

Article

Network Tower Sharing Analysis in Greece: A Structure–Conduct–Performance Approach

Vasileios Argyroulis¹, Antonios Kargas¹  and Dimitris Varoutas^{2,*} 

¹ Department of Business Administration, University of West Attica, 12241 Athens, Greece; vargyroulis@uniwa.gr (V.A.); akargas@uniwa.gr (A.K.)

² Department of Telecommunications and Informatics, National and Kapodistrian University of Athens, 16122 Athens, Greece

* Correspondence: d.varoutas@di.uoa.gr

Abstract: The paper intends to contribute to readers' comprehension of the Greek telecommunications market, focusing on the strategic decisions associated with network tower-sharing analysis in Greece. The Greek telecommunications industry is described for the first time following the Structure–Conduct–Performance (SCP) paradigm of Industrial Organisation (IO), as a methodological tool of analysis. In that respect, an SCP model in its extended form is constructed, aiming to examine how structure, conduct, and performance interrelate to each other. More precisely, the SCP model explains how strategic decisions regarding tower infrastructure sharing between 2013–2022 were developed, as a result of a series of interactions and feedback effects, amongst market structure, operators' conducts, and performances, resulting in strengthening competition and reshaping market structure with the entrance of a new player in the Greek mobile market, an independent TowerCo (Athens, Greece) in Greece. International tendencies and competition issues influencing domestic growth potentialities and alternative operators' concentration will be addressed, too. The paper concludes with presenting a basically qualitative, explanatory interpretive analysis of the perspectives of network tower-sharing analysis in the Greek telecommunication industry, including policy recommendations for the near future and thoughts on future research, as well.

Keywords: Structure–Conduct–Performance; network tower-sharing; Greek telecommunication industry; international competition; strategic decisions



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1. Introduction

Understanding the economic and business environment is crucial for comprehending market operations and business functions. This analysis involves examining the market structure, which significantly influences how businesses make decisions and operate under varying market conditions. For instance, different market structures, such as perfect competition, monopolistic competition, oligopoly, and monopoly, each present unique challenges and opportunities for businesses. Additionally, businesses must navigate external factors, including political, economic, socio-cultural, technological, legal, and environmental aspects, which collectively shape the business landscape. These factors impact strategic decision-making, operational efficiency, and, ultimately, business performance. Therefore, a thorough understanding of these elements is essential for businesses to adapt and thrive in a dynamic market environment.

Previous research on Structure–Conduct–Performance (SCP) has encompassed a broad spectrum of empirical contexts within specific industries [1,2]. Most research studies carried

out have created a connection between the theory and exploratory variables reflecting the market's structure, firms' conduct, and performance, aiming to identify how they interrelate with each other. The variables employed so far could be grouped in five conceptual pillars [3], according to an extended version of the SCP model. More precisely, the SCP model embraces basic conditions, market structure, market conduct, performance, and public policy. In detail, basic conditions reflect the impact and shape of every industry, including psychological, technological, geographical, and institutional factors like price elasticity, substitutes, demand growth rate from the demand side and raw material, technology, and product durability from the supply side. In addition, market structure is defined by the number of sellers and buyers, product differentiation, barriers to entry, cost structures, vertical integration, and diversification. Market conduct is addressed by pricing behavior, product strategy and advertising, research and innovation, plant investments, and legal tactics, among others. Performance is also included in terms of both financial and societal welfare, such as production and allocative efficiency, full employment, and profitability (return on assets, ROA, or return on equity, ROE, investments level, etc.). Finally, public policy is defined by taxes and subsidies, international trade rules, price controls, antitrust legislation, and information provision [3].

Furthermore, other variables that directly influence both structure and conduct, while in parallel they reflect exact specificities of every single industry, are the number of patents, the minimum efficient scale (MES), the Lerner index (difference between market price and marginal cost), seller concentration, and price rigidity [4–9].

Current research applies the SCP paradigm in the tower-sharing market in Greece. The paper analyzes the pillars of the SCP paradigm, focusing on the causality and the influence of market structure and conduct on a firm's profitability. In that respect, the market structure defined by the number and size of Greek MNOs in the telecommunications market determines market conduct, which, in turn, determines their profitability. Various industry- and firm-specific factors are expected to be explored as influential factors for market performance, following not only the linear one-way relationship, but also examining potential feedback effects on the basis of a vice versa and non-linear approach. In that respect, the indirect impact of performance on structure and vice versa will be theoretically analyzed, too.

The main research questions raised in the paper are:

- Has the above-described extended version of the SCP paradigm been proven effective as a methodological tool applied in the Greek telecommunications market? Can the SCP paradigm provide valuable information (at strategic and decision-making levels) regarding network tower-sharing in Greece?
- How can market structure and conduct affect MNO's performance and especially their profitability?
- Do government policies play a significant role in market restructuring?
- Can specific performance variables be proposed when a network tower-sharing strategy is concerned?
- Which are the perspectives of network tower-sharing analysis in the Greek telecommunication industry according to the SCP paradigm?

In the paper's following sections, an SCP model in its extended form is constructed, while an analysis on how structure, conduct, and performance interrelate with each other, is carried out. The SCP model is employed to explain how strategic decisions regarding tower infrastructure development were formed in the period between 2013–2022, as a result of a series of interactions and feedback effects, amongst market structure, MNO's conducts and performances, resulting in strengthening competition and reshaping market structure with the entrance of a new player in the Greek mobile market, an independent TowerCo.

The above-mentioned framework enriches our knowledge of international tendencies, competition, domestic growth potentialities, operators' concentration, and sharing practices for the development of telecom infrastructures in Greece. This framework is directly related to the overall infrastructure-sharing services provided in Greece, as a result of the joint influence of existing market structure and market conducts on the tower-sharing prices and costs, the content of the associated infrastructure-sharing contracts, the basic conditions or the government policies affecting commercialization and the class of different buyers of tower spaces.

The paper concludes with presenting a basically qualitative, explanatory interpretive analysis on the perspectives of network tower-sharing analysis in the Greek telecommunication industry, including policy recommendations for the near future and thoughts on future research, too. Moreover, it sheds light on how a competitive advantage/disadvantage (e.g., based on cost-sharing) of key market players, is possible to affect the structure of the market and, in some cases, the conduct and the performance.

2. Literature Review

The Structure–Conduct–Performance paradigm has played a pivotal role in analyzing several ICT-related industries, often characterized by increased technology and commercial innovation, such as the telecommunications industry. Following the convergence of ICT with the telecommunications industry and content media market, the existing research analysis has been carried out, following an extended SCP model, expecting to bring added value to the current paper.

Meshor and Zajac [10] employed the SCP methodology to conduct a political economy analysis of telecommunications policy, focusing on stakeholders' policy objectives in Malaysia and Singapore. The key findings revealed that, despite notable differences in market structure, as well as on the goals of stakeholders (conduct), both countries demonstrated similar industry performance in their adoption of new telecommunications technologies, positioning them as "fast followers".

In addition, Fu in [11] studied the media market, also employing the SCP paradigm. In particular, he analyzed the content media market following the SCP rationale, coming to the conclusion that SCP is an effective tool for interpreting a market where ethical expectations interrelate strongly with commercial needs. Key findings specify that market structure decides the diversity of products and services provided (media diversity), developing a framework of market dynamics determining the variety produced in a content media market (conduct). An extension of this study also revealed how OTT (over-the-top) market structure is analyzed, influencing in turn market conduct and market performance [12]. Key findings revealed that OTT is a highly concentrated and oligopoly market, where competition and cooperation exist alongside in regard to business conduct for all stakeholders involved, such as license owners, content providers, internet companies, and manufacturers of smart TVs. Moreover, strategies employed focus on the increase in efficiency in terms of resource allocation and economies of scale, affecting performance, too.

In the case of the Saudi Arabian telecommunications industry, the different phases of market liberalization were analyzed by Mumuni et al. [13], following the SCP paradigm, too. According to this study, four distinct customer-based service performance outcomes were indicated and tested, i.e., (1) customer satisfaction, (2) customer attitudes, (3) customer loyalty, and (4) service quality perceptions, during different liberalization phases. Research revealed that changes in market structure in the early liberation phase (including the appearance of a new entrant), had a positive impact on all four performance outcomes increasing values; however, in the case of a later stage (including the appearance of a

second entrant), the service performance–outcomes were influenced negatively, reducing values, respectively.

In addition, the Philippines telecommunications industry was also analyzed by Patalinghug et al. under the SCP model [14]. It should be noted that the telecommunications industry in the Philippines is characterized by increased concentration, accompanied by noteworthy entry barriers (e.g., capital requirements and subscriber base and brand image). Research revealed that an incumbent's conducts are also able to have a notable effect on market structure, in relation to technology innovation, pricing, and bundled products offered to subscribers, while both market structure and conduct have a significant impact on the industry's performance.

Focusing on infrastructure sharing in telecommunications, Frisanco et al. in [15] analyzed infrastructure sharing in the core and radio access networks among multiple operators as a means of market conduct for mobile network operators (MNOs). Infrastructure sharing is considered a topic of high importance, and strategic options alongside the technological solutions available, as well as financial and regulatory issues, are addressed. The co-existence of old and new network technologies, as well as the geographical differentiation amongst rural, urban, and suburban areas, accompanied by the related best practices suggested, e.g., outsourcing, as a strategic option for neutral network and/or service provision taking advantage of economies of scale among others, have been considered, too.

As far as network tower-sharing in Ghana is concerned, authors in [16] employed the SCP approach to explore the possibilities for telecom infrastructure and services diffusion in the country. Network tower-sharing policy was introduced by the state as part of a government strategy to facilitate the expansion of telecom infrastructure all over the country, avoiding the duplication of investments. However, the results indicated that this policy was not finally successful, at least at the level that was initially expected. Approximately 40% of tower sites had only one co-locator in big cities, where multi-co-locations were anticipated, while in regional cities, MNOs chose to build their own individual towers, resulting in duplication of investments. The Structure–Conduct–Performance revealed this market misconduct, highlighting the fact that the existing market structure, which was very concentrated and characterized by the dominance of the incumbent operator, led alternative operators and new entrants to build their own infrastructure, limiting the diffusion of infrastructure in the country.

The SCP paradigm implies that market structure shapes market conduct, which in turn determines market performance, establishing a one-way direction model for representing market dynamics. In that respect, the reverse direction of the causes and effects of the model is not allowed, preventing market conduct and performance to influence market structure. However, later scholars examined the existence of feedback effects [6] from conduct and performance to structure, while further contributions by Carlton and Perloff led to an extended version of the model with extra conceptual pillars addressing government policies and basic conditions, respectively [17].

The proposed two-way, interactive framework within the SCP paradigm has been adopted for the current study, as it is better suited for considering the micro-economic and research-related subjects of each industry, while it is also capable of tackling inter-industry issues [6,9]. In addition, it is more focused on a business- and resource-oriented approach, considering enterprise strategies for the creation of a sustainable competitive advantage [1,18].

The traditional SCP paradigm provides a one-way approach explaining how market structure determines suppliers' conduct, which in turn affects the performance of the market [19,20]. This approach assumes that demand is fixed and predictable, while competition represents a condition [21]. The model proposes that market concentration, a major

structural characteristic [22], is inversely related to competition and positively related to performance [23].

The proposed research adopts an extended version of the SCP model, including feedback effects, to enable the exploration of potential interrelationships amongst all the conceptual pillars included in the study (Figure 1).

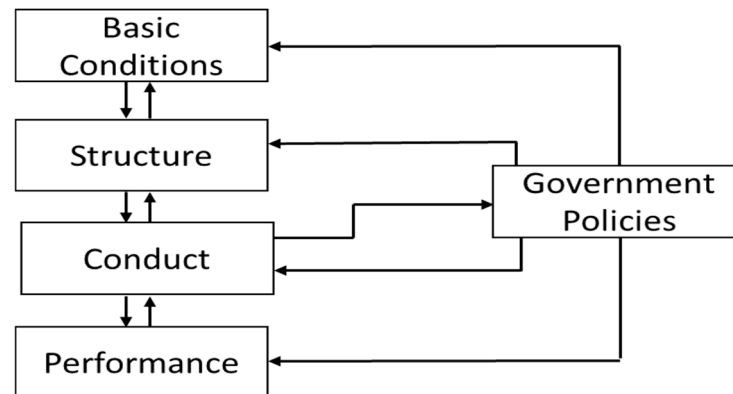


Figure 1. SCP paradigm based on Carlton and Perloff [17].

As far as market structure is concerned, a methodological approach was based on factors such as barriers to entry/exit the market, product's/service's similarity/differentiation [24], buyers and sellers' concentration, and demand's growth rate [25]. Existing research indicates that the above-mentioned factors are the most stable when studying market structure, while any other factor can be ignored when it is hard to observe or measure [26].

Conduct is revealed by strategies and organizational practices in any kind of business aspect, such as product/services, pricing policies, research and development, design and advertising, marketing and distribution, legal strategies, collusion, mergers/acquisitions, etc. [25]. On the other hand, mergers, such as horizontal (concerning firms offering similar products/services), vertical (concerning firms integrating a value chain), or conglomerate (concerning firms offering different products/services), impact seller concentration, vertical integration, and diversification, respectively, influencing industry structure. In any case of the above merger options, each market conduct performs a feedback effect on market structure, respectively. Changes in market power reshape the market structure and lead to changes in price, entry barriers, etc. [26]. In that respect, when strategies for mergers and acquisitions or for infrastructure sharing are applied, the whole market structure is reshaped. This paper analyses MNOs' strategies in telecommunications, casting a spotlight on mergers and acquisitions for infrastructure sharing, as an expression of firms' conduct, which finally results in a restructure of the industry landscape.

As far as performance is concerned, there have been two distinct measurement approaches. Both are trying to understand the essence of performance regarding profitability, productive efficiency, and growth [25]. The first approach is based on accounting measures such as return of assets and return on equity, even though this approach is subject to criticism [27]. The second approach includes analysis of aspects such as the level of investment, reinvestment of profits, market price levels, etc. [28]. The current study follows the second approach, trying to justify performance through less tangible and non-financial measures.

Finally, governmental policies have been added as a separate variable in the SCP framework, justifying such a modification by the fact that such policies can affect all other SCP variables [29]. Regulatory interventions can include measures directed to the market as a whole or the industry structure [25], while most common policies target competition's enhancement or prevention of abuses of market power [29]. Following such

a framework, the current study included regulatory aspects that played a significant role in the SCP framework.

3. Results

3.1. Basic Conditions

The Greek telecommunications market has undergone substantial transformations over the past three decades [30]. Initially operating as a state-owned monopoly through the Hellenic Telecommunications Organisation S.A—OTE in the fixed telephony sector—the market transitioned through phases of privatization and later liberalization [31]. In addition, mobile telephony began in 1992 with two private companies, namely Panafon and Telestet. This was followed by the launch of a third player, Cosmote, entering the market in 1996, owned by the former state-owned monopoly (OTE). Thereafter, the number of telecom operators grew rapidly, reaching fourteen (14) and eleven (11) fixed operators in 2008 and 2011, respectively. In parallel, the number of mobile operators remained steady at three (3) during this time.

In the following years, consecutive waves of economic crisis affected the Greek economy, resulting in a decline of market demand and supply [32]. By the end of 2022, the number of fixed telephony and broadband operators was four (4), while the number of mobile network operators was three (3) (i.e., Cosmote, Vodafone, and Nova). It should also be noted that although Greece has three MNOs, there are just two mobile network infrastructures in Greece, since Vodafone and Nova have been sharing their mobile network infrastructure for more than a decade. Additionally, Greece currently has no active mobile virtual network operator (MVNO). In contrast, several EU peer group countries, including Germany, Italy, the Netherlands, and Spain, have mobile virtual network operators (MVNOs) holding 10% or more of the mobile subscription market share. This suggests that in these markets, competition extends beyond just the infrastructure-based MNOs, enhancing market dynamics.

The COVID-19 pandemic crisis decreased Greek electronic communications' turnover to 4.8 billion euros (3.4% decline) in 2020, while the number of employees increased by 1.6% compared to 2019, reaching 14.6 thousand people. Even though the consumer price index (CPI) during 2020 reduced by almost 1%, the communications weight coefficient in the total household expenditure increased to 44.20 compared to 42.41 in 2019, revealing an increased importance when calculating CPI. Finally, sector's share to Greece's gross domestic product (GDP) in 2020 raised up to 2.9%, while it is worth mentioning that even in periods where the weighted average GDP reduced (e.g., −2.2% for the period 2011–2020), the sector's turnover still increased (e.g., 3.4% for the same period).

3.2. Market Structure

The current section aims to describe the structure of the mobile communications market in Greece, in order to provide evidence about significant aspects related to operators' behavior. In 2022, the number of mobile telephony connections came up to 13.8 million, recording a marginal increase of 0.1% versus 2021, while active connections decreased by 1.2% to approximately 11.4 million. The term “connections”, instead of “subscribers”, is preferred since a unique subscriber (individual or legal entity) can hold more than one connection. On the other hand, “Active connections” indicate that retail or wholesale revenues were generated during the last quarter (Table 1).

The vast majority of the above-mentioned number of total connections concerns residential connections, reaching 12.5 million connections at the end of 2022, which decreased by 0.36% versus 2021. On the other hand, business users' connections increased by 4.3% from 2021 to 2022, reaching 1.3 million connections (Figure 2, Table 1). Regarding the

penetration of mobile telephony on Greek population, it increased at the end of 2022 by 2.3%, reaching 132% (from 129% in 2021) in terms of total connections, and 109% (from 108% in 2021) in terms of active mobile telephony connections.

Table 1. Main market analysis [compiled by the authors].

	2017	2018	2019	2020	2021	2022	2021–2022
Registered connections	16,167,273	15,354,388	14,458,145	13,650,884	13,813,026	13,826,201	0.1%
Active connections	12,937,106	12,170,757	11,882,081	11,412,995	11,494,008	11,352,410	−1.2%
Residential	14,902,753	14,063,618	13,234,616	12,441,461	12,561,275	12,520,488	−0.3%
Business	1,264,520	1,290,770	1,223,529	1,209,423	1,251,751	1,305,713	4.3%
Penetration based on registered connections	150%	143%	135%	127%	129%	132%	-
Penetration based on active connections	120%	113%	111%	106%	108%	109%	-
Cosmote market shares based on registered connections	46.3%	47.9%	46.6%	46%	46%	47.8%	-
CYTA market shares based on registered connections	0.4%	0.4%	0%	-	-	-	-
Vodafone market shares based on registered connections	30.9%	30.3%	28.9%	29.2%	30.2%	30.2%	-
WIND market shares based on registered connections	22.4%	21.4%	24.5%	24.8%	23.8%	21.9%	-
Cosmote market shares based on active connections	45–55%	45–55%	45–55%	45–55%	45–55%	45–55%	-
CYTA market shares based on active connections	0–5%	0–5%	0–5%	-	-	-	-
Vodafone market shares based on active connections	25–35%	25–35%	25–35%	25–35%	25–35%	25–35%	-
WIND market shares based on active connections	15–25%	15–25%	15–25%	15–25%	15–25%	15–25%	-

In 2022, Cosmote’s market share in terms of total connections performed an increase of 47.8% versus 46% in 2021. On the contrary, the WIND market share showed a decrease in 2022 to 21.9% (from 23.8% in 2021), whereas Vodafone’s market share remained stable at 30.2%. In regard to active connections, Cosmote’s share is in the range of [45–55%], followed by Vodafone in the range of [25–35%] and WIND in the range of [15–25%] (Table 1). In addition, the penetration rate of active mobile telephony connections on Greece’s population at the end of 2022 reached 109%, which was an increase of approximately 1 percentage point compared to 2021 (penetration 108%). In addition, the penetration rate in terms of total connections was 132% in 2022, versus 129% in 2021.

However, focusing on the evolution of the above-described values over time, the situation seems stable for at least the last six years, evolving in a way that is not unusual. Looking at the big picture in terms of MNO’s market shares in total connections, the incumbent (Cosmote) has a leading position with a market share of around 47% on average, while the other two alternative MNOs (Vodafone and WIND) share the rest of the market, following with approximately 30% and 23% on average, respectively. In particular, Vodafone reached a maximum market share at the end of 2016 (35.3%), declining since then,

while 2020 was the first year after 2016 with increased market share. Moreover, WIND reached its own maximum market share at the end of 2013 (25.5%), decreasing from then up to December 2016 (18.7%) and then increasing after 2018, amounting to 21.9% in 2022, after some more fluctuations. Finally, Cosmote faced a significant decrease since 2011 (market share of 52.2%), and its minimum level was reached in 2014, when its market share fell to 44.5%, stabilizing since then. In addition, MNOs' total shares based on active connections remained in the same range the last six years, i.e., 45–55% for Cosmote, 25–35% for Vodafone, and 15–25% for WIND.

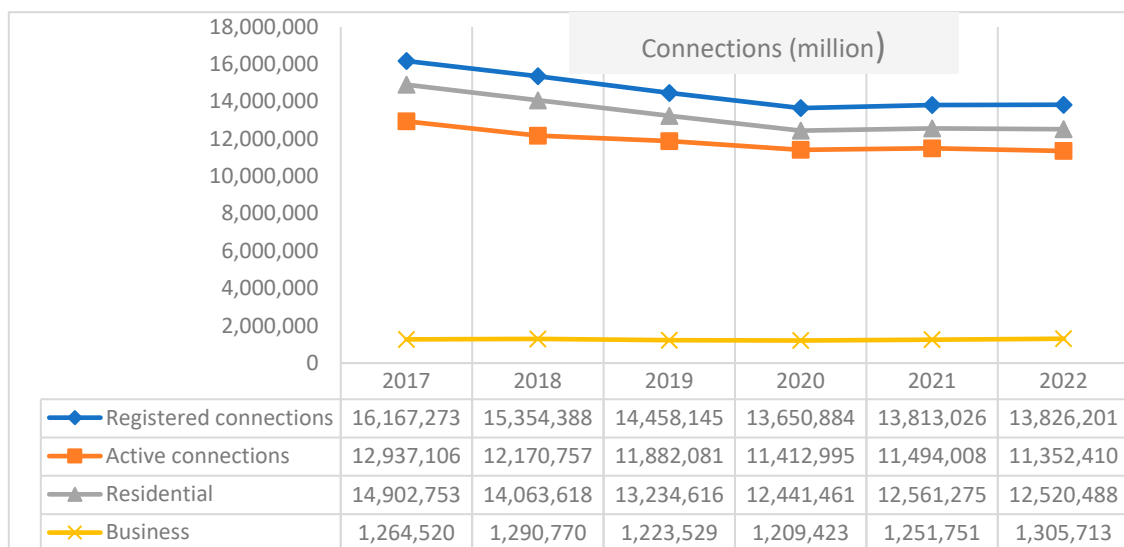


Figure 2. Connections in Greece between 2017–2022.

As mentioned above, the number of connections in 2022 slightly increased, while in parallel, the use of the mobile communications network also increased for most services, revealing very positive potentialities. In particular, the use of mobile communications networks in 2022 performed a 6.6% growth in domestic voice traffic. In particular, post-paid residential users had the largest share of this (44.6%), while the pre-paid users performed the second largest share (40.6%). It is worth mentioning that 51% of the calls carried out were characterized as “on-net”, meaning that they were carried out within the same operator’s network.

Moreover, the volume of data services in 2022 reached a peak of 844 million GB versus 563 million GB in 2021. In addition, consumed data performed a substantial increase in all user categories in 2022. On average, a post-paid residential user consumed 8 GB of data per month (compared to 5.3 GB in 2021), followed by a prepaid user at 5.5 GB (up from 3.8 GB in 2021) and a business user at 4.5 GB (up from 2.6 GB in 2021). Most of the data traffic (93%) was carried out through mobile phones, while the remaining 7% was transferred via other portable devices using data cards and M2M connections.

Comparing Greece with a peer group of eleven other EU countries during 2017–2022 revealed that Greece’s mobile data usage per subscription (excluding M2M and Including M2M) is lower than the median of the EU countries of reference, while it performs the fastest compound annual growth rate (CAGR +62% versus +37% between 2017–2022) in the mobile data usage. Although mobile data usage in Greece is low, it exhibits the most significant growth. It should be noted that up to 2020, Greece was performing the lowest data usage among the EU countries of reference, but after 2020, it has made significant growth, overtaking countries like Belgium, Germany, and the Netherlands. In parallel, as far as the use of voice is concerned, Greece is the leader, registering the highest value

among the EU countries of reference, and continues to have very positive prospects for growth in the future.

Considering revenues, the total mobile revenue per gigabyte of mobile data is higher than the median of the reference countries; however, Greece performed the third-fastest decrease in the revenue per GB from 2017 to 2022. In 2022, Belgium (3.1 EUR) was the leader regarding revenues per GB, while Germany was second (2.8 EUR), and the Netherlands remained at 2.2 EUR in 1H 2023, while Greece was fourth in ranking with 1.7 EUR in 1H 2023. It should be noted that Greece had the highest revenue per GB in 2019, but since then, Greece has fallen below Belgium, Germany, and the Netherlands, demonstrating a significant decrease. In addition, voice revenue per mobile voice minute reaches the median of the peer group and experiences median erosion between 2017 and 2022. In terms of mobile ARPU, Greece's revenue per mobile subscription, excluding M2M, is, after compensation for the comparative price level, at the median, while Greece is included in the group of countries with a positive CAGR, as far as ARPU is concerned, between 2017 and 2022.

As far as value for money is concerned, Greece performs less favorably in mobile data offerings in contrast to most of the EU countries of reference; however, it achieves better of all in voice services. In summary, Greek subscribers tend to pay an ordinary monthly rate to Greek telecom operators, while using comparatively less data and more voice services. Since voice minutes are no longer charged per minute in most modern markets, the focus of value for money is expected to be shifted to mobile data, which is still primarily charged by the gigabyte. Greece's value-for-money position in mobile data ranks among the weakest, on par with countries such as Belgium, Germany, and the Netherlands. However, there is significant potential for improvement, as Greece leads its peer group in the fastest growth rate of data usage.

All the above-mentioned results indicate a market where intense competition exists and little space for cooperation seems to be available, in terms of tower infrastructure sharing, especially in regard to cooperating with the incumbent operator.

3.3. Government Policies—Conduct—New Market Structure

The current section describes the two-way approach of the SCP paradigm by involving how market structure has led to specific government policies, which led to specific MNOs conducts, leading the whole market in a restructuring via an ongoing procedure of a two-way cause-effect logic as presented in Figure 1.

3.3.1. Government Policies

Government policies regarding infrastructure sharing in the Greek telecommunication industry come from Hellenic Telecommunication and Post Commission (EETT), whose policies are described in the current subsection. More precisely, infrastructure-sharing policies started to be applied back in 2011 when 900 MHz and 1800 MHz licenses involved an obligation for MNOs to negotiate and develop commercial agreements upon another MNO's request, in exact cases of collocation and sharing of equipment and/or real estate (including passive components). In that respect, MNOs could sign commercial agreements between them, which should not restrict competition (in accordance with Law 3959/2011 on the Protection of Free Competition) and should notify EETT 90 days in advance to obtain approval. On the other hand, EETT would provide approval, ensuring that the competition's regulations have been followed. Of course, setting no restrictions on the commercial terms of collocation made negotiations a "tool" often used by the incumbent to discourage and/or avoid any infrastructure sharing by setting terms difficult to be accepted by any competitor, i.e., an alternative MNO.

It was only after 2012, when Law 4070 applied, that EETT could set new regulations requiring MNOs to collocate masts and antennas mainly for environmental reasons, when technically possible, upon request, and on reasonable terms. An overall change in how operators faced infrastructure sharing and its benefits appeared when an agreement between Vodafone and WIND came to EETT for approval on July 2013, regarding network infrastructure sharing for mobile 2G/3G. Approval was given under the condition that EETT reserved the right to check and ensure that no law violations were conducted, or competition conditions were not violated.

Following infrastructure-sharing policies of 2011 and considering the negative response of the market as far as cooperation agreements amongst MNOs are concerned, EETT amended a regulation in 2015, encouraging collocation between MNOs, but on a basis of prefixed and mandatory provisions for any type of agreement. The procedure for improvements on this regulation continued, with amendments and codification being set on public consultation during 2018.

In November 2020, EETT approved (unconditionally cleared) v to proceed with the acquisition of sole control over the passive mobile network infrastructure of WIND, leading MNOs to rearrange their conduct as it will be described in the next section.

EETT continued to improve the relevant regulation for co-location and joint use of facilities, conducting a second round of public consultation in 2022, in accordance with the provisions of Law 4727/2020. As a result, an amended “Regulation for the co-location and joint use of facilities” was prepared by EETT, which was published in 2023.

3.3.2. MNOs Conduct

By 2014, alternative MNOs such as Vodafone and WIND had increased their market share (28.8% and 25.5% by the end of 2013), but it seemed difficult to threaten an incumbent company whose market share was 45.7% based on registered connections. Moreover, alternative operators were facing increased bureaucracy and difficulties regarding building new sites. Especially in urban areas, existing rooftops were of limited supply, in contrast to increased coverage needs due to population density. In addition, operators often faced severe difficulties and constraints for building new sites, since environmental and health issues had to be addressed and existing infrastructures (usually owned by the incumbent operator) located near essential facilities, leaving only few spaces for alternative operators to build their own infrastructures.

Such a situation led alternative operators, i.e., Vodafone and WIND, to proceed in a joint venture agreement, adopting a joint ownership model in 2013. This incident generated, after a few months, a new legal entity, namely Victus Networks, which owned and operated the mobile network, ensuring independence in management and consolidation of the shared infrastructure. Apart from managing the Radio Access Networks of its parent companies, Victus Networks acted on implementing a partial active RAN sharing for 2G and 3G technologies. Via the new company, both Vodafone and WIND had the opportunity to invest in new geographical areas and new technologies as well. The extra cost for operating a new company was covered by benefits arising from the joint control of the assets, alongside retaining transfer prices paid for their usage. More specifically, benefits arisen from the sharing of sites (co-location) and masts included:

- Reduced site acquisition times and build completion times, while in parallel increased the likelihood of obtaining planning permissions, as far as new sites were concerned;
- Facilitated access and proximity to densely populated locations (i.e., in urban areas) where access to new sites was limited, and there was reduced OPEX (site lease) and CAPEX (site build);

- Increased probability of network expansion in areas where profit was not possible without applying sharing strategies (i.e., in rural areas);
- Reduced environmental and visual impact.

Through infrastructure sharing, the two alternative operators managed to reduce the complexity and length of governmental approvals when new sites were built. Collocating policies became of high importance because of a limited supply of new sites, especially in urban areas. In parallel, increased competition with the incumbent operator and increased opposition from local communities and/or special pressure groups of residents was improving. Following a logic of cost and infrastructure reduction, avoiding duplication of investments, collocation made it easier for alternative operators to build new sites and achieve a higher quality of services around essential facilities, when commercial agreements with incumbent operator were difficult to reach until then. Finally, it was much simpler for both companies to expand in geographical areas, especially in rural areas, which were associated with high construction costs, including power supplies and access roads. Collocation reduced CAPEX costs and reduced the site payback period, improving the whole investment's probabilities for commercial viability.

In 2020, the Joint Venture passed in a second phase when WIND agreed to pass the sole control over its passive mobile network infrastructure to Vodafone. The Greek telecoms regulator EETT approved the transaction, leading to the unification of the shared passive mobile network, while the network passed from Vodafone to Vantage Towers GR, an independent TowerCo in Greece, being separated from Vodafone (Global) in May 2020 and holding VODAFONE's European tower infrastructure operations. The deal also included a long-term "Master Services Agreement" (MSA), ensuring that both companies would be treated fairly, equitably, and in a non-discriminatory manner, while Vantage Towers would be for both Vodafone and WIND, and was the favored supplier to build 250 new sites in a period of 5 years after 2021 for each of them, i.e., 500 new sites in total.

Up to the present, Vantage Towers is the leading TowerCo in Greece, managing around 5.2 thousand macro towers, more than 20 different tenants, of which two are anchored with extensive active sharing and perspectives to increase more their macro towers in the next few years. Moreover, Vantage Towers is listed in the Frankfurt Stock Exchange, even though Vodafone holds its majority ownership.

Any existing commercial collocation agreements with Cosmote, Forthnet, and Digea were still valid under the same conditions that existed with Victus Networks before all passive mobile network infrastructure was passed to Vantage Towers. Both Vodafone and WIND retain access to passive mobile networks, while part of the agreement was that part of both companies' debt would pass to Vantage Towers and indirectly to Vodafone's mother company.

By such an agreement, both alternative operators retained the above-mentioned benefits that forced them to proceed at the initial Joint Venture, but, moreover, (a) they were released from a large amount of debt created during their mobile network expansion, while (b) they reduced their operational cost coming from maintenance of their passive infrastructure, plus the capital cost required for expanding their mobile network to new geographical areas, as well as (c) providing them better access to financial liquidity at less cost, as a result of reducing debt, and doing better programming related to future investment.

3.3.3. New Market Structure

Recapping what has been described so far in the above section, the two alternative mobile operators in Greece (Vodafone and WIND), taking advantage of government policies encouraging infrastructure sharing, initially decided to join forces through the creation of a joint venture back in 2014. The cooperation had a positive impact for them, and, as a result,

their cooperation was deepened, passing in a second phase in 2020, which resulted in the creation of a new independent TowerCo in Greece. Following the SCP rationale, a scholar could observe that existing market conditions, alongside governmental policies and MNO's conducts, reshaped the market structure, not in terms of the incumbent's market share, but in terms of strengthening competition and involving a new player in the Greek mobile market, an independent TowerCo. The importance of such a restructuring is considered of vital importance in this study and will therefore be further analyzed, in terms of MNOs' shares in micro and macro stations across Greece. It should be noted that the proposed shares are presented in ranges, since the precise numbers are confidential, according to EETT. Even though presenting results in ranges is not totally representative, it can reveal important information regarding market restructuring.

Table 2 provides information regarding the micro and macro sites, before and after the market restructuring, which was provoked by the creation and entrance of a new player in the Greek mobile market, an independent TowerCo, namely Vantage Towers GR. When studying macro sites, it becomes clear that even though incumbent operator (Cosmote) retains its strength (45–55% of the whole macro sites), competition is rapidly increasing, since the new TowerCo performs a similar range of share in macro sites (45–55% of the whole macro sites), while Vodafone and WIND are expected to reach 0–5%. Vantage Towers may have fewer macro sites in absolute numbers, but plays a significant role in the market acting as an independent TowerCo, willing to provide collocation services to existing operators and new entrants, with more competitive commercial agreements than the incumbent operator.

Table 2. Share of macro sites before and after market restructuring.

Operator	Share of Macro Sites Before Market Restructuring	Share of Macro Sites After Market Restructuring
Cosmote	45–55%	45–55%
Vodafone	25–35%	0–5%
WIND	25–35%	0–5%
TowerCo	-	45–55%

As far as micro sites are concerned, Cosmote retains its strength as well (45–55% of the whole macro sites), while the new TowerCo controls 25–35% of the whole number of micro sites, and while the two alternative operators (Vodafone and WIND) fall from 25–35% and 15–25%, respectively, to 5–15% each (Table 3). After market restructuring, each alternative operator holds a market share of 5–15% in micro sites, which is an important element for the analysis of the structure of the market, revealing a differentiation compared with macro sites' market structure.

Table 3. Share of micro sites before and after market restructuring.

Operator	Share of Micro Sites Before Market Restructuring	Share of Micro Sites After Market Restructuring
Cosmote	45–55%	45–55%
VODAFONE	25–35%	5–15%
WIND	15–25%	5–15%
TowerCo	-	25–35%

In both cases, macro sites and micro sites, no company is gaining market share larger than 45–55% that could affect competition. As far as macro sites are concerned, TowerCo is expected to easily reach 45% of market share, while Cosmote most probably will have a market share between 35–45%. In terms of micro sites, the expected conditions are the

opposite, with Cosmote retaining 45–55% of the market share, while TowerCo is expected to reach 25–35%.

Combining both macro sites and micro sites in one market and including all operators, before and after market restructuring in 2020, the new market structure (Table 4) is revealed. Cosmote and TowerCo are becoming the largest players in the market, with the latter being expected to increase its dynamic by providing more competitive commercial agreements than the former operator (i.e., the incumbent), who was mainly operating its macro and micro sites in terms of pressure competition. All other market players were expected to limit their presence in the market.

Table 4. Share of macro and micro sites before and after market restructuring.

Operator	Share of Macro and Micro Sites Before Market Restructuring	Share of Macro and Micro Sites After Market Restructuring
Cosmote	35–45%	35–45%
VODAFONE	15–25%	0–5%
WIND	15–25%	0–5%
TowerCo	-	45–55%
Forthnet	0–5%	0–5%
Rural Connect	0–5%	0–5%
Digea	0–5%	0–5%
Other	5–15%	5–15%

3.4. Performance

Greece has been a leader in making the 5G pioneer bands (700 MHz, 2 GHz, 3400–3800 MHz, and 26 GHz) available as early as 2020. Since then, the country has made rapid advancements in expanding 5G coverage, constantly surpassing the EU average every year and contributing significantly to the digital decade objectives.

In 2023, Greece achieved 5G coverage of 98.1%, significantly higher than the EU average of 89.3%, with an annual growth rate of 14.5% compared to 9.8% at the EU level. It should be noted that 5G coverage refers to the percentage of populated areas covered by at least one operator, according to European Commission's and National Regulatory Authorities' reporting methodology. Approximately 58.8% of Greece's populated areas are covered by the 3.4–3.8 GHz band, supporting advanced applications that require a broader bandwidth, as well as exceeding the EU average of 50.6%. In rural regions, 5G coverage reached an impressive 92.1%, well above the EU's 73.1%, marking a significant leap from 57.8% in the previous year. Despite these advances, mobile broadband adoption in Greece remains at 83.5%, below the EU average of 89.9%. Greece's strategic plan aims for 100% 5G coverage by 2030, aligning with the EU's overall target. Given the consistent growth in recent years, Greece is expected to make a substantial contribution to meeting the EU's 5G targets [33,34].

In parallel, as far as fixed broadband is concerned, the situation is very different. Greece has been constantly scoring low for most fixed broadband indicators in the last years. Regarding fixed very high-capacity network (VHCN) coverage, Greece is notably below the EU average, with 20% in 2021, 27.9% in 2022, and 38.4% in 2023, versus 70% in 2021, 73% in 2022, and 79% in 2023, respectively. In addition, as far as fiber to the premises (FTTP) coverage is concerned, the situation is the same. However, it should be noted that Greece performed a notable increase of 10% in both VHCN and FTTP in the last reporting period (i.e., between 2022–2023), which provides a positive signal that the national broadband strategy is starting to produce good results.

As far as the country's strategy for broadband network deployment, Greece introduced its National Broadband Plan for 2021–2027 in 2022, aiming at advancing the use of fixed very high-capacity and 5G networks as key drivers of the country's digital transformation. The plan has outlined a strategic roadmap for fixed broadband and 5G development, with two primary objectives: a. to stimulate private investment by eliminating administrative obstacles and by fostering an investment-friendly climate, and b. to ensure the broad availability and widespread adoption of very high-capacity broadband services. On top of this, Greece also conducted in 2023 a detailed mapping of private investment plans, for the period 2023–2027. The Ministry of Digital Governance and EETT are currently reviewing the data, so as to identify any remaining investment gaps for speeding up networks' development. In parallel, two new operators have entered the Greek fiber deployment market the last year, and two major projects supported by the Recovery and Resilience Facility (RRF) and the European Regional Development Fund (ERDF) have been initiated, too.

It is obvious that targeted investments increasing fiber and 5G coverage at a large scale, especially in the un-/under-served areas of Greece, are of paramount importance for the take-up of fast fixed and 5G broadband. This will enable large enterprises, the wider public, and especially SMEs of Greece to use next-generation infrastructure, as a hotbed for the development of novel technologies, products, and services. The national strategy, alongside the Greek telecom market's specific features described in previous sections, has made the infrastructure sharing idea more attractive than ever among operators and regulators, as far as 5G network development is concerned. On the other hand, the fixed broadband network still needs significant investments to be mobilized and investment gaps to be filled, in order for Greece to meet national and EU targets by 2030.

Looking backwards in order to identify the drivers of country's good results on 5G network deployment, it is obvious that a big part of this success is due to the successful implementation of efficient tower-sharing strategies between alternative operators, triggered by a series of effective government policies and targeted measures applied between 2011–2023 to increase cooperation amongst them, within a predefined framework of play. As has been addressed in previous sections, existing market conditions, alongside governmental policies and MNOs' conducts, reshaped the market structure, not in terms of market shares, but in terms of strengthening competition for the rise of a new player in the Greek mobile market, an independent TowerCo.

Focusing on the SCP paradigm rationale, one of the main issues to be addressed in this section is how market structure and operators' conduct have affected market performance in the last decade. In other words, we will investigate whether there are any signs of market performance that reflect the underlying MNOs' strategies and conduct or market restructure after the entrance of Vantage towers in the Greek mobile market. How do the results on performance affect backwards operators' conducts and market structure? Looking into MNO investments and investments as a percentage of turnover the last decade (Figure 3), useful conclusions on operators' investments in telecom infrastructures (either on fixed broadband networks and/or mobile infrastructure) could be derived. During the last decade, a continuous evolution of the market is taking place, with circles of interactions between S-C-P, including feedback effects between government policies, operators, conducts, and market performances, before and after the milestone years—mainly in 2014 and 2020, when Victus was created and Vantage Towers Co entered in the market as an independent TowerCo, respectively. More precisely, there is a peak of investments in 2014 with 922 million versus 783 in 2023 (18% increase), reflecting the impact of the joint venture Victus on market performance. Additionally, there is a notable increase (38%) in investments in 2020 (entrance of Vantage Towers) with 1.094 million versus 793 million in 2019.

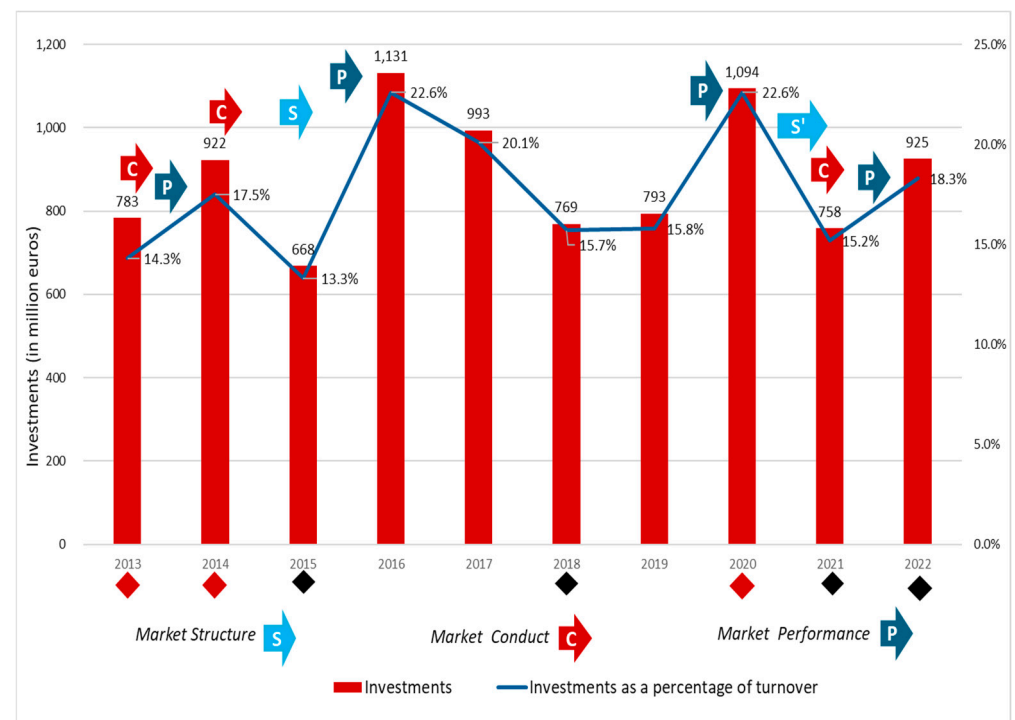


Figure 3. Investments (million) and investments as a percentage of turnover.

Considering the country's performance on 5G and fixed broadband deployment in the last years, Greece was seeking and still continues to seek funds for investments in broadband networks, aiming to bridge the gap with the EU average and hopefully meet EU's target, especially for VHCN/FTTP 100% coverage by 2030. Although this is an objective recently expressed explicitly through digital decade targets and/or national broadband plan 2021–2022, for all those operating in the Greek mobile market, it is not a new story. MNOs have been preparing their strategic plans and potential deployment scenarios for at least a decade. Therefore, employing the SCP model and reverse engineering, we return to analyzing their strategies for all this time, up to now.

The last decade, alternative mobile operators employed infrastructure-sharing strategies firstly to eliminate funds and time needed for 5G network deployment, meeting in parallel national and EU's targets. They were released from a large amount of debt related with their mobile network expansion, improving in parallel their financial performance, aiming: (i) to raise directly funding from stock exchange markets and the banking sector, which was planned to be mainly invested in the construction of broadband networks including both mobile and fixed optical networks expansion. As explained in previous sections, alternative MNOs after being released from a large amount of debt associated with their network expansion, increased their liquidity at minimum cost, (ii) to be more attractive for mergers and/or acquisitions by strategic partners/investors, for creating advanced enterprise schemes, with more sustainable competitive advantages, in terms of operational, technical, financial competences, etc. This is part of an overall MNO strategy aiming to provide them a lead the day after, increasing their overall market share and configuring a new market structure with those following this strategy on top.

In that respect, a telecom conglomerate United Group announced in September 2022 plans to invest \$2 billion worth of investments in Greece up to 2027 for the installation of a 10-gigabit optical-fiber network that will cover 4.5 million people and enterprises. At the beginning of the same year (i.e., January 2022), United Group took over Wind Hellas after EU clearance, aiming to consolidate in its portfolio of services WIND's fixed and mobile telecommunications services. In addition, two years ago, the United Group also acquired

the Greek telecommunications and pay-TV provider, Forthnet, for acquiring fixed and pay-TV service capabilities in its portfolio, too. At the end of March 2022, United Group had total debts exceeding 5.3 billion euros (bond loans, leases, etc.), an amount that is significantly increased compared to 4.0 billion euros a year ago. This increase in debts is attributed to a new loan of the group for acquiring Wind Hellas (980 million euros) and Optima Telekom in Croatia.

Additionally, Wind Hellas also established in Greece a new Fiber Co. (Athens, Greece) in 2021, namely Hellenic Open Fiber. This conduct was attributed to an overall strategic plan of WIND to create separate infrastructure companies, aiming for them to be open-access wholesale service providers to third parties. In that respect, the new company would undertake the setup of the optical infrastructure for fixed telephony, while WIND would retain only the active equipment serving its mobile network.

Summing up, the above-described case study of Wind Hellas reveals that it has indeed employed a long-term infrastructure-sharing policy, starting from its initial involvement in Victus Networks, passing to Vantage Towers and now to Hellenic Openfiber, as part of an overall strategy to save funds and improve its financial performance, reducing debt. In this way, it managed to be more attractive for an acquisition by a larger company. As a result, it finally became part of the European conglomerate, namely United Group. The final enterprise scheme, i.e., after the takeover, performs an improved fundraising capacity, while in parallel, there is a strategic focus on the development of fixed broadband networks through Hellenic Openfiber.

Looking at the big picture, there is an overall trend at the EU level (including Greece) for MNOs to separate infrastructure ownership and/or management from telecom service provisioning. In that respect, new TowerCos and FiberCos arise, which are usually connected in some way with MNOs. By sharing infrastructure, TowerCos/FiberCos provide the chance to MNOs to significantly decrease their infrastructure costs, since less passive infrastructure addresses more tenants per tower/optical fiber, and thus sustain profit margins. In this way, next-generation networks are deployed more efficiently and faster, giving the ground to MNOs to compete through innovation at the service level, focusing better on end-user needs and very often resulting in price reduction. In parallel, entry costs for new players are much lower, since there is no passive infrastructure to build. This increases competition, giving the chance to newcomers to enter the market.

Adopting such strategies, network expansion in unserved and underserved areas, where there is less revenue potential, is now possible. Infrastructure deployment is less costly, providing the chance to MNOs to differentiate in providing better quality of service and faster speeds. This is of critical importance, as Greece is in the middle of 5G expansion and in the beginning of fixed broadband deployment.

4. Discussion and Conclusions

The proposed research implemented the SCP framework in the tower-sharing market in Greece. It is the first time the above-mentioned framework has been applied to the Greek telecom market, while results contribute to existing research on SCP implementation in telecoms. It should be noted that the SCP framework is applied in its extended form in a mature market to explain significant changes in market structure. Emphasis is not set on a linear one-way relationship between Structure–Conduct–Performance that can mainly contribute to explaining financial growth, but on potential feedback effects of SCP's variables, including also governmental policies.

The analysis conducted revealed that the extended version of the SCP paradigm suits and provides valuable information (in strategic and decision-making level) regarding network tower-sharing in Greece, especially when it comes to interpreting the market

structure's changes over time, especially focusing on the last decade. Results indicate that, as far as network tower-sharing is concerned, many variables exist that play a significant role. Namely, these variables include barriers to entry/exit, market concentration, demand rates in specific geographical areas, pricing policies, legal strategies, cooperation and competition strategies, investment strategies, and reinvestment of profits strategies.

Government policies seem to be directly associated with operators' conduct and market restructuring. On the other hand, only indirect effects on performance are detected. Moreover, the SCP framework reveals the perspectives of network tower-sharing in the Greek telecommunication industry, focusing on the main drivers of TowerCos' emergence, as follows:

1. Lower cost structure: TowerCos' involvement seems welcomed by alternative operators since the infrastructure cost is decreasing while the profit margins can be sustained. Moreover, such an involvement facilitates the implementation of next generation networks alongside developing new innovative services for their customers. Finally, competition is expected to increase among service providers.
2. Efficient network expansion: TowerCos' involvement improves operators' presence in areas where less or no revenues are expected. Such an element is important when it comes to 5G expansion, since better quality of service and faster speeds are expected in a wider range.
3. Efficient network expansion: Entry barriers are lowered since no passive infrastructure cost exists for both existing and new service providers. Moreover, entry costs are reduced to those linked to active infrastructure, enabling faster time to market for service providers.
4. Growth in data traffic: Internet-wide usage led to growth of data traffic, while universal coverage became a necessity. TowerCos' involvement delivered a more efficient planning, especially in terms of high speed and low latency.

Following an analysis of the Greek mobile market focusing on infrastructure-sharing strategies, we examined in the previous sections basic conditions, government policies, incidents, and behaviors of the last decade in order to interpret the interrelationships amongst S-C-P. However, this valuable experience of examining the past provides, in parallel, the ground for visualizing the future and the means to reach the country's goals in the form of clear policy recommendations for the next phase that the Greek mobile market is entering. It should be noted that Greece is perceived as an integral part of Europe, and therefore, the proposed recommendations for Greece could potentially address other EU peer group telecom markets, too.

One of the key objectives for Greece and Europe is to accelerate the deployment of high-speed mobile and fixed broadband services by 2030. Ensuring low latency, ubiquitous connectivity, and seamless service delivery across Europe is essential for establishing a sustainable competitive advantage in the global market.

To achieve this goal, expanding private investment in mobile and fixed networks—particularly in 5G standalone (SA) and fiber infrastructures of critical importance. In parallel, fostering the consolidation of industry players and infrastructure can drive efficiency and scalability, creating an environment where innovation can thrive. Strategic focus areas should include the development of multi-shared platforms for Radio Access Network (O-RAN) sharing, advancements in edge computing, and the growth of IoT ecosystems. These technological advancements will not only enhance network performance, but also pave the way for transformative digital services that can boost economic growth and global competitiveness.

Regarding government policies, it is recommended that the state actively promote infrastructure sharing among all digital stakeholders—including internet service providers,

telecom operators, and network owners—through the development of appropriate legislation. Encouraging such collaboration can lead to more efficient resource utilization, reduced operational costs, and improved connectivity, ultimately benefiting consumers and businesses alike. Additionally, facilitating cross-border mergers and operations that enhance investment in telecom infrastructure should be a key priority.

Given the capital-intensive nature of telecommunications, regulatory frameworks should support consolidation efforts that drive technological advancements and network expansion. In this context, both EU and national merger clearance regulations should be aligned with broader innovation and investment objectives to ensure that policy decisions foster long-term industry growth and competitiveness.

Furthermore, the merger clearance process should be expedited to prevent unnecessary delays that could hinder market development and investment flows. At the same time, competition law enforcement (ex-post) should be reinforced under specific circumstances to prevent market abuses while maintaining a fair and dynamic competitive environment. This approach aligns with the recommendations outlined in the Draghi report on EU competitiveness, which emphasizes the need for a regulatory framework that balances market efficiency, innovation, and consumer welfare [35].

Since there is a growing social demand for high-speed and high-quality ubiquitous networks, it is also recommended that the states encourage infrastructure sharing, as long as it does not harm competition. While passive sharing is widely accepted, active sharing is also becoming more common; however, it should be reinforced. Enabled by national legislation, agreements should evolve to include deeper network and spectrum sharing, although we are aware that this may pose new regulatory and competition challenges. In many cases, operators should be encouraged to establish active-sharing agreements without prior regulatory approval but must notify authorities. Some agreements, however, require regulatory oversight. For the moment, 32 OECD countries allow RAN sharing, while 27 permit spectrum-sharing, sometimes requiring approval, which is a fact that lags network development. Core network sharing is allowed in 24 OECD countries. In that respect, specific national developments include Japan, which revised its guidelines on infrastructure sharing in 2022, and the Netherlands, which issued guidelines in 2021 to clarify network-sharing regulations [36].

In addition, it is recommended that states set cut-off dates for older technologies in order to accelerate the transition to more advanced networks. This approach is expected to enable the phase out of outdated systems and to promote investment in modern shared infrastructures. In parallel, it is recommended that states and EU policy makers encourage the strengthening of EU-based telecom equipment and software providers for succeeding in the so-called EU's open strategic autonomy. By boosting domestic capabilities, the EU can reduce dependence on external suppliers, enhance security, and ensure greater control over its digital infrastructure [35].

5. Limitations and Future Research

Changes in market structure began in 2021, but the full extent and significance of these changes require more time to become clear. While the timeframe since 2021 is too short to gather sufficient quantitative data, the proposed qualitative findings offer valuable insights into expected market trends in the coming years. Additionally, it is important to note that the exact number of macro and micro sites for each operator is not publicly available; only approximate range values of market shares can be accessed. This limitation makes it challenging to assess small yet meaningful changes in the market.

For future research, it is recommended to continue monitoring the telecommunications market to observe incumbents' behavior and responses, as well as the ongoing expansion of

mobile networks by all operators in Greece following the proposed network tower-sharing analysis. Additionally, as the market has not yet fully stabilized after TowerCo's entry, further developments are expected in the coming years. Leveraging quantitative methods or statistical models to assess the impact of tower-sharing on market performance more rigorously, once sufficient data becomes available, will offer valuable insights. Moreover, conducting a comparative study with other countries that have similar market structures or have implemented network sharing under different regulatory frameworks is also advised, as this could generate useful findings for policymaking across all involved nations.

An intriguing question that arises concerns the incumbent's approach to negotiating commercial agreements with alternative operators for infrastructure sharing (collocation agreements). Until recently, such agreements were difficult to establish, as the proposed commercial terms largely favored the incumbent. However, the presence of an independent TowerCo is expected to introduce greater competition, prompting the incumbent to reassess its infrastructure-sharing strategy and policies. This shift aims to enhance competitiveness with the new TowerCo while minimizing potential losses in wholesale revenue.

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