

Market Analysis for Mobile Virtual Network Operators (MVNOs): The Case of Turkey

Hande Kimiloglu

Management Information Systems Department, Bogazici University

Hisar Campus 34342 - Bebek, Istanbul, Turkey

Tel: 90-212-359-6935 E-mail: hande.kimiloglu@boun.edu.tr

Meltem Ozturan (Corresponding author)

Management Information Systems Department, Bogazici University

Hisar Campus 34342 - Bebek, Istanbul, Turkey

Tel: 90-212-359-7018 E-mail: ozturanm@boun.edu.tr

Birgul Kutlu

Management Information Systems Department, Bogazici University

Hisar Campus 34342 - Bebek, Istanbul, Turkey

Tel: 90-212-359-6931 E-mail: birgul.kutlu@boun.edu.tr

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Abstract

Nowadays, MVNOs are entering the market with the aim of providing new services in the mobile telecommunications industry. Current studies show that having an active and sizable mobile communications market, owning the necessary technological infrastructure, and developing the imperative regulations are critically important factors for MVNO market development. In this respect, this study aims to portray the state of MVNOs in the global market and analyze the potential of the Turkish market.

At the global level, MVNOs are rapidly developing in countries where the GSM market is already active and the consumer market hosts many segments with the potential to respond to different types of value-added services. As for Turkey, this market carries a high potential because of its active mobile communications industry providing a rich base of potential customers and an extensive variety of brands, companies, or institutions that could be willing to enter this new business realm.

Keywords: MVNO, Market analysis, Market structure, Mobile communication

1. Introduction

Nowadays, the mobile industry is characterized by a deceleration in the growth of annual subscribers in many national markets. A closer inspection of this situation shows that the demand in the market is shifting from conventional mobile communication or voice services to a wider portfolio including Internet access, location-based services, entertainment, and many other value-added applications. According to Gartner, worldwide mobile phone sales have declined by 8.6% while smartphones grew at a rate of 12.7% in the first quarter of 2009, which is a solid indicator of the changing consumer expectations in the mobile industry (Stevens & Pettey, 2009). Similarly, Western European mobile voice revenues have been found to be stagnating with a growth of just 1% year-on-year by the end of 2006, compared with 7% two years earlier (Buvat, Rao, & Kitson, 2007). Such developments imply that there is a gradual change in the nature of the mobile communications

market. Thus, it is essential to study how different parties such as communication service provider companies and other industrial players can intelligently react to these changes. In this context, the emergence of Mobile Virtual Network Operators (MVNOs) is an innovative development that should be monitored intensively as one of the major formations of this strategic trend.

An MVNO is defined as a company that provides mobile communication services, sells subscriptions and bills to customers under its own brand but does not have its own spectrum license (Dahlen, Troneng, Deilkas, & Lag, 2001; Haucap, 2006; Kiiski, 2006). Any company, institution or brand can act as an MVNO simply by renting the required bandwidth to convey its communication and value-added services from an existing mobile operator. This business dynamic has the potential to create a win-win environment both for mobile operators and for MVNOs. Mobile operators can continue to serve their customers while making bulk sales of bandwidth to companies or brands that want to function as MVNOs, thus increasing their sources of revenue. On the other hand, any organization that wants to strengthen its relationships with its existing customer base by providing mobile communication and value-added services to them under its own brand is also an obvious winner in this scenario. The benefits for them are creating a new revenue source as well as strengthening brand image and power.

This study has two major objectives. Firstly, it aims to provide an overview of the global MVNO market and identify the factors that are influential in the development of this business. For this purpose, the global MVNO market has been evaluated according to various indicators grouped into four major categories as “consumer”, “industry”, “regulation”, and “technology” factors. This evaluation has been done by reviewing the related literature and aggregating secondary data to draw a comprehensive picture of the current situation. Secondly, the potential of the MVNO industry is analyzed for Turkey where this development has not yet officially come to life. For this second objective, the current and expected future situation of this market is analyzed by finding relevant indicators related to the four major groups used in the global market analysis and envisioning the potential of the Turkish MVNO market with respect to these findings. As a country with 66 million GSM subscribers (Information and Communication Technologies Authority [ICTA], 2008) and a 92% penetration rate, it represents a very lucrative environment to conduct such a market analysis. The study shows that there is a fruitful market for MVNOs in Turkey and identifies three major potential groups that can act as players in this sector.

2. Background of the Study

In order to conduct a proper analysis of the MVNO market, a thorough understanding of its alternative definitions and categorizations, the place of MVNOs in the value chain of the mobile communications industry and an overview of their evolution are crucial.

2.1 Alternative Definitions and Categorizations of MVNOs

There are different categorizations of MVNOs in the literature. In one approach, Anders et al. classify MVNOs according to their “breadth of functions and level of integration in the value chain” as shown below (Lillehagen, Armyr, Hauger, Masdal, & Skow, 2001):

- Retailer MVNO: Provides mobile services to its own customers and can perform various roles such as sales, distribution, billing, and customer management but does not enter the mobile industry
- Expander MVNO: Enters new segments or markets as a telecommunication network provider to seek opportunities
- Integrator MVNO: Enters other layers of the value network such as content providing to get a better grip on the customer, enlarge the market, and increase the total value to customers

Dahlen et al. (2001) group MVNOs according to “how much of the communication network they control” and according to this perspective, there are two types of MVNOs as given below:

- Reseller MVNO: This model requires a ‘turn-key’ traffic contract with an MNO. Without control over any network elements, the service capabilities are governed by that MNO
- Mobile Switching Center (MSC) + Home Location Register (HLR): An MVNO of this type may build and operate its own backbone network in order to reduce costs on international traffic. This makes the model attractive for players that already control fixed network resources

From another perspective, Bhawan and Marg (2008) categorize MVNOs nonexclusively according to the “kind of offering they approach the market with” as follows:

- Facility-Based MVNOs: Have some network infrastructure of their own

- Target-Based MVNOs: Either operate as discount MVNOs or service lifestyle-based market niche segments
- Strategy-Based MVNOs: Have different strategies such as being a low cost international MVNO, a brand extension MVNO, a youth-focused MVNO, etc.
- Plan-Based MVNOs: Either offer pre-paid or post-paid plans

Finally, Shin and Bartolacci (2007) group MVNOs according to their “origin of business” as:

- Operator-centric MVNOs: Have telecom as their core business with a corresponding telecom corporate culture and are filling the network with traffic, but as an MVNO, only earn money on mobile services
- Enterprise-centric MVNOs: Players coming from disparate type of core business and therefore have very different corporate cultures, seek their profit in another business and act as MVNOs as an extra sales and marketing channel to promote their brands and products

2.2 Place of MVNOs in the Mobile Communications Industry Value Chain

The mobile communications industry hosts a large value chain with various players as given below.

- Mobile Network Operator (MNO): Owns and operates network facilities to provide mobile communication services to individual and corporate customers (Strategy Analytics, Inc., 2008)
- Software/Hardware Application Provider: Provides hardware such as cellular phones and software running over hardware for technical management purposes (Al-Debei & Avison, 2009)
- Content Provider: Provides needed information to be communicated to cellular customers (Al-Debei & Avison, 2009)
- Distributor: Purchases goods/services directly from the manufacturer/service provider for the purpose of resale (U. S. Commercial Service and U. S. Department of State, 2005)
- Customer: Purchases a commodity or service (Patterson and Marks, 1992)

In this highly integrated business environment, the entities that are related with MVNOs from different aspects identified above and their relationships with MVNOs are shown in Figure 1.

In addition to this aggregate view of the market, Sekino, Tripathy, and Gates (2006) show that MVNOs may have different levels of integration in this value chain according to the breadth of functions they perform as seen in Figure 2.

2.3 Evolution of MVNOs

In many markets, structural innovations like the emergence of totally novel players in the value chain take place in a gradual manner and evolve through a number of stages with different natures. Such has been the case in the development of MVNOs. The emergence of the MVNO phenomenon is characterized by the establishment of the first MVNO, Virgin Mobile, in United Kingdom in 1999 (Lee, Chan-Olmsted, & Ho, 2008). Since then, MVNOs have advanced through three waves as follows (Sekino et al., 2006):

- First Wave: In this phase starting in 1999, the approach was “Build Your Own MVNO” for any company that wanted to enter this business. This route was chosen partially because it was the only alternative in this period and also because this was the safer and thus more attractive approach for mobile operators. It is perhaps no surprise that most were 50:50 joint ventures as mobile operators cautiously entered the wholesale market.
- Second Wave: At this stage starting approximately after 2005, the approach was “Partnering with a Mobile Virtual Network Enterprise (MVNE)”. By this time, MVNEs had become indispensable partners for many MVNOs because they alleviate many of the back-office risks and complexities of launching a wireless service. However, MVNEs did not contribute to higher levels of the wireless service delivery chain such as offer development and handset customization, and were also not involved in negotiating wholesale agreements with MNOs for the purpose of providing network access to client MVNOs.
- Third Wave: This is the current direction of the market where the approach is going to be “MVNO in a box from Mobile Virtual Network Aggregators (MVNA)”. In this model, the MVNA controls all levels of the wireless value chain preceding branding and distribution. It owns network leasing agreements with MNO(s) and manages or outsources all the back-office systems and processes typically associated with MVNEs. It also owns/provides access to mobile data platforms. It manages the procurement of

MVNOs' handsets. It develops MVNOs' offers, including voice and data pricing, user interface (UI) customization, and design and aggregation of relevant content and applications. By managing each of these steps of the value chain, the MVNA enables a one-stop wireless solution to launch these brands in the wireless space.

3. Research Methodology

In this study, an exploratory approach has been preferred. Since the MVNO market is at such an introductory stage in its development in many markets and a totally new phenomenon for the case of Turkey, this approach is more suitable to study the topic instead of descriptive or causal attempts.

For this purpose, an extensive literature review has been conducted as a first step. Based on this review, initially, the foundations of the MVNO phenomenon have been compiled. More specifically, the definition and alternative categorizations of MVNOs have been conceptualized, the place of MVNOs in the mobile communications value chain has been portrayed and their evolution has been discussed.

This comprehensive literature review has also provided the basis for the analysis of the global MVNO market from four perspectives. Secondary data has been collected in order to evaluate the global MVNO market from consumer, industry, technological, and regulatory perspectives. This secondary data analysis has produced the key variables required to assess the potential of MVNOs in any market. Consequently, another set of secondary data has been collected to evaluate the future of MVNOs in the Turkish market. This examination has been done to understand the overall potential of the market as well as to pinpoint a set of high-potential candidates to act as MVNOs both at the global level and in Turkey. The identification of these candidates has been performed through brainstorming sessions within the research group and an expert opinion session with a software development and business solutions company aiming to target the MVNO market in Turkey.

4. Analysis of the Global MVNO Market

Innovative developments in industries might unexpectedly end up as failures simply because the market indicators have not been analyzed thoroughly and appropriate directions for development have not been outlined. Thus, since the MVNO business venture is seen as a key market opportunity in the mobile communications industry, a careful analysis is essential to assess this market's potential for growth. For this purpose, in this part of the study, the global MVNO market is examined in terms of four exogenous factors that might influence its development. These are the consumer, industry, regulation, and technology factors as outlined in Lee et al.'s study in 2008.

4.1 The Consumer Factor for the Global Market

A market must be analyzed with respect to the profile and behavior of its consumers in order to understand market potential and segmentation opportunities. From the demographic perspective, findings of Lee et al. (2008) show that variables such as age and ethnic origin might be important for segmentation purposes among many others. Additionally, from a behavioral perspective, the importance consumers attach to cost, functionality, usability, multimedia attributes, emotional attachment to mobile devices, etc. are also potential accelerating factors for MVNO diffusion (Lee et al., 2008).

4.2 The Industry Factor for the Global Market

Another crucial aspect of the global MVNO industry analysis is examining various market demographics and market potential indicators in order to assess its potential (Lee et al., 2008; Merry, 2005). A comprehensive review of the literature in this area has shown that the most important industrial factors requiring inspection for this market are:

- the size and geographic concentration of the market
- classification of potential MVNO businesses
- the structure and level of competitiveness in the market (number of MNOs and the MVNO/MNO ratio)

4.2.1 Size and Geographic Concentration of the Global MVNO Market

According to previous studies, there are approximately 550 MVNOs or resellers as of 2010 and their distribution according to countries is given in Table 1 (Informa Telecoms & Media, 2009; TelecomPaper, 2010; MVNO Directory, 2008).

Other important statistics about the MVNO market show that (Informa Telecoms & Media, 2009; MVNO Directory, 2008):

- There are approximately 85 million subscriptions on MVNOs or resellers globally.

- Western Europe is the largest market with 69% of total MVNOs and 65% of total subscriptions.
- Growth of MVNO is led by Eastern Europe and Latin America, although Western Europe, North America and Asia Pacific remain the largest markets.

As studies show, MVNOs have flourished most in European and North American telecom markets until now. However, just like the rapid distribution of innovations like mobile phones or Internet usage, this industrial development is also expected to diffuse into other parts of the world in a near future.

4.2.2 Classification of Potential MVNO Businesses

From a practical and regulatory perspective, there is no limitation as to which companies or brands can act as MVNOs. Therefore, any organization that aims to create a new revenue source for itself and strengthen its relationships with its current customer base can invest in this business realm. The variety of sectors or entities that can engage in this opportunity can be seen in Table 2 taken from Sekino et al. (2006).

The categorization in Feldmann's study in 2002 also shows the most commonly encountered or high potential sectors that can act as MVNOs as follows:

- Broadcast, media and entertainment companies (ESPN, Virgin, Disney)
- Retailers and supermarkets (7-Eleven, Sainsbury's)
- Communication companies such as ISPs, cable TV or fixed-line operators
- Financial industries
- Automotive

Feldman (2002) also suggests that "MNOs can act as wholesalers to virtual operators from telecom, retail, media, financial, and automotive industries". While these studies converge around similar industries as the potential early movers in the market, many other sectors, organizations and brands can be expected to benefit from this profitable business opportunity in the long run.

4.2.3 The Structure of and Level of Competitiveness in the Market

According to the literature, one of the most important drivers of the development of the MVNO market in a country is how high the 3G licensing fees are. In 2008, Lee et al.'s study shows that the higher 3G licensing fees in a country, the higher the level of MVNO development in that market (Table 3). This can be attributed to the fact that MNOs are willing to make use of the bulk revenue opportunity coming from the MVNO market in order to cover the large fees of 3G licenses.

In addition to the amount of 3G licensing fees, the number of MNOs in a market is also considered to be a very significant indicator of the potential for MVNOs in that market. Table 4 shows the number of MNOs and MVNOs and their ratio in selected OECD countries as of 2007. This table clearly shows that there has to be a minimum level of competition in the MNO (GSM) market for the MVNO market to start functioning, meaning there has to be at least two MNOs in that market. Shin and Bartolacci (2007) similarly state that the greater the number of MNOs, the higher the potential for MVNOs. However, if the number of MNOs is too high, this might lead them to become MVNOs themselves in order to target niche markets. This is also not desirable since the MVNO model is a catalyst to vertical disintegration in the telecom industry such that various players other than MNOs can access the value chain at different levels (Shin & Bartolacci, 2007).

Besides the number of MNOs, their relative market shares are also important in determining the diffusion of MVNOs. The degree of concentration, measured with Herfindahl-Hirschman Index (HHI) which is based on evaluating the comparative market shares of companies in a participating industry and calculated as follows is also seen as a factor affecting the diffusion of MVNOs in an industry.

$$HHI = \sum_{i=1}^f S_i^2$$

f =number of firms participating in an industry

S_i =each firm's market share

i =firm in a given industry

The HHI ranges can be interpreted as follows (U. S. Department of Justice & the Federal Trade Commission, 1997):

- * HHI below 1000 (10%) indicates an unconcentrated index.
- * HHI between 1000 (10%) to 1800 (18%) indicates moderate concentration.
- * HHI above 1800 (18%) indicates high concentration.

According to Mathew, Marsore, and Nair (2006), at the time of launch of the first MVNO, HHI index in a sample of 14 out of 16 markets was high as seen in Figure 3. In other words, higher HHI levels in a market indicating high concentration shows a greater potential for the MVNO market.

In highly concentrated markets, market followers usually do not have anything to lose while dominant players are threatened by MVNOs cannibalizing their own business (MVNO Directory, 2008). In practice, this pattern has been observed in the following examples (MVNO Directory, 2008):

- * UK: One2One, which was holding 4th place in the MNO market behind Orange, BT Cellnet and Vodafone formed the first MVNO partnership with Virgin and targeted the youth market. Quickly, Virgin Mobile became a key player in the UK mobile sector and built a solid place in consumers' views next to the four existing players.
- * South Africa: The same scenario has been repeated here with 3rd place company Cell C who allowed Virgin Mobile to start business as an MVNO.
- * US: Nextel and Sprint

4.3 The Regulation Factor for the Global Market

There are conflicting views about the necessity and level of regulation for MVNOs. Furthermore, there discussions pertaining to which issues should be covered by such regulations. Generally, managing the relationship between MNOs and MVNOs is the most crucial component demanding some sort of regulation. For example, MNOs' incentives to license MVNOs depend on how differentiated the services offered by MVNOs are and if they are not differentiated enough they might become direct competitors of MNOs (Lee et al., 2008). In turn, as previous studies suggest, MNOs can price the use of their networks unfairly to drive MVNOs away from the market if there are no regulatory protections. On the other hand, there is also the risk that regulated prices may be set too high or too low (Lewin, 2001). In order to bring a well-managed structure to this new market with no established policies and procedures, the European Union favors regulations about the authorization of MVNOs. In the most general sense, the EU aims to oblige MNOs to lease out capacity from their networks to all service providers at a fair price and lead MNOs to lower all kind of entry barriers to the market (Kiiski, 2006). Evidence shows that countries that have adopted these regulations fully (i.e. Finland, Denmark, UK, Netherlands, Norway, Sweden) have experienced significant growth and penetration in the MVNO market. For example, during the years 2003-2004, almost 20 MVNOs appeared in the Finnish and 20 others appeared in the Danish mobile market. Such indicators are expected to drive the MVNO market into a regulated structure in other countries as well.

4.4 The Technology Factor for the Global Market

An important question to consider in assessing the potential of any innovation is whether the necessary technology is available for its diffusion. Since mobile communications has become an indispensable part of daily life in many developed and developing nations, the technological infrastructure for this development is already available. Additionally, with the latest developments, 3G mobile systems enhance transmission rates extensively, thus, numerous mobile applications (video phone, video mail, video conferencing, mobile TV, etc.) become more and more available every day (Lee et al., 2008). In short, the question MVNOs need to consider is not whether the technology they need is currently available but which technology they want to employ in order to appeal to various market segments with distinctive VASs.

Based on this overview of the global MVNO market, secondary data has been collected and analyzed for the purpose of assessing the potential of the MVNO industry in Turkey and identifying possible MVNO candidates.

5. Analysis of the Potential of the MVNO Market in Turkey

In this section, the potential of the Turkish MVNO market is evaluated based on the findings produced from an analysis of secondary data. This market, where MVNOs have not started to function yet, signified a high potential for possible entrants according to the key consumer, industry, regulatory and technology indicators that have been examined.

5.1 The Consumer Factor for the Turkish Market

As mentioned earlier in the study, age and ethnic origin have been identified as two promising demographic

factors to indicate potential for the MVNO market. The age distribution in Turkey (Table 5) clearly shows that the population is relatively young (Turkish Statistical Institute [TurkStat], 2009). Therefore, MVNOs targeting the youth can be expected to have a high potential in this market. Current trends in the GSM industry also support this expectation. According to the regular mobile communication services consumption panel conducted by Ipsos KMG in Turkey, the 18-24 age group has the highest percentage of using regular voice services with 10.7%. However, this research also shows that the other age groups representing higher age intervals also have a closely compatible penetration percentage with an average usage rate of 7% for regular voice services (Ipsos KMG, 2008). Thus, because of the generally high population in Turkey and the overall extensive GSM penetration rate, it can be said that all age groups have great potential in terms of market size, therefore, various offers for different age groups can also be provided by companies. For example, MVNOs can target segments such as senior citizens or families with young children as other potential consumer groups in the Turkish market.

In terms of ethnic origin, socio-political factors would hinder targeting different groups living in Turkey. However, long distance operators can find a niche by targeting people with family members living abroad which is also a very high population group in this market. The fact that there are approximately 3 million Turkish citizens only in Germany, in addition to some other European countries such as Belgium or Netherlands alone is an adequate indicator of this potential. Another opportunity related to this variable could be place of birth which is an important identity variable for Turkish people. Since these variables do not relate to specific brands, GSM operators can make use of these opportunities and target these niches themselves by being their own MVNOs.

5.2 The Industry Factor for the Turkish Market

In the secondary data analysis regarding the potential MVNO market in Turkey, four important variables about the industry factor have been examined: size and growth of the GSM market as an indicator of the market potential for MVNOs, 3G licensing fees, number of MNOs and the level of competitiveness in the mobile communications industry measured with the HHI index.

As for the size and growth of the GSM market, findings are very promising. Figure 4 demonstrates the number of GSM subscribers and their increase rates between the years 1996 and 2006 for Turkey. As of December 31, 2009, this number has reached 66 million mobile subscriptions corresponding to a penetration rate of 92% (Turkcell, 2010). This rapidly elevating percentage indicates that Turkey has a very high potential to be a lucrative environment for the MVNO market.

This expectation is strengthened with an overview of the GSM penetration ratio which has shown a rapid increase between the years 1996 and 2006 as given in Figure 5. Surprisingly, although Turkey is currently in a developing country status, the ratio of GSM penetration is parallel with those of developed countries.

On the other hand, with respect to 3G licensing fees, the market indicators are not very positive. Turkey's 3G licenses for all three GSM operators as of 2008 are as follows (CNet Turkiye, 2008):

- * Type A license: 358 million Euros by Turkcell
- * Type B license: 250 million Euros by Vodafone
- * Type C license: 196 million Euros by Avea

These figures indicate that the 3G licensing fees in Turkey are relatively low compared to worldwide figures. Since high 3G licensing fees drive MNOs to support the establishment of MVNOs as a new revenue source to cover their costs, the relatively low level of 3G fees in Turkey can create a challenge against and cause delay in the development of the MVNO market.

As for the desired level of MNOs in a country to nourish the MVNO market, four or five 3G MNOs per country is said to be enough for strong service competition (Lewin, 2001). Considering that there are three GSM operators in Turkey, the MNO market seems relatively adequate for the MVNO market to start functioning.

However, the competitiveness level in the market is just as important as the number of MNOs. According to the market share percentages of the three companies in the Turkish GSM market seen below in Figure 6, the HHI for this market is 0.4122. Thus, the Turkish market has a concentrated structure with a relatively low level of competitiveness which can be an accelerator of the development of MVNOs.

From another perspective, this might be a major driving for the two market followers so as to gain a competitive edge over the market leader. According to MVNO Directory (2008), "the entrance of the first MVNO to any country is often born out of failings of the MNO which hosts it." Therefore:

- Vodafone may make use of this opportunity both for the purpose of using its excess capacity and also because of the fact that it is the major challenger of market leader Turkcell.

- Avea may make use of this opportunity and direct itself toward wholesaling excess capacity to MVNOs instead of investing in huge marketing costs and undercutting prices to battle with Turkcell and Vodafone in the market.

5.3 The Regulation Factor for the Turkish Market

Currently, it is not possible to analyze this factor for Turkey since there is no existing regulation. However, in order for an effective MVNO market to emerge and grow in this country, the related regulation needs to include the following major issues (Lee et al., 2008; Sirat, Asvial, & Adyawardhani, 2008):

- How MNOs should price the use of networks and ensuring price fairness
- Opportunity of number portability provided to MVNOs
- The use of multiple SIM cards
- Maximum amount of coverage that can be purchased by an MVNO

5.4 The Technology Factor for the Turkish Market

The essential issue here is that 3G mobile systems enhance transmission rates so that numerous mobile applications (video phone, video mail, video conferencing, mobile TV, etc.) become more available (Lee et al., 2008). Thus, with 3 GSM operators holding 3G licenses, Turkey can be accepted to have the most crucial base for the initiation of an MVNO market. Other technology-related indicators examined under the "Industry Factor" title such as mobile market size and penetration rates can also contribute to the positive outlook in this area.

5.5 Potential MVNO Business Sectors in Turkey

The analysis of the MVNO market at the macro level with a global perspective and at the micro level for the Turkish market has provided important insights as to which businesses or brands are better candidates to act as MVNOs and specifically which groups have the highest potential in Turkey.

For this purpose, the current list of MVNOs displayed by TelecomPaper (2010) has been analyzed. Only the MVNOs that are in active status have been extracted from the total list of MVNOs, Service Providers (SPs) and Enhanced Service Providers (ESPs) and the results demonstrated the currently active or high-potential industries for the MVNO market. With the outputs of this secondary data analysis, the literature review about the topic and the brainstorming and expert opinion sessions within the research group, three major potential groups have been determined as potential MVNO businesses in general. Within each group, businesses or organizations that might be better candidates to act as early movers in the Turkish market have further been pinpointed.

Potential Group 1: Companies currently functioning in the telecommunications and mobile product and service industries such as:

- Mobile communication companies selling cellular voice, data and messaging service packages with advantageous prices, or incentives such as mobile phones given as gifts for subscription, convenient e-mail services, etc.
- Telecom operators, fixed line service providers
- Calling card distribution companies
- ISPs
- Long distance operators: Companies specialized in offering low rates for international calls (appealing to travelers, people with many international connections, families with members residing in different countries, etc.)
- TV cable network operators

For the Turkish market, ISPs, companies selling pay-TV services, and the country's large national telecom operator could especially be significant candidates to function in the MVNO industry.

Potential Group 2: Companies, mostly in various retailing industries, with established brand names such as:

- Major consumer retailers in the form of retail chains and supermarkets
- Consumer retailers other than supermarkets (clothing, footwear, accessories, electronics, consumer durables, etc.)
- Broadcasting & TV companies
- Recreational products and services (entertainment)

- Banks
- Magazines, newspapers
- Online brands
- Soccer clubs

This potential segment is expected to be very active in the Turkish market. Especially, large retail chains and supermarkets, airline and automotive companies, banks, newspapers, celebrities and soccer clubs can be expected to be among the first candidates to step into this new business.

Potential Group 3: There is also the approach of identifying the MVNO's market position according to the segments it appeals to such as:

- The youth market, students
- Senior citizens
- The business market
- Ethnic origin, immigrants, large ethnic groups in foreign countries (i.e. African community in Belgium, Afro-Caribbean community in France, Eastern Europeans living in UK, all ethnic communities in France, North Africans in Belgium, Pakistanis in UK, Chinese American community)
- Gender

Turkey's large population size accommodates a potentially satisfactory market for various demographic segments. Thus, MVNOs targeting alternative age, gender, occupational and income segments could all find a fruitful market for their offerings.

6. Conclusion and Discussion

In this study, the MVNO market has been analyzed initially at the global level and specifically for the case of Turkey. The global overview of this innovative development in the mobile communications industry has produced promising findings in general. Although the introduction stage for this business seems to have lasted quite long, it is on the verge of rapid development, especially in Europe and the USA. As one of the countries with a very high GSM penetration ratio in Europe, Turkey has specifically been analyzed with respect to its promise for the MVNO sector.

The analysis aiming to investigate the potential MVNO market and MVNO business sectors for Turkey has produced promising findings. Although there are a few challenges that initial entrants might face and a regulatory infrastructure awaiting development, most market indicators which have proven to be important determinants of the development of the MVNO market in other countries are found to be more than adequate to generate and flourish an active industry in Turkey as well.

Findings related to Turkey can be summarized as follows:

- The Turkish MVNO market should definitely target the young population alongside other age groups such as seniors or young families.
- Instead of ethnic origin, international callers or birth origin can be preferred.
- Although Turkey has a high population posing an advantage from the consumer demographics perspective, it has one of the lowest GDP levels compared to the other countries with active MVNO markets showing that it is economically not as strong as them in general.
- Turkey is one of the countries with the lowest Internet penetration level in the global MVNO market list. Despite this fact, the mobile phone market is very active in Turkey. There is a very large gap between the Internet penetration rate and the mobile phone penetration rate, which is the most significant factor for the MVNO market. Thus, it also has a high mobile to fixed line ratio.
- Although HHI shows that the Turkish market is rather concentrated and that this might pose a challenge to the development of the MVNO market in Turkey, it can also lead two follower companies with close market shares to make use of the MVNO opportunity to change market dynamics.
- Because of heavy concentration and a few numbers of MNOs, the Turkish market needs to be regulated as also strongly suggested by EU.
- Turkey's infrastructure and consumer technology utilization level can be considered adequate for the initiation of the MVNO market.

- Any company with an already established brand name and large market potential in the retailing industry has a great chance in addition to other organizations such as banks, TV companies or entities with which Turkish people strongly identify themselves with (i.e. soccer clubs, celebrities, etc.)
- Possible MVNO candidates according to the market analysis can be listed as follows:
 - * A large retailer
 - * A technology retailer
 - * A bank
 - * A soccer club
 - * A cable TV/broadcasting company
 - * A newspaper company
 - * A GSM operator
 - * An airline company
 - * An automotive company
 - * A celebrity
 - * Alumni associations

This study shows that various aspects of the emergence and potential development of the MVNO market in Turkey are suitable to be the subject of empirical research studies.

One of the most important issues that need to be investigated is the expected patterns of consumer behavior in this market. For this purpose, a field research aiming to find out consumer attitudes toward MVNOs in general, their acceptance of various brands, companies or organizations that might act as MVNOs and their approach toward the various value-added services they may provide is strongly needed. Furthermore, similar exploratory studies can be performed for other countries where MVNOs have not been established to assess market potential.

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Table 1. Global MVNO List (Total 544 as of 2010) (TelecomPaper, 2010)

Australia	35	Japan	7	Poland	9
Austria	5	Korea	4	Portugal	9
Belgium	53	Latvia	3	Russian Federation	1
Canada	9	Lithuania	3	Singapore	2
Croatia (Hrvatska)	3	Luxembourg	2	Slovenia	2
Denmark	12	Malaysia	6	Spain	14
Estonia	3	Malta	4	Sweden	28
Finland	10	Netherlands	69	Switzerland	8
France	39	Netherlands Antilles	1	Taiwan	3
Germany	69	New Zealand	6	Thailand	2
Hong Kong	3	Norway	15	Ukraine	2
Ireland	4	Oman	2	United Kingdom	30
Italy	11	Philippines	2	United States	54

Table 2. Private Label MVNO Categories (Sekino et al., 2006)

Universities	Consumer Financial Services	Catalog and Mail Order
Ethnic Brands	Magazines and Newspapers	Broadcasting & Cable TV
Online Brands	Recreational Products/Activities	Personalities
Religion	Gaming Equipment and Software	Enterprise
Casinos and Gambling	Professional Associations	Hotels
Sports Teams/Leagues	Causes & Advocacy Groups	Cable TV Channels
Luxury Brands	Small Wireline and Cable Operators	Airlines
Investment Services	Auto and Truck Manufacturers	Restaurant Chains
Motion Pictures	Music Labels and Aggregators	Celebrities
Retail → Apparel, Footwear, Accessories, Home Improvement, Department, Big Box		

Table 3. Average Licensing Fee by MVNO Group (Lee et al., 2007)

Group 1 (High MVNO Ratio)	3G Licensing Fee/Licensee (US\$ Million)
Belgium	104.75
Germany	7 641.66
France	551
Norway	11.2
Netherlands	501.62
Group 1 Average	1762.046
Group 2 (Medium MVNO Ratio)	
Australia	58.61
Sweden	0.01
Poland	613
Ireland	43.175
Spain	111
United Kingdom	7 078
Denmark	94.4
Group 2 Average	1 142.60
Group 3 (Low MVNO Ratio)	
Finland	0
Portugal	90
Switzerland	29.75
Italy	2 014
Czech Republic	101.66
Austria	101.66
Luxembourg	0
Japan	0
Group 3 Average	292.13

Table 4. Status of MVNOs and MNOs in Selected OECD Countries (2007) (Lee et al., 2008)

Country	No. of MVNOs	No. of MNOs	Ratio of MVNOs to MNOs
United States	69	12	5.75:1
Germany	20	4	5:1
United Kingdom	19	5	3.8:1
France	18	3	6:1
Belgium	18	3	6:1
Netherlands	17	6	2.83:1
Norway	13	3	4.33:1
Poland	12	3	4:1
Ireland	11	4	2.75:1
Canada	8	6	1.33.:1
Spain	7	3	2.33:1
Finland	7	4	1.75:1
Australia	7	5	1.4:1
Austria	7	5	1.4:1
Sweden	6	5	1.2:1
Portugal	5	4	1.25:1
Denmark	4	4	1:1
Italy	4	5	0.8:1
Japan	4	5	0.8:1
Czech Republic	3	3	1:1
Luxembourg	2	2	1:1
Switzerland	2	3	0.66:1

Table 5. Distribution of the Turkish Population According to Age as of 2009 (TurkStat, 2009)

Age Group	Total	%
0-9	12 356 968	17.0
10-19	12 736 986	17.6
20-29	12 788 977	17.6
30-39	11 416 345	15.7
40-49	9 146 098	12.6
50-59	6 671 346	9.2
60-69	4 084 892	5.6
70-79	2 469 600	3.4
80-89	823 270	1,1
90+	66 830	0.1
Total	72 561 312	

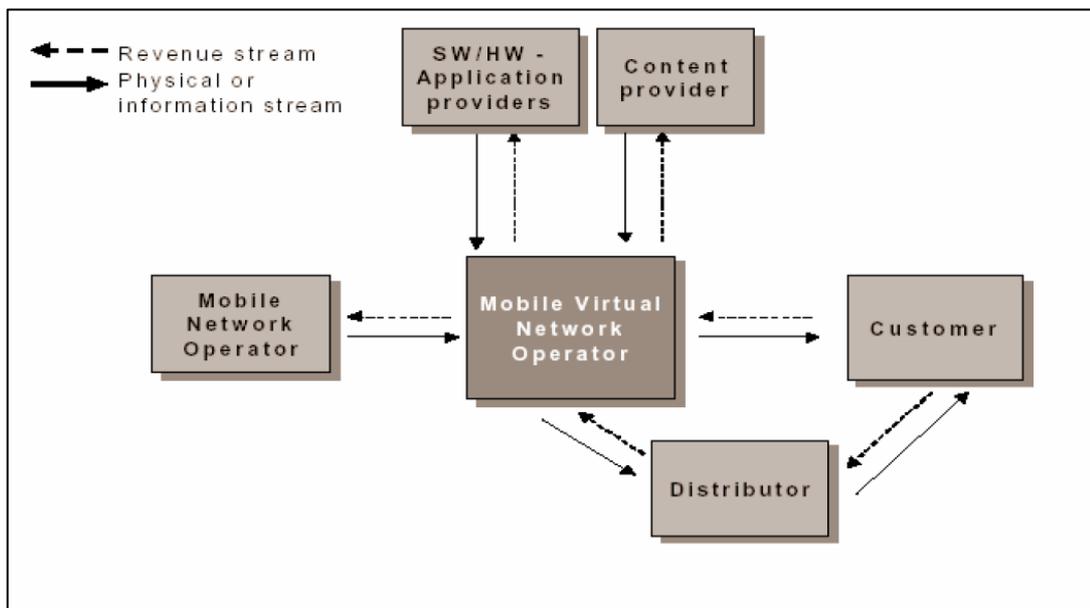


Figure 1. MVNOs and Other Actors in the Mobile Communications Value Chain (Sirat et al., 2008)

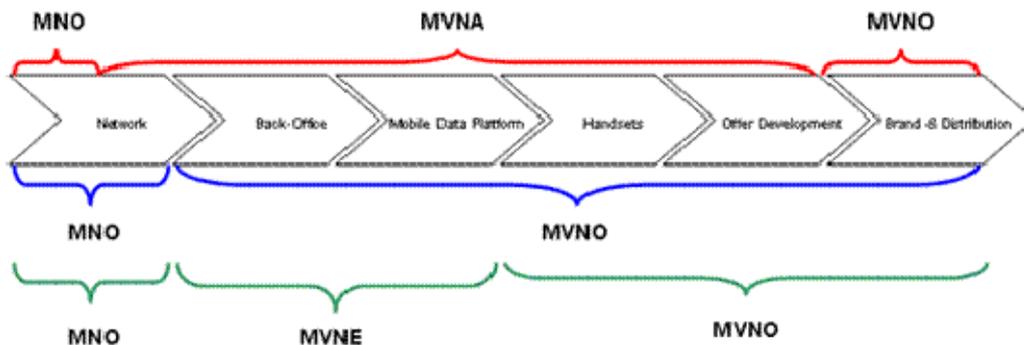


Figure 2. Business Models for MVNOs (Sekino et al., 2006)

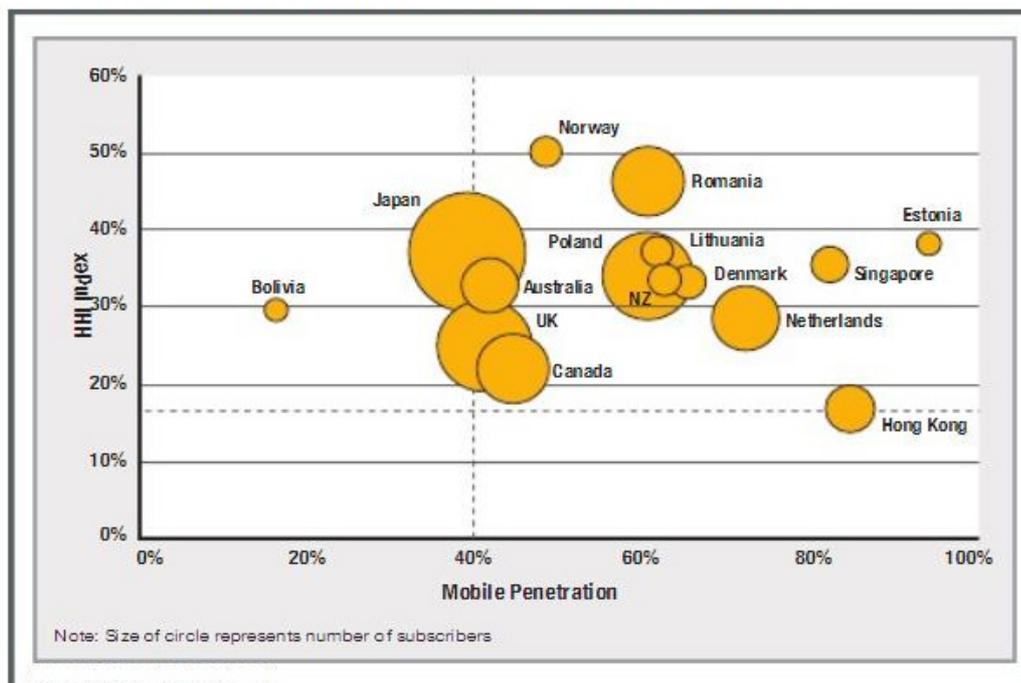


Figure 3. Mobile Penetration and HHI at Time of First MVNO Launch (Mathew et al., 2006)

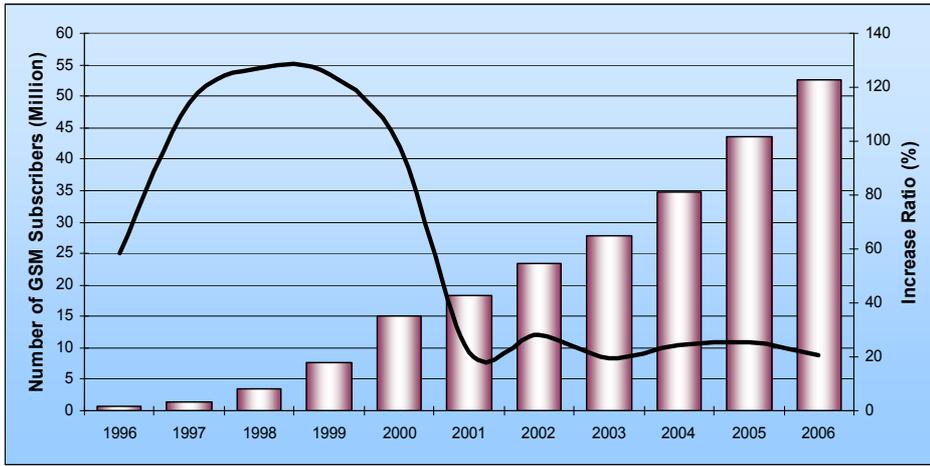


Figure 4. Number of GSM Subscribers and Increase Rates of Turkey (1996-2006) (ICTA, 2007)

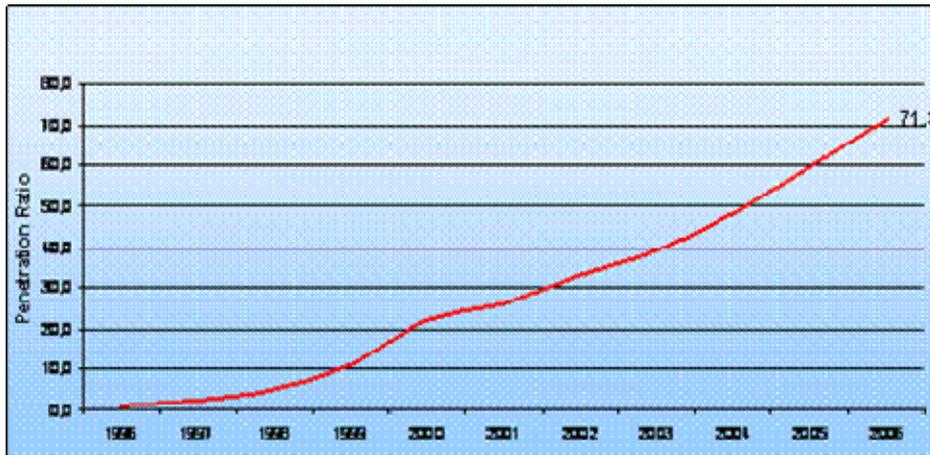


Figure 5. GSM Penetration Rates of Turkey (1996-2006) (ICTA, 2007)

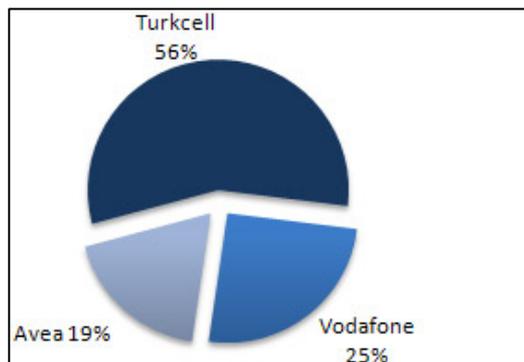


Figure 6. Market Share Percentages of Turkish GSM Market (Turkcell, 2010)