	.003	11.1325	3.6850	3.8038	18.4613
Population below subsistence level	Equal variances assumed	1.137	.289	-2.512	85	.014	-254497.52	101304.55	-455918,12	-53076.93
	Equal variances not assumed			-2.410	62.432	.019	-254497.52	105595.62	-465551,10	-43443.95

Group Statistics

	Vimpelcom operating in the region	N	Mean	Std. Deviation	Std. Error Mean
Legislative environment	No	65	45.75	26.20	3.25
	Yes	22	40.95	24.37	5.20
Political environment	No	65	44.34	26.63	3.30
	Yes	22	43.59	22.29	4.75
Urban population (%) of all population	No	64	65.3047	16.3777	2.0472
	Yes	22	73.0636	10.5244	2.2438
Population (%) below subsistence level	No	65	46.5477	20.6261	2.5584
	Yes	22	39.3864	13.6932	2.9194
Population below subsistence level	No	65	547547.15	439413.34	54502.52
	Yes	22	888292.37	504159.00	107487.06

Independent Samples Test (Vimpelcom Operating in the Region)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Legislative environment	Equal variances assumed	.205	.652	.755	85	.452	4.80	6.35	-7.83	17.43
	Equal variances not assumed			.783	38.690	.438	4.80	6.13	-7.60	17.20
Political environment	Equal variances assumed	1.568	.214	.118	85	.906	.75	6.32	-11.82	13.32
	Equal variances not assumed			.129	42.912	.898	.75	5.79	-10.92	12.42
Urban population (%) of all population	Equal variances assumed	2.843	.095	-2.075	84	.041	-7.7589	3.7388	-15.1940	-.3239
	Equal variances not assumed			-2.554	57.283	.013	-7.7589	3.0374	-13.8406	-1.6773
Population (%) below subsistence level	Equal variances assumed	4.375	.039	1.516	85	.133	7.1613	4.7230	-2.2293	16.5520
	Equal variances not assumed			1.845	54.996	.070	7.1613	3.8818	-.6179	14.9406
Population below subsistence level	Equal variances assumed	.692	.408	-3.028	85	.003	-340745.23	112540.40	-564505,69	-116984.76
	Equal variances not assumed			-2.827	32.482	.008	-340745.23	120515.53	-586084,45	-95406.00

APPENDIX 3. Independent Samples Test for Medians
(Mann-Whitney Test, for not-normally distributed variables)

Ranks

	Both MTS and Vimpelcom operating in the region	N	Mean Rank	Sum of Ranks
Population	No	70	41.27	2889.00
	Yes	17	55.24	939.00
Urban population	No	69	40.45	2791.00
	Yes	17	55.88	950.00
Distance from Moscow	No	70	51.59	3611.00
	Yes	17	12.76	217.00
Population Density	No	70	39.49	2764.50
	Yes	17	62.56	1063.50
Gross Regional Product	No	62	39.06	2422.00
	Yes	17	43.41	738.00
Gross Regional Product per	No	62	40.82	2531.00
	Yes	17	37.00	629.00
Number of SMEs	No	68	40.37	2745.00
	Yes	17	53.53	910.00
Cumulative FDI	No	70	41.84	2929.00
	Yes	17	52.88	899.00
People in highest income group	No	70	44.44	3111.00
	Yes	17	42.18	717.00
Regional Exports	No	62	39.92	2475.00
	Yes	17	40.29	685.00
Expert Rating for Regional Potential	No	70	41.99	2939.50
	Yes	17	52.26	888.50

Test Statistics[a]

	Population	Urban population	Distance from Moscow	Population Density	Gross Regional Product	Gross Regional Product per capita	Number of SMEs	Cumulative FDI	People in highest income group	Regional Exports	Expert Rating for Regional Potential
Mann-Whitney U	404.000	376.000	64.000	279.500	469.000	476.000	399.000	444.000	564.000	522.000	454.500
Wilcoxon W	2889.000	2791.000	217.000	2764.500	2422.000	629.000	2745.000	2929.000	717.000	2475.000	2939.500
Z	-2.045	-2.283	-5.684	-3.378	-.692	-.608	-1.967	-1.617	-.332	-.060	-1.504
Asymp. Sig. (2-tailed)	.041	.022	.000	.001	.489	.543	.049	.106	.740	.952	.133

a. Grouping Variable: Both MTS and Vimpelcom operating in the region

Ranks

	MTS operating in the region	N	Mean Rank	Sum of Ranks
Population	No	52	37.35	1942.00
	Yes	35	53.89	1886.00
Urban population	No	51	36.24	1848.00
	Yes	35	54.09	1893.00
Distance from Moscow	No	52	55.50	2886.00
	Yes	35	26.91	942.00
Population Density	No	52	36.63	1904.50
	Yes	35	54.96	1923.50
Gross Regional Product	No	44	35.27	1552.00
	Yes	35	45.94	1608.00
Gross Regional Product per capita	No	44	37.20	1637.00
	Yes	35	43.51	1523.00
Number of SMEs	No	51	36.41	1857.00
	Yes	34	52.88	1798.00
Cumulative FDI	No	52	36.79	1913.00
	Yes	35	54.71	1915.00
People in highest income group	No	52	41.94	2181.00
	Yes	35	47.06	1647.00
Regional Exports	No	44	35.73	1572.00
	Yes	35	45.37	1588.00
Expert Rating for Regional Potential	No	52	37.40	1945.00
	Yes	35	53.80	1883.00

APPENDIX 3.   (Continued)

Test Statistics[a]

	Population	Urban population	Distance from Moscow	Population Density	Gross Regional Product	Gross Regional Product per capita	Number of SMEs	Cumulative FDI	People in highest income group	Regional Exports	Expert Rating for Regional Potential
Mann-Whitney U	564.000	522.000	312.000	526.500	562.000	647.000	531.000	535.000	803.000	582.000	567.000
Wilcoxon W	1942.000	1848.000	942.000	1904.500	1552.000	1637.000	1857.000	1913.000	2181.000	1572.000	1945.000
Z	-2.995	-3.257	-5.176	-3.320	-2.053	-1.214	-3.014	-3.247	-.926	-1.855	-2.969
Asymp. Sig. (2-tailed)	.003	.001	.000	.001	.040	.225	.003	.001	.354	.064	.003

a. Grouping Variable: MTS operating in the region

Ranks

	Vimpelcom operating in the region	N	Mean Rank	Sum of Ranks
Population	No	65	38.94	2531.00
	Yes	22	58.95	1297.00
Urban population	No	64	38.19	2444.00
	Yes	22	58.95	1297.00
Distance from Moscow	No	65	51.89	3373.00
	Yes	22	20.68	455.00
Population Density	No	65	38.76	2519.50
	Yes	22	59.48	1308.50
Gross Regional Product	No	57	37.37	2130.00
	Yes	22	46.82	1030.00
Gross Regional Product per capita	No	57	41.39	2359.00
	Yes	22	36.41	801.00
Number of SMEs	No	63	38.24	2409.00
	Yes	22	56.64	1246.00
Cumulative FDI	No	65	40.97	2663.00
	Yes	22	52.95	1165.00
People in highest income group	No	65	43.37	2819.00
	Yes	22	45.86	1009.00
Regional Exports	No	57	39.28	2239.00
	Yes	22	41.86	921.00
Expert Rating for Regional Potential	No	65	40.01	2600.50
	Yes	22	55.80	1227.50

Test Statistics[a]

	Population	Urban population	Distance from Moscow	Population Density	Gross Regional Product	Gross Regional Product per capita	Number of SMEs	Cumulative FDI	People in highest income group	Regional Exports	Expert Rating for Regional Potential
Mann-Whitney U	386.000	364.000	202.000	374.500	477.000	548.000	393.000	518.000	674.000	586.000	455.500
Wilcoxon W	2531.000	2444.000	455.000	2519.500	2130.000	801.000	2409.000	2663.000	2819.000	2239.000	2600.500
Z	-3.213	-3.365	-5.010	-3.325	-1.641	-.864	-3.010	-1.924	-.400	-.448	-2.534
Asymp. Sig. (2-tailed)	.001	.001	.000	.001	.101	.388	.003	.054	.689	.654	.011

a. Grouping Variable: Vimpelcom operating in the region