Abstract The Structure–Conduct–Performance (SCP) Paradigm is recognised as one of the most efficient and reliable means to analyse an industry or more specifically the market power-profitability relationship within it. Basically, the SCP method implies a relationship between its three components: market structure, conduct and performance in a way that the performance of an industry is influenced by the behaviour of the players within it (conduct), which on the other hand is determined by the companies’ market power (structure). The main criticism towards the paradigm has been that the reverse (performance-structure) relationship is also possible and especially relevant for sectors that are characterised with fast technology changes.

Against this background, the paper aims at investigating the plausibility of the SCP paradigm for the mobile telecommunications industry in Bulgaria. This work develops and subsequently applies an original combination of the above-mentioned traditional industrial organisation method with strategic management approaches which makes its results interesting from an economic but also from a managerial perspective. The market structure analysis (section 3) is broadened up by the Five Forces method, which reveals how the industry would influence the business strategies of the companies. Porter’s Generic Strategies Approach, on the other hand, supplements the conduct part of the SCP Paradigm (section 4) and reveals the pricing and product policies of the mobile operators in Bulgaria.

Moreover, in the Structure chapter are, as well, discussed the developments, related to the ownership of the mobile operators and the obtaining of licences. Also the long and painful privatisation process of the incumbent operator, from which the third GSM operator in Bulgaria was born, is tracked. That deal, which inevitably changed the market structure of Bulgarian mobile telecommunications results in a more competitive conduct of the operators and smaller profitability (average revenue per user) for the players in the market.

Keywords Structure-Conduct-Performance Paradigm, Strategic Industry Analysis, Mobile Telecommunications, Regulation, Bulgaria
## Introduction

The Structure–Conduct–Performance (SCP) Paradigm is recognised as one of the most efficient and reliable means to analyse an industry or more specifically the market power-profitability relationship within it. Basically, the SCP method implies a relationship between its three components: market structure, conduct and performance in a way that the performance of an industry is influenced by the behaviour of the players within it (conduct), which on the other hand is determined by the companies’ market power (structure).

The SCP paradigm will be combined with new strategic management methods and thus a new theoretical framework will be developed, which will be called ‘Strategic Industry Analysis’. That framework will permit analysing the mobile telecommunications industry in Bulgaria not only from an industrial economics perspective but also from strategic management point of view, which will make it a valuable reference for potential and current players in the market, supporting their strategy formulation and development. That is the reason, why the industry analysis that will be performed, is called ‘strategic’. Moreover, in the course of discussion of the mobile telecommunications in Bulgaria, the evidence of plausibility of the SCP paradigm for this industry will be found.

### 1. Framework for Strategic Industry Analysis

#### 1.1. Structure Conduct Performance Paradigm

The SCP Paradigm was a principal approach to study the industrial organisation during the second half of the 20th century and is recognised as one of the most efficient and reliable means to analyse an industry or more specifically, the market power-profitability relationship in this industry. It was developed by Edward Mason and Joe Bain\(^1\) in the 1940s and 1950s\(^2\). Basically, SCP method (as shown in Figure 1.1), implies a relationship between the three components of this paradigm: market structure, conduct and performance in a way that the performance of an industry is influenced by the behaviour (conduct) of the other players in the industry, which on the other hand is determined by their power (structure). Additionally, the broken line in Figure 1.1 points out the possibility of secondary influences between the components of the paradigm in a reverse way - in a direction from ‘Performance’ towards ‘Structure’. These relationships, as well as the direct impact of the government policies (including regulation, tax policies, etc.) on the structure, conduct and performance of an industry shall be a focus in the following in-depth analysis.

As depicted in Figure 1.1, market structure is first determined by the basic market conditions, namely the demand conditions and supply conditions. Demand conditions include price elasticity of demand, substitutes, market growth and method of purchase. Conditions, determined by supply are technology, raw materials, unionization, product durability, location.

The market structure is characterised by the size distribution of firms. It is important not only because it has implications on the conduct and performance but also because it impacts the ‘strategic possibilities which face the organization, its ability to act strategically and the likely effects of such strategic behaviour’\(^3\). For example, a firm with a market share of 60% would be in completely different situation than a firm that has 6% of the same market. The first will have a market power and the second will experience a rigorous competitive pressure.

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\(^1\) They are considered to be part of the so called ‘Harvard tradition’


Figure 1.1: The Structure-Conduct-Performance Paradigm

Another element of the market structure is the barriers to entry in a given market. Shepherd defines barriers to entry as ‘anything that decreases the likelihood, scope or speed of entry’\(^4\). This important aspect will be discussed in detail in the Five Forces Analysis Framework part, as it is one of the Five Forces.

In order to find out the link between the various elements of industry’s structure, conduct and performance, the structure should be first measured by defining its concentration. The two methods for estimating concentration – Four Firm Concentration Ratio and Herfindahl-Hirschman index, which will be discussed below, take into account not only the number of the firms in the industry, but also their market shares. Once the market concentration is measured, the category that the analysed market belongs to\(^5\) can be determined, which would allow making assumptions about the further behaviour of the firms, belonging to this market.

The **four-firm concentration ratio** is the cumulative share of the 4 largest firms in the market\(^6\). The way it is calculated is shown below:

\[
C_4 = w_1 + w_2 + w_3 + w_4
\]

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\(^5\) The research field has defined four main categories of markets, which embody the various degrees of competition and monopoly: pure monopoly, dominant firm, tight oligopoly and loose oligopoly

\(^6\) Cp. Waldman.; Jensen, l.c., p. 95
$C_4$ - the four firm concentration ratio

$w_1, w_2, w_3, w_4$ - market shares of the largest four firms in the industry (the size of the firm is typically measured by its sales or market share)

A disadvantage of the four-firm concentration ratio is that it provides no information about the distribution of the market shares among the top 4 firms: knowing that the top firms control, for example, 60% of the market doesn’t indicate whether there is one dominant firm with 40 or 50% of the market or four fairly large firms with equal market share\(^7\). Also, this concentration measure method doesn’t detect if a redistribution of the market shares of these four companies occurs.

**Herfindahl-Hirschman index (HHI)** is a concentration measuring approach that has the advantage of taking into consideration the difference in the market shares between the companies. It was created independently by two economists, Albert Hirschman and Orris Herfindahl\(^8\) and adopted since 1980 in two US antitrust agencies\(^9\). Differently from the Four Firm Concentration ratio, HHI takes into account the market shares of all the firms, presented in the market, therefore it is considered to be more precise than the first. Nonetheless, Shepherd points out the fact that HHI needs much more information to be estimated than the Four Firm Concentration ratio, as a defect\(^10\).

The HHI can be calculated by summing the squared market shares (or their decimal points\(^11\)) of all the firms in a given industry or market\(^12\). If the industry consists of only one firm, the HHI is 1 and the more the firms are, the closer to 0 the index gets. Also, the HHI increases as the market shares of a given number of firms become less equal\(^13\). Mathematically, HHI can be expressed like that:

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

Conduct is the second aspect of the SCP paradigm that is by definition directly influenced by the market structure. It takes into consideration the pricing strategies and product strategies of the firms within an industry, their amount of advertising, research and development, mergers, legal strategies, etc. and a product strategy where each firm is constantly attempting to develop new brands.

The performance of an industry, is influenced directly by the conduct, in a way that the more competitive the industry is, the less the market power of the players, which leads to a greater social efficiency\(^14\). The Performance part of the paradigm includes an analysis of profitability, the allocative efficiency in an industry, etc.

As every theoretical model, SCP is open to criticism. According to Tirole, this paradigm, although plausible, often rested on loose theories and it emphasised empirical studies on industries\(^15\). He claims that the SCP theory fails to find a causal interpretation of the relationship between structure, conduct and performance\(^16\). Another criticism that Tirole points out is that SCP doesn’t specify whether and in what form government intervention can improve market performance\(^17\).

Shepherd points out that the SCP paradigm considers mainly the causation that runs into direction from structure towards performance (illustrated by the thick arrows in Figure 1.1). However, it was urged by free-market advocates during the 1970s\(^18\) that through a range of decisions, the firm

\(^7\) Cp. Waldman.; Jensen, l.c., p. 95
\(^8\) ibid., p. 96
\(^9\) Shepherd; Shepherd, l.c., p. 72
\(^10\) Cp. ibid.
\(^11\) The use of decimal points is imposed by the practice (the antitrust practitioners)
\(^13\) Waldman.; Jensen, l.c., p. 96
\(^15\) Cp. Tirole, l.c., p. 1
\(^16\) Cp. ibid., p. 2
\(^17\) Cp. ibid.
\(^18\) Shepherd; Shepherd, l.c., p. 8-9
could significantly alter the cost and industry structures in which it finds itself, which means that the main relationship between the components of the SCP paradigm goes in a reverse way – in a direction from performance, towards structure.\(^{19}\)

The range of decisions that a firm might undertake and influence the market structure by changing it is called in the literature: active behaviour of the firm and may include: investment, research and development, mergers. In this way the firm attempts over time to modify and/or remove constraints, thus permitting better achievement of its objectives.\(^{20}\)

The performance-structure relationship is especially relevant for sectors that are characterised with fast technology changes. Those technology changes give the opportunity of creating new products, which could win the market in a rapid way and alter the market structure in favour of the company that introduced the new technology. Two companies: IBM and AT&T are cited in the literature as examples of becoming firms with dominant market power, because of introducing new technologies.

1.2. Analysis of External Environment

The second approach that is used to evaluate the mobile telecommunications industry in Bulgaria is the External Environment Analysis. Differently from the SCP Paradigm, it is an applied management method, part of the strategic management process. This process is formulated in a diverse way in the various strategic management publications. However, the initial step of all of them happens to be namely External Environment Analysis.

In Industrial Organisation Model of above Average Returns, also called I/O Model, the external environment is not only just an initial step of the approach, but it is regarded as a key factor for determining the strategies of the companies within an industry. The model specifies that the industry in which a firm chooses to compete has an even stronger influence on firm’s performance than do the choices managers make inside their organisations.\(^{22}\)

The external environment of a business organisation is defined by David Needle as one, ‘comprising of all factors that exist outside the business enterprise but that interact with it (the enterprise)’.\(^{23}\) This process of interaction, visualised by Worthington and Britton, shows that the external environment influences the business organisation, as well as its inputs, outputs and the consumption of the final product by the clients of the firm:

Figure 1.2: The firm and its environment

- Environmental influences
  - Inputs
  - Business organization
  - Outputs
  - Consumption

Source Worthington; Britton, l.c., p.5

The external environment is rather dynamic, complex, consisting of many factors, which makes it difficult to be analysed and predicted, but in spite of this it cannot be ignored in any

\(^{20}\) Cp. ibid., p. 30
\(^{21}\) For more information: Shepherd; Shepherd, l.c., p. 23
\(^{23}\) Worthington; Britton, l.c., p. 75
meaningful analysis of business activity. Analysing the factors, that determine the external environment is a valuable instrument for managers (but also policy makers) to understand the industry and adequately react to changes. Hitt divides the external environment of a firm into three major parts: general, industry and competitor environments, visualised in Figure 1.3. Namely these three types of environments will be incorporated in the structure of the thesis.

**Figure 1.3:** The External Environment

![Diagram of the External Environment](source: modified from Hitt, et al, p. 39)

**The general environment** is composed of dimensions in the broader society that influence the industry and the firm within it. The number of the general environmental factors is virtually unlimited. Again, the different authors combine the dimensions they consider, that this analysis should include, in a distinct way. According to Hitt, they are: demographic, economic, political/legal, socio-cultural, technological, and global. Others, for example Worthington and Britton, name the general environment analysis ‘PESTLE’, which stands for political, economic, socio-cultural and technological, legal and ethical analysis, but they note that it is also popular as PEST analysis, which discusses only the first four environmental factors. The last type of general environment analysis is rather well-known not only in the academic literature but also in the business practice.

The general environment analysis can and should be adapted in accordance to the needs of the particular organisations, in a way that they pick up those groups of factors that impact the industry of the firm in the greatest extent and analyse them with regard to its own business strategy. For the purpose of the strategic industrial analysis of the mobile telecommunications industry in Bulgaria, the four general environmental factors – political, economic, social and technological (or PEST factors) will be examined.

**Political** environment includes general issues like political system and its institutions, the governmental involvement in the working economy, the trend towards globalization of the markets, etc., which influence the business activity indirectly. However, the political institutions (mainly government, which is the major institution in a country ‘can be seen as the biggest business enterprise at national or local level’), may affect the business also in a direct way, through their policies, relating to the different industries, taxes, laws and regulations, trade restrictions, etc. Hitt also mentions another feature of the political environment - the active role of the companies to influence the governmental policies and actions, by developing their corporate political strategy.

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24 Cp. Worthington; Britton, l.c., p. 3
25 Hitt et al, l.c., p. 39
26 ibid.
27 Strategic Management, PEST Analysis, URL: http://www.netmba.com/strategy/pest/
28 Hitt et al, l.c., p. 39-49
29 Cp. Worthington; Britton, l.c., p. 9
30 Cp. ibid, p. 7
31 Cp. ibid.
32 Cp. Hitt et al, l.c., p. 46
The **economic** environment also shapes the development of an industry in a country and the companies. It refers to nature and direction of economy in which a firm competes or may compete\(^{33}\). Factors, such as economic growth, interest rates, exchange rates and inflation rate, etc., which determine the health of the nation’s economy, should be taken into account as a part of this analysis. Those aspects serve as a broader context for the players, located in a specific country or territory.

The **social** factors, as part of PEST analysis, include: amount of population, population growth rate, age distribution, changes in tastes and buying patterns, etc. These influences and developments are strategically important for the companies and impact their business operations, as on one hand people are a key organizational resource for them, and on the other hand people are the consumers of their production. Therefore, the number and quality of people are essential for the organizations.

The **technological** factors are related to the proliferation of specific technologies and infrastructure that would serve as a basis and would enable the operations of the companies in an industry.

**Industry Environment** ‘Compared to the general environment, the industry environment often has a more direct effect on the firm’s strategic competitiveness and above-average returns’\(^{34}\). The most influential and widely used framework to evaluate the industry attractiveness\(^{35}\) is the Five Forces Model, developed by Michael Porter on the basis of economic principles, during the end of the 80s of the last century. This industry study method is one step ahead of the others because it involves the impact of the industry on business strategy\(^{36}\). ‘The objective of such an analysis is to investigate how the organisation needs to form its strategy in order to develop opportunities in its environment and protect itself against competition and other threats’\(^{37}\).

Porter’s Five Forces include bargaining power of buyers, bargaining power of suppliers, barriers to entry, threat of substitutes and rivalry among existing firms. The way these five elements interact, can be followed in Figure 1.4 – the intensity of the rivalry in the industry is directly affected by the rest four elements of the model. It is important to be borne in mind that an efficient analysis may be made only if the five elements are discussed together. The validity of the five forces may be questionable if one relies only on some of these forces.

**Figure 1.4:** Porter’s Five Forces

The central force in Porter’s model is named **Rivalry among existing firms** and represents the competition between companies within an industry on a number of price and non-price dimensions\(^{38}\).

\(^{33}\) Cp. Worthington; Britton, l.c., p. 4  
\(^{34}\) Hitt et al, l.c., p. 52  
\(^{36}\) Cp. Besanko, David; Dranove, David; Shanley, Mark: Economics of Strategy, John Wiley &Sons 1996, p. 253  
\(^{38}\) Cp. Besanko et al, l.c., p. 255
Non price competition may take place on the basis of branding or the range, design or functionality of the products offered\textsuperscript{39}. Also, the rivalry between the players is based on quality and innovation.

**Substitution** of one product with another one increases the rivalry within an industry. ‘A unique consideration is that new substitutes frequently represent new technologies, whose costs are likely to decline over time because of the learning curve’\textsuperscript{40}. These new technologies are likely to threaten to a great extent the business of market-leader companies, turning the attention of the clients to their products that has advantages, related to price, convenience, functions, etc.

Substitutes make some products outmoded and completely replace them. However, more often, the substitute do not entirely replace the existing product but upgrades it by introducing new technology or reducing the costs of production of the same product\textsuperscript{41}. Therefore, the threat for the products/services produced by a company to get outdated must be carefully examined, getting to know the upcoming technologies and technology trends. Also, if the ability of the user to switch to a substitute is high and his/her costs are low, the challenge, posed by the substitute may be considerable, as well.

**Barriers to Entry** If an industry is profitable and growing, it becomes attractive for new investors to ‘enter’ and take advantage of the favourable economic environment. With every new entrant, the rivalry increases and the market shares of the already existing companies are jeopardized. There is a relation between the entry barriers and competition: ‘the easier it is for a company to enter a market, the greater the degree of competition is likely to be’\textsuperscript{42}. These entry barriers may be of a different origin: capital requirements, economies of scale, differentiation of the products through branding, the degree of government protectionism, etc.

*Supplier power* refers to the ability of input suppliers to negotiate prices that extract profits from their customers\textsuperscript{43}. ‘The bargaining power of the suppliers in an industry depends on their number and size.’\textsuperscript{44}. If they are only few, their power would be big because it would be difficult for the firm to easily replace one with another. Supplier’s ability to bargain is also considerable if supplier’s prices form a large part of the total cost of the organisation – in this case any increase would hit value added unless the organisation was able to raise its own prices in compensation\textsuperscript{45}. Other important determinants of the suppliers’ power are: their contribution to quality or service of the industry products, differentiation or switching cost of supplier’s products and availability of substitutes for the supplier’s products\textsuperscript{46}.

By **buyers**, Porter means the customers of the organisation or those who buy the output, produced by it. Their power is also taken into consideration within the Five Forces Analysis, being placed as a mirror image of the Supplier’s power. The buyer ability to bargain is high and can become a threat for the company, for instance, if the number of the customers is small, if the selling price from the organisation is important to the total costs of the buyer, and also if the product from the organisation is undifferentiated (in this case, the buyers can easily switch to another company)\textsuperscript{47}.

Porter’s Five Forces is almost twenty years old, but it is said to be flexible enough to accommodate new economic concepts as they emerge\textsuperscript{48}. Nevertheless, there are some shortcomings that should be kept in mind. One of the limitations of Porter’s model for industry analysis is that the only relationships between products that are considered are substitute relations; however, many

\textsuperscript{39} Curwen, Peter; Whalley, Jason: Telecommunications Strategy Cases, Theory and Applications, Routledge Taylor & Francis Group, London and New York, 2004, p. 34
\textsuperscript{40} Besanko et al, l.c., p. 256
\textsuperscript{41} Cp. Lynch, l.c., p. 128
\textsuperscript{42} Curwen; Whalley, l.c, p. 35
\textsuperscript{43} Besanko et al, l.c., p. 257
\textsuperscript{44} Cp. Curwen; Whalley, l.c., p. 34
\textsuperscript{45} Cp. Lynch, l.c., p. 125
\textsuperscript{46} Cp. Hax.; Majluf, l.c., p. 68
\textsuperscript{47} Cp. Lynch, l.c., p. 126 str.
products are complementary to one another. The place of the second type of products is not ensured within the Five Forces, therefore, some strategists are proposing that complements should be included in the model in the form of a sixth force.

Another disadvantage of the Five Forces model is pointed out by Besanko, according to whom government is a significant factor, influencing an industry, which is not discussed within the Porter’s model. The government policy could even make up a sixth force and for this reason it will be taken into consideration in the strategic industry analysis of mobile telecommunications sector in Bulgaria. However, the action of government will be included as a part of PEST Analysis and not in Porter’s Five Forces.

Analysis of the **Competitor Environment** The third component of the Industry Environment is the analysis of the competitor environment. As competitors may be considered all the business organisations, with which a firm competes or shall compete in a direct way in the future.

The approach that will be used to analyse the competitor environment is the Porter’s Generic Strategies. It is a helpful method of determining companies’ position within an industry and their source of competitive advantage. The matrix of the model has two dimensions – competitive advantage and competitive scope. The competitive advantage dimension determines the two different strategies, through which a firm can become competitive – through cost advantage (meaning that it sells the its products at lower cost than its competitors) or through differentiation of its product by advertising, branding or other strategies, and making it ‘valuable to buyers beyond simply offering low price’. The third Porter’s strategy is the Focus strategy. It is characterised with a narrow target, combined with either cost advantage or differentiation. ‘Because of their narrow market focus, firms pursuing a focus strategy have lower volumes and therefore less bargaining power with their suppliers’.

![Porter’s Generic Strategies](image)

According to Porter, the features of the Cost Leadership, Differentiation and Focus strategies can not be combined – ‘a firm stuck in the middle is almost guaranteed low profitability’. Moreover, it is interesting how the choice of a generic strategy is influencing the profitability of a company. In most industries, market leadership is held by a firm that effectively differentiates its products and the cost leader is a smaller company that minimises overhead and operates with cheaply acquired assets.

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49 Cp. ibid.
50 Cp. Besanko et al., l.c., p.360
51 See Section 1.2.1
52 Product differentiation means distinguishing of a product of a company’s product with its substitutes
55 ibid, p. 42
56 Grant, l.c., p. 248
1.3. Definition of Strategic Industry Analysis

‘Strategic industry analysis’ is a concept, developed on the basis of the two theories: SCP and External Environment, which were discussed above. This section will outline not only the way in which the two approaches are combined, but also, how the outcome of this combination can be applied to the Bulgarian mobile telecommunications industry.

The SCP is the backbone of the Strategic Industry Analysis. This paradigm, which is a method from industrial economics, would assume that the market structure would influence the behaviour of the firms (the mobile operators) and the performance of the mobile telecommunications industry in Bulgaria. However, as pointed out before, this causation may prove wrong in some specific industries, related to a fast technology development. Therefore, by analysing the structure, conduct and performance of Bulgarian mobile telecommunications industry, it will be found out if the paradigm is plausible for this specific industry or not. The External Environment analysis will upgrade the SCP paradigm, giving this work a more applied management orientation. It will provide the potential and current players in the industry with a valuable insight into the conditions and risks that exist in Bulgaria.

![SCP and External Environment Approaches, Applied in the Thesis](image)

2. The General Environment - PEST Analysis

Bulgaria is situated on the Balkan Peninsula, the south-east part of Europe (area: 110,993 km²). The general political developments in the country (the fall of the communism and the Soviet influence) and transition towards market economy brought the need to radically change Bulgarian telecommunications policy, to perform a structural reform in this sector, and thus to become part of

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57 As shown in Figure 1.1, the SCP is consisting of a big amount of factors. Nevertheless, only the most relevant of them for the mobile telecommunications industry will be considered (they are highlighted in blue). Also, some of the factors require data, which is not available, like for example the price elasticity (from demand conditions) and that makes them difficult to be analysed.

58 Due to volume restrictions of the paper, not all of the elements of the PEST Analysis will be discussed, but the authors will concentrate on the Political Analysis of Bulgaria (incl. telecommunications policy)
the ongoing (in the last decade of the 20th century) global trend towards privatisation of government owned firms and liberalisation within the telecommunications sector.

The recent developments in the telecommunications policy should be also seen from the broader perspective of the European integration of Bulgaria. The European Union and its institutions play a key role, motivating the change in the telecommunications legislation of Bulgaria (as well as of all of its country-members), which to allow faster liberalisation of this market. The main argument for liberalisation was the concern that a persistence of national monopolies would be counter to the principles of the Common Market, and that they would also put at risk the international competitiveness of the European information and communications industry.

The process of liberalisation of the telecommunications market in Bulgaria started in 1992. It is based on the European policy and, in particular, on the recommendations of Directive 90/388/ECC on competition in the markets for telecommunications services, and its subsequent amendments leading to a gradual opening of the telecommunications market. The speed of liberalisation of the fixed and mobile telecommunications services in Bulgaria was considerably different. As a consequence of the fact that Bulgarian incumbent operator – Bulgarian Telecommunications Company (BTC) was offering only fixed-line services during that time, the market for mobile and paging services in Bulgaria was liberalised as early as 1992, without any obstacles from the side of BTC, whose interests were not endangered.

During the EU-accession period, Bulgaria had to harmonise its legislation to that of the Union, by adopting the ‘acquis communautaire’ - the legislation, regulations and resolutions issued by the European Union. The common draft negotiating positions in the sphere of telecommunications, proposed by the European Commission, were formulated in Chapter 19 ‘Telecom, IT and Postal Services’ of the acquis communautaire. The country provisionally closed this chapter in October 2001 and definitely closed it in December 2004. Bulgarian legislation was gradually aligned to European regulatory Framework and then to the one from 2002.

The Communications Regulation Commission (CRC) is an independent specialised state body that regulates and controls the electronic communications in Bulgaria. The Electronic Communications Act (Prom. SG 41/22.05.2007) gives much stronger instruments in its hands in order to stimulate the competition in the different telecommunications sectors.

3. Market Structure

3.1. Market Players – Ownership, Licences and Interests

Radiotelecommunications Company EOOD or RTC (trade name: Mobikom) was the first mobile telecommunications company that started operating in Bulgaria. It was established in Sofia in 1992 as a joint venture of Cable & Wireless (49%), Bulgarian Telecommunications Company (39%) and Radioelectronic Systems (12%). As Radio Electronic Systems and BTC were state owned, RTC itself had also 51% state ownership during its first years of existence. RTC acquired a NMT 450

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59 The start of the negotiations for a full-right membership of Bulgaria in the EU took place in 1999.
60 Gruber, l.c, p. 54
62 BTC was not offering mobile telecommunications services, like some other incumbents of another countries
63 A chapter is ‘provisionally closed’ after a common agreement is reached on EU accession conditions. Source: URL: Info Europa Portal, Negotiation Chapters: URL: http://www.infoeuropa.ro.jsp/page.jsp?cid=10&lid=2
65 The description of the legal capacity of CRC draws on the Electronic Communications Act as of 22 May, 2007, Chapter 4
66 Bulgarian Telecommunications Company (BTC) is the former state-owned monopoly telecom
67 Mobikom, official corporate website, URL: www.mobikom.com
licensure in 1993 and launched its commercial service in December the same year. At the beginning of 2005, the BTC achieved gradually a 100% ownership of RTC, buying in parts the shares that were owned by Cable and Wireless and Radioelectronic Systems.

The other three companies in the Bulgarian telecommunications market operate under digital GSM standard:

**Mobiltel EAD (trade name - Mtel)** is the first GSM operator in the country. It has had a very dynamic history. In March 1994, Mobiltel AD was founded as a joint stock private company, incorporated under the Bulgarian law and officially launched commercially its M-Tel GSM network in September 1995. The company received a GSM licence (type: GSM 900; expiry year 2015) for the price of US$ 20,000 without taking part in a tender. A political deal was allegedly behind the digital license.

During the first year of its creation, Mobiltel EAD was owned by the American company US West (25%) and the business group Tron; the first withdrew from the project in 1995. Subsequently, Mtel changed hands several times. In 1997, Eastern Market Telecom Fund (an investment fund of United European Bank) and BulSim EOOD acquired 50% of the Bulgarian GSM operator each.72

In January 2002, Mtel becomes an ownership of the Vienna-registered MobilTel Holding GmbH, incorporated with the purpose of acquisition of the company and backed by MS Privatstiftung of Vienna, BAWAG-P.S.K. and Cordt and Partner GmbH. The unofficial price was 800 mln $73. The owning companies did not start negotiations with big mobile operators that would be interested to acquire Mtel, but with financial companies. Some specialists from the sector find that this strategy is followed because of the need to ‘rinse out’ the earlier influence of Michael Chorny and rise the price of the telecom. Thus, in June 2004, the shares of Mobiltel were moved to a company, called BidCo, owned by the former investors (60%) and a consortium of private equity investors, led by Citigroup Investments Inc, ABN Amro Capital Ltd and Communications Venture Partners Ltd acquired a 40% stake in Mobiltel EAD from Mobiltel Holding GmbH in a leveraged buy-out (LBO) valued at 1,2 billion €.

Telekom Austria Group, the incumbent Austrian telecom, bought an option (80 mln €) to purchase 100% of Mtel’s shares and consequently became the new owner of the Bulgarian telecom in July, 2005. The deal was concluded for 1,6 billion € as a result of almost one year long negotiations. ‘The acquisition became the largest foreign investment in Austria’s economic history’. The management team and the supervisory council were changed to representatives from Telekom Austria.

**Cosmo Bulgaria Mobile EAD or CBM** (trade name Globul), 100% owned by the international company OTE S.A. during that time, won the second GSM licence in Bulgaria in December 2000, participating in a tender, based on prise of the licence. OTE paid up 135 million dollars for the licence. CBM’s GSM services were launched in September 2001 under the trade mark

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68 Mobiltel, official corporate website: URL: www.mtel.bg/mobiltel/about/history.php
71 Behind the Easter Market Telecom Fund was staying the well-known Russian businessman Michael Chorny, implicated in money laundering scandals and suspected in relations with politicians
72 Mobiltel, official corporate website, l.c.
73 Telekom Austria, MobilTel Agree on 1.1 Bln Euro Acquisition, Capital Weekly/ 9 June 2005; URL: http://www.sandlercap.com/news_june0905.asp
75 The tender procedure attracted a lot of participants - Hellenic Telecommunications Organisation S.A. Greece; Fintur Holdings B.V, Turkey, Finland; Rumeli-Telsim Consortium, Turkey; Vodafone Bulgaria S.A. Bulgaria; TIM International B.V, Netherlands (Source: Transparency International, l.c, p. 19)
– Globul\textsuperscript{76} and unleashed the long-expected competition on the Bulgarian mobile telecommunications market.

‘For the first year of its existence, the company was declared the biggest greenfield venture and was awarded the prize for Investment of the Year. Over 1.1 billion BGL (= 550 million) have been invested in the rollout of the network and the development of services of Globul so far’\textsuperscript{77}.

In August 2005, the ownership of CBM changed and 100\% of its shares were acquired by Cosmote Group that has operations also on the telecommunications market in Greece, Romania, Albania and Macedonia\textsuperscript{78}. Cosmote Group paid 400 mln € for the second Bulgarian mobile operator.

**BTC Mobile EOOD** (trade name *Vivatel*) was founded in November, 2004 with a sole owner – BTC. The progress of the issuance of the third GSM licence to BTC was directly related to its long and excruciating privatisation process\textsuperscript{79}. Since the GSM licence was decided to be issued as a bonus (and without a tender)\textsuperscript{80} to the buyer of BTC\textsuperscript{81}, the speed of its bringing into operation depended on the finalising the sale of BTC.

According to Transparency International, the mobile operator, part of BTC was expected to start up functioning at the end of 2000\textsuperscript{82}, because the privatisation deal was supposed to be finalised by that time. However, it took much more time than anticipated. After extensive negotiations, a consortium, made by OTE and KPN was selected for a buyer of the incumbent telecom in 2000, but then the government of UDF refused to sell BTC\textsuperscript{83}.

The next privatisation attempt made by the government of NMSII was a subject of hot political and economic debates in Bulgaria. The issue of the third GSM license was seen as a critical point within the deal. The laws of that time were ambiguous on whether an administrative tender procedure (also known as ‘beauty contest’) for the licence had to be held or not. In the Privatisation Act it was specified that no tender was needed and in the Telecommunications Act – that the spectrum (which is a scarce resource) had to be assigned only after such a procedure.

This legal vagueness opposed the Chairman of the Communications Regulation Commission Georgi Aleksandrov, who believed that the licence should be awarded only after a tender, to the former Minister of Transport and Communications Nikolai Vasilev, who claimed that the licence was to be awarded as a part of the privatisation deal. After Aleksandrov appealed the decision of the government before the Supreme Administrative Court (SAC), he was fired with a decision of the government and the board of members of CRC voted to issue the third GSM licence to BTC in June 2004.

Thus, there were no more obstacles to finalising the privatisation of BTC and the Austrian holding company Viva Ventures, a consortium led by the US private equity house Advent International received 65\% of the incumbent telecom together with the third licence for operating of digital GSM standard network. The GSM service of BTC was launched in November, 2005 under the trade name *Vivatel*. According to some specialists, if an open tender were held, the price of Bulgaria's third GSM operator would exceed 100 million EUR\textsuperscript{84}. Therefore, this privatisation deal was heavily criticised and the government was accused in corruption in some unofficial sources.

In January, 2006, the investment company Novator bought an option to acquire the 65\% of BTC, owned by Advent International. Consequently, in June, 2007, BTC was bought by AIG Global Investment Group for 1,08 bn €- a bid, which is believed to be the largest in Bulgaria to date\textsuperscript{85}. The

\textsuperscript{76} The trade mark Globul had been kept in an utmost secret till the time of the commercial launch of CBM’s services.

\textsuperscript{77} Globul, official corporate website: http://globul.bg/eng/about.html

\textsuperscript{78} ibid.

\textsuperscript{79} The privatisation of BTC has been the largest privatisation deal in Bulgaria

\textsuperscript{80} Unlike from the other incumbent telecoms in Europe, BTC did not have a GSM licence

\textsuperscript{81} This decision was taken by the government of UDF and stipulated in the Privatisation Act

\textsuperscript{82} Transparency International, l.c., p. 3

\textsuperscript{83} The consortium was ready to pay $610 million for a 51 percent stake, with a GSM license included.

\textsuperscript{84} Aleksandrova, l.c.

\textsuperscript{85} The Economist Intelligence Unit: Bulgaria: AIG muscles in, URL:http://globaltechforum.eiu.com/index.asp-?layout=rich_story&channelid=4&categoryid=29&title=Bulgaria\%3A+AIG+muscles+in&doc_id=10667
other candidates for BTC were Oger Telecom, Turkcell, and two private equity funds - Mid Europa Partners or Texas Pacific Group/Warburg Pincus.

On the 15th of May, 2005, the three digital mobile operators received licences for provision of 3G UMTS services on Bulgarian market (valid till 2025). Mtel bid 78 million BGL for the Class A licence (with greater capacity) while Vivatel and Globul agreed to pay 42 million BGL each for Class B licences; the three operators have launched 3G services in 200686.

3.2. Mobile Telecommunications Diffusion in Bulgaria and Market Share Dynamics

As shown in Figure 3.2, the number of the subscribers is rapidly growing since 2000 to reach 8 258 78087 in 2006. The mobile penetration in Bulgaria (visualised in Figure 3.3) has rocketed to 112%88 (in the end of 2006), overtaking that of its regional neighbours Hungary, Slovenia, the Slovak Republic and Russia89.

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86 International Telecoms Intelligence Ltd, Bulgaria Telecommunications Market Intelligence Report, June 2005, Summary, URL: http://www.researchandmarkets.com/reports/354143
87 This is the number of active post-paid and pre-paid subscribers (at 12 months term of validity)
88 When the penetration overtakes 100%, this means that some of the subscribers have more than one SIM card.
89 Mobile Communications Europe Magazine, March 20, 2007
3.3. Market Share Dynamics

Figure 3.5: Market Shares of Mobile Operators by Number of Subscribers

It can be noted on Figure 3.5 that Globul has gradually taken from the market share of Mtel, reducing the second from 58% (for 2005) to 51.7% (for 2006). The entry of Vivatel in 2005 further redistributed the market shares of the mobile operators. The first mobile operator continued to lose market share on account of Globul’s and Vivatel’s growing presence in Bulgarian mobile telecommunications market.

3.4. Measuring the Industry Concentration

The Four Firm Concentration Ratio of the mobile telecommunications industry in Bulgaria can be estimated by summing the market shares of the top four firms in it\(^91\). As a matter of fact, the total number of companies, providing mobile telephone services is exactly four, but it should be considered that the analogue operator’s functionality has faded away. The Four Firm Concentration Ratio will be calculated in this way:

\[
C_4 = w_1 + w_2 + w_3 + w_4
\]

\((C_4 - \text{the four firm concentration ratio}, \ w_1 - \text{market share of Mtel for } 2006, \ w_2 - \text{market share of Globul for } 2006, \ w_3 - \text{market share of Vivatel for } 2006, \ w_4 - \text{market share of Mobikom for } 2006)\)

\[
C_4 = 51.69\% + 39.60\% + 8.70\% + 0.01\% = 100\%
\]

As the Four Firm Concentration ratio amounts at 100% since the onset of the mobile telecommunications industry, it can be concluded that the mobile telephone services market in Bulgaria is highly oligopolistic. The reason is that it is characterised with radio spectrum constraint and therefore highly regulated\(^93\).

Another approach to measure the industry concentration is calculating the **Herfindahl-Hirschman Index (HHI)**\(^94\).

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\(^90\) Source: CRC Annual Report 2005, l.c., p.64 & Barthel, l.c., p.71

\(^91\) For more theoretical details about the Four Firm Concentration Ratio, see: Chapter 1, Subsection 1.1.1.2.

\(^92\) Mobile Communications Europe Magazine, l.c., April 3, 2007, p.13

\(^93\) For details on the regulation of the mobile telecommunications industry in Bulgaria, see Chapter II, Subsection 1.3.

\(^94\) An increase of the HHI shows that the market shares of some companies become less equal to those of the other companies on the market and vice versa.
\[ HHI = \sum_{i=1}^{n} S_i^2. \]

The HHIs for the mobile telecommunications industry for the years 1993-2006 are calculated as shown below (an example of the 2006 estimation is given):

\[ HHI = 0.52^2 + 0.40^2 + 0.09^2 + 0 = 0.43 \]

Figure 3.6 illustrates the historical development of the HHI. The yearly rates of the index are compared to their theoretically lowest values. The HHI has the lowest level if all the companies in the market have equal market shares. With the market entry of Mobiltel in 1994, the HHI’s value started lowering from its highest level (1), because of the fact that the first GSM operator was stealing market share from the analogue one. Till 1996, the index had fallen by about 0.3 points.

Between 1996 and 1999, the index remains stable. However, in 2000, the HHI starts growing again due to the abrupt increase of the market share of Mobiltel that happens to be a monopoly in providing GSM services in Bulgarian mobile telecommunications market and the parallel process of fading away of the analogue technology. Since 2001, the HHI shows a constantly decreasing market concentration, which results from the gaining momentum of the second GSM operator Globul. As a consequence of the entry of the third GSM operator, the HHI decreases even below its value in 1998 but still keeps some 0.2 points difference with its theoretically lowest value (in 2006), which shows that there is a space for further market share redistribution among the mobile operators in Bulgaria.

**Figure 3.6:** HHI of the Mobile Telecommunications Industry in Bulgaria

3.5. Five Forces Analysis

**Internal Rivalry** The central force of the Porter’s Five Forces Framework is the internal rivalry or the competition within the particular industry. The analysis of the competition of Bulgarian mobile telecommunications industry is not restricted only in this subsection, but is also contained in the previous sections of this Chapter (where the market players, the development of their market shares are described) and in the following Chapter 4, where the competitive strategies of the operators are to be discussed.

It is important to point out the relationship between the market growth and the internal rivalry between the players on the mobile telecommunications market. If the market is organically growing, the mobile operators are increasing their number of subscribers and revenues. However, as soon as the market becomes saturated, the internal rivalry within the industry will drastically increase because the mobile operators would have to try to gain market share from one another. Bulgarian mobile telecommunications market is slowly getting closer to the saturation point and this would suggest a more competitive behaviour of the mobile operators\(^95\).

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\(^{95}\) The behaviour or the conduct of the mobile operators is analysed in Chapter 4: Conduct
Another aspect, which implies a higher internal rivalry in the mobile telecommunications market of the country, is the entrance of the third GSM operator. ‘While it is to be noted that there can be a serious competition in duopoly, usually a third entrant is required to start competition that addresses the true mass-market segment, including low-spending users, as well’\textsuperscript{96}.

**Substitutes** As mobile telecommunications is a high-tech industry, the substitutes that would replace the products/services of today, are strongly related to the factor innovation. As described in the Theoretical Framework (Section 1.2.2.2), there can be either complete substitutes or substitutes that do not entirely replace the current technologies but just upgrade their functions and provides a higher variety of services.

An example for the first type of substitution in Bulgarian mobile telecommunications industry is the complete replacement of the mobile telephony backed by the NMT 450 (analogue) standard from the so called first generation mobile telecommunications systems (1G) with the digital GSM standard. The GSM standard made the NMT 450 outdated because of its spectral efficiency that is four times higher than the most efficient analogue system\textsuperscript{97}. Also, the quality of mobile telephony was considerably boosted and the size and cost of equipment, most importantly of mobile phones, were drastically reduced\textsuperscript{98}.

For all of the above-listed reasons, the market share of Mobikom, which offers analogue NMT 450-backed services, has fallen down, permitting that Mtel, the company that introduced GSM services for the first time in Bulgaria gains serious positions on the market and strengthened the demand for these services, which caused an expansion in the subscriber rates\textsuperscript{99}.

UMTS standard that is, nowadays, being introduced by the three digital mobile operators in Bulgaria does not entirely replace the functions of the GSM standard. Actually, UMTS provides voice transmission as good as that of GSM, but it considerably increases the data rate transmission, which enabled the provision of high-quality data and video services. UMTS is chosen by the European Commission as a common 3G standard in Europe, as it is backward compatible with the GSM standard.

In order to plan their business strategies and future investments, mobile operators should be aware of the emerging trends in mobile telecommunications that would substitute the present technologies. The technological tendencies in Bulgarian mobile telecommunications industry should be seen as a result of the developments in the field of telecommunications the European Union. According to the European Commission’s report on the Future of Mobile Communications in the EU\textsuperscript{100}, there are two possible scenarios of substitution of the 3G technology\textsuperscript{101}.

The first possible scenario is called ‘linear 4G vision’ and it is based on an extrapolation from the current trend towards increasing the bandwidth of the mobile communications technologies and thus development of 4G mobile communications some time around 2010. The second scenario is the ‘concurrent 4G vision’ and it considers the availability of public wireless local area network (WLAN) technology, which would offer semi-mobile Internet access by the deployment of numerous ‘hot-spots’.

According to the European Commission’s report, in their present state, WLANs cannot compete with UMTS (3G) in terms of Quality of Service (QoS), coverage and security, but their low deployment cost (particularly for fixed-line operators with spare backbone capacity) makes them attractive to users who are mobile but not necessarily in motion.

\textsuperscript{96} Gruber, l.c., p.38
\textsuperscript{97} ibid. p. 30
\textsuperscript{98} Cp. ibid, p. 37
\textsuperscript{99}For more information on the diffusion of mobile telecommunications services in Bulgaria, see Section 3 of this Chapter
\textsuperscript{101} The explanation of the two scenarios draws on the European Commission’s Technical Report N 21192.
However, as soon as the number of WLANs grows, they may turn into direct competitors of UMTS networks, as the clients would be able to use them in the urban areas and only switch to 3G networks with their dual-mode phones when they travel to sparsely populated/rural areas.

WiMAX\textsuperscript{102} is one of the most important types of WLAN. According to the WiMAX Forum\textsuperscript{103}, the producers of hardware will give an answer to the question which direction will the technology ‘point-to-multi-points’ take; the producers are trying to reduce the size and the electricity consumption of the devices that will be used by the clients, which are obstacles to introduce the mobile services, backed by WiMAX technology. Some experts expect that WiMAX is to be launched in 2008, as soon as WiMAX chipsets will be able to be incorporated in the end-user devices.

**Barriers to entry** The structure of an industry and its internal rivalry are determined by the extent of difficulty to enter in it. The entry barriers in the mobile telecommunications industry in Bulgaria used to be very high but with the liberalisation they were noticeably lowered. However, they still remain considerable.

The major barrier to enter in Bulgarian mobile telecommunications market is implied by the nature of the mobile telecommunications - to provide wireless telephony connection with the use of radio spectrum, considered to be a scarce resource. To obtain radio spectrum, a mobile operator should receive a licence from CRC\textsuperscript{104}.

The capital-intensiveness of the mobile telecommunications industry also poses a significant entry barrier for potential players in Bulgarian, as a huge amount of investment is required to purchase the equipment, needed to build the mobile telecommunications network and to maintain it. The main investment lies with the equipment related to the radio transmission between handset and network: in general, base stations account for more than 50% of the cost of a network\textsuperscript{105}.

However, these costs are developing in a direction of lowering worldwide, and this tendency affects Bulgarian mobile operators, as well. Gruber\textsuperscript{106} points out that during the early stages of the mobile telecommunications industry, the total cost per cellular mobile telecommunications user\textsuperscript{107} totalled at 2,400$, while in 2000, the infrastructure investment cost per subscriber was stabilised around 350€ and the handset prices – around 100€. Therefore, the entry barrier of this type lessens its influence on the potential entrants.

**Suppliers** In order to be able to transmit voice, data and media from place to place, the mobile operators need input technologies, namely high-tech equipment for building of their mobile telecommunications networks, such as base stations, radio transmission, switching equipment, fibre-optic cables, billing software, IP network nodes, etc. The equipment, needed by Bulgarian mobile operators is delivered and maintained by companies-suppliers on two levels.

The companies that work directly with the mobile operators on different projects are the so called *system integrators*, who create solutions, integrating equipment from different *vendors*. However, there are cases that some vendors work directly with the GSM operators, as well. A number of big system integrators are present in Bulgarian telecommunications market – Intracom Telecom\textsuperscript{108}, Telelink, CNsys, Bynet. These companies have established their partner networks of vendors (like...
Cisco, Siemens Enterprise Communications\textsuperscript{109}, Alcatel-Lucent\textsuperscript{110}, Huawei and Motorola, Nortel, Oracle, Ericsson, Nokia, Juniper, Converse, HP and Sun).

The niche for the suppliers of telecommunications equipment in Bulgaria has been growing because of the huge investments made during the last three years by Mobiltel and CBM in order to put into practice the transition from 2G to 3G technology. BTC even built an entire new mobile telecommunications network for its mobile subdivision. Bulgarian telecommunications operators have invested 945 mln BGN (483 mln €) during 2005: from January till October 2005, BTC invested 400 mln BGN (204,5 mln €) for digitalising its fixed-line network and building the mobile network of Vivatel; Globul announced that they would invest 100 mln BGN (51 mln €) in 2007; Mtel did not give official information but the expected investments are likely to be high, considering the ambitions of the company to retain its first position in the mobile telecommunication market in Bulgaria.\textsuperscript{111}

The importance of the equipment and services that the system integrators provide to the mobile operators are a determinant of the quality of the mobile services, delivered to the end clients, which therefore would lead the presumption that the bargaining power of suppliers is high. However, this is not the case in the Bulgarian telecommunications market, as there are already a number of big names that operate in this market.

A recent example shows the low dependency of the mobile operators from the system integrators. Siemens was a supplier for Mtel for a long time and it was expected that the vendor would build in the 3G network for the mobile operator, but surprisingly Mtel chose Ericsson to do it.

Table 3.1: Mobile Operators and Their Suppliers

<table>
<thead>
<tr>
<th>Company</th>
<th>Supplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobikom</td>
<td>N/A</td>
</tr>
<tr>
<td>Mtel</td>
<td>• Siemens (centrals, base stations, optical rings)</td>
</tr>
<tr>
<td></td>
<td>• Alcatel (part of the centrals)</td>
</tr>
<tr>
<td></td>
<td>• Ericsson (3G network)</td>
</tr>
<tr>
<td></td>
<td>• Nortel</td>
</tr>
<tr>
<td></td>
<td>• Intracom</td>
</tr>
<tr>
<td>Globul</td>
<td>• Ericsson &amp; Huawei (3G network equipment)</td>
</tr>
<tr>
<td></td>
<td>• Intracom (building and maintaining of the base stations, DXX installations, mobile VPN networks, billing system, maintenance of the GSM network)</td>
</tr>
<tr>
<td></td>
<td>• LHS (new billing system)</td>
</tr>
<tr>
<td></td>
<td>• Telelink (intermediary, building of base stations)</td>
</tr>
<tr>
<td></td>
<td>• Motorola</td>
</tr>
<tr>
<td>Vivatel &amp; BTC</td>
<td>• Nokia (network of Vivatel, 3G/UMTS network)</td>
</tr>
<tr>
<td></td>
<td>• Telelink (building of base stations)</td>
</tr>
<tr>
<td></td>
<td>• Intracom (maintaining of base stations, services, related to the implementation of the GSM network)</td>
</tr>
</tbody>
</table>

Source: Capital Weekly, issue 42/ 20 Oct. 2006 & own research

Buyers There are two levels of buyers in Bulgarian mobile telecommunications market. The first is the retail chains that sell the products and services of the mobile operators and the second is the end-users of these services.

Since its entry in Bulgarian mobile telecommunications market, Mobiltel has relied on its own network of ‘Mtel shops’ to sell its own products and services. Presently\textsuperscript{112}, according to the information from the official corporate website of Mtel, they amount at 144 and they are situated all

\textsuperscript{109} 100% owned by Siemens AG
\textsuperscript{110} Alcatel merged with Lucent on the 30\textsuperscript{th} of November, 2006
\textsuperscript{111} Mihaylova, Paulina: Intracom with Renewed Ambitions for Bulgaria, Capital Weekly, issue 42/ 20 Oct. 2006
\textsuperscript{112} As of 19\textsuperscript{th} of July, 2007
over Bulgaria. Since the beginning of 2006, however, the first GSM operator obviously decided to seek partnership with other retail chains, and started working with Handy and Technopolis.

Table 3.2: The Mobile Operators in Bulgaria and Their Distributors

<table>
<thead>
<tr>
<th>Mobile Operators</th>
<th>Distributors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mtel</td>
<td>• Own retail chains</td>
</tr>
<tr>
<td></td>
<td>• Handy</td>
</tr>
<tr>
<td></td>
<td>• Technopolis</td>
</tr>
<tr>
<td>Globul</td>
<td>• Da Da</td>
</tr>
<tr>
<td></td>
<td>• Germanos</td>
</tr>
<tr>
<td></td>
<td>• Global Net</td>
</tr>
<tr>
<td></td>
<td>• Office 1 Superstore</td>
</tr>
<tr>
<td>Vivatel</td>
<td>• BTC centres</td>
</tr>
<tr>
<td></td>
<td>• 2 be</td>
</tr>
<tr>
<td></td>
<td>• Jeff</td>
</tr>
<tr>
<td></td>
<td>• Mobika</td>
</tr>
<tr>
<td></td>
<td>• Mobile World</td>
</tr>
</tbody>
</table>

Source: own research

Globul sells its products and services through four specialised retail chains – Germanos, Office 1 Superstore, Da Da and Global Net. Germanos has always been the partner that accounts for the highest sales of the mobile operator. According to Capital Weekly\textsuperscript{113}, Germanos\textsuperscript{114} made 60% of the sales of the company as of March, 2006. Later in the year (in March, 2006), Cosmote Group (owner of Globul) acquired 42% of the market shares of Germanos and purchased the rest till the end of August with a total value of the deal - 1.58 billion Euros\textsuperscript{115}. This vertical integration lowered the bargaining power of Germanos and ‘forced’ the chain to work exclusively with Globul\textsuperscript{116}.

A considerable strategic advantage for Vivatel is the huge network of retail centres, that its owner, the former telecom monopolist BTC possesses (their number is about 150 in the whole country). Therefore, Vivatel doesn’t need and doesn’t plan to open a separate retail chain. It works with the retail chains 2be and Jeff, as well. Vivatel also had ambitions to sell products and services through Germanos but it became impossible after the chain was purchased by Cosmo Group. The third GSM operator started working with Global Net, but soon the two companies gave up of their partnership, allegedly as a result of pressure from the side of Globul.

As a whole, it may be concluded that the purchasing power of the distributors of mobile telecommunications products and services in Bulgaria is low, because two of the operators Mtel and Vivatel have very strong company shops and Globul is vertically integrated with one of the biggest retail chains – Germanos.

The second level of buyers – the end-users of mobile telecommunications products and services – is a mass market, the size of which is measured by the diffusion of these services in Bulgaria\textsuperscript{117}. The considerable number of buyers implies that the individual buyer’s power to negotiate with the mobile telephone companies is minimal. However, with the increase of the competition in the market, the level of buyers’ power is increasing, as they are able to choose the cheapest and/or the most advantageous product or service.

\textsuperscript{113} Mihaylova, Paulina: The Dealer of Minutes, Capital Weekly, issue 9/ 3 Mar. 2006

\textsuperscript{114} Germanos is one of the most successful retail chains in Bulgaria by number of shops and sales.

\textsuperscript{115} Cosmote buys 42% of Germanos shares, Source: URL: http://english.hotnews.ro/Cosmote-buys-42-of-Germanos-shares-articol_42680.htm

\textsuperscript{116} Although the second mobile operator did not oblige Germanos not to sell other operator’s products through their contract

\textsuperscript{117} For more information on the penetration of mobile telecommunications services in Bulgaria – see Section 3.2 of this Chapter
4. Conduct

4.1. Product Differentiation

Product differentiation is a strategy that aims at distinguishing the firm’s product in the eyes of the customers from its close substitutes (or the products of competitor companies). The main source of product differentiation would be the way the firms position their products in the product space. The differentiated products in mobile telecommunications are based on identical services, but bundled in various packages and heavily advertised (in the most of the cases), in order to reach the demands of different target groups.

In order to analyse the product differentiation strategies of the mobile operators in Bulgaria, the mobile telecommunications product should first be defined. As presented on Figure 4.1, the different products are composed by a particular combination of services.

Figure 4.1: Horizontal Differentiation in Mobile Telecommunications

There are several ways to classify the mobile telecommunications services. One way is to divide them into necessary and optional services as shown on Figure 4.2. According to Gruber118, the so-called necessary services include registration/call origination119, and call termination120, and the optional services include provision of handsets, international roaming and messaging services. However, this classification doesn’t consider the introduction of the 3G technology standard, which provides for a number of new services, like provision of music, video, TV, etc. Those are additionally included in the list of the optional services and are presented in blue colour.

Another way to classify mobile telecommunications services is to distinguish wholesale from retail services121. Wholesale services are provided only by the mobile operators that possess their own network122. Those types of services are being sold to retailer companies123, which package the services and sell them to end users. Therefore, the retail services are those, sold directly to the end clients by the mobile operators or retailers.

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118 Gruber, l.c., p.44
119 Registration/call origination means that the calling party originates a mobile telephone call.
120 Call termination means that the call is transmitted from the network of a telephone company to another one.
121 Gruber, l.c., p. 43
122 The number of those operators is limited because of a spectrum constraint
123 An example for retail companies are the so-called MVNO, which still doesn’t exist in Bulgarian mobile telecommunications market.
The above-explained two approaches are used and a definition of the horizontal product differentiation in mobile telecommunications is developed and shown in Figure 4.1. The single services (service 1, service 2, etc.) coincide with the necessary and optional services, listed on Figure 4.2. The mobile telecommunications product is formed as a package of the services, which has its price and is sold to the end clients, which are divided by target groups.

**Services Provided** During the dawn of Bulgarian mobile telecommunications industry, the range of services, provided by the mobile operators had been largely restricted to mobile telephony. Therefore, Mobikom, the NMT operator and the first GSM operator (Mtel) did not differ by the type of services they offer, but only by the specifics of the underlying technologies they used. The situation became different when Mtel started to provide new services, namely CLIP, CLIR, SMS, Voice mail and free conference connection in April 2001; later the same year, the voice mail became also free of charge for all the subscribers and the subscribers could already pay their bills through a bank transfer.

In 2003, all the mobile operators had already been providing not only necessary services, but also voice mail, conference connection, SMS and emergency calls. Moreover, in October, the same year, Mtel introduced the GPRS technology in its entire network, which allowed offering various services, such as MMS, mobile Internet and WAP; the same was done by Globul in December. The following years were particularly intensive in introduction of new services, as can be seen on Table 4.2. The developments in the mobile telecommunications services market in 2005 and 2006 showed a proliferation of services with an informational and entertainment character.

**Product and Tariff Policies** The product and tariff policies of Bulgarian mobile operators are a major part of their corporate strategies. Those policies are analysed parallelly because only with a combination between them (bundling of specific services and including them in different tariff plans) the mobile operators may achieve differentiation and reach different customer target groups divided by age, average monthly expenditure for mobile telecommunications services, business & non-business, etc.

During the initial stage of development of Bulgarian mobile telecommunications industry (90s of the last century) that was first characterised with a market structure, based on natural monopoly (only Mobikom, the NMT 450 operator was present on the market) and then on duopoly (with the

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125 Cp. Mobiltel, official corporate website, l.c.
127 Cp. ibid.
The entrance of the first GSM operator - Mobiltel), the scope of the product differentiation was low. The products were based only on mobile telephony. The target segment of the operators had been very narrow and encompassed mainly the well-off business people and officials.

Table 4.2: New Services, Introduced by the Mobile Operators in 2004-2006

<table>
<thead>
<tr>
<th>Mobile operator</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mtel</td>
<td>• ‘Mtel +' - specialized news, horoscopes, etc., received through SMS</td>
<td>• GPRS applications</td>
<td>• Corporate VPN based on Wi-Max</td>
</tr>
<tr>
<td></td>
<td>• ‘MMS news rental’ – receiving multimedia news (containing picture and text)</td>
<td>• EDGE applications</td>
<td>• Video telephony</td>
</tr>
<tr>
<td></td>
<td>• Mobile Internet through GPRS</td>
<td>• Recharge of Prima through Internet</td>
<td>• HDMA</td>
</tr>
<tr>
<td></td>
<td>• WAP through GPRS</td>
<td>• New animations, logos, Pictures, skins, games</td>
<td>• Expansion of WCDMA/HSDPA services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Video MMS</td>
<td>• Vodafone Life! Portal &amp; Mobile TV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Musical128</td>
<td>• Vodafone mobile connect PC cards/ PC modems</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Electronic prepaid account recharge</td>
</tr>
<tr>
<td>Globul</td>
<td>• GPRS applications</td>
<td>• Globul MVPN</td>
<td>• Services, based on WCDMA network</td>
</tr>
<tr>
<td></td>
<td>• ‘Globul chat’ – sending chat messages through SMS or WAP</td>
<td>• My Global menu129</td>
<td>• 1-Mode</td>
</tr>
<tr>
<td></td>
<td>• Mobile Internet through GPRS</td>
<td>• Globul 2 in 1130</td>
<td>• 3G Globul Connect Center (when using Data SIM)</td>
</tr>
<tr>
<td></td>
<td>• WAP through GPRS</td>
<td>• GPRS roaming</td>
<td>• 3G Internet Access</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Automatic pre-paid account recharge</td>
</tr>
<tr>
<td>Vivatel</td>
<td>---</td>
<td>• Pre-paid roaming</td>
<td>• Post-paid services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pre-paid GPRS</td>
<td>• Mobile internet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pre-paid plan for business customers</td>
<td>• MMS</td>
</tr>
<tr>
<td>Mobikom</td>
<td>• ‘Mobifix Plus – a combination of the mobile service Mobifon and the VoIP service MobiVoice</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: CRC Annual Report 2005, l.c. p.70

Gruber131 points out that during the early stages of the mobile telecommunications industry development worldwide, the pricing was undertaken on a uniform basis and pricing strategies were simple and ‘essentially designed to extract monopoly rents because of the very strong capacity constraints on radio frequency spectrum’ - this had been valid for Bulgaria, as well.

The proliferation of more complex and flexible tariff packages in Bulgarian mobile telecommunications market was unleashed with the technological innovation, but mainly as a result of a change in the market structure - the entry of the second GSM operator (in the end of 2001), which intensified the competition in the market. An example of a flexible element in the price packages is a price reduction of a 1-minute call within a closed subscriber group. Certainly, the major elements of the price packages remained – a subscription fee and a per-minute calling fee.

128 It allows replacement of the standard "free" ringing tone with chosen by the user music
129 My Global Menu allowing easy and quick access to various inquiry, information and fun services
130 Globul 2 in 1, which enables handling two numbers – personal and business, billed separately, through one mobile handset
131 Gruber, l.c., p. 44
In 2002, Mobiltel offered four subscription packages – “Business”, “Universal”, “Economic” and “Limited”\(^{132}\). The company showed that it wants to retain its business clients and relies on them, proposing the companies that possess from 2 to 6 SIM cards to talk at preferential price rates within a ‘Business group’. The price plans, offered in 2002 and 2003 by Mobikom were: “Mobi L”, “Mobi XL”, “Mobifix” and “Citiphone”. 

After its launch on the market, Globul gained momentum in 2002 and 2003 by introducing new services and programmes, focused at individual needs of various groups of customers, among which: Who is calling and Subscription Packages with Minute Bundles\(^{133}\). As the operator strived to attract subscribers from the other networks, it was relying on “the strategy of offering equal tariffs per one-minute call to any network in the country without time zones”\(^{134}\). The competitive response of Mtel was to introduce another (fifth) tariff plan that includes tariffs for calls to all the networks in Bulgaria (in the beginning of 2004).

An important tariff innovation, introduced almost simultaneously by the digital mobile operators in 2002 was the so called ‘pre-paid’ schemes. They are characterised by selling of call time in advance to the subscribers. ‘The attractiveness of pre-paid schemes stems from several factors: they give the user the ability to control expenditures: customer acquisition and billing costs are smaller for mobile operators, and there is less scope for fraud and bad debts’\(^{135}\).

Another incentive for launch of more complex product and tariff policies of the digital mobile operators in Bulgaria was the anticipated market entry of the third GSM operator\(^{136}\). As stated by CRC, in 2004, the mobile companies ‘continued to segment the market, offering packages with volumes of minutes for calls, which satisfy the specific needs of the various groups of clients’\(^{137}\). Additional flexible element of the price packages was introduced - the launch of ‘individual pricing plans’, through which the users were offered by the both digital operators to call with a limited number of preliminary selected numbers for lower prices – such packages were ‘Family and Friends’, offered by Mobiltel and ‘For Friends’ by Globul\(^{138}\). Further differentiation was sought by the ‘organisation of various promotional campaigns for price reductions of telephone handsets, bonuses and discounts at the offering of services through prepaid cards’\(^{139}\) by the mobile operators.

In 2005, the offered variety of tariff plans had been rather rich. The preferential rates were provided mostly for on-net call in order to encourage the customers to use more their own network, which may on the other hand motivate other clients to enter this network, in order to use their special discount and, thus the network effect would be increased\(^{140}\). Mtel increased the number of its tariff plans to eight, adding ‘M-tel Extra, M-tel 5 and M-tel 20, including a certain number of free minutes and/or free SMS for the own network of the operator, depending on the amount of monthly fee\(^{141}\).

The first GSM operator continued to pay special attention to its corporate clients, offering four tariff plans for them. ‘In October the operator introduced a new promotional tariff plan Business Plus, targeting the employees of small and middle-sized companies, with preferential rates for calls within the corporate group, a certain number of minutes for on-net calls and call to fixed networks, and equal rates for peak and off-peak calls; since July Mtel provides also to its business customers the service

\(^{132}\) CRC Annual Report 2003, l.c.,p. 36; The names of price plans and the time of their introduction in the market draw on CRC Annual Reports.

\(^{133}\) Globul, official corporate website, l.c.

\(^{134}\) CRC Annual Report 2002 and 2003, l.c.

\(^{135}\) Gruber, l.c, p.45

\(^{136}\) It can be seen that not only the actual change of the market structure but also the anticipation of that may stimulate the competitive behaviour of the companies.

\(^{137}\) CRC Annual Report 2004, l.c., p. 63

\(^{138}\) ibid.

\(^{139}\) ibid.

\(^{140}\) Network effect – the higher the number of the overall customers of a network, the more the added value for a current or potential one

\(^{141}\) CRC Annual Report 2005, l.c., p. 74
‘Business network’ for calls at preferential rates to up to 10 business subscribers out of the corporate group of the subscriber.\footnote{ibid.}

Globul’s subscription plans in 2005 were seven. The operator made a successful try to enter in a more convincing way the business segment, where Mobilitel has been traditionally stronger. ‘The corporate programme of the operator, Globul Business Partner, offered six different business packages according to the specific usage patterns, including up to 500 minutes for national calls, as well as 300 minutes for calls in closed group that could be used free or against monthly subscription, depending on the term of the contract.\footnote{CRC Annual Report 2005, l.c., p. 74}

During 2005, the cellular operators continued their intensive competition in the pre-paid services. Mtel and Globul offered 3 pre-paid tariff plans, segmenting the users according to their specific preferences (for example, plans with included number of free SMS (Globul – B-connect SMS), plans according to the time when the calls are usually held (Mtel – Prima Party), and according to the network calls are usually terminated (Mtel – Prima Star); Vivatel introduced pre-paid for the business as well and Mobikom was continuing to offer its pre-paid service Mobilik.\footnote{ibid.}

4.2. Price Levels

There are two reasons why the price levels of the mobile telecommunications services and packages of services are examined within this chapter. Firstly, such an analysis would reveal how the increased competitive pressure affected the end consumer prices in mobile telecommunications industry. Secondly, an analysis of the individual price level offered by the mobile operators will provide an insight on where they shall be placed in the Generic Strategies Matrix \footnote{See Chapter 1: Theoretical Framework, Subsection 1.2.3: Porter’s Generic Strategies} and which generic strategy they follow.

‘The end consumer prices for subscribers to mobile services depend both on the price strategies of the companies themselves and the negotiated prices for interconnection with the fixed network of BTC and the other mobile networks.’\footnote{CRC Annual Report 2002, l.c., p.30} The price strategies or tariff policy of the mobile operators in Bulgaria were discussed in the previous subsection as strongly related to their product policy. The development of termination prices in mobile networks is shown in Figure 4.5.

As of 01.01.2005, Bulgaria was among the four countries with the highest mobile termination rates: by about 43\% higher than the average value for the investigated European countries (0,1337 €)\footnote{A research, made by IRG Mobile Markets Working Group, which calculates the weighted-average for each of the countries, taking into account the number of subscribers and the termination charges of each of the mobile operators. This research is cited by CRC in their Annual Report 2005, l.c., p. 78}. It can be calculated that the price for mobile termination per minute is: 0,1912 €, which is close to last year’s level (shown in Figure 4.5.). In 01.01.2006, the country took a leading position among the European countries in the level of the mobile termination rates, which keeps close to its previous year’s level. The comparatively high level of mobile termination rates is positively influencing the end-user prices of mobile telecommunications services.

In order to evaluate the prices offered to the end-consumers by the mobile operators in Bulgaria, their levels should be first calculated. However, this may prove to be a rather difficult activity as nowadays ‘the tariff options are quite complex and difficult to compare without taking into account the long list of parameters, such as subscription activation charges, monthly subscription charges, peak and off-peak tariffs, free call units included in the package, volume dependent tariffs, normal call tariffs, SMS tariffs, tariffs for on-net calls, tariffs for off-net calls, etc.’\footnote{Cullen International, Report 3 – Country Comparative Report, Supply of Services in Monitoring of South East Europe – Telecommunications Services Sector and Related Aspects, March 2007, URL: www.cullen-international.com/documents/cullen/cipublic/studies/balkan/report1comparative.pdf, p. 142}
Therefore, in order to make the mobile operator’s prices comparable, OECD created three price baskets that encompass the low, medium and high usage profiles and take into account all the above mentioned factors (detailed information on OECD price baskets can be found in Appendix 4). However, as Bulgaria is not a part of OECD and also had not been a member of the EU till the 1st of Jan. 2007, the country has not been considered in the detailed reports of those organisations on the development of the mobile telecommunications industries.

Bulgaria was included, though, in a series of Country Comparative Reports\textsuperscript{149}, prepared by Cullen International by the order of the European Commission. They compare the price baskets of different South-East European countries to the median rates in the EU, which ‘represent the point where half of the EU values are higher and the other half lower’\textsuperscript{150}.

Figure 4.6: Levels in Bulgaria in Comparison with the EU Median

\textit{€ with VAT}

\textbf{Source: this Figure is a sketch from Cullen International, Report 3, l.c., p.143}

It can be seen on the Figure 4.6 that the prices of all the mobile basket categories in Bulgaria are higher than the corresponding EU median and the price levels in 2005 and 2006 were the same.

\textsuperscript{149} ibid.
\textsuperscript{150} ibid.
For the years before 2005, only qualitative data on the price levels is available. In CRC report 2005, it is mentioned that digital operator’s prices of mobile services during the duopoly of Mobilnet and Globul ‘have been kept on similar levels and for a period long enough quite high’. However, the expected entrance of the third GSM operator ‘has caused a considerable decrease of retail prices for mobile services’; indicator for that were the offers of calls at the price of 0.01BGN (0.005 € Cents) or null tariff per minute. Therefore, the price levels in 2005 were lower than those in 2004.

Figure 4.7: Consumer Prices of Mobile Services in EU and Bulgaria – OECD Mobile Basket – Low Consumption

Source: CRC Annual Report 2004, l.c., p. 63

4.3. Generic Strategies Analysis

The Generic Strategies Analysis subsection aims at summarising all the content of the Conduct Chapter by positioning the mobile operators on Porter’s Generic Strategies matrix and thus defining the strategies they currently use. Mobikom is not included, as at that moment the analogue operator does not lead any active strategy, because of the fading away of the technology it uses to provide mobile telecommunications services.

Competitive Scope

The competitive scope of the digital operators is wide. They are aiming at attracting corporate, as well as private clients, with different disposable income and from different age groups.

Competitive Advantage

Mtel The first GSM operator in Bulgarian mobile telecommunications market remained a monopolist in providing digital mobile services for rather a long time, being able to profit from high prices. Mtel is still considered to have the highest prices among the digital operators. Also, the company has based its competitive advantage on high level of differentiation of its products, offering a wide range of service bundles, extensively advertised. Therefore, the Generic Strategy of Mtel can be clearly recognized as Differentiation Strategy.

Globul With its entrance in Bulgarian mobile telecommunications market, Globul started gaining competitive advantage with the lower prices it offered in order to take clients from Mtel,

151 CRC Annual Report 2005, l.c., p. 74
152 ibid.
153 For more theoretical aspects of the Generic Strategies, see Chapter I - Theoretical Framework, Subsection 2.3.1.- Porter’s Generic Strategies
which were not satisfied with the high prices of the first mobile operator. However, Globul gained momentum offering different pricing plans and various services backed up by the increasing quality of its network and the launch technological innovations. Also, Globul considerably enhanced its amount of advertising, overtaking Mtel in TV advertising in 2006. Thus, Globul changed its Generic Strategy from ‘Cost Leadership’ to ‘Differentiation’, but still keeps lower prices than the first GSM operator. That’s why it is positioned on the left of Mtel in Figure 4.8.

**Vivatel** Similarly to Globul, Vivatel started with a cost leadership competitive advantage and restricted range of services – initially it launched only pre-paid packages and later on, post-paid. Therefore, the third GSM operator follows a Cost Leadership Generic Strategy.

**5. Performance**

**5.1. Total Revenues**

The total revenue is the only key performance indicator that is available in the yearly reports of CRC\(^1\). Table 5.1 points out that the amount of revenue of every operator is growing yearly (for the period 2003 – 2006) and thus the total industry revenue is raising (Figure 5.1). If compare Figure 5.2 with Figure 3.5: Market Shares of Mobile Operators by Number of Subscribers (in Chapter 3), it can be noticed that the market shares of mobile operators by subscribers and revenues differ and this difference is determined by the strategies of the cellular operators (their conduct). Mobiltel is traditionally relying on the business segment with higher disposable income and still keeps higher prices than the other players, so their market share by revenues is higher than by subscribers. The later-movers Globul and Vivatel are offering lower prices to attract new customers and their revenues market share is lower than their subscribers’ market share.

<table>
<thead>
<tr>
<th>Company</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobikom</td>
<td>23,3</td>
<td>13,7</td>
<td>7,1</td>
<td>n/a</td>
</tr>
<tr>
<td>Mobiltel</td>
<td>461</td>
<td>491,4</td>
<td>573,9</td>
<td>583,8</td>
</tr>
<tr>
<td>Globul</td>
<td>99,2</td>
<td>177,5</td>
<td>274,1</td>
<td>342,3</td>
</tr>
<tr>
<td>Vivatel</td>
<td>1,6</td>
<td>40,1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Own calculation on the basis of the market shares of mobile operators by revenues (Figure 5.2) and the yearly revenues of Globul (www.globul.bg)*

\(^1\) The other financial data that might eventually be used to measure the performance of the mobile operators and mobile telecommunications industry in Bulgaria, such as EBITDA (Earnings Before Interest, Taxes, Depreciation and Amortization), net income, ROCE (Return on Capital Employed) was not provided by the mobile operators in Bulgaria with the explanation that it is confidential.
5.2. Average Revenue per User

Although the revenues of the mobile operators is a very popular indicator, extensively cited in Bulgarian media and in CRC reports, there is another key performance measure that includes much more determinants and is therefore a more reliable one. This is the Average revenue per user (ARPU) - it is typically used by analysts, and also by regulators in some countries\textsuperscript{155}, to evaluate how the mobile telecommunications industries and the players within them are performing. APRU will be considered as a basic indicator of performance in this thesis.

ARPU is defined as a function of the following four vectors:

\[
\text{ARPU}_{it} = g(S_{it}, M_{it}, R_{it}, Q_{it}),
\]

where:

- \(S_{it}\) – service quality variables;
- \(M_{it}\) – market environment variables, such as Market concentration, Population density, Personal incomes, Prices of substitutes or complements, Churn\textsuperscript{156}, Demographic effects, Time effects;
- \(R_{it}\) – regulatory variables, such as mobile number portability;
- \(Q_{it}\) - quantity variables.\textsuperscript{157}

\textsuperscript{155} CRC does not estimate it probably because of a lack of the institutional capacity

\textsuperscript{156} Churn rate will be defined in the next Sub-section

\textsuperscript{157}
Table 5.2 illustrates the development of ARPU indexes for Bulgarian mobile operators (whenever data is available) and the analyst estimate of the weighted average for the whole industry. The ARPU levels of the operators vary during the different quarters of 2005 and 2006. It can be clearly noticed that Mobiltel has the highest levels of ARPU during all the period (except of the fourth quarter of 2005), reaching the level of 12.60. The latest entrant in the mobile telecommunications industry in Bulgaria, Vivatel has the lowest ARPU, reaching 7.00 during the second quarter of 2006.

Table 5.2: ARPU (€)

<table>
<thead>
<tr>
<th>Operator</th>
<th>1Q/05</th>
<th>2Q/05</th>
<th>3Q/05</th>
<th>4Q/05</th>
<th>1Q/06</th>
<th>2Q/06</th>
<th>3Q/06</th>
<th>4Q/06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobiltel</td>
<td>12.40</td>
<td>12.60</td>
<td>12.80</td>
<td>11.70</td>
<td>10.70*</td>
<td>11.30</td>
<td>11.40</td>
<td>11.00*</td>
</tr>
<tr>
<td>Globul</td>
<td>11.00*</td>
<td>11.00</td>
<td>12.00*</td>
<td>12.00</td>
<td>9.30*</td>
<td>11.00</td>
<td>11.00</td>
<td>10.30</td>
</tr>
<tr>
<td>Vivatel</td>
<td>n/a</td>
<td>n/a</td>
<td>11.50*</td>
<td>10.30*</td>
<td>n/a</td>
<td>7.00</td>
<td>8.04*</td>
<td>7.80*</td>
</tr>
<tr>
<td>Mobikom</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Weighted Average</td>
<td>11.90*</td>
<td>12.00*</td>
<td>13.24</td>
<td>18.56</td>
<td>10.10*</td>
<td>10.92*</td>
<td>11.03</td>
<td>10.48</td>
</tr>
</tbody>
</table>

Source: Informa Telecoms and Media, cited by Mobile Communications Europe Magazine (Issues: 6 June, 2006; 12 September, 2006; 5 December 2006; 20 March, 2007)

5.3. Churn Rate

Like ARPU, churn rate is a typical indicator for the performance of the mobile telecommunications industry. It is a measure of the subscriber turnover (in percentage, for a given time frame) or the percentage of customers, who change their mobile company. Gruber points out that the churn rate depends on the number of the handset subsidies, which usually motivate the customers to change their mobile telephone company in order to receive a new mobile handset.158

The churn rate is a valuable performance measure instrument. However, the churn rates of Bulgarian mobile telecommunication operators cannot be considered for the reason of lack of information. Only two numbers are available from Mobile Communications Europe Magazine - the churn rates of Mobiltel for 2Q/2005 and for the 2Q/2006, which are 5.10% and 5.60% respectively but these figures are not enough to draw any conclusions for the churn rates of Bulgarian mobile telecommunications industry and how they are influenced by the conduct of the mobile operators.

Conclusion

The aim of this paper was to perform a profound analysis of the Bulgarian mobile telecommunications industry, identifying the plausibility of the Structure-Conduct-Performance (SCP) paradigm for this industry. The assumption of the SCP paradigm that the market structure influences the conduct and the performance, on the other hand, is affected by the conduct, proved to be valid for the examined industry. This distinguished mobile telecommunications in Bulgaria from other high-tech industries, where a reverse causality of the paradigm’s main elements is observed. Cases, in which introduction of advance-guard new technologies led to developing of new products and considerable market structure change in favour of the company-innovator, were cited by the

158 Cp. Gruber, l.c., p.50
159 Mobile Communications Europe Magazine, September 12, 2006, p.13
opponents of the SCP in order to impeach the paradigm. However, the strategic industry analysis of Bulgarian mobile telecommunications showed that the causation develops in a ‘straight’ direction – from structure towards performance, even though it belongs to the industries, characterised with fast technological changes.

As a result of the gradual liberalisation of the mobile telecommunications industry in the country, its structure underwent a change from the monopoly of the analogue operator, to a less concentrated but still highly oligopolistic market. Since 2001, the Herfindahl-Hirschman Index (HHI) has decreased, showing the decreasing concentration in the industry and redistributions of mobile operator’s market shares.

The period of duopoly, made up by Mobikom and Mtel continued quite long and the change in the structure, namely the long-awaited launch of the second GSM operator (in 2001) considerably changed the conduct in the market into a more competitive one. As the coverage of operators’ networks, which is a key factor for vertical product differentiation, aligned very fast, the mobile companies have differentiated themselves only horizontally, following different product and tariff policies.

The next change in the market structure - the entrance of the third GSM operator (in 2005) led to aggressive promotions, innovative service packages with flexible elements and decrease in the prices (in 2005, compared to 2004). However, the price levels in the industry have remained higher than the EU median ones. This leaves space for further price competition between the companies.

The mobile operators in Bulgaria are positioned differently in the Porter’s Generic Strategies’ Matrix. The first GSM operator, Mtel, continues to follow its Product Differentiation strategy, keeping higher prices than the other operators’ and providing a great amount of service packages to its clients. Globul relied on Cost Leadership Strategy in the beginning of its existence, but then it gained momentum in offering a wide range of services and changed its strategy into Product Differentiation. Vivatel is still in an initial level of attracting new clients, following a Cost Leadership Strategy – restricted range of services with attractive prices.

The performance of the mobile operators is influenced by the market conduct in a way that the more competitive the behaviour of the mobile operators in Bulgaria, the lower their Average Revenue per User.

Mobile telecommunications in Bulgaria proved to be a very complex and dynamic industry and the current and potential players in it should be aware of a great number of factors in order to be successful. The market is already quite competitive and they should be ready for intensive rivalry on a price and product level.

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Appendix: Price Baskets for Consumption of Mobile Services

The price baskets, formed by OECD in cover the standard tariff plans, as well as pre-paid services. However, any free minutes for outgoing calls or free SMS of the calling plans are excluded. Every basket has a specific distribution of calls in the peak and off-peak hours, as well as specific call duration and contains the following elements:

- Low user basket: contains 30 SMS and 25 minutes outgoing calls, 42% of them to fixed telephone lines and 58% to mobile networks (40% are mobile on-net calls and 18% mobile off-net calls);
- Medium user basket: contains 35 SMS and 75 minutes outgoing calls, 36% of them to fixed telephone lines and 64% to mobile networks (43% are mobile on-net calls and 21% mobile off-net calls);
- High user basket: contains 42 SMS and 150 minutes outgoing calls, 40% of them to fixed telephone lines and 60% to mobile networks (42% are mobile on-net calls and 18% mobile off-net calls).

The above-mentioned basket definitions were revised in the beginning of 2006 and they were adapted according to the new consumption patterns of the customers. The three new baskets are:

- Low user basket. The usage level of this basket is low, with a call volume less than half of that in the Medium user basket.
- Medium user basket. This basket will have 75 outgoing calls per month.
- High user basket. The usage level is about twice the Medium user basket.

Call and message volumes for each basket are:

---

### Category Low Medium High

#### Category Low Medium

<table>
<thead>
<tr>
<th>Category</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outgoing calls per month</td>
<td>25</td>
<td>75</td>
<td>150</td>
</tr>
<tr>
<td>SMS per month</td>
<td>30</td>
<td>35</td>
<td>42</td>
</tr>
<tr>
<td>Calls to fixed local area</td>
<td>28%</td>
<td>24%</td>
<td>26%</td>
</tr>
<tr>
<td>Calls to fixed national area</td>
<td>14%</td>
<td>12%</td>
<td>14%</td>
</tr>
<tr>
<td>On-net mobile</td>
<td>40%</td>
<td>43%</td>
<td>42%</td>
</tr>
<tr>
<td>Off-net mobile</td>
<td>18%</td>
<td>21%</td>
<td>18%</td>
</tr>
</tbody>
</table>

#### List of Abbreviations with Definitions

1G
*First generation mobile telephony system*, based on analogue technology. The most wide-spread first generation standard, used in Europe was the NMT standard.

2G
*Second generation mobile telephony system*, based on digital technology. The 2G standard, spread in Europe is the GSM standard.

3G
*Third generation mobile telephony system*, based on digital technology. It creates opportunities for providing services, such as video telephony, TV, etc. The most wide-spread 3G technology is W-CDMA.

Broadband
Signalling method in telecommunications with a comparatively high information carrying capacity, due to its large bandwidth.

CDMA 2000
*Code division multiple access 2000*. It is a mobile telecommunications protocol from the third generation systems that is compatible to NMT standard. It allows for fasted data transmission than GPRS.

CLIP
*Caller Line Identity Presentation*. A mobile telecommunications service that provides identification of calls.

CLIR
*Calling Line Identification Restriction*. A mobile telecommunications service that provides the option to make outgoing calls without displaying the number to the calling recipient.

EDGE
*Enhanced Data rates for GSM Evolution*. It is a digital mobile telecommunications technology that increases data transmission rates (up to 240 Kbits) of 2G and 2.5G networks and makes them closer to 3G.

GPRS
*General Packet Radio Service*. It is an intermediate step between 2G and 3G. Allows for providing Internet and other services, based on packet-stitching.

GSM
*Global System for Mobile Communications* developed by the joint endeavours of the European countries at the end of 80s of the last century (in order to avoid having different digital cellular formats). It was developed for both 900 MHz (called GSM 900) and 1800MHz (GSM 1800) frequency range band.

GSM 900
*Global System for Mobile Communications with 900 MHz frequency range band.*

GSM 1800
*Global System for Mobile Communications with 1800 MHz frequency range band.*

MMS
*Multimedia Messaging Services*. A way to transmit longer messages, images, short music clips and pictures to other mobile telephone users, to e-mail addresses as well; an SMS from a higher generation.

MNO
*Mobile Network Operator*.

MVNO
*Mobile Virtual Network Operator*. A company that doesn’t have a licence to operate a network but buys network capacity from MNO/s and sells mobile telecommunications services packages to the end-users.

MVPN
*Mobile Virtual Private Network*. It is a service for corporate clients, allowing for integrating all employees’ handsets and desk phones in a common network and providing more efficient communication.

NMT 450
*Nordic Mobile Telephony System* – a type of cellular phone system, based on the first generation (1G) analogue technology.

SMS
*Short Message Service*. A service that allows for sending and receiving short messages through a mobile handset.

UMTS
*Universal Mobile Telecommunications System*. A 3G system based on W-CDMA, which has the advantages of permanent connection for data transmission, a faster and better quality connection and more efficient usage of the devices.
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>WAP</td>
<td>Wireless Application Protocol. It is a specification of the mobile devices that enables the clients to access services and applications in an easy way.</td>
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<tr>
<td>Wi-Fi</td>
<td>Wireless Fidelity. It is a high-frequency WLAN, backed by the IEEE 802.11b standard, allowing laptops or other devices to access local networks.</td>
</tr>
<tr>
<td>WiMAX</td>
<td>Worldwide Interoperability for Microwave Access. A broadband technology for transmission of mobile data with frequency 3.6 GHZ in wider geographic distance than Wi-Fi can do.</td>
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<tr>
<td>WLAN</td>
<td>Wireless Local Area Network. It gives the mobile users the advantage of connecting to a local area network in a wireless way, through a radio connection.</td>
</tr>
<tr>
<td>W-CDMA</td>
<td>Wideband Code Division Multiple Access. Technology behind UMTS, which supports 3G cellular services. It is compatible with the GSM standard.</td>
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