

**ANALYSIS OF TURKISH MOBILE
COMMUNICATION MARKET AND INTRODUCTION
OF MOBILE VIRTUAL NETWORK OPERATORS**

Uygar BOYNUDELİK
108609049

**İSTANBUL BİLGİ ÜNİVERSİTESİ
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108609049

PROJE DANIŞMANININ ADI SOYADI (İMZASI) :

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KOMİSYON ÜYESİNİN ADI SOYADI (İMZASI) :

.....

PROJENİN ONAYLANDIĞI TARİH :

.....

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ABSTRACT

This study seeks to define the market conditions that resulted in the introduction of Mobile Virtual Network Operators. The mobile communications market in Turkey is analysed in depth. The historical development and regulation activities in Turkish market since 1994 is investigated. It's pointed out that Turkcell had benefited significant first mover advantage as the dominant market player. The current market situation is analysed in various aspects based on the report of Information and Communications Technologies Authority. It figures out that Turkish mobile operators are facing fierce competition and margin squeeze on traditional revenue streams like the other mobile operators globally. That's why; they need to reinvent new models and innovate to survive. Porter's five forces in Turkey's mobile communications market are discussed. Furthermore, market conditions that might result in the introduction of Mobile Virtual Network Operators are investigated. The world's greatest Mobile Virtual Network Operator Virgin Mobile and its business model are analyzed. This study states that it is hard to tell that Mobile Virtual Network Operator model is successfully applied in Turkey so far. However, there is still potential to set up a promising business model. An innovative model coupled with a powerful strategic partnership has huge potential to address the needs of specific segments with attractive offers and help the mobile operators to generate new revenue streams.

TABLE OF CONTENTS

- 1. Global Mobile Communications Market 1
- 2. Regulation and Development of Mobile Market in Turkey 2
 - 2.1. Regulatory Environment in the Turkish Mobile Market 4
 - 2.2. Development of Turkish mobile market..... 6
 - 2.2.1. Phase 1 – The Duopoly Period 6
 - 2.2.2. Phase 2 – New Entry and Quadropoly Period 7
 - 2.2.3. Phase 3 – The Current State of the Industry..... 8
- 3. A closer look at Turkish mobile industry..... 9
 - 3.1. Penetration..... 9
 - 3.2. 3G10
 - 3.3. Voice Traffic.....11
 - 3.4. Minutes of Usage (MoU).....12
 - 3.5. Mobile Revenues13
 - 3.6. ARPU14
 - 3.7. Churn Rate.....15
 - 3.8. Investment16
 - 3.9. Competition17
- 4. Mobile Operators in Turkey18
 - 4.1. Turkcell.....18
 - 4.1.1. Shareholder Structure.....19
 - 4.1.2. Highlights.....20
 - 4.2. Vodafone.....20
 - 4.2.1. Shareholder Structure.....21
 - 4.2.2. Highlights.....22
 - 4.3. Avea23
 - 4.3.1. Shareholder Structure.....24
 - 4.3.2. Highlights.....24
- 5. Porter’s Five Forces Model for Mobile Communications Market in Turkey.....25
 - 5.1. Threat of new entrants26
 - 5.2. Threat of substitute products26
 - 5.3. Rivalry among existing competitors27
 - 5.3.1. Mobile Number Portability29
 - 5.3.2. Mobile call termination rates.....29
 - 5.4. Bargaining power of suppliers29
 - 5.5. Bargaining power of customers31

6.	MVNO	32
6.1.	MVNO today	32
6.2.	Enablers	33
6.3.	Virgin Mobile Case Study.....	34
6.3.1.	Virgin Mobile UK	34
6.3.2.	Virgin Mobile Australia.....	38
6.3.3.	Virgin Mobile USA	38
6.3.4.	Virgin Mobile Canada.....	39
6.3.5.	Virgin Mobile France.....	40
6.3.6.	Virgin Mobile South Africa	41
6.3.7.	Virgin Mobile India	41
6.3.8.	Virgin Mobile Qatar.....	42
6.3.9.	Virgin Mobile's general strategy	42
7.	MVNO in Turkey.....	43
7.1.	Pre-MVNOs in Turkey	45
7.1.1.	Fenercell, GSMobile, Kartalcell and Trabzoncell.....	45
7.1.2.	Basicell	45
7.1.3.	Uğurcell	45
7.1.4.	İstanbulcell	46
7.1.5.	VIPCell	46
7.1.6.	TTNET Mobil.....	46
8.	Conclusion	48

LIST OF FIGURES

Figure 2.1 – Herfindahl-Hirschman index of mobile concentration, 2004 and 2009

Figure 2.2.1 – Timeline in Turkish mobile industry

Figure 3.1.1 – Mobile Subscriber Number and Penetration

Figure 3.3.1 – Total Annual Calling Traffic Amount

Figure 3.5.1 – Mobile revenues

Figure 3.8.1 – Annual Mobile investment per operator

Figure 5.1 – Annual Mobile investment per operator

Figure 6.3.1.1 – Virgin Mobile operations statistics

LIST OF TABLES

Table 3.2.1 – 3G service subscriber usage data

Table 3.4.1 – Mobile Operators' MoU values

Table 4.1.1.1 – Shareholding structure of Turkcell İletişim Hizmetleri A.Ş.

Table 4.2.1.1 – Shareholding structure of Vodafone

Table 5.3.1 Market shares of mobile operators in terms of number of subscribers

LIST OF ABBREVIATIONS

MNO: Mobile Network Operator

MVNO: Mobile Virtual Network Operator

MNP: Mobile Number Portability

ITU: International Telecommunications Union

ICTA: Information Technologies and Communications Authority

3G: 3rd Generation

OECD: Organization for Economic Co-operation and Development

UK: United Kingdom

PTT: Posts, Telegraph and Telephone

TT: Turk Telekom

US: United States

SIM: Subscriber Identity Module

EU: European Union

TÜİK: Türkiye İstatistik Kurumu

MOU: Minutes of Usage

ARPU: Average Revenue per User

SMS: Short Message Service

EBITDA: Earnings Before Interest, Taxes, Depreciation and Amortization

GSM: Global System for Mobile Communications)

CEO: Chief Executive Officer

NFC: Near Field Communications

VOIP: Voice Over IP

IMNO: Incumbent Mobile Network Operator

EMNO: Entrant Mobile Network Operator

VMA: Virgin Mobile Australia

VMSA: Virgin Mobile South Africa

VMF: Virgin Mobile France

INTRODUCTION

Today, the mobile communications market is one of the fastest growing markets in the world. Mobile industry continues to grow due to the current opportunities presented by the emerging markets. China and India offer much potential for future growth due to their large populations. On the other hand, with mobile penetration in most developed countries now well above 100%, opportunities to generate further growth will be limited. The mobile voice revenue is declining and this is set to continue over the next few years.

In Turkey, the total number of mobile subscribers is 61.8 million with 85.1% penetration ratio where Turkcell is the dominant mobile operator with 54.2% market share as of December 2010. It was the first mobile operator in Turkey that has started providing mobile services in 1994 and benefited first mover advantages since then. In this study, first of all, the development of mobile market in Turkey is analyzed. The regulative factors that resulted in today's competitive environment are investigated. After a chronological overview of Turkey's mobile market, market shares of operators are discussed in various categories.

Since the growth of overall subscriber base is almost stopped, mobile operators faced with high customer acquisition costs. Following the launch of MNP, switching costs has decreased remarkably. As a result, customer retention has become very difficult and increased competition caused squeezing profit margins.

MVNOs are operators providing mobile services without having their own infrastructure. They make a deal with one of licensed MNOs in order to utilize its infrastructure and try to leverage its existing assets to grow their own mobile customer base.

1. Global Mobile Communications Market

There have been significant changes in telecommunications market in last few decades. During this time period, innovative new technologies changed people's lifestyles and the way people communicate. Demand and interest of consumers to new telecommunication services are growing up rapidly which in turn makes the competition among operators more intense. Consequently, every day new services emerge with more affordable prices and higher quality. Based on the research of ITU, today, there are more than 5.3 billion mobile cellular subscriptions worldwide, including 940 million subscriptions to 3G services. (<http://www.itu.int/ITU-D/ict/material/FactsFigures2010.pdf>, 2010, p.1) There is a continuous growth trend in mobile users penetration particularly in emerging markets while the developed western countries are somewhat saturated. More than a billion mobile phone connections have been added in last 18 months.

(<http://www.bbc.co.uk/news/10569081>, 2010, ¶1) It is expected that the global mobile penetration rate will likely reach %100 over the coming 10 years. Mobile market revenues ratio in the total telecommunications revenues has increased from %22 to %41 in last 10 years among the OECD countries. In most of the countries mobile revenues exceeded fixed-line revenues. For instance, it is expected that in 5 Europe countries including Germany, France, Italy, Spain and UK, the mobile voice traffic would be 650 billion minutes whereas fixed-line voice traffic is just 450 billion minutes in 2011.

There are several factors that caused this significant growth in mobile market. First, the privatization and regulation of telecommunications market in most countries allowed new players to enter the market and provide innovative mobile services with lower rates. Second, mobile phone manufactures have been able to offer more capable phones at more economical prices by utilizing economics of scale. As a consequence, demand for mobile phone increased which resulted even smarter and more user friendly mobile phones. Additionally, by using new infrastructure technologies mobile operators are now able to provide more innovative value-added services in addition to voice and text services which in turn enable the mobile market to grow further.

The mobile phones used to access to mobile services provided has also evolved during the last decade. They are now much more ergonomic, more powerful, more user-friendly and

more innovative. According to a research conducted by Yankee, it is expected that the number of mobile internet users will double over the coming 5 years and will reach to 2 billion. It is also expected that most of the mobile internet users will connect to internet by using smart phones. Another output of the same research states that voice revenue ratio in total mobile communications revenues will continuously decrease and in 2011, more than %20 of the revenues will be through data (internet) service.

(http://www.deloitte.com/assets/Dcom-Turkey/Local%20Assets/Documents/turkey-tr_tmt_ElektronikHaberlesmePazari_2010_170111.pdf, 2011, pp: 1-2)

Today, we are living in convergence era. Services, devices and even industries converge to each other. The desktop computers are replaced by notebooks, basic mobile phones are replacing by more powerful smart phones, and 2G technologies are replaced by 3G technologies with higher bandwidth capabilities. It wouldn't be irrational to expect that the mobile markets all over the world either expand or evolve and continue to increase the welfare of human beings.

2. Regulation and Development of Mobile Market in Turkey

A long time has passed since Turkish authorities decided to develop an industry that would provide mobile communications services at competitive prices. However, today, Turkish mobile industry is one of the most concentrated markets in Europe.

The Herfindahl - Hirschman Index (HHI) is a commonly accepted measure of market concentration and often used by telecom regulators to monitor the distribution of market power. (<http://www.wirelessintelligence.com/analysis/2011/02/competition-and-concentration>, 2011, ¶1) HHI is based on the market share of individual mobile operators.

It is formulated as follows;

$$HHI = 10,000 [\sum(S_i)^2] = 10,000 [(S_1)^2 + (S_2)^2 + (S_3)^2 + \dots + (S_n)^2]$$

n = number of firms participating in an industry; S_i = each firm's market share

i = firm in a given industry.

The HHI scale ranges from 0 (for a hypothetical, perfectly competitive market, having an infinite number of competitors with an equal market share of zero) to 10,000 for a monopoly.

(http://stakeholders.ofcom.org.uk/binaries/research/cmr/753567/icmr/ICMR_2010.pdf, 2010, p.304)

As of December 2010, three operators Turkcell, Vodafone and Avea have market shares of 54.19%, 27.01% and 18.8% respectively.(

http://www.btk.gov.tr/Yayin/pv/ucaylik10_4.pdf, 2011, p.43) According to these values, HHI for Turkish mobile market is calculated to be;

$$HHI = 10.000 * [(0.542)^2 + (0.27)^2 + (0.188)^2] = 4020$$

According to US laws, markets with HHI value greater than 2500 are classified as being highly concentrated markets. (<http://www.justice.gov/atr/public/guidelines/hmg-2010.pdf>, 2010, p.19)

Herfindahl-Hirschman index of mobile concentration, 2004 and 2009

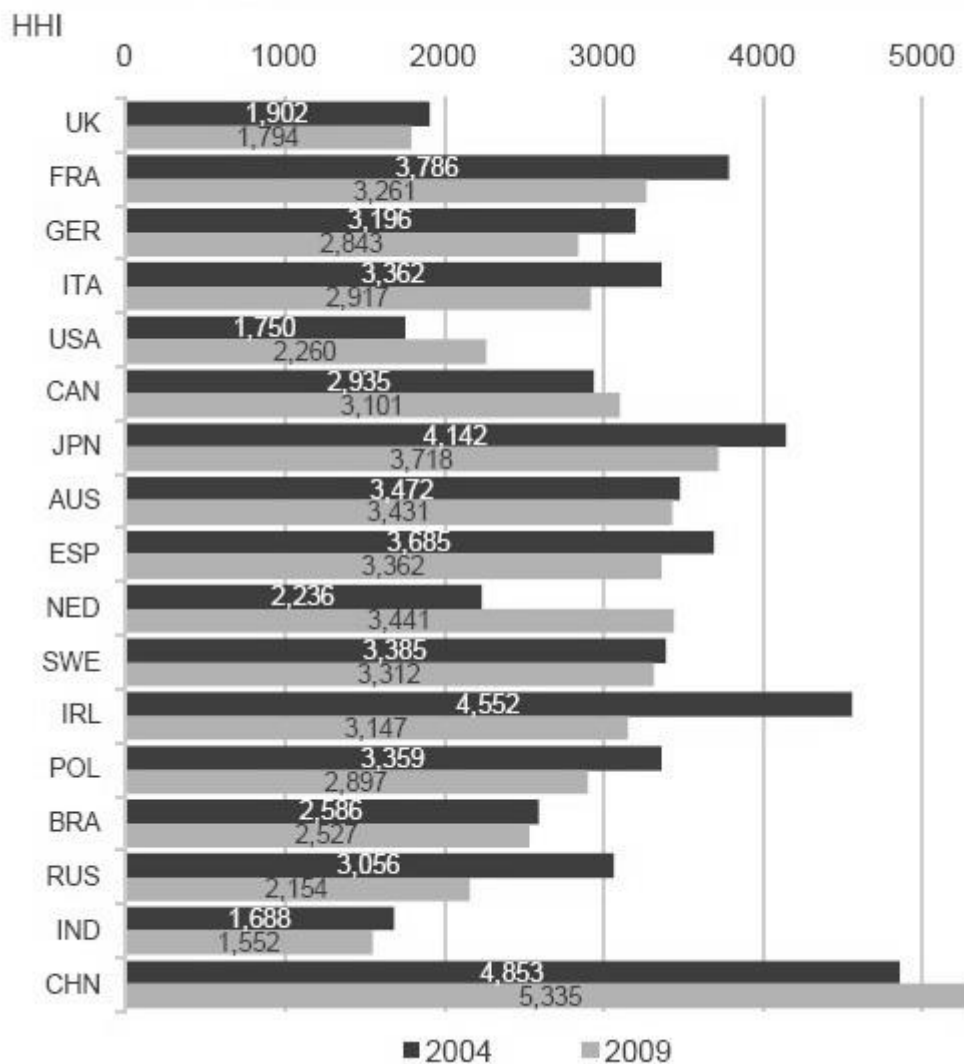


Figure 2.1 - Herfindahl-Hirschman index of mobile concentration, 2004 and 2009
Ofcom International Communications Market Report 2010, p.305

HHI of mobile markets of various countries including UK, France, Germany, Italy, USA, Japan, Sweden, Brazil, Russia and China are listed in figure 2.1. When Turkish mobile market's HHI (4020) as of December 2010 is compared to 2009 HHI values of these countries, only mobile communication market in China has a HHI (5335) greater than Turkey at the end of 2009. All the other countries are less concentrated than Turkey. Apparently, mobile communication market in Turkey is a highly concentrated market. Turkcell had substantial first-mover advantage. As being the first mobile operator in Turkey since 1994, Turkcell acquired the best customer base that is customers with the highest willingness to pay. Moreover, Turkcell has recovered the capital costs of setting up its network more quickly than their followers. Additionally, due to high switching costs, particularly before MNP has been introduced, Turkcell had put relatively less effort to keep its existing customers. (Gruber, 1999, pp: 521–538)

2.1. Regulatory Environment in the Turkish Mobile Market

Like most of countries, telecommunications services in Turkey used to be provided by a state monopoly (Posts, Telegraph and Telephone, PTT). In 1994, telecommunications and postal services in PTT are separated and Türk Telekom A.Ş. (TT) has been found.

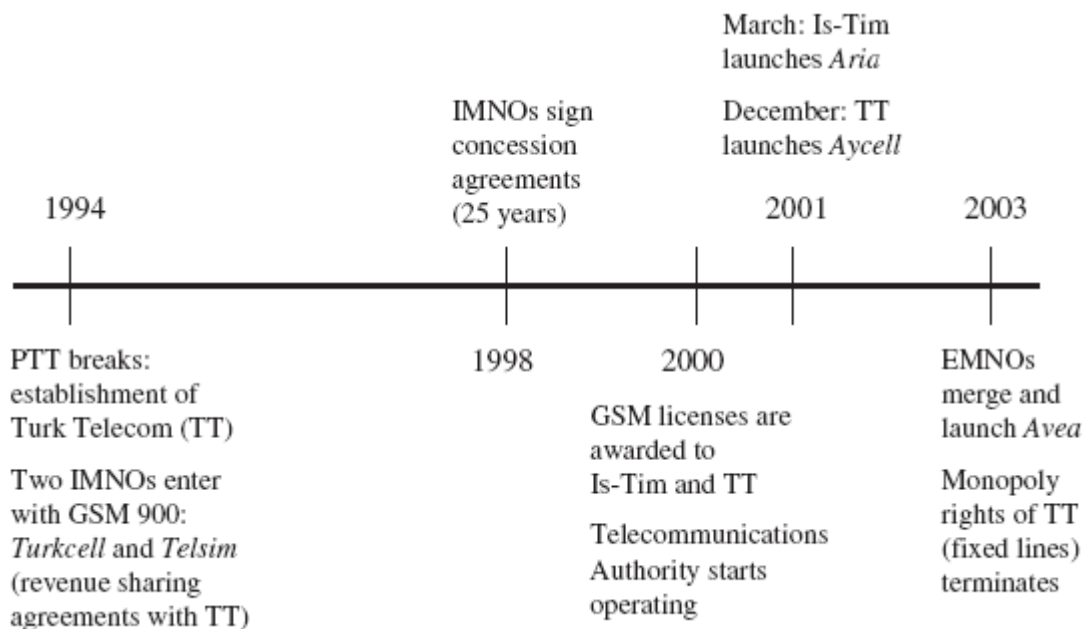


Figure 2.1.1 – Timeline in Turkish mobile industry

Atiyas & Doğan (2007) When good intentions are not enough: Sequential entry and competition in the Turkish mobile industry

The first important step in liberalization was the authorization of two private companies to provide mobile communications services in 1994. Turkcell and Telsim had revenue sharing agreements with TT until 1998. At that time, mobile operators were not free to set their own prices. Unlike the most of other countries, TT did not take part in the mobile business until 2001.

In 1998, revenue sharing agreements of the two mobile operators were transformed to 25-year licenses issued by Ministry of Transport. After 2 additional years of a duopoly period, in 2000, 2 additional licenses were tendered and İş Bankası-Telecom Italia consortium (Is-Tim) was the only successful applicant. Turk Telekom was also awarded with a license at the same price as Is-Tim's license. The telecommunications authority was also established in 2000 with extensive powers to issue secondary legislation in areas such as tariffs, interconnection and (since 2001) licensing, to monitor compliance and impose fines in case of non-compliance.

In March 2001, Is-Tim launched Aria while in December 2001 TT has launched Aycell starting the period of four mobile operators. In 2003, it was announced that Aria and Aycell have decided to merge to form a new company with TIM and TT holding ownership of 40 percent each and Is-Bank holding the remaining 20 percent. In 2004, TT&TIM was founded whose name has changed as Avea a few months later. In 2006, one year later than the privatization, TT acquired İş-Tim's share in Avea and TT's share in Avea has increased to 81.2%. (Atiyas, 2005, pp: 20-24)

An important change in mobile industry has become the acquisition of Telsim by Vodafone from the Turkish Savings Deposit and Investment fund in 2006 by USD 4.55 billion.

(http://www.vodafone.com/content/index/press/group_press_releases/2006/press_release13_12.html, 2006, ¶1)

Mobile Number Portability has been launched on November 9, 2008. As a result, switching cost of changing the operator has been minimized.

3G is a technology that enables to connect to internet with higher speeds either from a mobile device or a computer. All the three mobile operators are licensed to deliver 3G services and 3G services are available in Turkey since July 2009.

The negotiation process between Turkey and European Union for membership has been started in 2005. Turkey will eventually adopt the regulatory framework for electronic communications that is in place in European Union. The regulatory framework that is emerging in Turkey in the last few years is largely inspired by that in European Union such as the regulations at interconnection costs lately that plays a critical role to set up a competitive environment. TA and Ministry of Transport are aggressive to develop the mobile communications industry and to stimulate competition. This is partly explained by the fact that TT became a new entrant in the mobile business and a possible privatization of TT will generate more revenue in case of Avea has a better position in the market. (Atiyas & Doğan, 2007, pp: 501- 507)

2.2. Development of Turkish mobile market

2.2.1. Phase 1 – The Duopoly Period

In Turkey, Turkcell and Telsim are the first two mobile operators. They first started providing mobile services through revenue sharing agreements with Turk Telekom. The revenue sharing agreement states that 67% of the revenues obtained will be collected by TT while the remaining belongs to operators. Besides, the entire infrastructure investment was to be undertaken by the operators themselves.

In 1998, revenue sharing agreement is replaced by 25-year licenses to both operators for which each operator paid 500 million US dollars. Turkcell and Telsim have obtained the ownership of the infrastructure as well. They had stopped paying 67% of their revenues. Instead, they started to pay 15% of their gross revenue to the treasury. Following the licenses, the number of mobile phone users has increased substantially from 3,5 million to 16 million in 2000. The change in the contractual agreement has changed the rules of mobile market. It brought competition to the market. In revenue sharing agreement period, mobile call tariffs was determined by Turk Telekom whereas under license agreement the retail mobile tariffs started to be decided by the operator itself. As a result, calling rates has decreased due to competition.

During the duopoly period that continued until 2001, Turkcell always had larger market share than Telsim. In other words, Turkcell gained significant first-mover advantage over

Telsim. Starting to provide mobile services a few months earlier than Telsim was one of the reasons. More importantly, Telsim's activities were suspended between November 1995 and July 1996 since it violated revenue sharing agreement. Turkcell took advantage of being the only operator very well during this period.

Another competitive advantage of Turkcell was its exclusive agreements with major handset importers, distributors and retail dealers. Hence, Turkcell has prevented major handset brand distributors to provide Telsim SIM cards and subscriptions. At the end of duopoly period, Turkcell had dominance with a market share of about 69% in terms of the number of subscribers. (Atiyas & Doğan, 2007, pp 504-506)

2.2.2. Phase 2 – New Entry and Quadropoly Period

To increase the competition in fast growing mobile market and to generate new revenue, the Government decided to award three new licenses. It is decided to award two licenses through auctions to private parties. Turk Telekom would also be awarded with a license. The tender was held in April 2000 and the license was won by İş-TIM, a consortium of İşbank and Telecom Italia Mobile by 2.5 billion US dollars. Second license was not sold as no bidder participated to second round. Turk Telekom is also awarded by a license to the same price paid by İş-TIM.

İş-TIM launched its mobile service under the brand name Aria in March 2001 while Turk Telekom's subsidiary Aycell started operations in December 2001.

Unfortunately, Aria and Aycell entered the market during a macroeconomic crises climate followed by November 2000 and February 2001 financial crises. Moreover, the special consumption tax of 25% that was put to meet the cost of the earthquake badly affected new entrants. As a consequence, new entrants couldn't shake the market very much. Since both operators paid 2.5 billion US dollars, they were quite aggressive to grow their customer base and return their investment as soon as possible. The financial crises climate coupled with the heavy taxation resulted in increasing interest to prepaid subscription. In fact, to increase the number of their customers quickly, mobile operators also promoted prepaid packages by several marketing activities. The proportion of the prepaid subscription had

increased from 44% in 2000 to 62.4% in 2001. Since prepaid customers generate relatively less revenue than the post-paid customers, the total revenue has decreased to 2.85 billion US dollars from 3.49 billion US dollars although the total number of subscribers even increased by 21% within the same period.

New entries following a 7 years long duopoly period affected the degree of competition only slightly. Aria and Aycell had a total market share of 3.8% at their first year of entry which only increased to 7.25% in the following year. At the end, they failed to survive as separate entities and merged to form Avea in 2004 which finalized the quadropoly period. During the quadropoly period, the dominance of Turkcell didn't change whose market share remained at around 67% still enjoying its first-mover advantage. (Atiyas & Doğan, 2007, pp 506-507)

2.2.3. Phase 3 – The Current State of the Industry

National roaming is available where a new entrant operator uses the incumbent operators' infrastructure until its own infrastructure becomes ready. It is an alternative to expand the geographical coverage and extremely important at the initial phases of new entrants. National roaming helps the new entrants to provide their services as being an equal competitor starting from the first day of their launch. As a result, the competition would create a market place where the consumers get a service with economical prices and a good quality. National roaming is considered to be a prerequisite to competition in most of the European countries.

The government's intention was to support new licensees by imposing roaming obligations on the incumbent operators Turkcell and Telsim after launch considering Aria and Aycell need time to set up their own infrastructure. The authorities imposed national roaming obligations but failed to enforce it. İş-TIM couldn't get roaming services from none of the incumbent operators. Turkcell and Telsim refused to allow national roaming since they thought that they will negatively affected and tried to delay the process as long as possible. They challenged the decisions of the Authority at civil and administrative courts and the roaming issue has become more and more complicated.

(<http://arsiv.ntvmsnbc.com/news/139128.asp>, ¶ 1- ¶4)

In 2003, it was announced that Aria and Aycell have decided to merge and they dropped roaming requests. They merged to form a new company with TIM and TT holding ownership of 40 percent each and İşbank holding the remaining 20 percent. In 2004, TT&TIM was founded whose name has changed as Avea a few months later. In 2006, one year later than the privatization, TT acquired İş-Tim's share in Avea and TT's share in Avea has increased to 81.2%. The final important change in mobile telecommunications industry has become the acquisition of Telsim by Vodafone from the Turkish Savings Deposit and Investment fund in 2006. Since then, there is a cutthroat competition between Turkcell, Vodafone and Avea.

3. A closer look at Turkish mobile industry

3.1. Penetration

The number of total mobile subscribers was just 80.000 at the time when the first mobile operator Turkcell started to operate in 1994. As of December 2010, there are a total of 61.8 million mobile subscribers with a penetration ratio of %85.1. It's seen that the continuous increasing trend in the number of mobile subscribers is stopped since the beginning of 2009. (Figure 3.1.1) The number of subscribers has reached to the maximum of 65.8 million in 2008 with a penetration ratio of 92%. Then, it started to decrease mostly due to the flat rate campaigns of mobile operators started after Mobile Number Portability (MNP). Before MNP, the rate of calling another operator was high and it was common to have an additional mobile number from a competitor. However, following the launch of MNP, mobile operators started to offer flat rates so that the rate is the same for on-net and off-net calls. As a consequence, most of the people unsubscribed to their secondary operator and kept only one mobile number.

(http://www.btk.gov.tr/Yayin/pv/ucaylik10_4.pdf, 2011, p.36) As of December 2010, the mobile market shares based on the number of subscribers are 54.19% Turkcell, 27.01% Vodafone and 18.8% Avea. The numbers of subscribers are 33.47 million, 16.68 million and 11.62 million respectively. (http://www.btk.gov.tr/Yayin/pv/ucaylik10_4.pdf, 2010, p.43 – p.64)

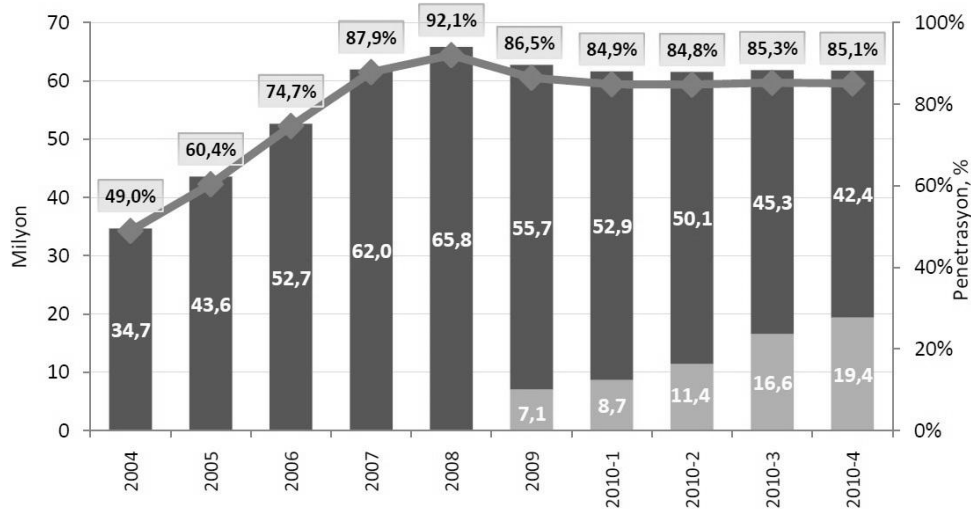


Figure 3.1.1: Mobile Subscriber Number and Penetration

ICTA, Türkiye Elektronik Haberleşme Sektörü Üç Aylık Pazar Verileri Raporu, 2010 yılı 4.çeyrek

The average mobile penetration of EU countries is 126%. Although, Turkey's penetration rate of 85% is much lower from the EU average it should also be kept in mind that there are lots of young people in Turkey under age of 15 who don't use mobile phone yet. Turkey's population is very young. Over 50 percent of the population is below 29.2 years of age. 76.3% of the population is living in urban areas. About 25.6% of the population (18.873.000) is in the 0-14 age group. (<http://www.tuik.gov.tr/PreHaberBultenleri.do?id=8428>, 2011, p.2) Keeping in mind this young segment who doesn't own mobile phones yet, the difference between the penetration ratios of Turkey and EU countries is not as much as it seems. As years pass, the mobile usage will likely increase as the growing young generation will start using mobile phones.

3.2. 3G

3G services are available in Turkey since July 2009. The existing mobile operators are licensed in 2008 to deliver 3G services. Turkcell won A-Class licence by 358 million Euro, Vodafone has awarded B-Class licence by 250 million Euro and Turk Telekom owned Avea had C-Class licence by 214 million Euro. Turkcell won Class A licence that will provide the widest frequency band probably due to the fact that it has the highest number of customers.

(<http://www.totaltele.com/view.aspx?ID=335766>, 2008, ¶ 1- ¶4)

Although 3G services are available only since 2009 in Turkey, it is not a new technology. Licensing mobile operators to deliver 3G services is delayed compared to western countries due to the Turkey's market dynamics. On the other hand, since both the infrastructure costs and 3G enabled mobile phone costs are decreased since the introduction of the technology many years ago, mobile operators have been able to offer 3G services to relatively affordable prices. As seen in figure 3.1.1 among the 61.8 mobile subscribers, there are 19.4 million 3G subscribers that constitute 31% of the total subscribers. Compared to the 30% 3G penetration rate among EU countries where 3G service has launched many years ago, 31% in less than 2 years is another indicator of great interest and demand of Turkish people to new technologies and services. In addition to 19.4 million 3G users, there are also 1.448.020 mobile internet users.

Table 3.2.1- 3G service subscriber usage data

	2010-1	2010-2	2010-3	2010-4
number of 3G subscribers	8,717,769	11,433,031	16,615,286	19,407,264
number of mobile internet users	640,58	832,321	1,158,866	1,448,020
mobile internet usage(in Gbytes)	2,105,643	2,629,253	3,274,139	4,387,315

ICTA, Türkiye Elektronik Haberleşme Sektörü Üç Aylık Pazar Verileri Raporu, 2010 yılı 4.çeyrek, p. 37

Table 3.2.1 shows the tremendous increase rate in the number of 3G subscribers, mobile internet users and the amount of mobile data used. This growing trend will likely to continue since mobile operators are offering 3G supporting mobile phones with economic prices, the number of portable devices (notebooks, tablets etc.) with 3G support are increasing day by day, data package rates are in decreasing trend and more and more innovative value added services are offered by mobile operators supported by social media applications.

3.3. Voice Traffic

The total voice traffic since 2004 is shown in figure 3.3.1. It's seen that the amount of total voice traffic is not changing much until 2008. Particularly with the introduction of MNP however coupled with the reduced interconnection rates, the mobile voice traffic has shown significant growth. While mobile traffic is increasing every year, the fixed-line traffic is decreasing year by year. It is worth to note that the mobile voice traffic constitutes

84% of total voice traffic in 2010. The total voice traffic is reported to be 149.4 billion minutes with an increase of 12.9% compared to 2009.

(http://www.btk.gov.tr/Yayin/pv/ucaylik10_4.pdf, 2011, p.5)

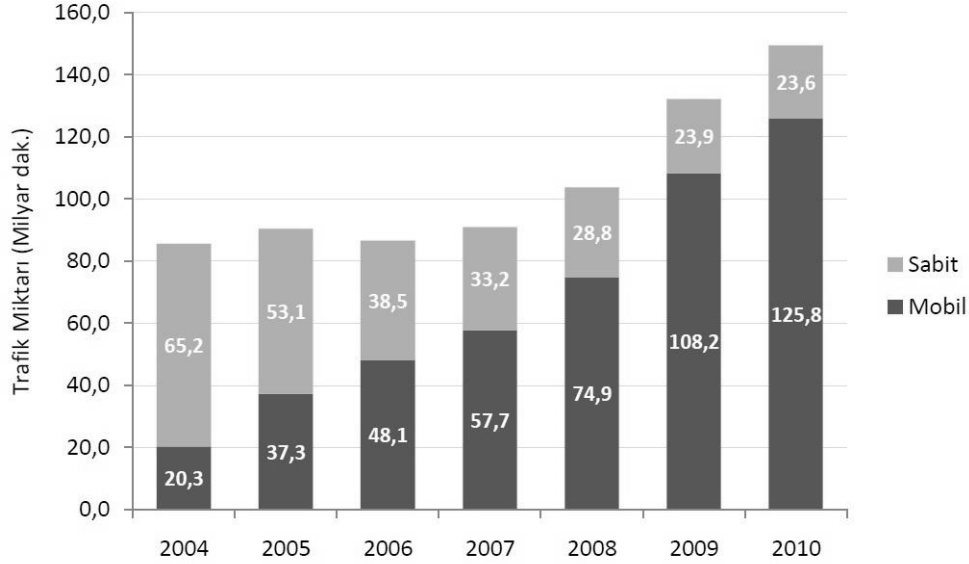


Figure 3.3.1- Total Annual Calling Traffic Amount

ICTA, Türkiye Elektronik Haberleşme Sektörü Üç Aylık Pazar Verileri Raporu, 2010 yılı 4.çeyrek, p. 6

At the end of the regulative actions by Information and Communications Technologies Authority (ICTA), today, the interconnection rates in Turkey are the lowest rates in Europe after Cyprus. The mobile interconnection rate is declined to 0.0313 TL effective as of April 1, 2010 which was 0.148 TL in January 2005. As a consequence of this decline, costs per minute decreased significantly and making an off-net call became no more as expensive as it used to be. Competitive mobile operators headed by Avea started to offer flat rates where calling to any mobile operator or a fixed line is at the same rate as making an on-net call. The discount in interconnection rates and market prices immediately resulted in a huge amount of increase in mobile voice traffic.

(http://www.deloitte.com/assets/Dcom-Turkey/Local%20Assets/Documents/turkey-tr_tmt_ElektronikHaberlesmePazari_2010_170111.pdf, 2011, p.6)

3.4. Minutes of Usage (MoU)

Minutes of Usage (MoU) is a widely used indicator which represents the average mobile phone usage amount. As of December, 2010, the average monthly usage in Turkey is 225.3

minutes. When MoU is measured all the incoming, outgoing and inbound traffic is taken into account. The result of the decline at interconnection costs effective as of 1 April, 2010 can be easily recognized by looking at Table 3.4.1.

Table 3.4.1 Mobile Operators' MoU values

Mobile Operators' MoU values (minutes)			
2010	Turkcell	Avea	Vodafone
January	153	252	231
February	144	231	216
March	163	264	251
April	159	259	243
May	172	274	261
June	177	272	266
July	193	271	263
August	192	261	250
September	206	262	256
October	199	275	261
November	187	254	244
December	198	276	264

ICTA, Türkiye Elektronik Haberleşme Sektörü Üç Aylık Pazar Verileri Raporu, 2010 yılı 4.çeyrek, p. 58

As of December 2010, Turkcell's MoU value is 198 minutes while Avea's MoU value is highest 276 minutes. Vodafone's customers talk on the phone 264 minutes monthly in average. Turkey is in the third place with 225.3 minutes MoU value after France (248,8 minutes) and Ireland (248,7 minutes) among the biggest European countries.

(http://www.btk.gov.tr/Yayin/pv/ucaylik10_4.pdf, 2011, p.58)

3.5. Mobile Revenues

Mobile revenues in Turkish mobile market are increasing continuously since many years and have reached to 12.97 billion TL at 2009 with a 2.78% increase. In 2010, mobile revenues are 3.39 billion TL at Q1, 3.41 billion TL at Q2, 3.67 billion TL at Q3 and 3.54 billion TL at Q4, reaching an annual total of 14.01 billion TL. If we look at the market shares based on the mobile revenues as of December 2010, Turkcell's market share is 54.64%, Vodafone's and Avea's market shares are 26.13% and 19.23% respectively in line with market shares in terms of subscribers.

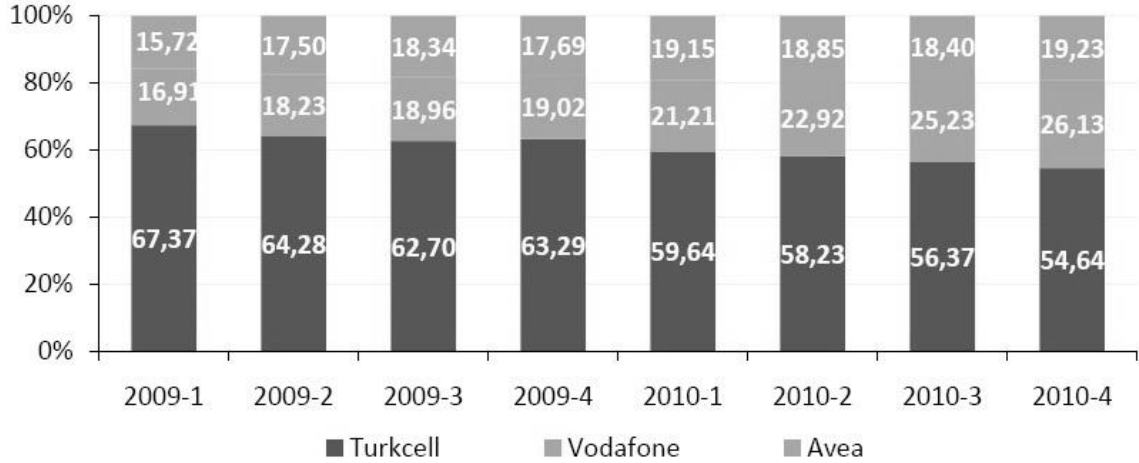


Figure 3.5.1- Mobile revenues

ICTA, Türkiye Elektronik Haberleşme Sektörü Üç Aylık Pazar Verileri Raporu, 2010 yılı 4.çeyrek, p. 54

Turkcell's mobile revenues market share is decreased by 8.65% compared to Q4 of 2009, whereas Avea's and Vodafone's market shares have increased by 1.54% and 7.11% respectively. Hence, Vodafone is the trending operator that had increased its revenue market share most during last year by capturing market share from Turkcell.

3.6. ARPU

Average Revenue Per User (ARPU) is a critical indicator that reflects the revenue generated per user. In fact, every operator targets not only to increase the number of subscribers but also the revenue gathered from each subscriber. ARPU is a measure to evaluate how efficiently revenue is realized from customers. The mix of prepaid and contract customers and level of usage have a material effect on ARPU (Virgin Media Annual Report 2009, p.45). The higher the ratio of post-paid customers, the higher will be the average ARPU. As of December 2010, 69% of the mobile customers of Turkey are prepaid. The contract customers' ratio has increased from 25.3% to 30.9% within the last year. On the other hand, based on the EU countries average, the ratio of prepaid customers is just 51%. At the early years of mobile services offerings, attractive prepaid offers are highly demanded especially by the young customer segment. Furthermore, since parents wanted to be able to limit the mobile phone spending of their children and not to be surprised by too expensive bills, prepaid customers dominated the market. Similarly, low ARPU generating customers who rarely use their mobile phones preferred prepaid offers.

The drawback of having much more prepaid customers with respect to contract customers is twofold. First, ARPU realized by prepaid customers is much lower compared to ARPU realized by contract customers. As of December 2010, Turkcell's prepaid ARPU is 11 TL, Vodafone's prepaid ARPU is 12.1 TL and Avea's prepaid ARPU is 11.1 TL. On the other hand, post-paid ARPU's are 38.3 TL, 36.9 TL and 30.4 TL respectively.

(http://www.btk.gov.tr/Yayin/pv/ucaylik10_4.pdf, 2011, p.56-57) That's why; the mix of the prepaid and post-paid customers is an important indicator to define the ARPU. The higher the ratio of post-paid customers, the higher will be the average ARPU. Second, after MNP, it is possible to change the mobile operator without changing the mobile phone number. Customer retention has become very difficult. Loyalties in the prepaid segment are low due to the low switching costs and it is not uncommon for user to routinely change their mobile operators. So, in this competitive environment, mobile operators prepare many campaigns to increase the ratio of post-paid customers. They offer brand-new mobile phones even tablets with voice, SMS and data packages if the customer commits to stay subscribed to the operator for a specific period of time.

Since the launch of MNP in November 2008, the mobile operators in Turkey are facing cutthroat competition and found themselves in price war. The operators are offering unlimited flat rates and since switching costs are low now, millions of price-sensitive people move their numbers to the most economical operator or to the operator which addresses their needs best. As of February 2011, a total of 25.2 million mobile numbers are moved to another operator. As seen, customer retention is really low in mobile market and bargaining power of customers is greatest ever.

3.7. Churn Rate

Churn is a term used to define the customer loss ratio of operators. It is calculated by dividing the number of customers, who unsubscribed to the service, by the number of total customer in a specific period of time. It is particularly used for industries with periodic subscription based customers. If the churn ratio exceeds the customer acquisition ratio, this means that the total number of customers is declining. In fact, churn ratio has a quite important parameter in terms of operational efficiency. Acquiring new customers can cost 5 to 10 times more than the costs involved in satisfying and retaining current customers

(Kotler, 2003, p.41) High churn ratio indicates a weakness at the operator's competitiveness. Operators try hard to preserve their existing customers in the highly competitive environment. As of December 2010, the churn ratios of Turkcell, Vodafone and Avea are 3.46%, 4.15% and 4.43% respectively. As these figures suggest, there is an intense competition among the three players.

(http://www.btk.gov.tr/Yayin/pv/ucaylik10_4.pdf, 2011, p.44)

Earnings before Interest, Taxes, Depreciation and Amortization (EBITDA) is an indicator of a company's financial performance calculated as revenue less expenses excluding tax, interest, depreciation and amortization. EBITDA margin is a measure of profitability. Companies with higher EBITDA margins are considered to be less risky than companies with low levels of EBITDA margins. EBITDA margins of Avea, Vodafone and Turkcell as of Q3 of 2010 are 19.21%, 12.2% and 39% respectively. In mature markets like Turkey, the average EBITDA margin is reported to be 34.5%. Avea and Vodafone seem not very profitable companies in this sense. (http://nsn-efficiencyforum.com/presentations/roger_keenon.pdf, 2009, p.3)

3.8. Investment

There has been huge amount of investment in mobile telecommunications industry so far. Mobile operator invested to be able to expand their geographical coverage, provide their services to as many as possible customers with a good quality and upgrade their infrastructure to be able to deliver 3G services. For this purpose, they installed many base stations all over the country, employed the most qualified personnel, invested in tools, inventory, buildings. The total investment from 2005 to the end of 2010 is 5889 billion TL for Turkcell, 4108 billion TL for Avea and 4041 billion TL for Vodafone.

(http://www.btk.gov.tr/Yayin/pv/ucaylik10_4.pdf, 2011, p.60) Based on the investment value, it can be concluded that within last 5 years Turkcell is the company that invested most to deliver the best and widest service quality. The majority of the investment in last 5 years is done to set up and expand 3G infrastructure.

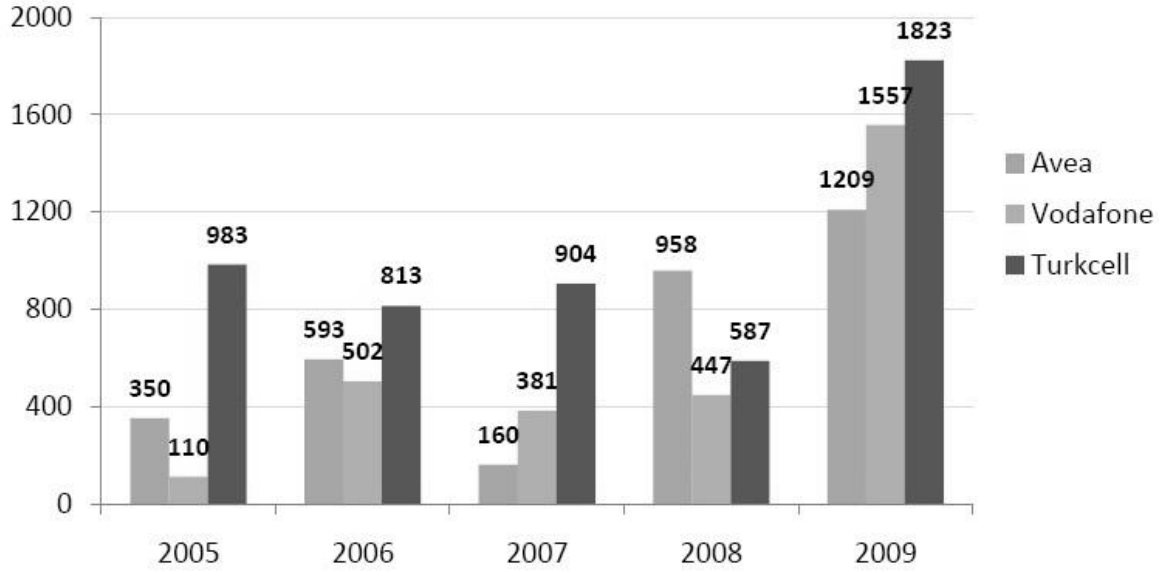


Figure 3.8.1 - Annual Mobile investment per operator

ICTA, Türkiye Elektronik Haberleşme Sektörü Üç Aylık Pazar Verileri Raporu, 2010 yılı 4.çeyrek, p. 60

3.9. Competition

Generally speaking, there is a fierce competition in Turkish mobile market among the three players with Turkcell has a dominant position. Turkey has a young population with an estimated average age of 29 and most of the population lives in urban areas. Mainly due to these two factors, it is estimated that the current mobile penetration rate of %85 has a growth potential. On the other hand, lower per capita income is a major disadvantage. Some of the young mobile customers are unemployed and live off of their parents' money. As a result, some of the young costumers have lower disposable income and it is more difficult to sell value-added services to them considering their low income per capita. This low revenue level is a major limitation to new infrastructure investment in Turkey. As of 2009, mobile ARPU in Turkey is 10.75 \$ (17.2 TL) whereas the mobile ARPU in Western Europe is \$37.4. (<http://www.tk.gov.tr/Yayin/Raporlar/pdf/fr2009tr.pdf>, 2010, p.34) Another disadvantage is the high tax rates. Turkey has the second highest tax rate on mobile use in the world after Uganda. The tax rate of about 60% results in usage levels far below the European countries. (Turan, 2010, p. 2-3)

The mobile market in Turkey has gone through national Telecommunications Company's (Türk Telekom) privatization and several acquisitions steps. The sale of Telsim, the privatization of TT in November 2005, acquisition of Telecom Italia Mobile's share in

Avea by TT and the purchase of Telsim by Vodafone changed the dynamics and ownership structure of mobile communication market in Turkey. This changing partnership increased the importance of the operational profitability. MNP which was introduced to Turkish market on November 9, 2009 created an aggressive competitive climate and led to unlimited flat rates. These unlimited flat rate offers has resulted in decreased profit margins. (<http://www.turkcell.com.tr/c/docs/reports/annualreport2010.pdf>, 2011, p.63)

3G service that is launched in June 2009 is welcomed very well by the mobile customers. It is expected that data services and revenues will increase over the coming years supported by the 3G enabled handsets provided by the mobile operators to contract customers.

All communication activities in Turkey are regulated by the Ministry of Transportation and the Information Technologies and Communications Authority (ICTA). ICTA is an independent telecommunications regulator with financial and administrative independence, which has the authority to grant licenses and set fees in the sector.

4. Mobile Operators in Turkey

4.1. Turkcell

GSM-based mobile communication started in Turkey when Turkcell started its operations in February 1994. Turkcell signed a 25-year GSM license contract on April 27, 1998 with the Ministry of Transportation of Turkey. As of December 31, 2010, Turkcell has made 9.1 billion US dollars worth of investment (including 2G and 3G licenses) in Turkey. Again as of December 31, 2010, with its 33.5 million subscribers (54.19% market share), Turkcell is not only the leading operator in Turkey, but is also the third biggest GSM operator in Europe in terms of subscriber numbers.

(<http://www.turkcell.com.tr/en/AboutTurkcell/corporateInfo/companyHistory>, 2010, ¶1)

As of December 31, 2010, Turkcell has covered 86.97% of the entire geography of Turkey which amounts to 99.07% of entire Turkey population; it covers 100% of the settlements with a population 1000 or more. Turkcell has the best and widest service quality with 24.250 base stations throughout Turkey.

(<http://www.turkcell.com.tr/en/AboutTurkcell/corporateInfo/CoverageArea>, 2011, ¶1)

Turkcell's vision is "To ease and enrich the lives of our customers with communication and technology solutions."

(<http://www.turkcell.com.tr/en/AboutTurkcell/corporateInfo/companyVision>, 2010, ¶1)

4.1.1. Shareholder Structure

Turkcell's founding shareholders are Sonera Holding, formerly known as Telecom Finland Ltd. and currently owned by TeliaSonera, Çukurova Group and MV Holding.

Çukurova Group is one of Turkey's leading conglomerates, active in insurance, media, trade, industrial services, communications, information technology and tourism.

TeliaSonera was formed in December 2002 with the merger of Sonera Corporation, a Finnish telecommunications provider, and Telia, a telecommunications operator in Sweden. Currently it is a major GSM operator particularly in Scandinavia.

34.69% of Turkcell shares are publicly traded. Turkcell shares are also listed on the Istanbul Stock Exchange and on the New York Stock Exchange since July 11, 2000.

Table 4.1.1.1 Shareholding structure of Turkcell İletişim Hizmetleri A.Ş. as of November 30, 2010

Shareholder	Value of Stake (TL)	Percentage of Share Capital
Turkcell Holding A.Ş.	1,122,000,000.238	51.00%
Çukurova Holding A.Ş.	995.509,43	0.05%
Sonera Holding B.V.	287,632,179.557	13.07%
MV Holding A.Ş.	26,021,712.590	1.18%
Other	137.199,58	0.01%
Publicly Traded	763.213.399	34.69%
TOTAL	2,200,000,000	100.00 %

<http://www.turkcell.com.tr/en/investorRelations/shareHolderStructure>

In fact, Turkcell's shareholder structure is quite complex. The three major shareholders are TeliaSonera, Russia's Altimo and Turkey's Çukurova Holding. TeliaSonera owns a 47 per cent stake in Turkcell Holding as well as 13.07 per cent stake in Turkcell. In total, its direct and indirect stake in Turkcell is actually 37.1 per cent. Nevertheless TeliaSonera can't control the company because a special purpose company Turkcell Holding holds 51

percent of Turkcell. Turkcell Holding is 53 percent owned by a Çukurova-Altimo partnership and 47 percent by TeliaSonera. Çukurova Group and Altimo hold in the proximity of 13 percent in Turkcell. (<http://www.bloomberg.com/news/2011-02-12/teliasonera-will-seek-turkcell-control-at-meeting-milliyet-says.html>, 2011, ¶1-¶4)

4.1.2. Highlights

Turkcell has known to be not only a mobile operator but also a technology company. It's been a pioneer in delivering the most innovative services and solutions to its 33.5 million customers. Turkcell has benefited from first mover advantages in the mobile market to establish its continued dominance.

Turkcell's 2010 revenue is 9,004,000 TL with EBIDTA margin of 32.7%. Turkcell's net income in 2010 has been 1,764,000 TL. Turkcell has focused on post-paid segment in 2010 and has reached to 10.1 million customers in post-paid segment with a net addition of 734.000 in 2010. The post-paid segment (30.1%) generated 60% of the revenues in Q4 of 2010. ARPU increased from 18.5 TL in 2009 to 19.5 TL in 2010 due to higher post-paid subscriber base and higher mobile internet and service revenues. Likewise, MoU has increased by 33.4% in 2010 and has reached to 179.1 minutes due to positive effects of flat rate offers.

(http://www.turkcell.com.tr/c/docs/presentations/20110224_Q410presentation_final.pdf, 2011, p.7)

4.2. Vodafone

Telsim started its operation in 1994 in order to provide services in GSM industry. Telsim signed a 25-year GSM license contract on April 27, 1998 with the Ministry of Transportation of Turkey. Telsim has been the number two mobile operator and the only alternative to Turkcell until 2000. It has reached a maximum market share of 31.5 percent in 1998. However, it was seized by the Savings Deposit Insurance Fund in February 2004 and it was put up for sale in August 2005, and an auction was held for Telsim on December 13, 2005 with Vodafone submitting the winning bid of \$4.55 billion.

(<http://www.turkcell.com.tr/en/investorRelations/marketInfo>) The sale process was

completed on May 24, 2006 and Telsim joined to Vodafone Group as Vodafone Telekomünikasyon A.Ş.

Vodafone is the first GSM operator in England and made the first mobile call on 1 January 1985. Vodafone Group has a significant role in Europe, in USA and in Far East with its subsidiaries, partners and investments ad world's greatest mobile communications company. (http://www.vodafone.com.tr/VodafoneHakkinda/tarihce_home.php, 2010, ¶1 – ¶3) It's the world's largest mobile telecommunications company measured by revenues (£ 44.45 billion as of 2010).

As of December 31, 2010, with its 16.68 million subscribers (27.01% market share) Vodafone is the second biggest mobile operator in Turkey. Vodafone Turkey made 2.1 billion TL investments to the technological infrastructure within last 2 years. The total investment since the acquisition of Telsim has reached a total of 10.2 billion TL with 17.400 base stations throughout Turkey. (<http://www.businews.eu/2010/12/vodafone-%E2%80%98u-donusu%E2%80%99-yapti-pazar-payi-yuzde-25-oldu>, 2010, ¶1)

4.2.1. Shareholder Structure

Vodafone Telekomünikasyon A.Ş. is a subsidiary of Vodafone Group PLC.

Table 4.2.1.1 Shareholding structure of Vodafone

Shareholders at 31 March 2010		
Number of ordinary shares held	Number of accounts	% of total issued shares
1 - 1,000	435,142	0
1,001 - 5,000	80,28	0
5,001 - 50,000	26,783	0.58%
50,001 - 100,000	1,13	0.14%
100,001 - 500,000	1,066	0
More than 500,000	1,663	1
Total	546,064	100%

http://www.vodafone.com/content/index/investors/share_debt/shareholder_structure.html

At 31 March 2010, approximately 48.8% of the Company's shares were held in the UK, 27.4% in North America, 16.4% in Europe (excluding the UK) and 7.4% in the Rest of the World.

BNY Mellon, as custodian of the Company's ADR programme, held approximately 14% of the Company's ordinary shares of \$0.11 3/7 each at 17 May 2010 as nominee. The total number of ADRs outstanding at 17 May 2010 was 740,793,229. At this date, 1,313 holders of record of ordinary shares had registered addresses in the United States and in total held approximately 0.006% of the ordinary shares of the Company. As at 17 May 2010, the following percentage interests in the ordinary share capital of the Company, disclosable under the Disclosure and Transparency Rules, (DTR 5), have been notified to the directors:

- Black Rock Inc - 5.74%
- Legal & General Group Plc - 4.07%

The rights attaching to the ordinary shares of the Company held by this shareholder are identical in all respects to the rights attaching to all the ordinary shares of the Company. The directors are not aware, as at 17 May 2010, of any other interest of 3% or more in the ordinary share capital of the Company. The Company is not directly or indirectly owned or controlled by any foreign government or any other legal entity. There are no arrangements known to the Company that could result in a change of control of the Company.

(http://www.vodafone.com/content/index/investors/share_debt/shareholder_structure.html)

4.2.2. Highlights

The first few years after the entrance to Turkish market in 2006 was not so good for Vodafone. The positioning of Vodafone Turkey was in line with the global Vodafone brand. However, this positioning was not an attractive differentiation strategy compared to the dominant power of Turkcell. The consequences of MNP have become quite negative for Vodafone. At Q1 of 2009, Vodafone's revenue has decreased by 18 percent.

Vodafone's current CEO Serpil Timuray joined the company in January 2009. She focused primarily on positioning and value proposition. Vodafone's advertisement campaigns are localized and warm and sympathetic messages are delivered to the customers over well-known beloved celebrities.

Since January 2009, the number of retail stores has increased to 977 from 770. Vodafone acquired Borusan Telekom in December 2009. After this acquisition Vodafone is now able to offer converged solutions to corporate business segment. In 2009, Vodafone upgraded its infrastructure by 1.5 billion worth investment and tripled the number of its base stations

to 16.000. With the 4400 3G base stations, Vodafone covers 72% of the entire population to deliver 3G services. (Bloomberg Businessweek, September 2010, pp.19-25)

While the number of total customers was 15.4 million as of Q1 of 2009, Vodafone has 16.7 million customers as of December 2010 of which 4.1 million is contract customers.

Furthermore, the market ratio in terms of mobile revenues was 16.91% in Q1 of 2009. In Q4 of 2010, the same ratio has become 26.13 %.

(http://www.btk.gov.tr/Yayin/pv/ucaylik10_4.pdf, 2011, p.42, p.54, p.56). Vodafone Turkey's revenue has increased by 31.3%, 23.7%, 29.5 and 31.7% during 2010 compared to the same period of 2009 and has reached 3.5 billion TL.(CNBC-e Business, May 2011, p.86) Vodafone Turkey has become the fastest growing operator in Vodafone Group Europe Region with the 31.7% increase in revenues at Q4 of 2010.

(http://www.vodafone.com.tr/VodafoneHakkinda/basin_odasi_bultenler.php?id=377, 2010, ¶1-2) Mobile voice traffic has become 12.8 billion minutes by 21% increase. As of December 2010, Vodafone's ARPU has increased to 18 TL. With the customer satisfaction, innovation and quality focus, Vodafone has increased its number of customers by 1 million and reached 16.7 million customers base last year. Furthermore, the number of contract customers has been 4.1 million with 1.8 million (82%) increase.

4.3. Avea

TT&TİM İletişim Hizmetleri A.Ş. was officially established in February 19th, 2004 as a consequence of the merger between Aycell, Türk Telekom's GSM Operator and İş-TİM which has been established through the partnership of İş Bankası Group with a share of 51% and TİM with a share of 49%. Following the merger, for a period Aria and Aycell brands existed under TT&TİM. A totally new brand "Avea", reflecting the synergy from the merger was introduced into the market on June 23rd, 2004. The business name "TT&TİM İletişim Hizmetleri A.Ş." was replaced with "Avea İletişim Hizmetleri A.Ş." as of October 15th, 2004.

Avea is the youngest operator of Turkey and has a nationwide customer base of 11.62 million as of December 2010. Avea is the third number mobile operator with a market share of 18.8% and it is competing with Vodafone for the second place. Avea is offering

services to 96.61% of Turkey's population through its next generation network with more than 2,700 employees. 67% of the Avea's customers are also 3G mobile subscriber. This means that Avea has a potential to increase its ARPU by delivering value added services via 3G technology.

4.3.1. Shareholder Structure

The privatization of 55% of Türk Telekom's shares was completed in November 2005, by Oger Telecom's acquisition 55% of Türk Telekom's shares. In September 2006, Türk Telekom acquired Telecom Italia's shares of 40.6% in Avea. Turk Telekom now holds 81.37% of the shares in Avea. The remaining 18.63% belongs to İş Bankası.

(<http://www.avea.com.tr/en/sta/hakkinda/hakkinda/aveahakkinda.shtml?pagemenu=hakkinda.hakkinda>, 2010, ¶1)

While 55% of Türk Telekom is owned by Oger Telecom, 30% belongs to Turkish State. The remaining 15% is the so-called free-flot part.

(<http://www.turktelekom.com.tr/tt/portal/About-TT/Company Profile/OwnershipStructure>)

4.3.2. Highlights

Erkan Akdemir has become Avea's CEO in June 2009. Since then, a new restructuring and reorganization process is continuing in Avea. He has first changed the top management team almost completely. According to the report of ICTA, Avea was not a profitable company at last 5 years before 2010. So, one of the high- priority targets of Avea was to become a profitable operation. Avea's revenue has been 2.646 million TL in 2010 whereas it was 2.504 million TL in 2009. More importantly, EBITDA margin has increased to 13% in 2010 from %2 in 2009 and has become 332 million TL. Although the number of total subscribers decreased by 200.000 to 11.6 million in 2010, ARPU has increased to 18.5 TL which results all-time-high value due to increase in prepaid ARPU and increasing share of post-paid subscribers.

(http://www.turktelekom.com.tr/telekom/eng/pdf/financial_operational/2010/2010-YE-TT-Group-Fact-Sheet.pdf, 2010, p.2)

One of advantages of Avea is its young infrastructure. While Avea's biggest competitor Vodafone is still providing services over the network left from Telsim, Avea has a younger network infrastructure. Furthermore, Avea is the first mobile operator with a licensed Research and Development Center. Aveabonus is one of the products of Avea's Research and Development Center for which Avea has made 65 million USD worth investment in last 5 years. This NFC (Near Field Communication) technology product has been launched at the end of 2010. This product combines credit card and mobile phone technologies and enables mobile phones to be used for payment. It can be used not only at NFC supporting mobile phones but also at all kind of mobile phones with a specific SIM card.

5. Porter's Five Forces Model for Mobile Communications Market in Turkey

Porter's Five Forces is a framework for industry analysis and strategy development formed by Michael E. Porter. It is used to figure out the overall industry profitability by investigating three forces from horizontal competition: the threat of new entrants, threat of substitute products and the threat of established rivals; and two forces from vertical competition: the bargaining power of suppliers and the bargaining power of customers. (http://en.wikipedia.org/wiki/Porter_five_forces_analysis, 2011, ¶1-¶4)

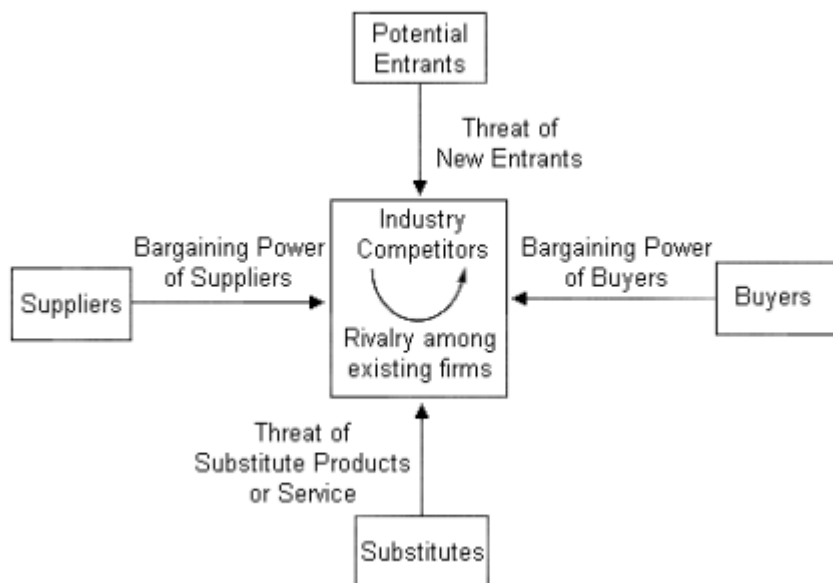


Figure 5.1 Porter's Five Forces Model

5.1. Threat of new entrants

The mobile telecommunications industry has one of the highest entry barriers among various industries. It requires a huge amount of fixed costs such as setting up an infrastructure that will enable a superior service quality, a lot of money for marketing activities, very high customer acquisition costs etc. Naturally, it is not possible to move the infrastructure investment abroad which makes the entry barrier even higher. Moreover, even if there is enough cash investment, it might be not possible to get licence from regulation authority ICTA. In Turkey, there are 3 mobile network operators; Turkcell, Vodafone and Avea. The government has last given two licences 11 years ago in 2000. It is very low probability that new licenses would be given. Additionally, there are physical constraints for new entrants. There is no good radio spectrum available in Turkey that will enable delivering voice and data quality with satisfactory quality. All in all, it seems like it is almost impossible that a new mobile network operator enters to Turkish mobile market.

Nevertheless, new mobile virtual network operators can still enter to the market as it doesn't have to make investment for the infrastructure. MVNOs which will be further detailed in the following sections are virtual operators providing mobile services without having their own infrastructure and radio spectrum. ICTA issues licenses to MVNOs who fulfil the requirements since 2009. Generally speaking, MVNOs have a win-win relationship with the existing operators by leveraging their existing customer base, brand and distribution channels.

5.2. Threat of substitute products

Nowadays, it's hard to keep up with the fast pace of technological advancements almost in every part of mobile communications value chain. New transmission technologies are evolving, smart phones' capabilities are increasing rapidly, mobile operating systems' war is getting fiercer, more and more mobile applications are available every day. As a result, competition results greater choice and lower rates. The mobile ecosystem is growing with fast pace.

A substitute performs the same or a similar function as an industry's product. When the threat of substitutes is high industry profitability suffers (Porter, 2008, p.84). The

mainstream mobile revenue generator in Turkey is still voice calling. 83% of the mobile revenues as of 2010 are constituted by voice revenues. SMS revenues are %8 of the total revenues, data is 3% and value-added services constitute 6% of the total revenues. (http://www.btk.gov.tr/Yayin/pv/ucaylik10_4.pdf, 2011, p.60) On the other hand, there are a couple of applications like Skype, Viber those enable talking on the phone with good quality via data transmission by Voice over IP (VoIP) technology. In other words, if two people talk on the phone by using Skype application, they are not charged for voice but data. Likewise, there are applications like Blackberry Messenger and Whatsapp those replace the traditional SMS technology. Instant messaging is possible by using these types of applications. To be able to use these advanced applications one should own a smart-phone. In Turkey, the penetration rate of smart-phones is not very high yet. Fortunately, mobile operators are conducting various campaigns to provide smart-phones with affordable prices to contract customers. In fact, they aim both to increase the ratio of contract customers and increase data revenues as smart-phones let their customers to utilize data transferring value-added services. It is expected that the data revenues share within total mobile revenues will increase over the coming years.

The data connection requiring applications like Skype and Whatsapp might be substitute means to mobile voice and text services over base stations. If somebody is within an area where internet connection is available, she/he can satisfy her/his communication needs without getting charged by the mobile operator. Alternatively, there are other fixed-mobile convergence technologies like femtocell and Wimax that might offer attractive price-performance trade-off or decrease profit margins of mobile operators.

5.3. Rivalry among existing competitors

Today, there is an intense competition between three main mobile network operators Turkcell, Vodafone and Avea. The competition is even reflected to advertising costs of the operators. According to the research of Media Monitoring Center, the top three brands in terms of money spent for advertisement are Turkcell, Vodafone and Avea respectively. (http://www.medyatakip.eu/UserFiles/File/Basin_bultenleri/BasinBulteni_2010nun_en_cok_reklam_verenleri.doc, 2010, p.3)

Market shares of the mobile operators in Turkey since 1994 till the end of 2010 is displayed at Table 5.3.1. It is generally believed that ICTA failed to counter the dominance of Turkcell and create a competitive environment so far. The table shows that although Turkcell's market share has decreased to 54.2% from 78% since the very beginning, it has still preserved its powerful dominant position.

Table 5.3.1 Market shares of mobile operators in terms of number of subscribers

Mobile Operators	Market Shares (%)																
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Turkcell	78.0	68.0	80.0	76.9	68.5	69.2	69.0	67.0	67.3	67.9	67.0	63.0	60.0	57.6	56.1	56.3	54.2
Telsim/ Vodafone																	
Avea	-	-	-	-	-	-	-	-	-	12.5	14.0	16.5	17.5	16.2	18.5	18.8	18.8
Aria	-	-	-	-	-	-	-	2.7	5.1	-	-	-	-	-	-	-	-
Aycell	-	-	-	-	-	-	-	1.1	2.1	-	-	-	-	-	-	-	-

<http://www.turkcell.com.tr/en/investorRelations/presentations/Presentations>,
http://www.milliyet.com.tr/Ekonomi/HaberDetay.aspx?aType=HaberDetay&Kategori=ekonomi&KategoriID=3&ArticleID=1067165&Date=05.03.2009&b=Avea,%20abonede%2012.2%20milyonu%20asti&ver=08,012_Haucap_Heimeshoff_Karacuka

As being the first mobile operator in Turkey, Turkcell benefited from first mover advantage and maintained its dominance by discriminating between on-net and off-net prices and in return exploiting tariff-mediated network externalities to its advantage. (Atiyas & Doğan, 2007, p.511) When call termination charges are high, off-net call costs increase which make it hard to lower the retail tariffs of off-net calls. Since on-net calls are not subject to termination charges, on-net retail tariffs can be lower. Additionally, before MNP has launched, switching costs was high when somebody would like to switch to a new operator. These factors have created competitive advantage to Turkcell that has a large subscriber base. First, a new customer will likely choose Turkcell since most of her contacts would be with a high probability Turkcell customers thus enables to make a larger proportion of on-net calls. Similarly, even if another operator offers more attractive off-net prices, the customer will less likely to switch to another operator due to high switching costs. Under these circumstances coupled with the first mover advantage, Turkcell succeed to maintain its dominance even after MNP has launched. (Atiyas, 2010, p.11) To set up a competitive mobile communications market, ICTA used several methods to counter the dominance of Turkcell.

5.3.1. Mobile Number Portability

Turkey is one of the countries that implemented MNP latest. The number portability regulation adopted in February 2007 and became effective in November 2008. Since then, there are a tremendous number of movements between the operators. As of May 2011, there are almost 29 million numbers that have been moved. (www.nts.gov.tr, 2011, ¶1)

MNP reshaped the mobile communications market by reducing switching costs.

Considering there are a total of 61.8 million SIM cards, it can be concluded that almost half of the mobile number has moved. In this dynamic market conditions, customer retention costs are quite high as the customers don't hesitate to move to the rival competitors with more attractive offers. Today, mobile operators are focused to increase the ratio of post-paid customers in total customers. To achieve this, they offer very attractive voice and data packages as well as brand-new mobile phones to potential customers who would possibly move its number from a rival operator. (Atiyas, 2010, p.12)

5.3.2. Mobile call termination rates

ICTA continuously reduced the interconnection charges to drive competition. As of 2010, the current rates are the lowest rates in Europe. As a result, Turkcell packages have changed so that differences between on-net and off-net retail prices are eliminated. Hence, there has been a significant convergence between the prices of three operators, presumably reflecting a reduction in the premium that Turkcell could charge. Hence, Turkcell's revenue has negatively affected. Another consequence of reduced termination rates is reduced number of mobile subscribers as users no longer need dual or triple subscriptions to avoid high off-net prices. (Atiyas, 2010, p.13)

5.4. Bargaining power of suppliers

Mobile operators are only able to provide mobile services to customers via mobile phones. In the past when the mobile communications industry was at early stages, mobile operators used to provide just a tiny SIM card that is to be placed to the related area on the back of the phone. The customers were supposed to buy their mobile phones by themselves. In duopoly period between 1994 and 2000, Turkcell acquired more customers than Telsim. One of the reasons was its exclusive agreements with major handset importers, distributors and retail dealers.

As the mobile phones market grows, they become more affordable. This trend had continued until Apple launched iPhone on January 9, 2007 that has started the new smart-phone era. These mobile phones are much more powerful, capable, application-rich, have a few inches multi-touch, high-resolution screens with user friendly interfaces and 3G connection support. While voice revenues are decreasing due to the increasing competition and mature markets, operators find out data services via smart-phones as the new revenue stream.

The sales of smart-phones in Turkey are also increasing like the rest of the world. One can either buy smart-phones from the market or get one by making a contract with any of the mobile operators. These good-looking new-generation phones allow mobile users to connect to internet, check their e-mails, and get updated via social media applications, visit websites or use a variety of applications. As a result, they use not only voice but also data services. So, operators have a new revenue generator to increase their average ARPU. In Turkey, any consumer willing to buy a smart-phone has mainly three alternatives. He/she can buy an iPhone, Blackberry or Android phone. There are several brands like Samsung, HTC and Huawei manufacturing smart-phones using Android as the operating system.

Since there is a growing demand for smart-phones, mobile phone suppliers have a significant bargaining power when negotiating with the mobile operators, distributors and retail stores. The most popular smart-phone in Turkey is iPhone. Apple has chosen Turkcell and Vodafone as iPhone carriers in Turkey. (<http://www.apple.com/tr/buy/>, 2011, ¶1) It is possible to have an iPhone with or without a contract. Turkcell and Vodafone had a competitive advantage over Avea to acquire new contract customers due to the attractiveness of iPhone. Apple decides which operator(s) will be its partner at any country and signs a deal with the selected operator(s). It is no doubt that being an iPhone carrier will help increase the subscriber base of any operator. Verizon has started selling iPhone on February 2010 in the USA in addition to AT&T. It is expected that Verizon will win 3.5 million new customers in 2011. (http://www.businessweek.com/magazine/content/11_04/b4212032854327.htm, 2011, ¶9)

Blackberry is the smart-phone preferred mostly by business-oriented consumers. All the three mobile operators Turkcell, Vodafone and Avea provide Blackberry phones. (<http://tr.blackberry.com/purchase/>, 2011, ¶1) It is possible to have a Blackberry with or without a contract. In addition to mobile operator, Blackberry mobile phones are also available on retail stores. There is a specific customer segment who would agree to pay relatively higher prices in order to own the latest model of Blackberry first or in case of a supply shortage. Besides, switching cost from Blackberry to another smart-phone might be high for some people, particularly for people using email services very frequently. The bargaining power of Blackberry manufacturer RIM would increase if a breakthrough new model launches that will be highly demanded by Turkish consumers.

In addition to iPhone and Blackberry, mobile operators also provide a variety of Android based low-end and high-end or basic model phones. Vodafone offers 4 different Vodafone branded models since February 2011. It is reported that within 1.5 months, it has sold 100.000 mobile phones. (<http://ekonomi.milliyet.com.tr/vodafone-markali-telefonlara-buyuk-ilgi/ekonomi/ekonomidetay/06.04.2011/1374081/default.htm>, 2011, ¶9) Furthermore, Turkcell also offers its own-branded low-end Android based smart-phone T10 as well as tablets. (<http://www.turkcell.com.tr/bireysel/cihazlar/akillitelefonlar/TurkcellT10>, 2011, ¶1)

Since there is an intense competition among the basic and low-end smart-phone manufacturers the mobile operators are free to deal with the manufacturers which are more advantageous for them. In other words, bargaining power of basic and low-end smart-phone manufacturers are not so much. Their products have more or less the similar technologies and don't have the power of attracting a substantial number of mobile customers like iPhone do.

5.5. Bargaining power of customers

The bargaining power of customers has never been so much like today since Turkcell started providing mobile services in 1994. Switching costs have been reduced due to MNP that has launched on November 2008. Furthermore, following the decreased interconnection costs, operators started to offer flat-rate tariffs with quite economical

prices. The total number of SIM-cards is almost stabilized in the proximity of 61.8 million. That's why; the operators are trying to acquire new customers from other operators by offering attractive packages to those coming from other operators. They target to increase the number of contract subscribers and hence make sure that they don't switch to a rival operator. Since the development of the market has almost stopped, customer acquisition costs has increased tremendously at last few years and caused squeezing margins.

6. MVNO

Mobile Virtual Network operator (MVNO) means in broad sense a company that provides mobile services without having its own licensed radio network or required infrastructure. Companies with its own frequency spectrum and infrastructure licensed by the regulation to deliver independent mobile services are called Mobile Network Operator (MNO). In Turkey, Turkcell, Vodafone and Avea are the 3 licensed MNOs.

Traditionally, mobile communications value chain is separated into two main areas. First area is the radio access network licensed by regulatory authority. Second area is the rest of the operations and processes that enables the delivery of the service to the customers. This second area of the value chain includes core network operation (e.g. backbone, switching etc.), the operation of value-added-services (e.g. SMS, ringing tone, Mobil TV, location based services etc.), back-office operations to support business process (e.g. number portability, billing, handset logistics, customer care, etc.), definition of the value proposition and the delivery of the service to the customers through distribution channel. Since MVNO don't have their own spectrum they can only involve in this value chain at the second part by leveraging its existing assets.

6.1. MVNO today

A late research (<http://www.wirelessintelligence.com/analysis/2010/06/global-mvno-market-surpasses-600-in-q2-2010/>, 2010, ¶1, ¶3, ¶5, ¶10) reveals that there are more than 600 active MVNOs worldwide. The same report forecasts that at the current growth rate, the number of MVNOs will surpass the number of MNOs by mid 2013. Western Europe is the largest market with %59 of total MVNOs where Germany alone has 103 MVNOs.

Western Europe has also 110 of the 162 operator-owned brands. Ovum's market research

forecasts that global mobile virtual network operator (MVNO) subscribers are expected to reach 85.6 million by 2015, and revenues are expected to be \$9.5 billion.

(http://www.researchandmarkets.com/reports/1396686/global_mvno_outlook_2010_15.pdf, 2010, ¶1)

6.2. Enablers

Generally speaking, MVNOs tend to be known brands or players are looking to leverage their brand by entering a totally new arena for them - mobile. In some cases, their core business is unrelated to telecommunications, as evidenced by the wide variety of new market entrants from industries as diverse as entertainment, broadcasting, retail, and even air transportation. Other potential entrants, such as cable companies, are already in the communications industry and trying to converge their service offering.

So, what motivates a company to become a MVNO? The large customer segment with well-defined lifestyle and taste is the most important motivator asset. New players believe that can define a mobile value proposition they can sell to existing customers as well as to new customers those will be attracted with the strength of the brand image. Service offer will include not only minutes of talking but also niche content according to the interest of the well-defined customer segment. Additionally, cable and broadband companies are interested in MVNO business as they target to complement their service offering with mobile and provide quadruple-play.

To summarize, it can be concluded that any MVNO tries to leverage their existing assets to generate customer growth with low customer acquisition costs. The factors that can be potentially leveraged are as follows:

- Existing customers: It is much more easier to sell to existing customers instead of acquiring new customers
- Brand: The trust, awareness and image can be utilized to attract potential customers
- Distribution: Available sales and marketing channels will help to reduce the cost of customer acquisition

- Content: With the increasing growth of smart phones mobile is the new media for content distribution
- Convergence: Bundling several communication services creates competitive advantage and increase customer loyalty.

6.3. Virgin Mobile Case Study

Virgin is a leading branded venture capital organization and is one of the world's most recognized and respected brands. Conceived in 1970 by Sir Richard Branson, the Virgin Group has gone on to grow successful businesses in sectors ranging from mobile telephony to transportation, travel, financial services, media, music and fitness.

Virgin has created more than 300 branded companies worldwide, employing approximately 50,000 people, in 30 countries. Global branded revenues in 2009 exceeded £11.5 billion (approx. US\$18 billion). (<http://www.virgin.com/about-us/>, 2011, ¶2)

Launched by Sir Richard Branson, Virgin Mobile is the fastest growing and most successful business in Virgin's history with more than 15 million customers around the world. (<http://www.virgin.com/richard-branson/blog/we-launch-virgin-mobile-qatar>, 2011, ¶1)

It is a powerful brand used by many mobile operators based in the UK and operating in Australia, USA, Canada, France, South Africa, India and Qatar.

The international Virgin Mobile businesses each act as independent operations, usually in a joint venture between Sir Richard Branson's Virgin Group and an existing local mobile operator. (http://en.wikipedia.org/wiki/Virgin_Mobile, 2011, ¶1)

6.3.1. Virgin Mobile UK

Virgin Mobile UK was the world's first MVNO launched in 1999. Being a virtual operator, Virgin Mobile UK doesn't have its own network infrastructure and delivers mobile services over the existing network of Everything Everywhere. Virgin Mobile UK is a subsidiary of Virgin Media. Virgin Media is a provider of entertainment and communications services in the UK, offering "quad play" broadband internet, television, mobile telephony and fixed line telephony services. Virgin Broadband is ranked as the third largest with 4.3 million customers at the end of 2010 in UK. Virgin Media TV has about 3.8 million customers as the only cable TV operator and is the second largest provider of pay TV in the UK. Additionally, Virgin Mobile UK is the largest MVNO with

more than 3 million customers as of 31 December 2010.

(<http://phx.corporateir.net/External.File?item=UGFyZW50SUQ9ODE4MTJ8Q2hpbGRJR D0tMXxUeXBIPtM=&t=1>, 2011, p.20)

Virgin Mobile plays a critical role in the corporate strategy of Virgin Media. It aims to cross-sell more mobile services to existing customer base. Quad-play customers who get the digital television, fixed line telephone, broadband and mobile services from Virgin Media will generate higher revenue and churn will likely decrease. That's why, Virgin Media is actively promoting bundled packages and prices are designed to encourage customers to use multiple services. Quad-play penetration increased to around 11.8% at the end of 2010 compared to 10.6% a year ago. There is still a solid growth potential for quad-play customer acquisition. The ARPU of the quad-play segment is estimated to be over 80£ where the average cable ARPU is 47£.

(<http://phx.corporateir.net/External.File?item=UGFyZW50SUQ9ODE4MTJ8Q2hpbGRJR D0tMXxUeXBIPtM=&t=1>, 2011, p.5)

	Three months ended				
	December 31, 2010	September 30, 2010	June 30, 2010	March 31, 2010	December 31, 2009
Contract mobile customers ⁽¹⁾ :					
Opening contract mobile customers	1,154,700	1,097,200	1,030,900	949,700	872,600
Net contract mobile customer additions ⁽²⁾	56,100	57,500	66,300	81,200	77,100
Closing contract mobile customers	1,210,800	1,154,700	1,097,200	1,030,900	949,700
Prepay mobile customers ⁽¹⁾ :					
Opening prepay mobile customers	1,912,300	1,976,200	2,028,900	2,225,000	2,323,300
Net prepay mobile customer disconnections ⁽²⁾	(54,200)	(63,900)	(52,700)	(196,100)	(98,300)
Closing prepay mobile customers	1,858,100	1,912,300	1,976,200	2,028,900	2,225,000
Total closing mobile customers: ⁽¹⁾	3,068,900	3,067,000	3,073,400	3,059,800	3,174,700
Mobile average revenue per user ⁽³⁾	£ 15.16	£ 15.01	£ 14.36	£ 13.70	£ 14.00
Mobile ARPU calculation:					
Mobile service revenue (millions)	£ 138.7	£ 138.6	£ 131.9	£ 127.7	£ 132.9
Average mobile customers	3,050,000	3,077,700	3,061,800	3,106,300	3,164,400

(1) Mobile customer information is for active customers. Prepay customers are defined as active customers if they have made an outbound call or text in the preceding 30 days. Contract customers are defined as active customers if they have entered into a contract with Virgin Mobile for a minimum 30-day period and have not been disconnected. Contract mobile customers include customers who have taken either a mobile service or a mobile broadband contract.

(2) Contract net adds in the three months ended June 30, 2010 includes 9,300 customers who have been taking contract services since joining but had previously been recorded as prepay customers. A corresponding reduction is included in prepay net adds in the same quarter.

(3) Mobile monthly average revenue per user, or Mobile ARPU, is calculated on a quarterly basis by dividing mobile service revenue (contract and prepay) for the period by the average number of active customers (contract and prepay) for the period, divided by three.

Figure 6.3.1.1 Virgin Mobile operations statistics

Virgin Media – full year and fourth quarter 2010 results

Figure 6.3.1.1 displays Virgin Mobile UK's operational performance as of December 31, 2010. One of the most important points is the proportion of the contract customers. Although, the number of total customers decreased from 3.174.700 to 3.068.900, the number of contract customers has increased to 1.210.80 in year by 27.5%. As a consequence, ARPU has increased by 8.3% for Q4 of 2010 from £14 to £15.16. Contract customers represent 39% of the total customers. Mobile revenue in Q4 of 2010 was £148.3 million, up 6.7% reflecting ARPU growth.

I find it worth to compare ARPU of Virgin Mobile UK to Turkish mobile operators' ARPU. As of December 31, 2010, Virgin Mobile's ARPU is 38.66 TL (£15.16). When we look at the Turkish market, Turkcell's, Vodafone's and Avea's ARPU values are 19.5 TL, 18 TL and 18.5 TL respectively. So, there seems a significant difference in terms of ARPU between two markets. Nevertheless, it should be kept in mind that ARPU heavily depends on regulation, local market dynamics and competition among others.

The quality of the voice, data and value added services provided by Virgin Mobile UK very much depends on the performance of its network partner, mobile operator Everything Everywhere.

Everything Everywhere is a 50-50 joint venture between Deutsche Telekom and France Telecom which was formed in 2010 through the merger T-Mobile (UK) and Orange U.K. Everything Everywhere is now the largest mobile operator in UK with 28 million customers. T-Mobile customers are able to make calls and send texts via Orange's network and Orange customers are also able to do the same using T-Mobile network.

(<http://everythingeverywhere.com/2010/10/27/1-35-million-customers-benefit-from-big-switch-on/>, 2011, ¶1) The merger has created a synergy and increased the total coverage of Everything Everywhere more than the sum of each operator's coverage individually.

Before the merger, Virgin Mobile UK's mobile network partner was T-Mobile. After the merger, on March 2011, it has been announced that agreement between Virgin Mobile and Everything Everywhere has been extended meaning that Virgin Mobile customers will be getting the mobile services via Everything Everywhere's network infrastructure.

(<http://www.mobilenewscwp.co.uk/2011/03/everything-everywhere-extends-virgin-mobile-mvno-deal/>, 2011, ¶2)

It is really important that Virgin Mobile UK's network partner has the widest coverage and best service quality. Virgin Mobile UK states that its phone network covers 99.4% of the UK population and its 3G network covers over 85%.

(<http://www.virginmobile.com/vm/ukCoverage.do?contentId=coverage.in.uk.howdoi.sm235>, 2011, ¶1) On the other hand, not having its own network infrastructure also brings some operational risks to Virgin Mobile. Virgin Mobile UK relies on its long term agreement with Everything Everywhere for various mobile services. If the agreement with Everything Everywhere is terminated, or if it fails to deploy and maintain its network, or to provide the services as required under the agreement and Virgin Mobile is unable to find a replacement network operator on a timely and commercial basis, Virgin Mobile could be prevented from carrying on its mobile business. (http://media.corporate-ir.net/media_files/IROL/13/135485/Virgin_Media_Annual_Report2009.pdf, 2010, p.32) In fact, this is the case for almost all of the MVNOs all over the world.

Virgin Mobile offers both Pay Monthly and Pay As You Go type subscriptions. Virgin mobile also sells a wide variety of mobile phones to its customers. At Pay Monthly subscription model, any customer can choose one of the offered mobile phones for free with an appropriate tariff with 18 or 24 month contract. Alternatively, one can also buy one of the offered mobile phones and pay a lower monthly fee for the contract period. There are several different tariffs for different models of mobile phones. Any customer who wants to be Virgin Mobile contract customer should first pick up any of the tens of mobile phones and then select the most appropriate tariff and contract period. At Pay As You Go type subscription model, Virgin Mobile sells many different models of mobile phones. Since there is no contract, it is not possible to offer mobile phones for free. If any customer would like to keep his/her mobile phone but still gets the service than Virgin Mobile provides the necessary SIM card. Additionally, Virgin Mobile offers lower tariffs for Virgin Media customers to be able to cross-sell other Virgin Media services.

Considering the number of handset models Virgin Mobile offers, stock management and distribution channel management has critical importance for Virgin Mobile. Moreover, the costs of mobile handsets will have a major impact on operational efficiency and profitability of Virgin Mobile. As of April 14, 2010, Virgin Media has 57 own-branded stores and 26 shopping center kiosks. Virgin Mobile telephony products are available also available at more than 4000 third party sales outlets.

(<http://pressoffice.virginmedia.com/phoenix.zhtml?c=205406&p=irol-newsArticle&ID=1412759&highlight=>, 2010, ¶9) In the ever-changing mobile phone market, mobile phone supply chain has a key role to operational efficiency. It might become harder to sell mobile phone models that are relatively old to profitable prices. On the other hand, if Virgin Mobile fails to supply a popular mobile phone model (i.e. iPhone 4) it can lose customers to its competitors.

6.3.2. Virgin Mobile Australia

Virgin Mobile Australia (VMA) operation first started in October 2000 as a 50/50 business partnership between Virgin Mobile UK and Optus. VMA was Australia's first MVNO. In 2002, Virgin Mobile UK increased its shareholding to 74.15% after Optus refused to inject more cash into the operations. At the end of 2005, VMA claimed more than 300.000 customers. ([http://en.wikipedia.org/wiki/Virgin_Mobile_Australia#cite_note-Telephony-1,2011, ¶5](http://en.wikipedia.org/wiki/Virgin_Mobile_Australia#cite_note-Telephony-1,2011,¶5))

In 2006, Optus has acquired 74.15% of VMA from the Virgin Group for \$22.6 million taking full-ownership of VMA. Virgin Group also granted Optus a 15-year license for ongoing use of Virgin Mobile brand in Australia.

([http://www.optus.com.au/aboutoptus/About+Optus/Media+Centre/Media+Releases/2006/Optus+acquires+Virgin+Mobile+Australia,2006, ¶5](http://www.optus.com.au/aboutoptus/About+Optus/Media+Centre/Media+Releases/2006/Optus+acquires+Virgin+Mobile+Australia,2006,¶5))

As of 12 April, 2010, VMA has hit one million customers having several rewards as being No.1 in customer satisfaction. As of 31 December, 2010, Optus is the second largest mobile operator in Australia with 32% market share and a total of 9 million customers. Since the acquisition of VMA by Optus, VMA is no more a MVNO. Instead, it has become one of the brands of Optus MNO. VMA's network reaches up 97% of the Australian population. ([http://www.virginmobile.com.au/about-virgin-mobile/facts-and-figures/,2006, ¶3](http://www.virginmobile.com.au/about-virgin-mobile/facts-and-figures/,2006,¶3))

6.3.3. Virgin Mobile USA

Founded in 2001 as a MVNO, Virgin Mobile USA was acquired by its network services provider, Sprint Nextel, in 2009 for an estimated total of 483\$ million and is now a wholly owned subsidiary of Sprint Nextel Corporation. Sprint is the third largest wireless

telecommunications network in the United States, with 49.9 million customers, behind Verizon Wireless and AT&T Mobility.

Under the Virgin Mobile brand, Virgin Mobile USA, Inc. provides prepaid wireless voice, messaging and broadband data services to subscribers throughout the United States via the Sprint Nextel network. Virgin Mobile USA targets younger customers or those who do not want to pay large monthly fees, offering some of the cheapest plan rates in the industry and does not require customers to enter into a contract. A range of Virgin Mobile handsets including high-end devices and broadband access devices are available online and at more than 40,000 retail partner locations including Bestbuy, RadioShack, Target and Wal-Mart stores. Virgin Mobile top-up cards are available online and in 150,000 retail locations nationwide. (http://en.wikipedia.org/wiki/Virgin_Mobile_USA, 2011, ¶2)

With the launch of Beyond Talk, Virgin Mobile USA offers the lowest price point in the industry for a wireless plan starting at \$25 that includes unlimited text and mobile web. (<http://virginmobileusa.marketwire.com/easyir/msc1.do?easyirid=F4ABAEBA3A27ECD9&cogo=y>, 2011, ¶5)

6.3.4. Virgin Mobile Canada

Virgin Mobile Canada was launched on March 1, 2005 as a joint venture between Virgin Group and Bell Canada as a MNVO. It has soon become No.1 mobile youth network targeting particularly young customer segment and stated its mission to be Canada's most loved mobile company.

J.D. Power and Associates 2009 Canadian Wireless Customer Satisfaction Study has awarded Virgin Mobile "Highest in Customer Satisfaction with Prepaid Wireless Service, Five Years in a Row" and it has ranked Virgin Mobile "Highest in Customer Satisfaction with post-paid Wireless Service".

On July 2, 2009 Bell announced that Bell Mobility has completed its \$142-million acquisition of the 50% stake in Virgin Mobile Canada not already owned by Bell, along with a long-term brand licensing agreement with the Virgin Group. It is also stated that while Virgin Mobile Canada will access Bell's existing and new wireless networks and share common distribution in high-traffic retail locations, the company will continue to

operate independently of Bell with its own distinctive brand, customer service operations and executive leadership team. In other words, Virgin Mobile Canada will continue to operate as MVNO. (<http://www.bce.ca/en/news/releases/bm/2009/07/02/75170.html>, 2009, ¶1-¶4)

Canada has 24.04 million mobile subscribers in total. Bell Mobility has over 7.242.048 subscribers as of the end of 2010 as being the second carrier after Rogers Wireless. (http://en.wikipedia.org/wiki/List_of_mobile_network_operators_of_the_Americas#Canada, 2011, ¶1-¶4)

6.3.5. Virgin Mobile France

Fourth mobile operator in France, Virgin Mobile France (VMF) has launched in April 2006. The company is positioned as a MVNO that operates on Orange SA network with more than 99% of population coverage with EDGE, and over 95% 3G+ coverage. VMF is commercialized by Omea Telecom, a joint venture between the Virgin and Carphone Warehouse groups, which has a customer base of more than 1.8 million subscribers with a target of 2 million customers in 2011. (<http://www.virginmobile.fr/virginmobile-et-vous/virgin-mobile-en-bref/qui-sommes-nous.htm>, 2011, ¶3)

Beyond its aggressive commercial strategy, its success is essentially based on the quality of basic principles: wide range of handsets and an off-beat and bold marketing message, exceptional customer service with more than 600 dedicated agents, who handle customer queries via Email and telephone, and strong distribution network with more than 2.500 sales outlets, 40.000 top-up outlets and its website www.virginmobile.fr. (<http://www.virgin.com/company/virgin-mobile-france/>, 2011, ¶2)

Virgin Mobile France has agreed to acquire rival MVNO Tele2 France for \$83 million in October 2009. At the end of June 2009, Tele2 France had approximately 429,000 mobile customers. (<http://www.cellular-news.com/story/40093.php>, 2009, ¶1-¶2)

6.3.6. Virgin Mobile South Africa

Virgin Mobile South Africa (VMSA) is a joint-venture between Sir Richard Branson's Virgin Group and Cell C. VMSA launched in 2006 as South Africa's first MVNO. In February 2011, it is announced that Cell C.'s 50% stake is to be sold Virgin Group UK and Calico Investments of Bahamas. Consequently, Virgin's stake has increased from 50% to 55% and Calico Investments of the Bahamas will acquire the remaining 45% stake in the company. Cell C will continue as Virgin Mobile's network partner in terms of an updated and expanded network services agreement.

(<http://mybroadband.co.za/news/telecoms/18353-Cell-selling-stake-Virgin-Mobile.html>, 2011, ¶1-¶2)

VMSA has over 300.000 mostly post paid active customer as of 9, February, 2011.

(<http://www.virginmobile.co.za/press.php>, 2011, ¶9)

6.3.7. Virgin Mobile India

India is the world's fastest-growing mobile market. Virgin Mobile brand is India's first national youth-focused mobile service with presence across 45,000 outlets launched in March 2008. Virgin Mobile branded services are being offered to the Indian consumers by Tata Teleservices through a brand franchise with Virgin Mobile as MVNO model is not allowed in India yet. Tata has two different brands as Tata Indicom and Virgin Mobile. Tata Indicom positioned as a mass market brand, while Virgin would be positioned as a youth brand.

Virgin Mobile India's target customer segment is Indian youth, aged between 15 and 30 years, estimated to be around 400 million, which is almost six times the size of that in the US. The usage of this sector is also high with urban youths' mobile usage standing at around 360 million minutes compared with the industry average of 160 million minutes, while their SMS usage is four times more than the industry average. The company plans to cover around 1000 cities by the year end. The target is to reach around 5 million customers in three years, at which point, breakeven will be achieved.

(<http://www.watblog.com/2008/03/04/virgin-and-tata-%E2%80%93-losing-the-virginity/>, 2011, ¶7-¶8)

6.3.8. Virgin Mobile Qatar

Virgin Mobile Qatar is a brand licensing partnership agreement between Virgin Group and Qatar Telecom (QTel). The new brand has been launched on May 13, 2010 over the network of Qatar Telecom three years after Virgin Mobile lost out to Vodafone in the race to acquire Qatar's second mobile license.

Virgin Mobile Qatar is Qatar's first youth-focused mobile offering, delivered by Virgin Mobile in the brand partnership. It offers prepaid service only, simplified all-day tariff plans (with no distinction between peak and off-peak) with 180-day airtime validity. Virgin Mobile Qatar is the eighth Virgin Mobile branded operation in the world, following on from launches in the UK, Australia, USA, Canada, France, South Africa, and India. QTel network has 3G coverage over more than 80% of Qatar. (http://en.wikipedia.org/wiki/Virgin_Mobile#Virgin_Mobile_Qatar/, 2011, ¶1)

6.3.9. Virgin Mobile's general strategy

Generally speaking, Virgin Mobile forms joint ventures with the local MNOs that have a superior service quality. Furthermore, it targets price-sensitive young customer segment with economical offers. Customer satisfaction rates are quite high for Virgin Mobile at various countries. It offers a wide variety of mobile handsets for both contract and pre-paid customers at hundreds of retail locations all over the country.

Virgin Mobile subscriber base has increased rapidly at various countries. In countries like USA, Australia and Canada, Virgin Mobile model has become so successful that their network partners has acquired Virgin Group's share and the brand has become a sub-brand of host MNOs.

7. MVNO in Turkey

Although, there are several MVNOs all over the world operating since 1999, in Turkish telecommunication market, MVNO licenses have been started to be issued just since June 2009. As of April 2011, there are a total of 24 licensees granted to operate as a MVNO. (<http://www.tk.gov.tr/doc/lisans/MVNO-bildirim.htm>, 2011, ¶1)

In addition to 24 granted companies, there are 8 pre-MVNOs and 1 semi-MVNO. The so-called pre-MVNOs; Fenercell, GSMobile, Trabzoncell, Kartalcell, Basicell, Uğurcell and İstanbulcell are the sub-brands of Avea. VIPCell is a sub-brand of Vodafone. They do not require a license since they operate as sub-brands of host operators whereby MVO owns the subscriber and also performs invoicing and collection. Hence, there is a revenue sharing partnership between the operator and the brand owner. On the other hand, TTNET Mobil is a semi MVNO in Turkey launched in September 2010. In fact, the only difference between TTNET Mobil and the foregoing models is that, TTNET Mobil does the invoicing, billing and collection by itself. Additionally, TTNET Mobil also provides a SIM card to its customers upon request. Hence, TTNET Mobil customers might have a dedicated mobile network code (501). Apart from this difference; TTNET Mobil is also a revenue sharing model between TTNET and Avea as the previously mentioned brands. Although it is not certain, it is estimated that there are about 750.000 subscribers of the pre-MVNOs. Although the MVNO licenses in Turkey are available since Q2 2009, the results show that it has not been successful so far. Neither a MVNO market nor a powerful MNVO has been formed in the past almost 2 years.

Companies operating in telecommunications industry pays %15 of their gross revenues to Turkish treasury. The most important barrier for MVNO licensees to start operating has been the double tax that was regulated to be collected both from the MVNO and MNO for the treasury. Before the new law that has been adapted both the MVNO and host operator was obliged to pay %15 of their gross revenue to Treasury. New law which is called as “Torba Yasa” is published in the Official Gazette of Republic of Turkey on February 25, 2011. (<http://ekonomi.haberturk.com/makro-ekonomi/haber/600549-taraftarin-sanal-operatorune-hazine-payi-kolayligi>, 2011, ¶1-¶2) With this new regulation, only the MNO will pay tax to the Treasury. It is estimated that this new law will reshape the mobile communication market over the coming days particularly for MVNO candidates.

Additionally, Rıdvan Uğurlu, General Consuel of TELKODER (Turkish Competitive Telco Operators Association) believes that MNOs are not keen to cooperate with MVNOs. He thinks that ICTA needs to regulate the market so that the MNOs are obliged to cooperate with MVNOs. (<http://www.bthaber.com.tr/?p=6225>, 2011, ¶4)

ICTA has defined Virtual Mobile Network Service (Sanal Mobil Şebeke Hizmeti) as follows:

Virtual Mobile Network Service includes providing mobile electronic communication by the operator with its own brand to its subscribers without having its own allocated frequency band, over the infrastructure of the operators that are licensed by ICTA to deliver mobile electronic communication services within the authorization of the host operator.

1. MVNO can freely decide terms and conditions of its service over the host operators' infrastructure by negotiating with host operator without being contrary to regulation.
2. MVNO is not allowed to set up a wireless access network. However, it can set up or rent other required network components as stated in the regulation. MVNO will provide the required transmission lines to connect its own network components from the host operator or licensed network operators.
3. MVNO applies to its host operator if it needs mobile network code. If MVNO and host operator agree to use host operators mobile network code, host operator shall declare to ICTA within one month following the agreement.
4. MVNO applies to its host operator in order to use host operator's mobile numbers if it needs mobile numbers. . If MVNO and host operator agree to use host operators mobile numbers, host operator shall declare the number block that will be used to ICTA within one month following the agreement.
5. MVNO can provide SIM card with its own brand to its subscribers.
6. MVNO shall make a subscription contract with its subscribers on his own behalf.
7. MVNO is not allowed to provide network operation service with this license.

However, it can share its own network components with other MVNOs.

(http://www.tk.gov.tr/Duzenlemeler/Hukuki/yonetmelikler/2009/ehhsa_tks.doc, 2009, p.8)

7.1. Pre-MVNOs in Turkey

7.1.1. Fenercell, GSMobile, Kartalcell and Trabzoncell

Fenercell, GSMobile, Kartalcell and Trabzoncell are revenue sharing partnerships between Turkey's greatest four sport clubs and Avea launched in 2009. It was announced that the total number of subscribers of these four co-brands has reached 360.000 when about one year has passed since their launch. As of Q1 of 2010, Fenercell had about 145.000-150.000 subscribers, GSMobile had 120.000 subscribers, Kartalcell had 55-60.000 and Trabzoncell had 45-50.000 subscribers. (<http://www.haberler.com/avea-sanal-operator-uygulamasinda-dort-futbol-haberi/>, 2010, ¶10) It is also lately announced that Fenercell has reached 300.000 subscribers as of March 2011.

(<http://www.fenerbahce.org.tr/fb2008/detay.asp?ContentID=23518>, 2011, ¶1)

This new co-branding model between sports clubs and Avea has become a new revenue generator to sports clubs while leveraging Avea's current assets for acquisition of new customers. The service is delivered via the infrastructure of Avea. In addition to traditional mobile services, they also offer value-added-services exclusively to supporters.

7.1.2. Basicell

This is a special economic tariff of Avea offered specifically to Finance and Insurance sectors' employees segment. Basicell tariff is only available for the members of BASIDAV (Basisenliler Dayanışma ve Yardımlaşma Vakfı), BASISEN (Banka ve Sigorta İşçileri Sendikası), the other employees working at the company where the members work, retired employees of İşbankası. Basicell tariff is most suitable for price-sensitive customers.

(<http://www.avea.com.tr/tr/sta/bireysel/tarifeler/faturali/basicell.shtml>, 2011, ¶1)

7.1.3. Uğurcell

Uğurcell is part of the Uğurlu Evim project. Uğurlu Evim is Turkey's first online mobile education platform that is developed by Uğur Eğitim Kurumları and Turk Telekom. Uğurcell is the first and only educational GSM brand launched in 2010 specifically targeting student segment whose mobile communication services are delivered via Avea's infrastructure. It is a revenue sharing partnership between Uğur Eğitim Kurumları and Avea. Uğurcell subscribers will get latest information about their education; will call with

their friends, family and teachers with economical prices. It is targeted to reach around 150.000 students in the medium term.

(http://www.avea.com.tr/tr/sta/hakkinda/basinodasi/ort_20100331.shtml?pagemenu=basinodasi.bultenler, 2011, ¶1)

7.1.4. İstanbulcell

İstanbulcell is a revenue sharing partnership between Avea and İstanbul municipality. Similar to the other models, this service offers economical prices for a specific segment of potential customers. İstanbul municipality employees, İSKİ and İETT employees can subscribe to İstanbulcell by declaring their corporate identities.

(<http://www.avea.com.tr/tr/sta/bireysel/tarifeler/faturali/istanbulcell.shtml?pagemenu=tarifeler.faturali.mobil.istanbulcell>, 2011, ¶1)

7.1.5. VIPCell

As being one of the MVNO licensees, İhlas İletişim is providing mobile services with its own brand VIPCell. VIPCell is using Vodafone's infrastructure. İhlas İletişim has signed a long term agreement with Vodafone. According to the agreement, about 30.000 employees of İhlas Group will be getting mobile services from Vodafone with VIPCell brand. It is announced that new projects will be developed by İhlas İletişim and Vodafone over the coming period.

(http://www.ihlasiletisim.com/17_EKIM_2009_TURKIYE%20GAZETESI.jpg, 2009, ¶1)

7.1.6. TTNET Mobil

TTNET started to provide mobile communication services branded as TTNET Mobil in October 2010. It is started as a revenue sharing model between TTNET and Avea. TTNET is planning to transform this partnership to a MVNO model. TTNET Mobil is currently using Avea's infrastructure and also open to cooperate with other mobile operators.

(<http://teknoloji.milliyet.com.tr/ikisi-bir-arada-501-li-hatlar-geliyor/mobildunya/haberdetay/26.10.2010/1306420/default.htm>, 2010, ¶7-¶8)

Only the TTNET subscribers can get TTNET Mobil service including air-time, SMS, mobile internet either via mobile device or PC with 3g connection speed with price-competitive offers. It is a post-paid service. One of the advantages is that subscribers get only one invoice for both internet and mobile communication services. It is possible to move the existing mobile number to TTNET Mobil or to get a new mobile number with a mobile network code 501. On the contrary to the other pre-MVNO models, TTNET Mobil provides its own branded SIM card to its customers. As a result, the mobile network code becomes different than Avea's prefixes. (www.ttnetmobil.com.tr, 2011, ¶1)

TTNET Mobil plays a critical role in TTNET's strategy as with the launch of mobile service following internet, video and voice services, TTNET has become first quadruple-player in Turkish market.

8. Conclusion

Today, the mobile communications market is one of the fastest growing markets in the world. Although, mobile phone penetration is above %100 and saturated in developed countries, it is still growing in emerging markets. In Turkey, as of December 2010, the total number of mobile subscribers is 61.8 million with 85.1% penetration ratio where Turkcell is the dominant mobile operator with 54.2% market share. Turkish mobile market is considered to be a highly concentrated market with a HHI value of 4020. Fortunately, MNP has changed the dynamics of market remarkably since November 2008. Since then, there is a cutthroat competitive rivalry among the three mobile operators resulted in a price war as well as squeezing profit margins. Almost 30 millions mobile numbers are moved so far. Since the market growth is nearly stopped since 2009, operators are aggressively fighting to acquire existing customers from rival operators to increase their market shares and revenues.

In this intense competitive environment, mobile operators need to invent new models and revenue streams to improve their operational efficiency, increase customer retention and reduce customer acquisition costs. In fact, this is the case of mobile communications market in most of the developed countries and resulted in the introduction of MVNO model. MVNOs in general are mobile service providers without their own infrastructure but partnering with MNOs. They help MNOs to utilize their resources more efficiently and acquire customers with reduced costs by leveraging their existing assets. (brand image, existing customers, distribution channels etc.) Virgin Mobile is the most successful MVNO in the world operating in several countries with its innovative and customer oriented model.

In Turkey, however, there is no real MVNO model yet although ICTA issued 24 licences since 2009. Instead, there are various companies providing mobile services in revenue-sharing model. Double tax issue was the biggest barrier that caused this latency which has been resolved recently in 2010. Consequently, it is very likely that MNVOs from different industries will start operating in Turkey soon.

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