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EDITORIAL OFFICE

office 2035, 76, av. Vernadsky, Moscow, Russia, 119454

OFFICIAL WEBSITE

ibj.mgimo.ru

EMAIL

ibj@inno.mgimo.ru

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CHIEF EDITOR'S REMARKS

Vladimir V. Shapovalov

MGIMO University

Dear readers!

The global economy continues to transform, affecting various areas and sectors. Apart from the general tendencies in international business, we drew attention to the trends in the electronic and pharmaceutical industries of several countries in this issue.

You will learn about the current conjunctural problems of business development in the EAEU member states amid escalating global military-political and economic tensions from the article by Associate Professor of the Department of Economic Policy and Public-Private Partnership of MGIMO A. Afyan.

Experts of the Center for Applied Research of the School of International Business of MGIMO M. Chertovskikh and M. Gromov will identify the features of the worldview model of «pentabasis» by the example of enterprise management and the creation of its corporate culture.

This issue includes three European authors: P. Ertelt from the UNITAR International University (Germany) will reveal peculiarities of the country risks in Germany and its counterparts at the current stage of the development of the world economy. D. Panyasak (France) will talk about the consequences for the electronic industry functioning in the context of digitalization and the methods for state regulation of this sector. Independent consultant D. Topadze (France) will provide insights to the intricacies of doing business in France.

Finally, you will find more about the pharmaceutical industry development in Russia from the article by the Head of the Department of Economic Policy and Public-Private Partnership of MGIMO E. Zavialova and expert D. Polozova.

The special guest of the issue, the CEO of MegaFon, H. Pombukhchan, will share with you his thoughts on the prospects of the Russian telecommunications market in the near future.

Sincerely,
Chief Editor,
Vladimir Shapovalov

MARKET ENVIRONMENT RELATED ISSUES OF BUSINESS DEVELOPMENT IN THE EAEU STATES

Aram I. Afyan

MGIMO University

Abstract

Integration processes in the EAEU area are becoming a subject of keen interest both from the governments of the member states and from the international community amid growing global military-political and economic tensions. Developing new global supply chains provides a unique opportunity for the business community of the EAEU member states to offer the world economy alternative business models of interaction with regional markets. At the same time, traditional integration problems still remain relevant for the Union: the uneven development of national economies, the complicated bureaucratic nature of interagency procedures, differences in legal systems, technical barriers, low integration in innovation and technology, and others. The article defines the main essence of the problems associated with the Union interaction that impede the development of regional business. The article also reveals possible ways of resolving the most serious restrictions, emphasizing the importance of cooperation among the EAEU member states in boosting cross-border business.

Keywords

Integration processes, the EAEU, regional business, international business, Eurasian cooperation, regional risks.

TRANSFORMATION OF INITIAL CONDITIONS

Modern Eurasian integration processes are developing amid a global military-political and economic confrontation when each state, regardless of membership in certain associations and unions, is forced to navigate between the interests of major parties in the conflict. At the same time, membership in the Eurasian Economic Union opens up new development horizons for many of its members, which, with the efficiently organized legal and economic processes, can give a powerful impetus to the development of national economies.

The global sanctions war declared by Western countries against Russia and the Republic of Belarus has caused a drastic transformation of supply chains that have been shaping for decades. Such a dramatic disruption of cross-border business processes, on the one hand, triggered a significant deterioration in the business environment for most economic entities in the EAEU area, up to the halted activity of many of them. On the other hand, the opportunity to design new logistics routes «from scratch» creates unprecedented benefits for new business projects, especially for the most economically lagging Union members.

However, all the EAEU states still face the threat of sanctions pressure from Western countries if they are suspected of violating the restrictive measures imposed against Russia [1]. Under these circumstances it becomes vital for Armenia, Kazakhstan and Kyrgyzstan not only to arrange the re-export of finished products and make up for the current temporary deficit on the Russian market, but also to direct efforts to develop value added and organize the manufacturing of goods in demand on the Union markets.

The geopolitical aggravation and, at the same time, new emerging opportunities, on the one hand, make the integration processes development more relevant, on the other hand, they are reminiscent of those systemic problems that remain unresolved on the Union agenda.

RELEVANT PROBLEMS OF ECONOMIC INTEGRATION

1. The uneven development of the EAEU economies is the main problem and phenomenon that has been witnessed in the economic cooperation among the Union states from the very beginning of its creation in 2015 [2]. This implies that some countries have a higher level of economic development and productivity than others. The most developed EAEU country is Russia, which leads by many economic indicators, such as GDP, industrial output, labor productivity, etc. At the same time, such countries as Armenia and Kyrgyzstan have a lower level of economic development and remain in a more difficult position. The uneven development of the EAEU economies may lead to unequal distribution of benefits and resources among the member states, which is likely to cause dependence of some countries on others, and also create certain difficulties in maintaining the competitiveness of less developed economies.

2. Differences in legal systems and economic regulation, as well as a complicated system of bureaucratic procedures in member states, still remain a relevant problem. This hinders doing business, particularly for those operating in several countries. Bureaucratic procedures and regulations in different EAEU countries especially complicate the activity of small and medium-sized enterprises (SMEs). For instance, procedures for obtaining permits to do business, compliance with the fiscal law and reporting in line with national rules bear tangible costs for SMEs. Moreover, a serious constraint for SMEs is the interaction with tax authorities and quarantine services when moving goods across borders.

3. Technical barriers are another significant factor hindering the business activity in the EAEU. Differences in technical standards and requirements for product quality, as well as differences in certification systems in the EAEU member states imply tangible difficulties for business. For instance, goods manufactured in compliance with the regulation of one country may not be compatible with the requirements of another country. This generates extra costs for processing (updating) and certification of goods, which has a negative impact on profitability of the business.

4. Low integration in technology and innovation is another factor hindering the development of the EAEU economies. One of the main problems associated with technological integration is the difference in national strategies and approaches to technological development. Apart from that, unlike the European Union (EU) with numerous joint projects, programs and tools that promote integration in scientific research and technology, the EAEU still lacks single integration system for technological integration. Another problem is insufficient number of businesses participating in innovative projects and programs. Often companies cannot realize the value of innovations, allocate the required resources and manage the processes of their development [3].

5. Restrictions on the movement of goods and services: the EAEU has a number of restrictions on the free movement of goods and services. Some member states retain national regulations and restrictions on the participation of foreign companies in a number of economic sectors (for instance, public procurement), which creates additional obstacles to the development of cross-border business.

Restrictions on the movement of goods lead to flawed competition and inadequate pricing policy, which also have a negative impact on economic development in the region.

6. The underdevelopment of international infrastructure projects is another problem that hinders the development of the EAEU economies. It complicates trade between countries and hinders access to the global market. The lack of international transport links limits the free flow of goods and services and reduces the effectiveness of accelerating infrastructure integration and competitiveness of the region on the global market.

7. Finally, the EAEU faces the problem of conflicts between its members. For instance, in 2019 Russia and Belarus faced serious disagreements over oil and gas prices, which restricted energy supplies from Russia to Belarus [4].

Conflicts between the EAEU states may be caused by various reasons, for instance, trade disputes, market competition, different approaches to solving economic problems, etc. Conflicts between member states may also result from different national interests and priorities. For instance, Belarus can protect its national interests in the production and export of agricultural produce, while Russia protects its interests in the energy sector and oil and gas industry.

MECHANISMS OF COMPREHENSIVE SOLUTIONS

Despite the complicated nature of the above problems, their full or partial resolution is a key prerequisite for the implementation of the Union strategic integration goals. In the light of the foregoing, it seems reasonable to concentrate the efforts of government heads of the member states using the mechanisms of the EAEU governing bodies in the following areas.

1. Development of harmonized measures aimed at encouraging a more even development of member economies. This can be achieved through the integration of financial and economic infrastructure, support for investment and technological innovation, as well as through higher levels of labor education

and qualification throughout the area of the Union.

2. Streamlining the procedure for interaction among the EAEU member states to optimize bureaucratic barriers in cross-border business [5].

3. Introduction of a single product certification system in all the EAEU member states. This would reduce the time and cost of obtaining certificates and entry barriers on another market [6]. Moreover, to eliminate the existing incompatibility of standards in different states it seems reasonable to coordinate the EAEU members when developing and adopting new norms and standards that should be compatible in various sectors of the economy.

4. Educational programs and business support in innovation. One of the solutions may be joint projects and programs in various areas of innovation. Better interaction of innovation centers, single innovation network, the introduction and improvement of the main internal mechanisms (innovations, software products, intellectual property management and other elements) can considerably accelerate the development of economic and innovation potentials of the EAEU member states, as well as ensure technological independence and higher competitiveness on the global market [8].

5. A solution to the problem of underdeveloped international infrastructure projects can be achieved through a series of measures aimed at strengthening infrastructure capacity and a common logistics system. In particular, the development of a single transport system will improve the international infrastructure network and strengthen the attractiveness of the region as a whole.

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About the author:

Aram I. Afyan - PhD in Economics, Associate Professor of the Department of Economic Policy and Public-Private Partnership, MGIMO University, 119454, Russia, Moscow, 76 Vernadsky Avenue.

RSCI Author ID: 1090813

spin-код: 7472-2915

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«GRAMMAR» OF THE WORLDVIEW «PENTABASIS» MODEL FOR NATIONAL MANAGEMENT CULTURE

Matvey G. Chertovskikh

Mikhail S. Gromov

MGIMO University

Abstract

The article discusses the general structure of the worldview model of «Pentabasis» and attempts to produce practical explications of the system for corporate governance and culture. The study comprehends the named system of values within structuralism as an axiological code that encompasses all spheres of social life. It also gives the analysis of syntagmatic and paradigmatic interactions within the system. Analytical consideration of the links between the elements of the model provides the basis to make a conclusion about possible simultaneous work with attributes (selected values), regardless of the level at which the interaction takes place. It is noted that «Pentabasis» is aimed at reproducing the structures of the state in those areas where it is applied, however, the very concept of «state» here refers to the concept of state-service and does not have an explicit paternalistic tinge. Further, the article transfers the cultural Russian value dominants to the field of governance and management. The authors prove the advantage of the theory of motivation Y within the Russian management culture, based on the principles of «Pentabasis», and also compare the corporate maxims of both national and foreign companies to check them against the model provisions and further improve in line with the proposed recommendations.

Keywords

Russian management culture, governance and management in Russia, «Pentabasis» of values, theory of motivation Y, state-service, corporate values, foundations of Russian nation-building, corporate ideology, «Pentabasis» factors, Russian culture.

In September 2023 it is planned to introduce a new large-scale course in the curriculum of higher schools - «Foundations of Russian nation-building». The authors of the course emphasize that its objective is to fill in the gaps in the knowledge of national culture and history, however, it should be noted that in parallel it is supposed to place certain worldview accents [1]. Then it is obvious that there is a need for an ideological base which will underpin the educational function of the course and one of the main sources can be the worldview model of “Pentabasis” developed in 2022.

This study is planned to look into possible practical application of the model for the national corporate culture, the culture of governance and management in general. It also seems appropriate to problematize some related theoretical aspects of model application in governance and management in the interests of teaching management, as one of the possible units of the new educational course. To this end we will consider “Pentabasis” within structuralism, transfer its provisions and basic principles from the general culture to governance and business ethics, compare the results obtained with studies of the actual situation in the Russian management culture and the content of the value dominants of the corporate cultures in companies operating (or who have operated recently) in Russia.

We metaphorically call the results of theoretical consideration and structural conceptualization of the model “grammar”, in the sense that it is assumed to possess implicit structure of the system, the understanding of which will allow one to adequately operate with its elements in a communicative way, in this case within managerial activity. Moreover, the authors of the model themselves (A.D. Kharichev and others) tried to formulate a nationwide civilizational code using the materials of group discussions, which, in our opinion, can be interpreted in a broad sense as a structure with a language-like order.

It should be noted that this study is not the first on the specified issues. According to the state task of the Ministry of Science and Higher Education of the Russian Federation (draft No. FZNF-2022-0001 - Potential and features of worldview development in the digital environment), studies have already been carried out, some of which are closely related to the issue under study, for instance: «The development of Patriotism in Russia: Pentabasis and Corporate Culture» [2]. It is also worth noting the InterComm 2022 conference - “The route has been rebuilt. We are looking for a new coordinate system”, which gave the platform for discussion of, inter alia, new value orientations amid restructuring the system of internal communications.

To begin with, let's share a brief insight into the «Pentabasis» model. The study, which first presented the model, was conducted through group discussions from 4 March to 20 May 2022. The method trial was effected to describe worldview systems in groups of students of Moscow State University and the Higher School of Economics and the teaching staff of the conference participants in Sevastopol [3]. As a result, it was possible to encode the socio-political discourse of modern Russia within a five-part model: a person - a family - a society - a state - a country. The levels of discourse reveal an obvious, paradigmatic connection, since the system is hierarchically ordered at the first three levels, the fourth (a state) is the result of their interaction as a whole, and the last level, a country, is the same result of the overall operation of the system. At the same time, in the whole model, they are connected syntactically as equal elements of the «Pentabasis» set.

To discover further potential of working with the system, let us look into the nature of the links among the elements in more detail. At each paradigmatic level the authors single out a value dominant, an attribute that, for the above order, can be represented accordingly: creativity - traditions - consentience - trust in institutions - patriotism. Syntagmatic links within the levels, on the

one hand, enable scaling and thus changing the level in nesting relations, which can be illustrated by the example of the article text: «the people of the Russian Federation [note of the author “level of society”] is a family of families” [4]. On the other hand, the syntax of level attributes is possible, for instance, where the dominant “trust in institutions” for the level “state” can enter into a horizontal connection with the dominant “traditions”, respectively, for the level “family”, etc. As evidence one can go on the contrary and assume that each attribute is an isolated property of the level to which this attribution is made. However, then we should recognize as a necessary conclusion that the level of a state does not retain the discursive right to “create”, which is clearly not to the liking of the model authors, and even more so is unlikely to be true in all cases from a pragmatic and correspondent point of view. Then we should return to understanding the model as a system which properties exceed those of its individual objects, and value dominants are emergent properties that emerge when and only when all parts of the model work together. Thus, regardless of the attribution to different paradigmatic levels, all value dominants shape an anthropological microparadigm with syntactic links. That’s where we can draw the first practical consequence: despite the maximum actualization within a particular level, all value dominants emerge and are actualized in their own way at each other level in the course of their inevitable systemic interaction.

Therefore, we deem it essential to work in all five areas, and not to localize management within one of the levels, for instance, a family (if we imply a family business or an enterprise with strong horizontal ties), a society or a state (if we imply an enterprise possessing special role in ensuring the activity of the state, and the employment is a form of «sacred» service).

What else remains to be done for a minimum approximation to the general rules (“grammar”) of the worldview system in question? We shall consider again the names of value dominants. It can be assumed that all of them belong to the lexico-semantic field of the concept (archilexeme) «nation-building». We can go further and think about the fact that the whole system involves the reconstruction of state structures at different levels of human existence. But what does this mean and what do the authors of the study imply by a state? In addition, we specify that a distinction should be made between a “state” as part of “Pentabasis” and a state as a concept in national culture.

The study provides some metaphorical images of the future of Russia, some of which may be useful for understanding the structures that should be deployed within the worldview system. «Concepts of the modern state» block demonstrate two images with similar features: a technological state, a social state, a point of forces unity, a personalized state [5]. All this comes together no longer in the image of a paternalistic state, the existence of which is a goal in itself, and subordinates to its idea and itself the life projects of citizens, but rather as a service state, which allows, due to positive feedback, actualizing the internal needs of citizens, demanding in return loyalty and per se «contribution by deed». At the individual level it works in the following way: “... Russian ideas about self-realization are strikingly different from those that are common in the Western (Anglo-Saxon) world. Self-realization or destiny in the Russian case implies that an individual contributes to the development of the country. The destiny capitalization stage is optional. At the same time, capitalization in the minds of the section participants does not have negative connotations. Moreover, one of the tasks of a person living in Russia of the future is the capitalization of Russian citizenship” [6].

Now let’s transfer these values to labor culture:

Table 1

The Content of the Value Dominants of the «Pentabasis» Model in Management Culture of Russia

	Content within management culture
Creativity	The code holder perceives his work as self-realization. The maximum capitalization of labor is not a priority, but it is desirable. The priority for the worker is the performance of work, which, in his opinion, is essential.
Traditions	For a worker, the balance of work and family leisure, active involvement in the affairs of his family, is important. The culture of overtime at work and office atomization are unacceptable to the code holder, unless they are compensated by the involvement of other value dominants.
Consentience	The code holder is open for mutual understanding and support of his own initiative, trust in his own creative choice of the way to implement the task at work. Restrictions on these freedoms are perceived as a discriminatory measure.
Trust in institutions	The code holder has a need for the openness of the management system, for its non-indifference and service approach, as well as for the common goals for himself and representatives of the management.
Patriotism	The code holder considers it essential to be a part of a common cause, which he implements at his job and which his company implements in the country.

Source: Grishanin N.V., Minevich Y.V., Merkusheva A.S. Development of patriotism in Russia: Pentabasis and corporate culture // Bulletin of Omsk University. Series «Historical Sciences». 2023. №2 (38). URL: <https://cyberleninka.ru/article/n/formirovanie-patriotizma-v-rossii-pentabazis-i-korporativnaya-kultura> (Accessed 7 July 2023).

Next, we will provide a number of practical consequences and recommendations, starting with the expansion of the value dominant “creativity”. It is worth resorting to the theory of employee motivation to work. Theories X and Y characterize two possible variants of a person’s attitude to work. In accordance with the first variant (theory X), the set of worker characteristics is as follows: the average individual seeks to shirk his duties, does not like work, is passive, prefers to be led, does not want to take risks and responsibilities, focuses only on personal security and material benefit, i.e. this is an “economic individual”. Based on this, most people need to be forced, strictly controlled, to ensure the achievement of the goals of the organization. In contrast to Theory X managers, who see it as their primary responsibility to manage employees, Theory Y managers seek to help employees acquire self-management skills.

Theory Y suggests that there is another category of workers. For them, physical and mental labor is as natural and necessary as play or rest, so they do not avoid labor. Such workers do not just wish to shirk responsibility, but also strive for it, do not need control and are able to control themselves, demonstrate imagination, ingenuity and initiative.

The manager, according to D. McGregor, must, based on corresponding assumptions about human motivation, adhere to a certain style of leadership: authoritarian in the first case and democratic in the second [7]. The authoritarian style (a variant of motivation according to theory X) is tight control, coercion to work, negative sanctions, an emphasis on material incentives. Democratic style (variant of motivation according to theory Y) emphasizes the use of the creative abilities of subordinates, flexible control, lack of coercion, self-control, participation in management, moral stimulation.

In Russia we witness use of various theories of personnel motivation.

When managing personnel, one cannot do without world's best practices, however, it must be considered that mere imitation is impossible. The development of Russian management should take into account the main trend in the development of mentality towards individualism, focusing more and more on the individual, control by an individual, keeping record of the individual contribution and remuneration based on it. This means that enterprises should assign priority to promotions based not on acquaintance and family ties, but solely on the personal abilities of each individual. When shaping a management system, it is essential to consider the business qualities of an individual, his ability to perceive the new, determination.

It is advisable to use workers with a collectivist mindset in areas with specific methods of management that are adequate to them, with an emphasis on collective work, collective responsibility and control, the use of a brigade form of labor organization and its compensation, etc.

A modern Russian manager should be flexible in defining the goals and objectives of management and persistence, when a goal is selected, in a steady striving to achieve it. This type of manager, which combines flexibility, adaptability and great strong-willed qualities, will have to be raised for many years to come.

Thus, given the Russian reality our study should pay more attention to theory Y, which is based on flexibility, adaptability, maneuverability and dialectic.

Now let's turn to the perception of the corporate culture itself in its traditional forms. In the above mentioned paper by Grishanin N.V., Minevich Y.V. and Merkusheva A.S. we see the following statement: "... in a historical perspective, patriotism, or sacrifice in the name of the state, country, family, society, was opposed by a company, especially a multinational one" [8]. In the post-Soviet area the stereotype of the "bourgeois" and, accordingly, the anti-people capitalist enterprise is really rooted. As far back as the middle of the last decade studies sometimes revealed that in Russia the corporate culture, as part of the management culture and social code, had not taken root and was not the case everywhere. "All the above characteristics of the current state of the culture in national organizations give reason to believe that it is too early to talk about it as a factor in improving the efficiency of enterprises, motivating staff and boosting labor productivity" [9]. However, by 2022, according to a survey by Rabota.ru service, 67% of respondents (the users of the service) said they were aware of the corporate culture of their company [10]. Modern studies of the vision of the future among Russians testify to its eclecticism and uncertainty, however, it is noted that: "such an idea cannot be the idea of money, wealth and its accumulation" [11].

In view of the foregoing, we see the clear need to apply the value dominants of the model to create a corporate culture adequate to our conditions, as long as it reflects the current need. Are these dominants reflected in the corporate cultures of large corporations and not only national ones? Five principles of MNC Mars Inc. include such value dominants as: quality, responsibility, mutual benefit, efficiency and freedom [12]. However, let us note that the lexico-semantic fields of these two tiers (the five principles of Mars and the value dominants of "Pentabasis") are different. Where the attributes of «Pentabasis» reproduce the structures of the state discourse, the five principles reproduce the structures of capitalist discourse possessing a different semantics.

Let's take another example. The Coca-Cola Company distinguishes three dominants in its corporate culture: cultural and gender diversity, equity and inclusion (Diversity, Equity & Inclusion) [13]. The presented concepts, in turn, refer to the field of left-liberal value discourse. At the same time, by the way, the text of the article by Kharichev A.D. et al. also mentions a need for "inclusion", but then makes an interesting comment regarding the meaning of the concept:

"[author's note about the image of Russia of the future] A community based on certain rules and principles, regardless of gender, race, nationality, ethnic group, etc., whose members are happy against all odds. Acceptance of different, i.e. inclusion, coexistence, acceptance of others as equals (in no case be confused with the term "tolerance")" [14].

Consider now the example from national practice. PJSC Gazprom distinguishes the following value dominants: professionalism, initiative, thrift, mutual respect, openness to dialogue, continuity, image [15]. This tier of dominants is also more about a rather traditional corporate approach of a capitalist enterprise, however, in contrast to the Five Principles of Mars Inc. beyond its value dominants, it includes other components that already belong to the state or, to be more precise, country discourse: for instance, the slogan "Gazprom is a national treasure", which caused a conflict with the Federal Antitrust Agency in 2016 [16]. Within the current consideration such a slogan sounds more than appropriate, since it reflects the need of both workers and society as a whole for patriotism. One more difference from Mars Inc. is another semantic accentuation of values: not "mutual benefit", but "mutual respect", not "freedom", which in the case of Mars Inc. means a certain general level of freedom implying the financial sovereignty of the company, and «initiative», «thrift» and «professionalism», addressing agency directly to the worker. Apart from that, the "Pentabasis" model fits such items as "continuity", which coincides with the concept of "traditions" and "image" transferred to the corporate area, in the Company Code it is materialized as a set of measures aimed at symbolic capitalization of the common cause of workers in front of society. Thus, we see that some elements of the «Pentabasis» model are already traced in the management practice of national companies.

Our practical recommendations can be summarized as follows: based on the provisions of the worldview «Pentabasis» model in Russia, management theory Y is the most suitable for motivating workers; at the level of corporate culture, we recommend introducing all the value dominants of the model simultaneously with contextualization to the activity of the enterprise.

Our study of the specified worldview model as a structured system that involves addressing messages significant for a representative of the Russian society, which, being for a person on the same level of his lifeworld, and providing an inextricable connection of entire social life, can be considered the first approximation to the «grammar» of managerial «Pentabasis», which in future will enable further practical applications for the system. At the same time, the system focus on reproducing state discourse in the areas it is applied, coupled with a rethinking of the role of the state (as a service state), gives clearer understanding of the desired identity of a hypothetical modern worker and his view of life.

Summing up, it should be noted that the studied model was considered, first of all, as a theoretical system that reflects some relationships between groups of people, ideas, and other abstract and material actors and systems, which does not encompass the entire chaotic socio-political discourse. However, this does not prevent us from approaching Pentabasis as, on the one hand, a certain need and, on the other hand, a document of the era we live in. The first dimension of the study, which offers practical recommendations, may be of interest to practitioners, the second - to researchers and teachers of management.

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About the authors:

Matvey G. Chertovskikh — lecturer at the Chair of Philosophy named after A.F. Shishkin, expert of the Center for Applied Research, Faculty of International Business, MGIMO University, 119454, Russia, Moscow, 76 Vernadsky Avenue.

RSCI Author ID: 1170727

spin code: 6855-2492

ORCID ID: 0009-0008-6976-0653

Mikhail S. Gromov — expert of the Center for Applied Research, Faculty of International Business, MGIMO University 119454, Russia, Moscow, 76 Vernadsky Avenue.

RSCI Author ID: 1206852

spin code: 9523-2006

ORCID ID: 0000-0002-5552-0885

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COUNTRY RISK ASSESSMENT FOR THE FEDERAL REPUBLIC OF GERMANY

Patrick Sebastian Oliver Ertelt

UNITAR International University

Abstract

This paper provides a country risk assessment analysis for the Federal Republic of Germany, with a particular focus on the sections about risk and vulnerabilities, banks, and real estate. The analysis highlights key data, such as Germany's primary export products and its trading partners. It discusses the impact of special military operation on German exports and the shift in gas imports from Russia to other countries. The paper also examines the response of companies and households to the natural gas shortage, including energy efficiency measures and reduced gas consumption. It discusses the pressure on businesses due to increased financing costs and wage increases. The analysis projects an increase in consumer prices in 2023 and discusses the impact of international commerce and the recovery of China on global commodity demand. The paper also addresses the German government's support measures in response to the energy crisis and the country's fiscal situation.

Keywords

Country risk assessment, Germany, risk and vulnerabilities, banks, real estate.

KEY DATA

In 2022, motor vehicles and their parts accounted for 15.6% of Germany's exports, making them the country's primary export product. Machinery (13.3%) and chemical products (10.4%) ranked second and third, respectively, among the most essential exports [1]. According to preliminary data, exports and imports between Germany and the People's Republic of China totaled 298.9 billion euros in 2022. The Federal Statistical Office (Destatis) reports that for the seventh consecutive year, the People's Republic of China was Germany's most significant trading partner in 2022. The United States came in second with a volume of 248.7 billion euros, followed by the Netherlands in third with a volume of 230.0 billion euros. Since the beginning of Russia's attack on Ukraine, German exports to the CIS countries (Commonwealth of Independent States, excluding Russia) have increased significantly. From January to April of 2023, goods worth 2,9 billion euros were exported to the CIS countries. The Federal Statistical Office (Destatis) reports that exports to these nations increased by 1.5 billion euros and more than doubled (+106.4%) compared to the same period in the pre-war year of 2021 (1.4 billion euros). In contrast, exports to the Russian Federation fell from 8.4 billion euros in the first quarter of 2021 to 3.5 billion euros in the first quarter of 2023. This represented a decrease of 58.3%, or 4,9 billion euros. Therefore, the increase in exports to the CIS countries was less than a third of the decline in exports to Russia [2].

Table 1

Key facts about Germany

GDP	4072 billion dollars (World Bank, 2022)
Population	84.4 (Destatis, 2023)
Form of State	Federal Republic
Head of State, Head of Government	Dr. Frank-Walter Steinmeier (Federal President), Olaf Scholz (Federal Chancellor)
Next elections	2025 (federal and legislative)

Sources: World Bank Open Data, available at: <https://data.worldbank.org> (Accessed 23 May 2023).

Federal Statistical Office. Current population, available at: https://www.destatis.de/EN/Themes/Society-Environment/Population/Current-Population/_node.html (Accessed 23 May 2023).

ECONOMIC OVERVIEW AND TRENDS THE GERMAN ECONOMY IS STRUGGLING

In 2023, the German economy is expected to stagnate due to the fact that many hazards from 2022 have transferred into the current year. Supply chain chokepoints are one of these dangers. Even though these risks will have diminished significantly by the end of 2022, reciprocal sanctions between

the EU and Russia will continue to impact on intra-European goods trade. In addition, the rapid spread of Covid-19 in China at the start of 2023 hampered supply chains. The energy supply, particularly natural gas, poses the greatest threat to the supply chain. Before the explosion at the Nord-Stream I and II pipelines at the end of September 2022, Russia held a 35 percent stake of German gas imports. Since then, the volume of total gas imports decreased by 38% in the spring of 2023 compared to the spring of 2022, and the distribution among supplier nations has shifted. The Czech Republic ceased gas exports to Germany, whereas the Netherlands, Belgium, and, to a lesser extent, Norway increased theirs. In Germany, the first three floating LNG terminals were constructed between late 2022 and early 2023, but their import capacity remained very low in spring 2023. Over the course of 2023, an additional three LNG terminals should be added, which, by the end of 2023, should provide up to half of the previous Russian gas supply, with total German gas imports remaining 16% below pre-war levels. Companies and households have responded to the natural gas shortage. After the price increase, businesses turned increasingly to energy efficiency and cost-cutting measures, while private households reduced their heating. The moderate temperatures, with the exception of a few isolated weeks, reduced gas consumption in December and January by nearly 20% compared to the average of the previous four years (Quelle: Bundesnetzagentur: Rückblick: Gasversorgung im Jahr 2022). This has assisted in maintaining very high gas storage levels (64% in late March 2023 compared to 26% at the same time in 2022), thereby preventing significant production cuts or even temporary shutdowns in German industry, such as the chemical and steel sectors [3]. In spite of this, pressure on businesses will remain elevated in 2023. Due to the change in European Central Bank (ECB) monetary policy, European companies face increased financing costs, which is a significant factor in this regard. The European Central Bank (ECB) raised its primary refinancing rate by 250 basis points to 2.50% in 2022 and another 100 basis points in early 2023 [4]. A further increase of 50 basis points is anticipated. In addition, monetary policymakers determined that, beginning in March 2023, the ECB balance sheet will be reduced by €15 billion per month.

In the third and fourth quarters of 2023, it is highly probable that these planned cuts will increase. Moreover, companies will be forced to pay greater wages. In 2023 and 2024, tariff-wage negotiations that concluded in late 2022 resulted in a 7% increase distributed in one or two stages [5]. Early in 2023, unions demanded approximately 10% wage increases for one year, which led to several disturbances in the public sector. While a portion of these additional company costs may be absorbed by margins, a sizeable portion will still result in price increases. While not as pronounced as in 2022, consumer prices are projected to increase in 2023 to levels above their long-term average. Therefore, the situation for households should continue to be difficult, but will be somewhat ameliorated by a persistently robust savings rate (11.2% in 2022, slightly above the pre-pandemic level) and a persistently robust labor market, where employees' bargaining power has increased due to the lack of skilled workers. This will promote personal consumption. At least in Western Europe, international commerce should remain subdued during the first six months of the year. Nonetheless, China should gradually recover in the latter half of 2023. Consequently, the global demand for commodities will increase, which will once again contribute to higher prices in this category, as well as an increase in the demand for German goods [6], [7], [8].

FOURTH CONSECUTIVE YEAR OF GENERAL FUND DEFICIT

In response to the energy crisis, the German government has enacted a number of support measures for private households and energy-intensive

businesses through 2023. The primary initiative is a €200 billion package that went into effect in March 2023 and includes a gas and electricity price cap [9]. However, as a result of the decline in global energy prices, the ultimate cost of these measures may be significantly less than anticipated. In addition, rising inflation, sales, and incomes may result in increased state tax revenues. Consequently, the German public deficit should continue to be close to the Maastricht criteria objective.

The surplus of Germany's current account should increase slightly. Import prices, which are primarily influenced by energy costs, should fall on average, improving the trade surplus. It is anticipated that the balances of services (deficit), investment income (surplus), and current transfers (deficit) will experience only minor adjustments.

THE FIRST THREE-PARTY GOVERNING COALITION IN GERMAN HISTORY SCRAPES BY

Olaf Scholz (Social Democrat, SPD) is presiding over the first federal tripartite coalition in German history, which consists of the SPD (206 of 736 seats in Parliament), the Greens (118 seats), and the FDP (92 seats). The Russian military operation in Ukraine at the beginning of the coalition compelled the government parties to change their political posture, frequently in direct opposition to their ideology. In the 1980s, the Green Party, which grew out of the peace and anti-nuclear movements, supported military aid and opposed direct armament deliveries to Ukraine. Moreover, Minister of the Economy Robert Habeck (Greens) visited Middle Eastern countries such as Qatar to secure additional natural gas supplies for Germany (despite reservations regarding the country's human rights record). Habeck also agreed with Chancellor Scholz's decision to extend the lifetime of nuclear power facilities by a few months. On the other side of the political spectrum, liberal Finance Minister Christian Lindner (FDP) announced more support programs for the population to manage with higher energy prices, funded by an increase in public debt, as well as a cap on gas prices, thus interfering with the free market. In spite of their pragmatic approach to politics, coalition parties have lost support in the surveys. As a result of the fact that all parties are attempting to reach a compromise and there are no viable alternatives, the coalition appears stable and should last until the September 2025 election.

NO RETURN TO THE 2% TARGET BY 2024

The inflation projections for 2022 and 2023 to 8.5% and 6.2% can be seen as increased respectively. The steep increase in inflation is primarily attributable to the rapid increase in energy and food commodity prices. However, core inflation appears likely to stabilize significantly above average. Over the forecast horizon, commodity-price increases and supply-chain constraints are anticipated to diminish. Nonetheless, labor cost pressure will remain high, and the green transition will incur additional expenses. Inflation will decline significantly overall, but both headline and core inflation will remain above 2% in 2024 [10].

OFF-BALANCE-SHEET EXPENDITURES ARE DEVELOPING RAPIDLY, ACCORDING TO THE ECONOMIC FORECAST

As a result of Russia's military operation in Ukraine, the German government announced significant fiscal measures to combat the energy crisis. In an effort to pursue a prudent underlying fiscal stance consistent with the domestic debt brake, the German government has amassed approximately

EUR400 billion in off-balance sheet spending (EUR100 billion for military upgrade, EUR200 billion to subsidize energy prices, and EUR100 billion for climate investments). In 2023, a robust increase in tax revenues will help ameliorate the fiscal situation. After reaching 3.6% in 2021, it is reasonable to anticipate the budget deficit to average around 3% over the forecast horizon. The ratio of government debt to GDP will likely stabilize just below 70% [10].

RISK AND VULNERABILITIES

The first table below highlights the results of small and medium-sized enterprises (SMEs) amidst the robust pre-pandemic performance of the NFC sector in Germany. In the 10 years between the Global Financial Crisis and the beginning of the pandemic in 2020, Germany's NFC (Nonfinancial Corporations) sector averaged slightly better results than in the 11 years prior to the GFC, which included the Asian financial crisis and the recession in advanced economies caused by the bursting of the dot-com stock bubble. During 2010-2019, the average financial performance of large companies was somewhat weaker than that of the SME sector in terms of sales percentage and return on assets. (KfW 2020) [11]. The German national development bank Kreditanstalt für Wiederaufbau (KfW) deems the period 2010-2019 a «bright decade for German SMEs.»

Table 2

Profitability of Nonfinancial Corporations, 1997 - 2019

	1997 - 2007	2010 - 2019
Annual result before taxes on income (percent of sales)	4.0	4.2
Large companies	3.8	3.4
Small and mid-sized companies (SMEs)	4.1	5.7
Return on assets (in percent, after tax)	4.2	4.5
Large companies	3.7	3.4
Small and mid-sized companies (SMEs)	5.0	6.9

Sources: IMF staff calculations, available at: <https://www.imf.org/en/Publications/CR/Issues/2022/07/19/Germany-Selected-Issues-521023> (Accessed 09 July 2023).

Deutsche Bundesbank staff calculations. URL: <https://www.bundesbank.de/resource/blob/885944/4ce9fac781237b852c07fd64f862c00a/mL/2021-annual-report-data.pdf> (Accessed 11 July 2023).

In the years preceding the pandemic, the sustained improvement in SME profitability was primarily attributable to robust performance outside the manufacturing sector (Figure below). Since the Great Recession, the return on assets (RoA) of small and medium-sized enterprises (SMEs) has increased while the RoA of large corporations has fluctuated around the long-term average of 3.5 percent. The widening performance gap was most pronounced outside of the manufacturing industry. During the decade preceding the pandemic, small

and medium-sized enterprises (SMEs) in the manufacturing sector attained a higher RoA than their larger counterparts, but the gap between the two remained relatively stable at 1.5 percentage points. Despite a slight decline in its proportion of sales and profits, the manufacturing sector continues to represent a significant portion of the NFC sector's total assets and a significant portion of the sector's liabilities to banks [12].

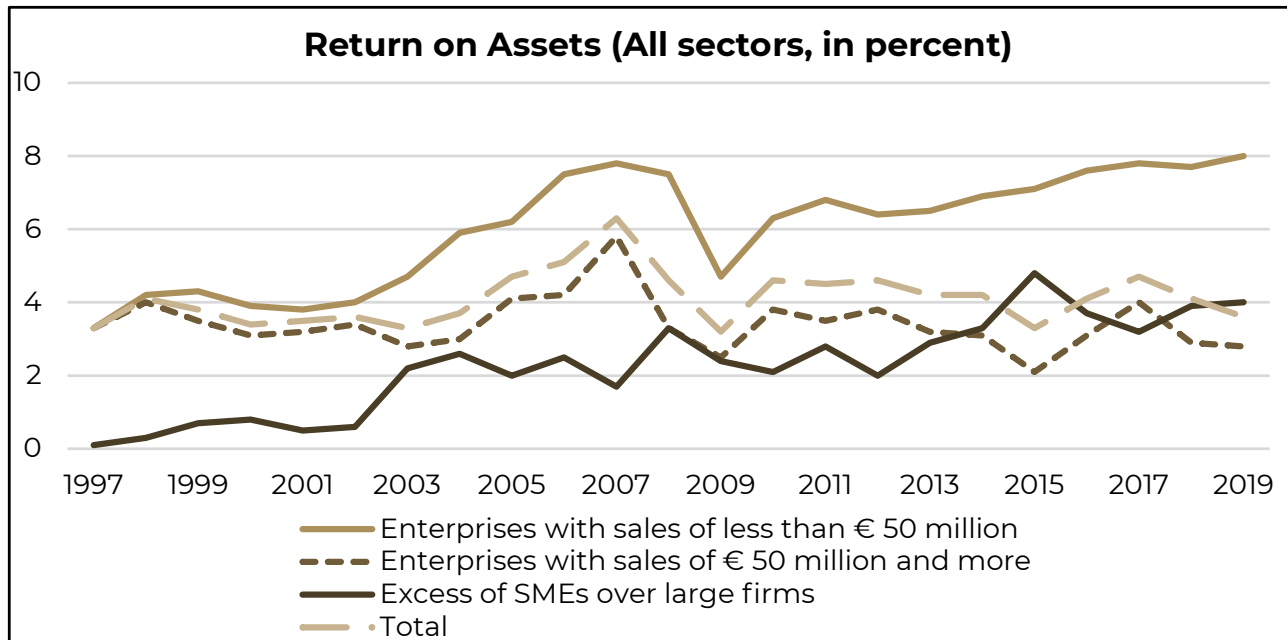


Fig. 1. Return on Assets (All sectors, in percent).

Source: Deutsche Bundesbank, available at: <https://www.bundesbank.de/resource/blob/885944/4ce9fac781237b852c07fd64f862c00a/mL/2021-annual-report-data.pdf> (Accessed 09 July 2023).

The resilience of the NFC sector combined with the various support measures instituted by the government helped the sector weather the pandemic relatively well.

According to data for 2020 presented in Deutsche Bundesbank (2021), the total income of NFCs decreased by €220 billion, or 3.1%. However, enterprises' total expenses prior to income taxes decreased by the same amount. The annual result before taxes on income remained essentially unchanged at 4.1 percent of sales despite a decrease in profits before taxes of 3.8%. In accordance with this, data from KfW's SME panel of 9,889 enterprises with an annual turnover of less than €500 million suggests that, on average, the return on sales of SMEs has remained largely unchanged. However, the tiniest SMEs appear to have experienced the most difficulty. They have exhausted their reserves. Insofar as they operate in industries for which 2021 was also a problematic year, buffers may have shrunk.

The distribution of RoA for listed NFCs fell to levels last seen during the Great Recession. But the decline in RoA in 2020 is less severe than during the recessions caused by the bursting of the dot-com mania in 2000/01 and the Great Financial Crisis in 2008/09. The downward trend exacerbated a decline that began in 2018, when many export-oriented companies were affected by China's weakening demand. Profits for listed nonfinancial organizations monitored by the Bundesbank declined [13].

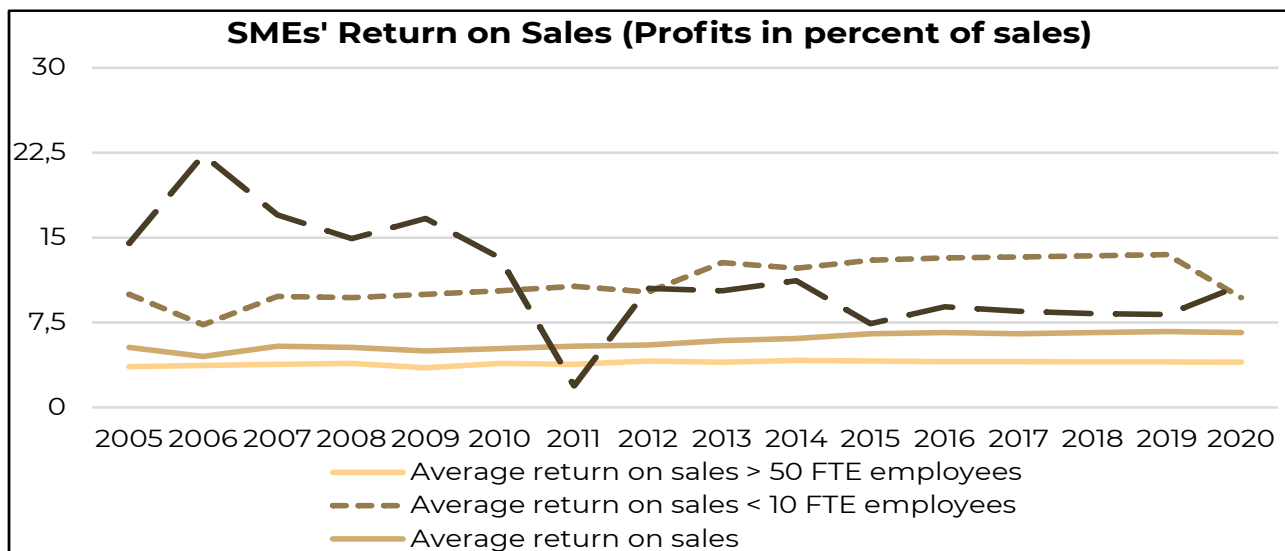


Fig. 2. SMEs' Return on Sales (Profits in percent of sales).

Source: KfW SME panel (enterprises with turnover < € 500 million), available at: [https://www.kfw.de/PDF/Download-Center/Konzernthemen/Research/PDF-Dokumente-KfW-Mittelstandspanel/PDF-Dateien-Mittelstandspanel-\(EN\)/KfW-SME-Panel-2020_en.pdf](https://www.kfw.de/PDF/Download-Center/Konzernthemen/Research/PDF-Dokumente-KfW-Mittelstandspanel/PDF-Dateien-Mittelstandspanel-(EN)/KfW-SME-Panel-2020_en.pdf) (Accessed 08 July 2023).

On the eve of the pandemic, the overall ICR (interest coverage ratio) distribution of publicly traded companies was greater than in the preceding two decades. Despite the fact that the 25th percentile of firms has already turned negative in 2019, as a number of firms' fiscal years begin in the previous calendar year. Additionally, it should be noted that not all news regarding NFC operations in 2020 was negative. Of the 57 listed firms with an ICR below 1 in 2019 that were also included in our 2020 sample, 17 firms with a total debt of €17.5bn saw their earnings increase in 2020, pushing their ICR above 1. These companies operate in novel or more recession-resistant industries, such as (solar) energy, telecommunications, food, pharmaceuticals, e-commerce, construction, and the production of salt and sugar. Utilizing the generally lax domestic and international financing conditions, businesses have improved the maturity profile of their debt. At the aggregate level, rollover risks have become more contained as the proportion of short-term debt has decreased.

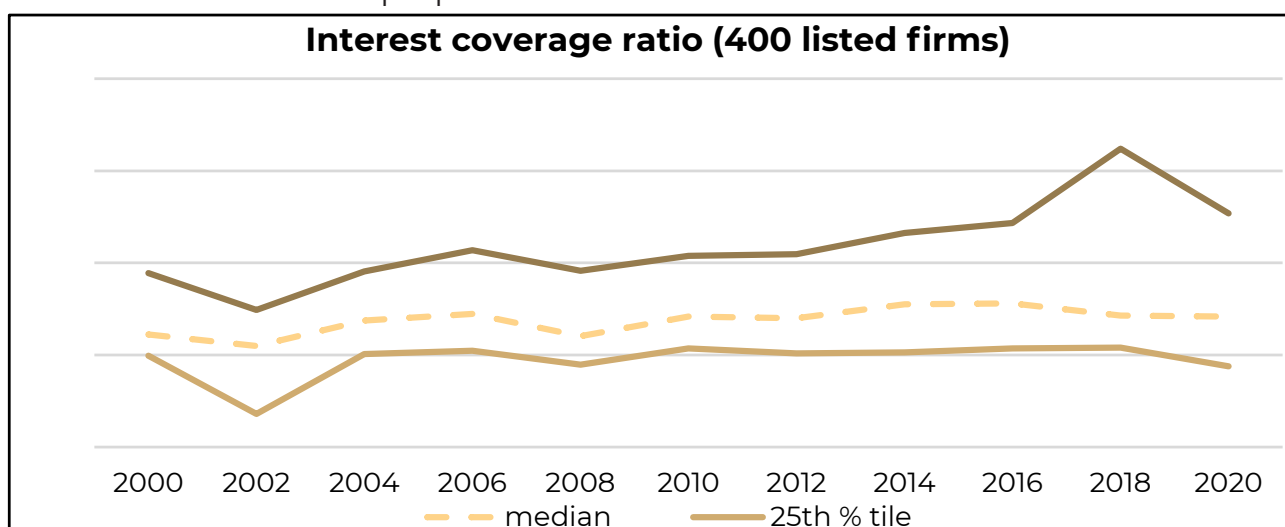


Fig. 3. Interest coverage ratio (400 listed firms).

Source: IMF Corporate Vulnerability Utility, available at: <https://www.elibrary.imf.org/downloadpdf/book/9781616352028/ch007.pdf> (Accessed 11 July 2023).

BANKS

In international comparison, the profitability of the German finance system is relatively low. In 2020, German banks reported lower returns on total assets, risk-adjusted assets, and equity (ROE) than EU averages. In 2020, the aggregate ROE of German banks fell short of the estimated cost of capital by European banks, which ranged from 8 to 12 percent. This is the result of both cyclical and structural factors. Low interest rates have reduced the net interest incomes of German retail banks, while efforts to increase fee and commission income have been hampered by customer risk aversion, a preference for savings products over asset management products, limited customer experience with fee-based products, and intense bank competition.

The aggregate profitability figures conceal significant heterogeneity among the various categories of banks. Savings banks and cooperatives have performed better than private banks, but the profitability of all bank groups has declined over time due to the effects of low interest rates. This is due in part to the difficulty and protracted implementation periods of private banks' restructuring plans to address the effects of the global financial crisis. The higher profitability of savings and cooperative banks is largely attributable to increased lending volumes (including to real estate) and a regional focus that shields them from intense competition, resulting in a substantial increase in their market share in lending to households and businesses (especially SMEs) [14].

Rising risks and vulnerabilities threaten the business models of savings and cooperative banks and necessitate ongoing risk monitoring. Until now, increased lending, particularly for residential and commercial real estate, has helped cooperative and savings banks increase revenues and partially counterbalance declining interest rates. In the future, however, rising risks and vulnerabilities in the German banking sector, especially in real estate, threaten the viability of such business models and the ability of banks to continue to generate profits. Despite this, BaFin has implemented a macroprudential policy package, which includes a sectoral systemic risk buffer for RRE exposures. Other hazards, such as those resulting from changes in interest rates, slow digitalization, cyber threats, and geopolitical developments, are also on the rise. Therefore, efforts should be accelerated to acquire data on bank exposures to various risks.

REAL ESTATE

Since the beginning of the present upswing in the German RRE market in 2010, RRE prices have increased by approximately 91% by the end of 2021, a rate faster than in many other OECD countries. Prior to 2009, nominal RRE prices in Germany increased by approximately 25 percent between 1990 and 2009. The current upswing in the RRE market began in 2010 and persisted throughout the COVID-19 pandemic, with nominal (real) house prices increasing by approximately 91 (63%) percent between 2010 and 2021 [15]. In the seven largest cities, RRE prices increased by approximately 144 percent between 2010 and 2021, outpacing most other cities in the world. The most rapid price growth in the German RRE market was observed in the most populous cities. Specifically, residential property prices in the seven greatest cities increased by 144 (109) percent nominally (real) from 2010 to 21 [16]. The COVID-19 pandemic caused divergent dynamics in the RRE and CRE markets, with some CRE subsector price declines [17]. While RRE prices in Germany continued to rise through the end of 2021, CRE prices declined significantly since the onset of the COVID-19 pandemic, albeit with significant heterogeneity across property types [18]. In 2021, CRE prices will decrease by 0.8%, compared to an increase of 6.4% in 2019. After declining in 2021H1, average office prices increased by 0.2 percent in

2021 (9.6 percent in 2019), whereas retail property prices (mostly nonfood) have continued to decline (-3.1 percent in 2021) since late 2018 due to competition from e-commerce, which was exacerbated by the COVID-19 pandemic [14]. The performance of CRE sub-sectors also varies by location, with prices increasing the most in prominent locations in larger cities. There is significant heterogeneity not only between subsectors but also by location within the CRE industry. For example, office properties in prominent locations in larger cities performed better – even after the COVID-19 outbreak – than properties in less populous areas, which experienced stagnation or outright price decline. Food-related properties, especially in prime locations, have been in greater demand than non-food-related properties, such as shopping malls, which have been struggling for several years due to the shift in consumer preferences toward online shopping. The COVID-19 pandemic further exacerbated this trend.

CONCLUDING REMARKS AND RECOMMENDATIONS

1. Economic Stability: Germany's economy, the largest in Europe, is widely robust and secure. This makes it a desirable location for international investors. However, the analysis identifies potential hazards, such as chokepoints in the supply chain and reciprocal sanctions between the EU and Russia. Businesses should be advised to closely monitor these risks and develop contingency plans to mitigate their effects.

2. The analysis focuses on the financial performance of German small and medium-sized enterprises (SMEs). While SME profitability has improved, there are still vulnerabilities, particularly in the manufacturing sector. To mitigate risks, it is recommended that small and medium-sized enterprises diversify their operations and investigate opportunities outside the manufacturing sector.

3. The analysis also reveals that the profitability of the German financial sector is relatively low in comparison to international norms. Profitability is affected by a number of factors, including low interest rates and fierce competition. It is suggested that banks investigate innovative strategies to increase fee and commission income and enhance efficiency in order to increase profitability.

4. The analysis furthermore points to a significant price growth in the residential real estate (RRE) market in Germany, especially in the largest cities. However, the commercial real estate (CRE) market exhibits divergent dynamics, with some subsectors experiencing price declines. It is recommended that investors and market participants thoroughly evaluate the risks and opportunities in various sectors and locations.

5. In conclusion, despite the fact that Germany provides a stable and alluring business environment, risks and vulnerabilities must be considered. To mitigate risks and maximize opportunities across multiple sectors, thorough risk assessments, diversification strategies, and innovative approaches are advised. Businesses and policymakers must continuously monitor economic trends and potential hazards in order to make informed decisions and adapt to changing conditions.

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About the author:

Patrick Sebastian Oliver Ertelt – independent consultant, UNITAR International University, Germany.

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THE ELECTRONICS INDUSTRY AND ENVIRONMENTAL GOVERNANCE: CHINA AND APPLE INC. CASE STUDIES

Dhanistha Marina Panyasak

MGIMO University

Abstract

Addressing environmental challenges has become a top priority for the international community. In the context of globalization, the electronics industry has developed significantly, especially with the expansion of digitalization. Nevertheless, from its manufacturing, including semiconductors, to its end-of-life product, electronic waste, this industry is a major contributor to resource depletion and environmental pollution. This article describes the challenges encountered by a state sector, China and a transnational corporation, Apple Inc., for the development of the electronics industry while limiting its environmental impact.

Keywords

Semiconductors, electronics industry, electronic waste, CO2 emission, depletion, pollution, environmental issues, China, Apple Inc., transnational corporations, environmental governance.

INTRODUCTION

With the expansion of digitalization, the electronics industry, including the semiconductor production, plays an important role in the global economy. Nevertheless, the electronics industry is a major contributor to environment degradation through pollution and resource depletion. The amount of electrical and electronic equipment waste, also called e-waste (electronic waste) or WEEE (Waste Electrical and Electronic Equipment), is tragically expanding: 57.4 million tons of e-waste, outweighing China's great wall, were produced in the world for the year 2021[1] and it is expected to reach 120 million tons in 2050.

At the global scene, state actors and transnational corporations have the necessity to conduct their development while keeping their technological sovereignty or leadership. Therefore, these actors face antagonist forces while both fostering digitalization and the electronics industry and considering the environmental impact of their strategies.

The objective of our study is to provide an understanding of these forces by presenting the electronics industry and its impacts on the efforts for fighting environmental issues in 2023.

We use a descriptive method by analyzing China and Apple Inc. transnational corporation strategies for the electronics and semiconductor industry development and its consequences on the environment.

The first part of the article presents the environmental impacts of the electronics industry.

The second part studies the stakeholders' cases by:

1. Describing their main challenges and strategies for the electronics industry and its corresponding environmental impact.
2. Calculating some projections of e-waste impact.
3. Applying a range of tests using the information provided above in the points 1 and 2.
4. The conclusion gives a synthesis of our study highlighting the main outcomes.

THE ELECTRONICS INDUSTRY AND THE ENVIRONMENT

CARBON FOOTPRINT

The Full Life Cycle Assessment (LCA) method provides the equivalent CO₂ emission of an electronic product, from cradle to grave, by considering raw material extraction, supply chain, manufacturing, and recycling at the end of the product life. For smartphones LCA study, the manufacturing phase has been identified as the most consuming of energy and mineral resources. For example, a report on an Apple iPhone14 [2] shows that manufacturing generates 79% of the total smartphone CO₂e emission. In the manufacturing phase, the semiconductor production – part of the electronics industry - has the higher contribution with 29%. This could be explained by the several hundreds of pieces (semiconductors, plastic, metal parts) from which a smartphone is made. Therefore, the manufacturing is the result of a fabrication requiring tens to hundreds of operations performed in several locations around the world. Consequently, beside the manufacturing, transportation has also a significant carbon impact.

In 2020, the quantity of emissions, equivalent CO₂, reported for top semiconductor manufacturers were: 29.5 Mt for Samsung Electronics, 35.4 Mt for Intel Corp, and 17 Mt Taiwan Semiconductor Manufacturing Corporation (TSMC) [3]. Additionally, the trend of the semiconductor sector pollution is driven by

the technology. As demonstrated by an IMEC expert research for the EETimes in 2020 [4], advanced technologies consume more energy and generate more CO₂e emissions.

ENVIRONMENTAL DISFIGURATION AND WATER DEPLETION

The construction and the functioning of semiconductor and electronic factories lead to deforestation, drought of water, and disfiguration of the environment, in order to convey large amounts of electricity and water. For instance, the plants of the top worldwide semiconductor company located in Taiwan (TSMC), require approximately 5% of the island's electricity. In 2021, due to the high demand, this top company's consumption has increased to 7.2%. In 2019, 63 million tons of water a year were consumed by TSMC factories [5].

HAZARDOUS POLLUTION

Resources needed for semiconductor manufacturing are the combination of mineral and chemical elements resulting from complex fabrication processes. Almost all the elements of the Mendeleev periodic table are used in the semiconductor and electronics industry. A study reports [6] that in South Korea, 12 semiconductor plants used 345 different chemical products and constituents among which several were carcinogen. The environmental performance web page of Ocotillo Intel Corp plant in Arizona [7] provides us some quantitative information. For instance, during Q1 2023, the factory generated 11 tons of waste among which 53% were hazardous.

MINING AND RESOURCE DEPLETION

Each raw material extraction has a contribution to environmental degradation and its consequences. For instance, Cobalt and Coltan are essential for a large number of electronic components: Cobalt for Batteries, Cobalt and Coltan for semiconductors. In 2023, DRC supplies about 63% of the Cobalt global needs which will grow by 60% in 2025. The consequences in the country are resource depletion, pollution of soils, destruction of gorillas' habitats, illegal exploitation of adults and children in unsafe conditions and financing the guerillas. Moreover, rare earth metals are particularly well known for their high polluting energy-intensive extraction and transformations.

E-WASTE

The demand of the developing countries for second-hand electronic equipment and recycling activities is growing. Therefore, developed countries export their electrical and electronic end of life products to the developing countries. Moreover, for many years, organized crime has been rising in the sector by permitting to circumvent legislation on hazardous material transportation legislation. In 2017, a study [8] from the Basel Action Network, used GPS technology to track 314 pieces of e-waste. It demonstrated that 6% was exported and 37% of these exportations, went from the EU to Africa. In the importing countries, "Waste mountains" disposal pollutes soils, water and air resulting in lands where agriculture is not possible. As a consequence, the country could face impoverishment due to economic development slowdown and food insecurity that can lead to instability. Moreover, the local population is exploited as a low-cost labor for disposal, repair and recycling. Men, women and children, manipulating component wastes that may lead to injuries, inhale toxic smokes when burning plastic to extract copper, gold or other metals. Women and children account for up to 30% of the workforce. As an example, Agbogbloshie's disposal site in Ghana receives 40,000 tons each year mainly

coming from outside Africa. In this site, every day, 5,000 people work as “burner boys” of plastic.

ELECTRONICS INDUSTRY VULNERABILITY

Beside its environmental impact, the electronics industry faces the associated risks towards its dependency on energy for electricity, water and material resources. For example, a 2017 report from ADEME, stated that there was only 12 years left of resources of Antimonies, a material absolutely needed for the industry [9]. As reported by McKinsey [10], the interdependencies and complexity make the semiconductor supply chains vulnerable to climate change issues. The disruption may last for months and the impact can lead to the loss of 200% of yearly profits or 35% loss of revenues. Other industries dependent on electronics are therefore also vulnerable as for the automotive industry.

INTERNATIONAL EFFORTS FOR ELECTRONICS IMPACT

Since 2018, several UN entities have signed a letter of intent to form the UN e-waste coalition, in order to tackle the electronic waste issue. In this context, statistics are provided by the Global E-waste Statistics Partnership (GESP) [11], also in collaboration with the StEP (Solving the E-waste Problem) initiative. Especially, the StEP initiative supports researches and projects for the redesign, reuse, recycling, capacity building and policy for e-waste. The Global E-waste Monitor 2020 [12] provides an overview of statistics of e-waste global, regional and national levels while the Global Transboundary E-waste Flow Monitor 2020 [13] focuses on exportations and importations. Moreover, the international institutions provide solutions and frameworks for policies and regulation, in order to support national developments. As reported by the UN E-waste coalition, 39% of all countries have put in place policies and legislation for the e-waste management. Additionally, the public-private Platform for Accelerating the Circular Economy (PACE), launched by the World Economic Forum in 2017, also addresses the e-waste issue in its report A New Circular Vision for Electronics [14] and where we can find e-waste data and guidelines for transforming the economy to attain the zero-waste objective.

The pollution generated by the electronics industry is addressed by different protocols, agreements and conventions: the Paris Agreement, the Kyoto protocol, the Stockholm convention or the Basel convention. Besides, transnational corporations actors in the electronics industry must comply with legislation RoHS [15] and REACH [16] legislations, and participate in the efforts with their expertise.

DESCRIPTION OF THE TESTS FOR THE CASE STUDIES

In this article, the last step for China and Apple Inc. analyses permits to assess forces in favor or disfavor of the actors' Green strategies. Therefore, it will help to confirm or infirm that the electronics industry challenges their efforts for addressing environmental issues by reducing their efficiency, polluting more, impacting environment in other countries by moving away e-waste.

TEST 1, 2 and 3 were defined in accordance with the environmental degradation whereas TEST 4, 5, 6 were defined in accordance with lowering the efficiency of the mechanisms of the governance.

TEST 1: Environmental impact of the electronics.

Can the actor increase the electronics industry's impact on environment?

This question has to be considered from cradle to grave (including e-waste), from depletion to pollution.

TEST 2: Enabler of globalization of supply chains, communications.

Can the actor accelerate the phenomenon of globalization of supply chains and development of communication infrastructures? And therefore, can it expand globally the electronics industry's impact on the environment?

TEST:3: Society Shaping (driven by digitalization).

Can the actor, through digitalization, shape the society by further increasing the consumption of electronic products?

This can be done by influencing or expanding the use of electronic devices.

TEST 4: Lack of will or transparency (Green washing).

Can the actor use the lack of transparency, as for example Green Washing, or mislead the international community about its efforts in fighting the environmental threat and therefore with a risk of compromising common efforts?

TEST 5: Effect of alliances and partnerships.

Can the actor through its alliances and partnerships be restrained, slowed down in its efforts in fighting the environmental issues?

TEST 6: Technological competition in the electronics industry and digital sovereignty.

Can the actor, competing for power, can further the development of the electronics industry while reducing the efforts for the sustainable development?

CHINA

CHINA'S CHALLENGES

Over the last few decades, China has succeeded its industrial and economic growth. As reported by the World Economic Forum in 2018, China is a manufacturing hub producing 39% of the world electronics and 70% of mobile phones [17]. China has strengthened its essential role in global supply chains that has been shown with the global impacts of its lockdowns during the COVID-19 pandemic. The PRC government has exploited opportunities of EU and US delocalization policies have facilitated China's electronics sector rise. Particularly, liberalization steps through reforms, which permitted the financial system to support the export-oriented manufacturing, have boosted and maintained the industrial sector. It has become the first country for its semiconductor investments which represent 27% of global investments in 2020 [18]. The China's strategy also has global impact as it scales up the trade with other countries' economy. Therefore, these countries develop their electronics industry, like the case of India which has the objective to double the value of its electronics industry by 2026 [19].

In its Made in China 2025 plan, PRC wants to become the first global manufacturer and a country of innovation, especially in the electronics sector [20]. Nevertheless, the country faces challenges for keeping its industry competitive. First, as a drawback of its economic development, Chinese labor is becoming expensive at the global market comparing to other countries as Vietnam and India [21]. Secondly, technical competition is becoming more aggressive. Finally, the environmental issues are the new factors to be taken into account. As the first producer and consumer of coal, the country has generated 33% of the total global CO2e emission in 2021.

Among the main challenges to be addressed by China to reach its objectives, we can mention;

- The Taiwan reunification. This will permit to remove Taiwan as a competitor and significantly increase China's technological and economic power. In particular, Taiwan Semiconductor Manufacturing Company is one of the most valuable companies in the world (ranked in the top 10 in terms of capitalization).

- The One Belt One Road initiative is a way to secure China's access to additional raw material resources located in other countries.

- Its rivalry with the US: Although the US and China are big trade partners, the status of China as the second economic power after the US makes it the principal adversary and a threat for the US. Furthermore, with the expansion of digitalization, China fights for its technological leader position in the Cyberspace. Its companies ZTE and Huawei, own the 5G technology bringing the country a technological competitive advantage. Consequently, China's technology is considered as a National Security threat for the US [22] which has become more aggressive in the economic sphere by sanctioning Huawei and ZTE in 2018. In 2022, the US Department of Commerce's Bureau of Industry and Security has restricted 31 Chinese companies and institutions to obtain high-technology chips [23]. Moreover, the US has maintained closed relationships with Taiwan (economic, military) and can use this advantage in its rivalry with China.

At a national level, the central government has launched several policies which have been also fostered with the increasing rivalry with the US. In 2014, the central government launched the China's National Integrated Circuit Industry Investment (as known as the Big Fund) to support promising start-ups. China's components industry still rely on imports of equipment and circuits. In Jan 2021, in the context of the US sanctions on China, the Ministry of Industry and Information Technology launched its plan 2021-2023 to bolster the electronics industry [24]. The action plan promotes innovation and the development of domestic production of new technologies such as connected vehicles, smart devices and 5G technology products. The aim is to strengthen the position of companies in supply chains and reduce dependency towards foreign products. In this plan, the goal is to increase total sales revenues to Rmb 2.1 trillion by 2023.

In September 2022, the General Office of the State Council approved an institutional reform with the aim of facilitating innovation, enhance market vitality, improve standards and high-quality development of electrical and electronics industry. Above all, improvements will address certification and license mechanisms for reducing the delay in the processes for approval. Moreover, R&D import and export tax system will be improved to facilitate the cross border of e-commerce.

Finally, in 2023, cash incentives and policy support are doubling and increasing the domestic semiconductor industry in order to be self-sufficient and ensure China's sovereignty. For example, in Lishui city (eastern Zhejiang), if the annual revenue of a chip design company exceeds from Rmb20 million to Rmb500 million, the government will give respectively from Rmb300,000 to Rmb5 million yuan in subsidies. Another example is the Shenzhen attracting policy which gives Rmb30 million cash reward to top chip companies.

CHINA'S ELECTRONICS ENVIRONMENTAL IMPACTS

PRC has an important responsibility in resource depletion for global electronics. In 2023, among the 50 critical raw materials identified by the EU, 10 are only provided by China [25]. In particular, the country provides 90% of Rare Earth metals used in all electronics and 60% of Lithium used mainly for batteries. Moreover, mining and extraction for these materials are large contributors of China's responsibility in the greenhouse gas emissions. With "Reducing poverty" and "Improving financial stability", "Fighting pollution" is one of the "three tough battles" of the President Xi Jinping [26].

China is the second producer of e-waste after the US. Its population, industries and infrastructure make it one of the largest consumers of electronic products. The e-waste ends up in open landfills or is further sent to other

countries in Southeast Asia. In 2019, 10.12 Mt of e-waste were generated in the country (7.2 kg/capita) with only 1.54 Mt collected. In 2020, the e-waste was generated by 800 million units of electronic products [27]. Moreover, China is both an exporter and importer of e-waste. The area of Guiyu in China [28] is one of the largest e-waste recycling hub, competing with Agbogbloshie in Ghana. In addition to domestic e-waste transferred to this location, it receives millions of tons of imported e-waste from developed countries (US, Europe). In 2020, more than 100,000 people processed 150 to 300 million of e-waste annually.

CHINA'S E-WASTE GOVERNANCE

Since 2009, policies have restricted imported e-waste and today most of the e-waste is generated domestically. Nevertheless, informal e-waste transnational trade results from the contradictions of legislations and heterogeneity of the waste collected.

In 2012, Guiyu was identified as a priority with the “Comprehensive Remediation Scheme of Guiyu e-waste Pollution” 2013 and Circular Electronics in China project was launched in 2017. This project involves the Platform for Shaping the Future of Global Public Goods of the WEF, the Platform for Accelerating the Circular Economy (PACE), and the Danish International Development Agency (Danida). In this project private and public entities collaborate in order to support companies to attain the objective of reducing and recycling 50% of e-waste by 2025 [29].

The public-private collaborations between the China Association of Circular Economy (CACE) and China National Resource Recycling Association involve transnational corporations such as Dell, Oppo, Xiaomi, Siemens, Huawei with the aim of providing policy recommendations for a circular economy.

The current e-waste management system in China is focused on management, treatment and subsidies, treatment standards, auditing and implementation, and the institutional reform launched in September 2022 is taking into account the e-waste issue, and will give support to the development of e-waste and recycling. Improvement in the systems is expected using Artificial Intelligence, big data and online real-time monitoring.

As the first producer and ownership of Electrical Vehicles (EV), China faces the challenges of EV batterie recycling. The Measures for Echelon Utilization of Power Batteries of New Energy Vehicles and Interim Measures for the Administration of Recycling and Utilization of Power Batteries for New Energy Vehicles 2018 deals with this issue.

E-WASTE PROJECTION

We perform calculations to assess the China's electronic waste projection for 2025 and 2050. We are interested about the remaining electronic waste which will continue to pollute the environment. In other words, the part of the end-of-life electronic products which is not collected and recycled, and, additionally the part from which any material to be reused is recovered. As a starting point for the trends, we exploit the 2019 quantity of e-waste provided by the Global e-waste Statistics Partnership (GESP). The calculation we propose is the following:

- e-waste not recycled = e-waste generated x (1-recycling rate);
- e-waste not recovered = e-waste recycled x (1-recovering rate);
- Remaining e-waste = e-waste not recycled + e-waste not recovered

with recycling rate = quantity of recycled e-waste / generated e-waste and recovering rate = quantity of material recovered / quantity of e-waste recycled.

To calculate the projected electronic waste generated by a population, first we calculate the e-waste generated per capita. Then, we use the formula

proposed in 2017 by Kush and Hills [30], who have demonstrated that the quantity of e-waste is correlated with GDP PPP growth:

- $\text{e-waste generated per capita} = \text{GDP PPP} \times 0.5 \text{ kg per 1000.}$

Then, we calculate the volume of e-waste generated by the population with the following calculation:

- $\text{e-waste generated by the population} = \text{e-waste generated per capita} \times \text{population.}$

Finally, we can calculate the range for the accumulated remaining e-waste, from 2025 to 2050:

- $\text{best_case} = \min (\text{remaining e-waste for 2025; remaining e-waste for 2050}) \times 25 \text{ years;}$
- $\text{worst_case} = \max (\text{remaining e-waste for 2025; remaining e-waste for 2050}) \times 25 \text{ years;}$
- $\text{range of accumulated remaining e-waste from 2025 to 2050} = [\text{best_case; worst_case}].$

Table 1

China: E-waste Projections

	2019	2025	2050
Population	1 400 170 000 (1)	1 409 170 000 (2)	1 313 000 000 (2)
GDP PPP (k\$)		26,54 (2)	26,54 (3)
E-Waste generated (kg) per capita	7,20 (1)	13,27	13,27
E-Waste generated (Ktons)		18 700	17 424
E-waste generated (number of Eiffel tower)	1 003	1 851	1 725
Recycling rate (4)	16% (1)	50%	90%
E-Waste Recycled (Ktons)	1 621	9 350	15 681
Remaining E-Waste (Ktons) after recycling	8 508	9 350	1 742
Recovery rate (5)	90%	90%	90%
E-Waste Recovered (Ktons)	1 459	8 415	14 113
Remaining E-Waste (Ktons) after recovering		935	1 568

Total Remaining E-waste (Ktons)	8 670	10 285	3 310
Total Remaining (number of Eiffel tower)		1 018	328

Sources: GESP, available at: <https://globalewaste.org/> (Accessed 05 July 2023) (1); IMF, available at: <https://www.imf.org/> (Accessed 05 July 2023) (2).

From our calculations, the result of the accumulated remaining e-waste during 25 years is: from 2025 to 2050 is $[10,285 \text{ Ktons} * 25; 3,310 \text{ Ktons} * 25] = [82 \text{ Mt}; 257 \text{ Mt}]$. To have an order of magnitude, we compare the results with the weight of the Eiffel tower (10.1 Ktons) like the World Economic Forum in its 2019 report.

It will be equivalent to 8,194 Eiffel towers in the best case, and to 25,457 Eiffel towers in the worst case. Therefore, even if the e-waste quantity will diminish after successful policies, the remaining e-waste is expected to remain significant in the mid and long term.

Table 2

China: Forces in favor and disfavor of the environment

In favor of the environment	In disfavor of the environment
TEST 1: Environmental impact of the electronics.	
<ul style="list-style-type: none"> - Importations of e-waste from developed countries have been reduced. - Strong willingness of the Chinese government to strictly apply policies (punishment and incentive). - Rise of legislation concerning EV batteries and use of recycled material. 	<ul style="list-style-type: none"> - The 2025 plan will boost the electronics industry. - The GDP growth and consequently the consumption of the population as calculated for the e-waste. - The raise of electronic Vehicles increases the issue of EV batteries challenge.
TEST: 2 Enabler of globalization of supply chains, communications.	
<ul style="list-style-type: none"> - The need of a renewable energy for manufacturing as a choice criterion for manufacturers can accelerate China's energy transition. 	<ul style="list-style-type: none"> - The development of 5G and Five years plan will challenge the objectives. - After the COVID-19, China has to relaunch its economy with surpassing its emissions attaining 33% of the global emissions in 2021. China's industrial development scales up the industrial development of other countries.

TEST 3: Society shaping (driven by digitalization).	
<ul style="list-style-type: none"> - Digitalization will permit to build broader awareness to the environmental issue and accelerate implementation of policies. - This can be fostered by the efficiency of the government through its authority. 	<ul style="list-style-type: none"> - Policies are increasing for domestic production and exportations of 5G, connected products will increase electronics' environmental impacts.
TEST 4: Lack of will or transparency (Green washing).	
<ul style="list-style-type: none"> - Governance is based on audit of system and results of recycling. - E-waste legislation encourages formal channels for recycling (finance). - There is a growth of formal companies' registration. 	<ul style="list-style-type: none"> - The efforts in the development of renewable energies and e-waste recycling can hide the real impacts of the electronics industry.
TEST 5: Effect of alliances and partnerships.	
<ul style="list-style-type: none"> - The collaboration between leaders for the e-waste issue to set standards (WEF/PACE working group). 	<ul style="list-style-type: none"> - Partnerships with other countries can bolster their development of electronics' manufacturing.
TEST 6: Technological competition in the electronics industry and digital sovereignty	
<ul style="list-style-type: none"> - Competition can lead to new constraints and legislation in favor of the Green Economy. 	<ul style="list-style-type: none"> - The competition between the US and China will foster Electronic Production. - With the future Taiwan reunification, the impact of the semiconductor and electronics industry will grow. - The rivalry with the US increases policies to stimulate growth of the domestic electronics and semiconductor industry.

Source: compiled by the author.

APPLE

APPLE'S CHALLENGES

Competition at the global stage: through its equipment, operator services and software applications, Apple Inc. plays a major role in the digital economy. Moreover, from the manufacturing point of view, as an Original

Equipment Manufacturer, Apple is at the center of a global supply chain network of suppliers and sub-contractors. The current expansion of Apple is both a factor and a consequence of the development of the digital economy and globalization. In August 2022, it had accounted for 7.3% of in the S&P 500, the highest weighting for any company since 1980 [31]. Apple competes, not only with other GAFAM companies (Google, Facebook, Amazon, Microsoft) for operating systems and web-browsers, but also with other companies for other markets addressed by its products. For instance, Apple is a major key player in the smartphone market: in 2022, the iPhone generated 52% of its revenue, fighting with Samsung for the TOP1 position [32].

Legislation: reaching standard level in the market satisfying the countries' legislations is a necessity to keep technical leadership and market position. Non-compliance and change in legislation can have negative consequences. As for an example, Apple will struggle to change its iPhone ports in USB-C in order to be compliant with new legislations issued by the UE and India [33]. In order to meet the requirements, the company needs to redesign parts of the product and transform its supply chain. This will result in additional costs and delays.

Reputation: as a powerful corporation, Apple's behavior and corporate social responsibility are particularly in the center of the attention. For this reason, keeping a good reputation is a major challenge for Apple which has to ensure its image and identity. Apple is responsible for the well-being of its suppliers' workers. Sometimes, Apple faces subcontractors' issues that can threaten its business. As for example, in China, its supplier Foxconn, in October 2022, due to COVID-19, forced thousands of employees in Zhengzhou to be in lockdown in the plant and continue working for seven days [34]. Moreover, as other transnational corporations, Apple faces criticism for its Green Washing [35] as it misleads information on its environmental impact and policy.

Vulnerability and Opportunities in Geopolitical Tensions: as a technology leader and global manufacturer, Apple is impacted by geopolitical tensions. Tensions between states can impact sales market and supply chains. In March 2022, Apple decided to stop its activities in Russia complying with the response of the West to the Russian Operation in Ukraine. As a result, the loss of revenue is estimated at \$2.5 million/year [36]. Despite the geopolitical tensions between US and China, Apple struggles to keep good relationships with China: in October 2022, one smartphone out of four sold in China was an iPhone [37]. The country market represents 19% of Apple's revenue in 2022. Furthermore, a large part of Apple's supply chain is located in China: in March 2023, the CEO of Apple, Tim Cook, visited China's Development Forum in Beijing with the aim of maintaining good relationships [38].

Beside negative effects of geopolitical tensions, positive effects can appear. As for instance, Apple's global market share has grown as a consequence of US sanctions against the Chinese company Huawei: in January 2022, Huawei, weakened by the sanctions, was positioned at the 9th place [39] although in 2018, the Chinese brand was the 1st provider before Apple [40].

APPLE'S GOVERNANCE FOR PROFITABILITY IN THE ELECTRONICS INDUSTRY

From the market point of view, Apple uses a wide range of mechanisms to keep its global position and get market opportunities. Here under we highlight some mechanisms used.

Marketing: Apple is well known for its successful marketing strategy and technical innovation. Numerous internet websites, such as Forbes [41], provides the basic lessons learned from its strategy and how Apple's product marketing is efficient. Especially, Apple accomplishes building and maintaining brand attachment with customers. By influencing the customer with its identity,

and the creation of a community, Apple ensures a sustainable competitive advantage.

Technology: Apple uses technology innovation as a driver to provide new experiences to the customer. In 2021, the BBC media reported that Apple had acquired 100 companies over six years [42]. By choosing a strategy of acquisition, Apple ensures early access to new technologies and therefore owning them. As a technological leader and its marketing, Apple has shaped the society by succeeding to create communities and new behaviors through Apple stores and Apple applications.

Lobbying: Anticipating new standards is a competitive advantage and the strategy towards legislation is critical for Apple. Lobbying permits Apple to influence legislation. As an example, in March 2023, Foxconn and Apple succeeded to change in their favor Karnataka state of India labor legislation [43]. From 2021 to 2022, the Apple lobbying budget increased by 44% to reach \$9.4 million for the year 2022 [44].

Alliances, Partnerships and Collaboration: Apple uses alliances, partnerships with other companies or collaborations with laboratories or universities to benefit from best practices, common learning, or simply to gain power or accelerate its progress. For example, in 2019, Apple announced its Alliance with Amazon, Google and Zigbee to define smart home devices standards [45].

Environmental Governance: On the one hand, Apple has to comply with Green legislation to ensure its business continuity (like RoHS, and REACH, or other local legislations for e-waste as we have seen for China). On the other hand, it needs to reassure its customers which feel more concerned about environmental issues. Therefore, Apple governance and strategy towards environmental issues can be found in its 2022 environmental progress report [46]. In this report, Apple presents its willingness to take care about the environment stating its commitment and transparency. Here are some examples of Apple's actions:

- Apple has joined the RE100 initiative with the objective to use 100% renewable electricity worldwide (in 2021, Apple's total emissions were 23.3 million tons).

- Apple listens to stakeholders (suppliers, customers, employees, industry partners and investors) and is keen to share best practices. In particular, it shares knowledge, collaborates and partners with other actors (academia, intergovernmental organization, scientific communities, other business entities) from diverse countries (including US, Europe and China).

- Apple is a part of coalitions and partners in order to create standards, tools and opportunities in the Green Economy. In that way the company can influence the change in the industry engaging itself in initiatives. For example, Apple has developed a new standard the "IPC1402" (Green cleaners) in collaboration with 20 other companies. Apple is also part of First Movers Coalition, a private partnership launched by the US and the World Economic Forum with the aim of creating market demand in low-carbon technology.

Moreover, Apple informs its customers making them aware of the environmental impact of its products as for example the 2022 iPhone 14 Product Environmental Report which demonstrates their progress showing that the iPhone14 generates less CO₂e emissions (61 kg) through its life cycle than the iPhone13 (64 kg).

CALCULATIONS

Here we propose to make some basic calculations and reasoning for evaluating Apple's Green Washing and its remaining environmental impact after implementation of its governance and measures.

IPHONE 14 CARBON FOOTPRINT

Here we propose to calculate the iPhone 14 Carbon Footprint by using the information provided by iPhone 14 Product Environmental report. The report states that one iPhone 14 smartphone generates 61 kg of carbon emissions in its lifecycle. Moreover, in November 2022, Bloomberg reported that Apple had lowered its production by 3 million and, therefore, the final number of iPhone 14 to be produced was 87 million units (instead of 90 million) [47]. Then, we are able to calculate the CO₂ emissions for the total number of devices produced:

- iPhone 14 total carbon emission = single iPhone 14 lifecycle carbon emission * total units produced;
- iPhone 14 total carbon emission = 87 million of units * 61 kg/unit;
- iPhone 14 total carbon emission = 5.3 million tons.

As a result, the iPhone 14 will generate globally a total of 5.3 Mt of CO₂e emissions.

However, Apple has the ambition to move all its iPhone 14 manufacturing supply chain using 100% renewable energy. From the Apple's report, the manufacturing represents 79% of its emissions. Therefore, 21% of its emissions will remain. Consequently, here is the quantity of carbon emissions of the iPhone that we can expect after the success of this strategy:

iPhone 14 manufacturing supply chain using 100% renewable energy.

- $21\% * 5.3 \text{ Mt} = 1.1 \text{ Mt of CO}_2$

Nevertheless, as raised previously, Apple has more than hundred suppliers in 43 countries. The countries' location that could be, at least involved in the process steps, components and subcomponents of the iPhone 14 are: US, China, Malaysia, Philippines, Japan, Vietnam, India.

- All these countries do not have appropriate legislation or infrastructures for renewable energy.

- Moreover, before changing their fabrication processes, the suppliers should have access to renewable energy and technically define, implement and validate the change. First, expertise is needed, secondly this implies significant costs and delays (several months) that can impact its other customers and/or simply impact its business.

- However, Apple has just announced that it has moved part of its iPhone production to India and expected that it would reach 25% of its total production in 2025 [48]. Although we can imagine that the production in India use renewable energy, the production phase to be performed in the country is the assembly of the final product which is the process step generating less CO₂ emission).

From our point of view, the "move all its iPhone 14 manufacturing supply chain using 100% renewable energy" is a non-realistic target.

IPHONE 14 E-WASTE

To calculate the electronic waste generated by the iPhone 14 series, we use data from the Apple's website to have an average weight of one iPhone 14. The website provides a weight from 172 g (iPhone 14) and 240 g (iPhone 14 Pro Max). Therefore, we use the mean which is approximately 207 g. Then, we obtain the electronics waste generated by the iPhone 14 series by multiplying the weight by the total number of units produced.

Total E-Waste generated by iPhone 14 = iPhone weight * total units produced

Total E-Waste generated by iPhone 14 = 0.207 kg * 87 million units = 18 million kg.

This gives us 18 Ktons of E-Waste equivalent to more or less 1.8 Eiffel towers.

Table 3

Apple: Forces in favor and disfavor of the environment

In favor of the environment	In disfavor of the environment
TEST 1: Environmental impact of the electronics.	
<ul style="list-style-type: none"> - Apple has defined strategy and governance to reduce its CO2 emissions also through its suppliers. - Apple uses recycled materials in its products. - Apple has smarted chemistry strategy. 	<ul style="list-style-type: none"> - The Objective of CO2 emissions reduction is non-reachable. - Furthermore, the electrification using renewable energy has an environmental impact. - The rate of use of recycled material is still too low. - Apple is more focused on the cleaning than the manufacturing of the components.
TEST: 2 Enabler of globalization of supply chains, communications.	
<ul style="list-style-type: none"> - The implementation of technical Green solutions developed by Apple can be rapidly spread into communication infrastructures or devices used for communications. 	<ul style="list-style-type: none"> - As a technological leader, Apple permits the globalization of communications and infrastructure to expand.
TEST 3: Society shaping (driven by digitalization).	
<ul style="list-style-type: none"> - Apple can influence large populations and promote the Green Economy through its community 	<ul style="list-style-type: none"> - Apple can drive a large number of people for its profitability interests prior to environmental issues.
TEST 4: Lack of will or transparency (Green washing).	
<ul style="list-style-type: none"> - With Green Washing, Apple simplifies things by informing the customer at a level of understanding addressing a wide range of people making them feel more concerned about the environmental issue. 	<ul style="list-style-type: none"> - Apple is performing Green Washing that misleads the customer and the real impact of its products. - Apple use the environmental issue to make its reputation positive with the aim of making its products more attractive, and gaining market shares that results in increasing its production.
TEST 5: Effect of alliances and partnerships.	
<ul style="list-style-type: none"> - Coalition with other stakeholders can further the definition and implementation of technical solutions and standards for the Green Economy. - Apple participates in initiatives that increase expertise and education. 	<ul style="list-style-type: none"> - By owning expertise and means of influencing, Apple favors its interests that can be a threat for governments. - Business competition leads to Green standards that can be biased and too constraining for other companies.

TEST 6: Technological competition in the electronics industry and digital sovereignty

<ul style="list-style-type: none">- Under the pressure for Digital Sovereignty, Apple is encouraged to produce locally.- Facing the issue of resource depletion that can threaten its product deliveries, Apple accelerates the race to recycling solutions.	<ul style="list-style-type: none">- Apple is vulnerable to geopolitical tensions and is part of the technical competition between states and faces other issues (loss of market shares, shortages in supply chain) that can be more important than the environmental challenge.- Apple cannot transform rapidly its supply chain as it is complex.- Market competition for recycling may lead to not disclose green innovation to other stakeholders and delays the common fight against environmental issues.
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Source: compiled by the author.

OUTCOMES AND CONCLUSION

In this article we presented how the electronics industry impacts the environment.

The case studies of China and Apple Inc. enabled us to understand the different factors and the complexity that they have to address in their strategies of developing the electronics industry while coping with the environmental issues.

Here the main outcomes:

Until now, policies of the Chinese government have been effective in developing its electronics industry, reinforced by the competition with the US. Its development drives the electronics industry and the digitalization development of the other countries. However, conscious of the environmental impact, the Chinese government rapidly implements policies in favor of the environment in particular for the e-waste issue.

Apple Inc. has to anticipate and comply with the environmental legislation while it has to influence it in order to expand its business globally, and therefore increase the environmental impact of its products.

In their governance, the two stakeholders show their willingness of using renewable energy and recycled materials. However, the magnitude of the trends of e-waste and greenhouse gas emissions obtained from the calculations, after successful policies, demonstrate that the electronics industry will continue to have a significant impact on the environment.

This study showed how the sovereignty and the fight for technical leadership can challenge the efforts for fighting against environmental issues and balance for more industrial development.

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About the author:

Dhanistha Marina Panyasak - independent consultant, France.

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IMPORTANT ASPECTS OF CREATING A BUSINESS ABROAD ON THE EXAMPLE OF FRANCE

Daria Y. Topadze

MGIMO University

Abstract

The article examines practical aspects of starting a small or medium-sized business abroad that are not obvious at first glance, considering the specific case of French legislation. This paper provides insights into a number of hidden aspects that may critically impact a company's performance by analyzing behavioral and cultural dimensions that determine the way companies embark on a foreign market. The following conclusions are made: 1) physical presence in the host country has a positive effect on companies; 2) the choice of the right strategy directly depends on the depth of preliminary marketing research, which should have an extended scope and greater engagement of resources (when entering a market with a different culture, smooth adaptation is required to successfully implement a strategy); 3) to enter and operate successfully in foreign markets, companies should seek assistance from local financial and marketing consultants, but at the same time have sufficient knowledge about potential pitfalls and challenges; 4) it is important to factor in nationally oriented interests and political risks.

Keywords

Entrepreneurship, business, foreign experience, foreign markets, strategy.

At first glance, it may seem almost the same thing: you find a niche, perform market and customer surveys, and identify the target audience. Next, you draft a business plan: the initial costs of setting up a business in the host country, whether as a new venture, merger or acquisition, plus current management costs. What comes first is the local specifics of taxation, salaries and applicable contributions, terms of employment and dismissal. That is already more of an effort compared to your home country.

At the next stage, you may experience fears associated with a language barrier. However, let's assume that you have a good command of the local language or are fluent in English. Apart from that, you have studied the legal grounds for your stay abroad. A business visa or business residence permit is still a solid basis for a long stay and business activities in the country.

However, most of the pitfalls of doing business abroad are associated with other aspects you are not familiar with in your home country, which may become serious challenges in the host country. Though having a ready-made business plan, an entrepreneur who is just starting out may encounter a number of circumstances and factors that set them back to square one despite the fact that the calculations made say that all the numbers add up, contingency allowances are made, and they show profit.

When starting a business abroad, you should be well versed in two areas: firstly, country-specific business costs and regulations that do not exist in your home country and, secondly, the local mindset. Country-specific business costs and regulations are very difficult to foresee precisely because you are unlikely to inquire about them, while for local consultants they are absolutely obvious, and it may never occur to them to inform you accordingly.

The local mindset may even make your idea unprofitable and unattractive, even though a similar product or service is extremely popular in your home country.

It is also worth mentioning the accepted standards of business communication and negotiations, as a number of communication mistakes may become fatal when dealing with customers or local partners.

Let's take a closer look at each of these aspects by considering several cases.

LOCAL REGULATIONS AND COST OF DOING BUSINESS

Let's suppose you open a restaurant in France. Though this is quite unfamiliar, it is a good idea to inquire about items on your menu which prices are regulated by the state. For example, in France, the pricing of alcoholic drinks in a cocktail menu is relatively regulated. Prices may be set only within the allowed range.

France has an official schedule of prices updated annually that determines the allowed price range of drinks depending on their alcoholic content [1], and drinks are broken down into several categories with specific rules applying to each [2]. When stifled by a complex tax system, manipulating the end price of a cocktail is unlikely to increase your margin.

France has a tough rule for businesses that requires them to make advance payments of VAT for a future period. The tax amount is calculated based on the current period with another 50% of the VAT added to the amount payable by the company to the budget. Thus, in its first year of operation, a new business is supposed to pay 150% of VAT for the period.

Another surprising and unexpected expense which is hard to account for in a business plan in advance is the quarterly fee for a certificate with the tax registration number of your business. A number of institutions, both public and

private, want to check whether your business is actually operating by requiring you to produce an official certificate issued no later than 3 months ago. The one-time issuance fee for such a certificate may reach €60. To save some money, you may want to pay for a monthly subscription offering automatic issuance of such a certificate 4 times a year.

Not to mention the financial statements that companies are required to submit via specialized websites to prove the transparency of their business. As you might have already guessed, the submission of financial statements also comes at a cost for companies.

Another aspect of doing business in France that may surprise foreigners is a strictly defined staffing schedule for each type of activity [3]. In France, the established business practice dictates that you do not arbitrarily invent new positions or combine multiple positions in one. There are regulations and commonly accepted types of staff schedules for everything [4]. Moreover, employees are obliged to meet the formal requirements for their position—specialized background and a diploma are a must. That is, you cannot work as a marketing director if you majored in Sports Management or if you do not have a higher education degree required for your position level. When hiring employees, you will have to factor this in.

By the way, submitting employee salary slips to the tax authority is subject to a fee. Salary slip forms are sold by the piece or in large packages. Therefore, you should not be surprised when your outsourced accountant charges you—on top of their regular fee—for a number of paper forms and special accounting software for filing financial statements. By the way, the preparation and submission of the annual balance sheet of a company is usually not included in the monthly fee of outsourced accountants and is charged for extra.

Moreover, to do business in a particular industry in France, you will have to provide proof of your qualifications. For example, you open a barbershop or a hairdresser. You as the business owner, as well as the barbers or hairdressers you hire, are required to have an industry-specific diploma. This requirement is strictly controlled [5].

Let's go back to the restaurant example. In France, businesses serving local customers are subject to a number of strict geographical rules. For example, a restaurant owner wants to sell their restaurant because they have found more profitable premises nearby and plan to reopen their restaurant there. They will not be allowed to do so even if they change the business name and concept of their restaurant. According to the terms of a non-compete agreement, you can open a similar establishment only at a certain distance from your previous location in order not to lure away existing customers.

SPECIFICS OF LOCAL MINDSET

Any company that considers entering a foreign market will start with the following question. Which foreign market to choose? Of course, entrepreneurs will pay attention in the first place to the macroeconomic situation, market size, purchasing power of the country's population, and potential future growth. Last but not least, for a foreign company, the attractiveness of a country as a market will depend on the ratio between the advantages of a given market versus potential costs, as well as the level of risk associated with project implementation.

Quite often, decision-making is driven by entrepreneurial instinct and the fact that there is an available niche to take for a particular product that offers value and a sustainable competitive advantage. However, differences in mindset may become the main source of danger.

Risks associated with an unfamiliar situation, lack of knowledge about market specifics and consumer mindset in the host country certainly put foreign businesses at a disadvantage compared to the local competition. Unfortunately, this responsibility of newcomers may result in additional costs incurred in order to achieve the same level of knowledge as a local company. The main source of such knowledge is in-depth marketing research along with possible previous experience of doing business in other countries [6].

Why is this niche still available? The answer to this question should be as detailed and clear as possible. An untapped business opportunity may remain just an idea if the specifics of the local mindset, which may be completely incomprehensible to a foreigner, prevent it from being implemented.

European concepts of practicality, comfort, and luxury are quite different from Russian ones. Europe is known for a predominantly practical approach to consuming services, which remain bare bones in their purpose with greater comfort and luxurious features added gradually as customers rise in class in terms of income and position in society, but not before [7].

Let's take for example a service such as a gym. In Europe and in France in particular, most gyms look like a tourist camp: no-frills, sometimes even austere, empty locker rooms without hangers—remember to bring your own padlock to keep your belongings safe. No hairdryers, no water cooler, no wall decorations, no towels—remember to bring a towel along with your padlock. To make things even worse, public baths or saunas are not popular in France. Therefore, if you decide to take this absolutely untapped niche, you will not succeed because the French do not like saunas and will never pay for them. The fitness equipment is old and worn out, however, to your surprise, any Frenchman will tell you that 5-kilogram dumbbells weigh the same regardless of whether they are just bare metal or have a nice and bright-colored rubber coating. In this sector, consumers are not willing to pay a penny extra for greater comfort because they simply do not need it. Therefore, there are very few luxury gyms in France and there is no demand for more.

Let's go back to the restaurant example again. In this case, the positioning is crystal clear as well. Even blindfolded, every Frenchman knows perfectly well what is on the menu, in which establishment, and how much they pay. As a rule, menu items are generally the same. Therefore, if you replace *salade niçoise* or tomatoes with mozzarella with creative menu items from a St. Petersburg gastropub at the same price or even cheaper, the locals will not risk tasting them. They know for sure that if they want something exquisite, there are Michelin Star restaurants with a set of courses at €200 per person. Therefore, in France, there is no point in opening a midrange segment restaurant distinguished for its culinary experiments. And so on and so forth. You can now see how well you need to understand local consumer preferences to build the right business model.

What packaging and advertising should look like (down to the color scheme and font), how to interact with customers, which channels to use—all this is a way too difficult task if you are not familiar with the local industry specifics. Therefore, sticking to the best available concept in the industry may be a trivial but correct solution—copy what already works [8].

INTERCULTURAL COMMUNICATION AND A MIXED BUSINESS TEAM

One of the options is to establish a joint venture, which may give you an advantage and thus better knowledge and understanding of the conditions for doing business and culture in the host country. It is worth noting that Western and Eastern management styles are fundamentally different.

Apart from management, this is also true for communication both within the company and with external counterparties. Once sent, each message goes through several stages. The sender puts a certain meaning into the message, while the recipient decodes it. Apart from the sender's identity, the message encoding also corresponds to their cultural background, ideas conveyed in the source language, symbols, and images. A number of words we know may have connotations that differ from our understanding.

For example, the way of resolving conflicts based on trust. What is trust? In Anglo-Saxon culture, it is reliance on facts and skills; in European, deepening relationships; in Asian, interaction for mutual benefit.

Time-related factors, such as deadlines, daily schedule, and punctuality, should be considered as well. For instance, in Europe, it is bad manners to make business calls during a lunch break (1.5 to 2 hours), on weekends, in the evening, or even in the afternoon. Many companies do not answer the phone after lunch, and this does not mean that they are not working. If the subscriber does not answer, you should leave a voicemail because your interlocutor must know who called them, for what purpose, whether they should worry, and when to schedule a return call [9].

In Europe, being even 5–10 minutes late is a no-no. If you are 15 minutes late, this may mean your appointment has been cancelled.

Imagine how important these aspects are for successful negotiations. Therefore, it may be worth considering some form of mentoring where a professional helps build such important communication as you start a business.

Overall, international or foreign start-ups show significantly greater flexibility than local ones, which allows them to absorb knowledge more effectively and learn from international markets.

Cross-cultural knowledge is certainly an important criterion for choosing a strategy to enter a foreign market. When entering a market with a different culture, smooth adaptation is essential. Finally, most people tend to make behavioral mistakes. Their knowledge and constant monitoring may be instrumental in successful operations.

CONCLUSION

Unfortunately, another risk that cannot be discounted is the potential for discriminatory treatment of foreign companies compared to national ones in the host country. It may be expressed in differential treatment by administrative authorities, consumers, or suppliers in the host country. These risks can be characterized as political ones or as ethnocentrism of consumers in their home country.

As practice shows, the main conclusion is the following. Considering all of the above, despite all modern means of communication, physical presence in the country is critically important for doing business. It is impossible to effectively run a business from abroad. To build a successful international business or a business in another country, deep immersion in the host country and a sincere interest in getting to know the local culture are vitally important. Expectations based on local experience that do not meet the real-life context will result in poor performance.

In conclusion, here is another piece of advice. You should not persist in doing your business no matter what. This mistake often causes entrepreneurs to lose a fortune and precious time. If you started selling goods or services in a foreign market and the demand is low, most likely this will always be the case. In Europe, people are generally willing to pay for what they want when it meets their expectations. If a product or service is not in demand, it means that the product-market fit is not there.

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About the author:

Daria Y. Topadze - lecturer at MGIMO University, an independent consultant in the field of restaurant business and enterprise communication strategy, and a co-owner of Home Master, a company under French law (Nice, France).

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DEVELOPMENT PROSPECTS OF THE RUSSIAN PHARMACEUTICAL INDUSTRY IN THE MODERN CONTEXT

Elena B. Zavyalova

Darina V. Polozova

MGIMO University

Abstract

This article focuses on the prospects for the development of the Russian pharmaceutical industry in the modern economic and geopolitical context. The authors analyze the pharmaceutical market of the Russian Federation in the context of the importance of this industry for ensuring national security in the field of healthcare in times of crises brought about by various reasons. The objective of the present paper was to determine the vector of development of the Russian pharmaceutical market based on the identified structural characteristics and trends in the development of the industry in a rapidly changing geopolitical situation. As demonstrated by the analysis, the Russian pharmaceutical industry is critically dependent on the import of finished dosage forms and substances and is characterized by a consistently high share of non-innovative drugs, which in fact determines the main directions of development of the industry in the medium and long term. The article is based on the following methods: analyzing the results of monitoring the pharmaceutical market of the Russian Federation, analyzing statistical data and expert assessments of development trends in the global and national pharmaceutical industry. The authors come to the conclusion that it is necessary to promptly revise the structure and scope of government investment in the transition of the pharmaceutical industry to an innovative production model, which will allow Russian manufacturers both to meet the needs of Russian healthcare and support the fast-growing segment of the national economy and to become an exporter in the international pharmaceutical market.

Keywords

Pharmaceutical sector, pharmaceutical industry, drugs, medicines, pharmaceutical market, healthcare system, social and economic policy.

INTRODUCTION

The relevance of research in the pharmaceutical market of the Russian Federation is determined by both the high ROI of the pharmaceutical industry and its social significance as one of the key and vital sectors of the economy. The novel coronavirus infection pandemic (COVID-19) and the range of sanctions imposed on the Russian economy have once again demonstrated the importance of reorganizing the national pharmaceutical industry to ensure national security in the healthcare sector in the context of crises brought about by various reasons.

The high dependence of the national pharmaceutical industry on the import of pharmaceutical substances and finished pharmaceutical products, a pronounced market imbalance on the side of generic drugs and a low share of innovative medicines, a drop in real incomes of the population and a significant increase in budget allocations to the public procurement segment within the framework of national healthcare projects form certain structural features of the Russian pharmaceutical industry, prioritizing the directions of its development in the modern context.

THE PHARMACEUTICAL INDUSTRY IS ONE OF THE KEY AND VITAL SECTORS OF THE RUSSIAN ECONOMY

In 2020–2021, the world community closely followed the spread of the COVID-19 novel coronavirus infection: the number of infected and hospitalized, the death toll, treatment methods, the scope of restrictive measures and their impact on the global economy, the development of vaccines and their practical effectiveness, the growth rate of the vaccinated population, the impact of vaccination on the speed of the COVID-19 spreading, etc. The keen interest in the pharmaceutical industry is determined by the scale of the COVID-19 spreading throughout the world, the high mortality rate, and the impact of the pandemic on all spheres of society. The novel coronavirus infection pandemic has become a growth driver for the global pharmaceutical market in general and the Russian pharmaceutical market in particular.

According to the National Credit Ratings agency (NCR), the size of Russia's pharmaceutical market in relation to its GDP (1.62%) in the pre-COVID years was almost three times higher than the global average (0.61%) and, according to the International Monetary Fund (IMF), it is comparable to that of Japan (1.53%), Germany (1.18%), Italy (1.61%), Brazil (1.36%), Spain (1.66%), and Canada (1.29%) [1]. Over the five pre-COVID years from 2013 to 2019, the Russian pharmaceutical market grew by 85% in Russian ruble terms [2]. During this period, the Russian pharmaceutical market grew by 20.75% (1.1 billion packages) in physical terms [3].

The main factor exercising pressure on the rapid growth of the Russian pharmaceutical market in the pre-COVID years was the stagnation of real incomes of the population, which determined the commercial segment of the pharmaceutical market that had the largest volume and the highest growth rate.

During the 2020–2021 COVID pandemic, the Russian pharmaceutical market grew faster than predicted (at 5–6% annually) with the sales growth in monetary terms amounting to 9.6% in 2020 and 16.6% in 2021 [4]. The market volume in monetary terms reached RUB 2,375 billion versus RUB 2,037 billion in the previous year and RUB 1,859 billion in 2019, and the sales profits doubled [5].

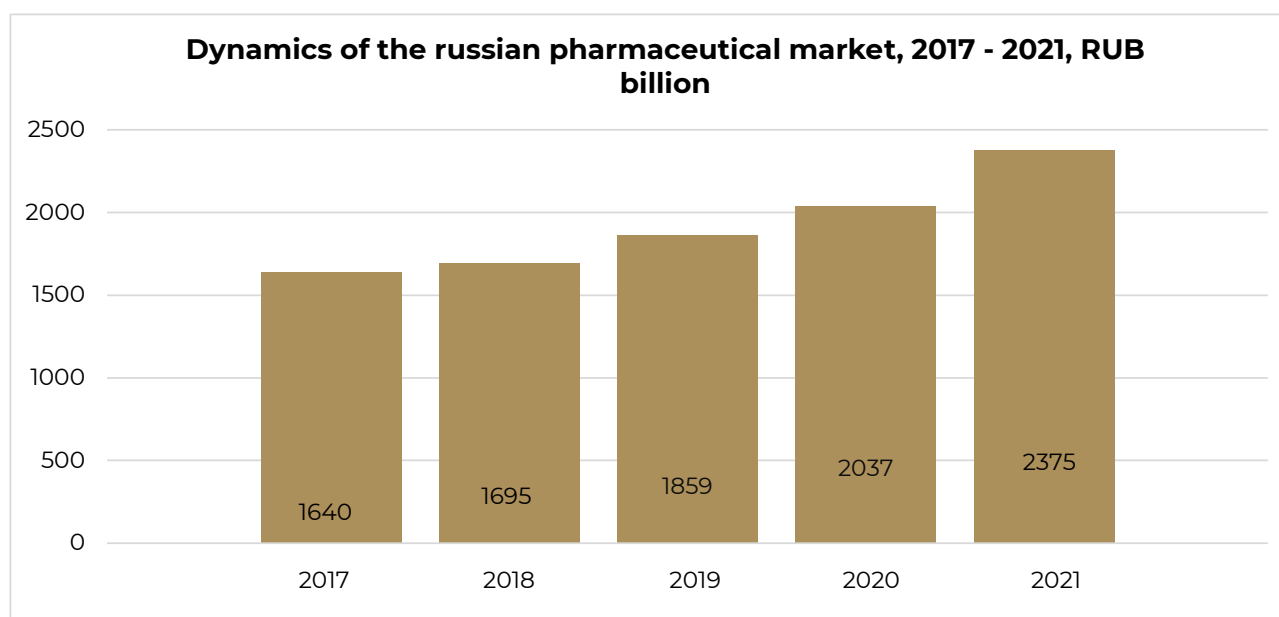


Fig. 1. Dynamics of the Russian pharmaceutical market, 2017–2021, RUB billion.

Source: compiled by the author based on: Russia's Pharmaceutical Market 2021. Annual report // DSM Group. Analytical reports. URL: https://dsm.ru/docs/presentations/Фармрынок_2021_Итоги_12месяцев.pdf (Accessed 28 August 2023).

According to National Credit Ratings (NCR), in the pre-COVID period, Russia was among the ten largest pharmaceutical markets [6].

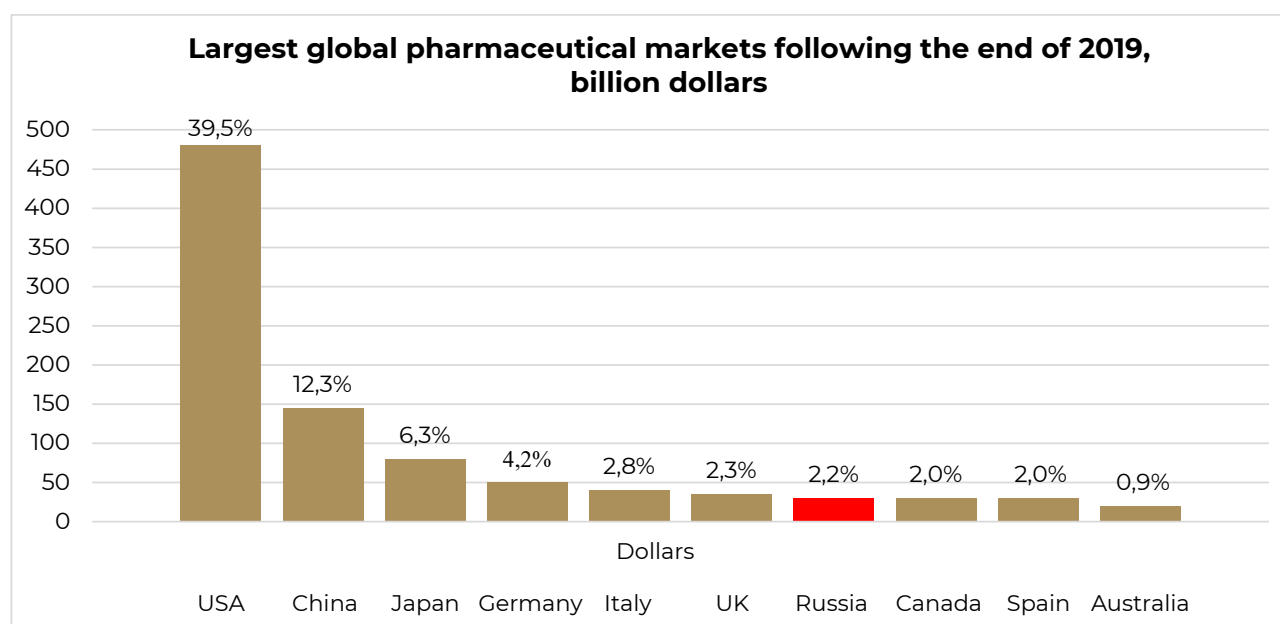


Fig. 2. Largest global pharmaceutical markets following the end of 2019, billion dollars.

Source: compiled by the author based on: Pharmaceutical Market of the Russian Federation — Will the State Help Us? // National Credit Ratings (NCR). Analytical review. 2020. URL: <https://www.ra-national.ru/ru/node/63747> (Accessed 26 August 2023).

At the same time, in terms of medicine use per capita, Russia ranks at the bottom of the Top 30 countries. Following the end of 2019, the sales of medicines per capita amounted to \$194, compared to \$462 on average in the Top 30 foreign markets and \$793 in Switzerland [7].

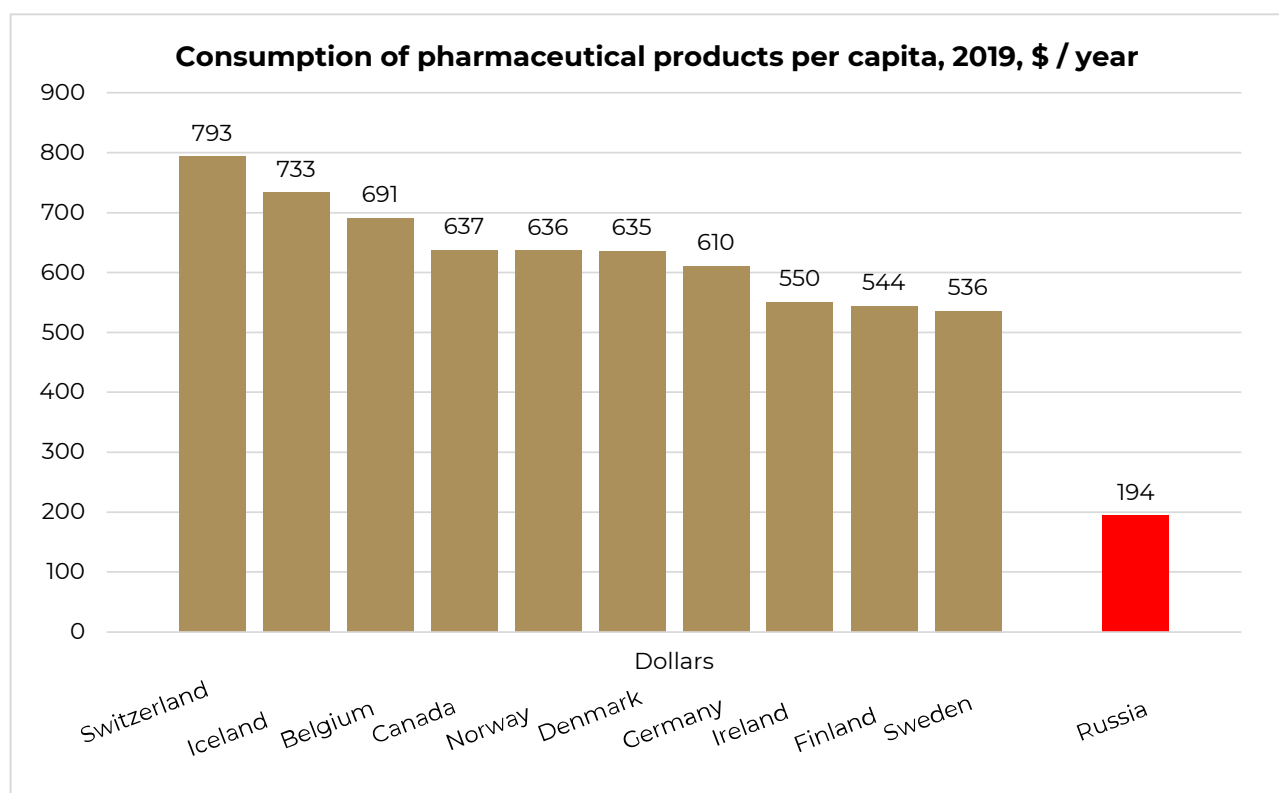


Fig. 3. Consumption of pharmaceutical products per capita, 2019. \$ / year.

Source: compiled by the author based on: Pharmaceutical Market of the Russian Federation — Will the State Help Us? // National Credit Ratings (NCR). Analytical review. 2020. URL: <https://www.ra-national.ru/ru/node/63747> (Accessed 27 August 2023).

The growth potential of the Russian market, primarily through government investment in healthcare, makes it attractive for pharmaceutical companies.

STRUCTURAL FEATURES OF THE PRESENT-DAY PHARMACEUTICAL MARKET IN RUSSIA

The structure of the Russian pharmaceutical market consists of two segments: the commercial segment (the commercial sector of medicines plus the sector of parapharmaceuticals distributed in pharmacies) and the public procurement segment. In line with the world practice, the growth of the Russian market was achieved primarily through increased sales volumes and profitability in the commercial sector, which over the years has maintained a consistently high share and positive dynamics. Thus, the commercial sector of medicine sales grew in monetary terms by 9.7% in 2020 and by 3.5% in 2021. The decline in growth rates is chiefly due to the shrinking real incomes of the population. As of the end of 2021, the share of the commercial sector is 61.3% [8].

Despite constant regulatory changes, the public procurement sector remains the main driver of growth in the Russian pharmaceutical market. It consists of hospital procurement, subsidized pharmaceutical provision (hereinafter referred to as EDC, Essential Drug Coverage), a program of territorial state guarantees and procurement of COVID-19 vaccines. The public procurement segment grew by 9.4% in 2020 and by 33.1% in 2021 (excluding the public procurement of COVID-19 vaccines) due to both objective reasons caused by the pandemic and additional financing of the 'Healthcare' national project with a share of 35.4% following the end of the year [9].

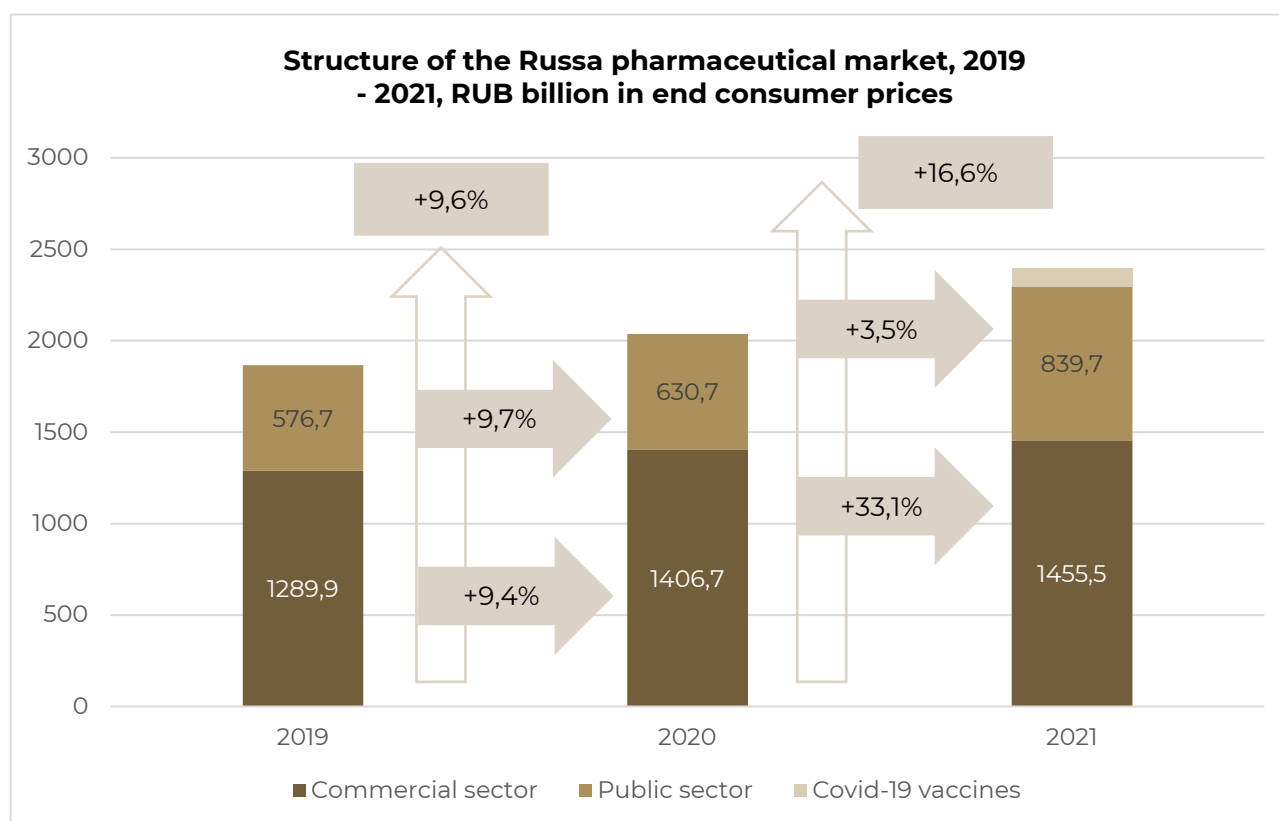


Fig. 4. Structure of the Russian pharmaceutical market, 2019 – 2021, RUB billion in end consumer prices.

Source: compiled by the author based on: Russia's Pharmaceutical Market 2021. Annual report // DSM Group. Analytical reports. URL: https://dsm.ru/docs/presentations/Фармрынок_2021_Итоги_12месяцев.pdf (Accessed 01 September 2023).

Another important feature of the Russian pharmaceutical industry is its high dependence on imported substances, which determines one of the key directions for further development of the industry in the medium term. The pharmaceutical market of the Russian Federation began to take shape at the turn of the millennium. In the command economy of the USSR, there was no room for competition between manufacturers in the production of medicines. Russia's transition to a market economy in the 1990s came with a deep crisis in the pharmaceutical industry. As the Russian market opened to foreign manufacturers, uncompetitive products of national pharmaceutical companies quickly disappeared from the commercial segment, partially remaining in the government procurement segment due to their low cost.

As a consequence, the production volumes of Russian-made substances came almost down to zero. In terms of securing its supplies of pharmaceutical substances, Russia followed the global practice, as no country in the world is self-sufficient. For example, the USA and a number of European countries (the UK, Germany, France) do not produce pharmaceutical substances for generic drugs, and in the USA they are produced exclusively for innovative drugs in the domestic market.

Italy and Spain have historically been the leaders of the pharmaceutical chemical industry and supply pharmaceutical substances only to EU countries. Israel, distinguished by its innovative pharmaceutical industry, meets the domestic demand with its own full-cycle production of drugs by 40%. The Russian pharmaceutical industry is critically dependent on foreign supplies of pharmaceutical substances, the main suppliers of which are China, India, and France.

TOP-10 countries of origin of pharmaceutical substances in 2020

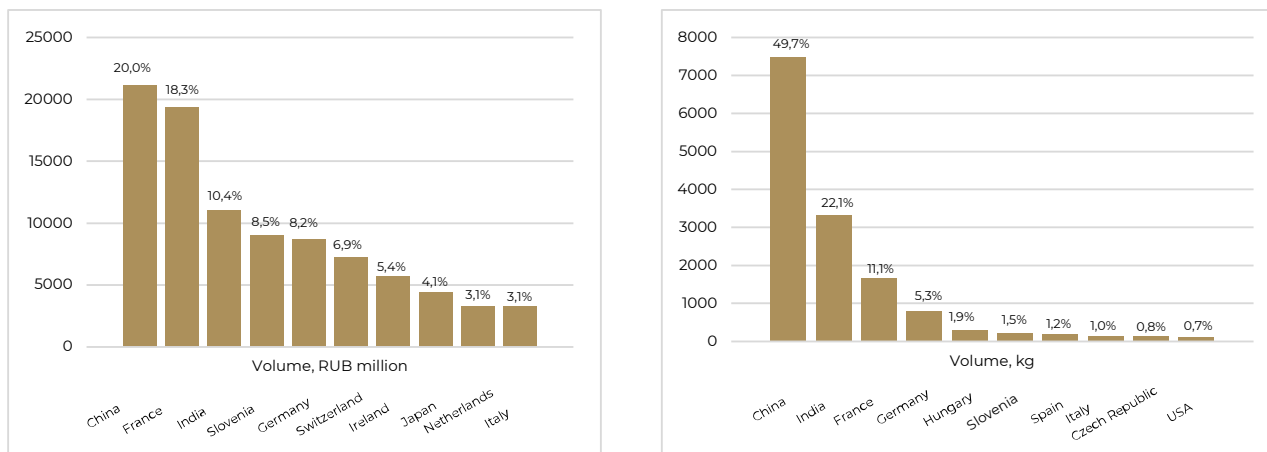


Fig. 5. Top-10 countries of origin of pharmaceutical substances in 2020.

Source: compiled by the author based on: Imports of Pharmaceutical Substances to Russia // Remedium. 2020. № 1-3. URL: https://remedium.ru/state/Import_farmatsevticheskikh_substantsiy_v_Rossiyu/ (Accessed 01 September 2023).

The way to ensure stability of the domestic market and one of the key factors of national security in terms of drug supply is full-cycle production, which includes the production of pharmaceutical substances, in particular those for innovative drugs, which ultimately also determines the competitiveness of the manufacturer.

At the beginning of the 2000s, a number of Russian pharmaceutical companies, having gained access to technology, began producing generic drugs that were in the highest demand in the commercial segment of the market. These drugs were low-cost, unbranded (produced under international nonproprietary names (hereinafter referred to as INN)) and, as a rule, belonged to the most popular categories: drugs for the treatment of cardiovascular and gastrointestinal diseases, antibiotics, antifungals, vitamins, etc.

In 2011, in order to solve the problem of the predominance of foreign-made drugs in the Russian pharmaceutical market and the small share of original innovative drugs in medical prescriptions, Russia adopted a federal state program for the development strategy of the pharmaceutical and medical industry until 2020 (Pharma – 2020) with the main objective to establish a full-cycle production cycle of drugs in Russia, increase the local content of foreign-made drugs, and incentivize the development of innovative technologies in the pharmaceutical industry [10].

The Pharma – 2020 state program gave a significant impetus to the growth of the national pharmaceutical industry with the following direct consequences: increased local content of products of the largest foreign pharmaceutical companies in Russia, a significant growth of the production of drugs by Russian pharmaceutical manufacturers, and the development of pharmaceutical clusters in a number of regions (the Yaroslavl, Kaluga, Nizhny Novgorod, Sverdlovsk, Moscow regions).

By the beginning of the COVID-19 pandemic, which had a certain impact on the development and structure of the global pharmaceutical market, the market share of drugs with a high local content increased from 24% (2012) to 32% (2018), and the share of imports in the list of vital and of essential drugs (hereinafter referred to as VED) decreased from 28% (2015) to 16% (2018). In 2021, the share of drugs with a high local content was 43.7% in monetary terms and 68.6% in physical terms [11].

The Pharma – 2020 state program, along with the import substitution policy, envisaged the transition of the national pharmaceutical industry to an

innovative development model and was aimed at technological revamping of the Russian pharmaceutical industry and making its products competitive in world markets. These objectives were never achieved in full as planned.

Market structure in various sections, 2021

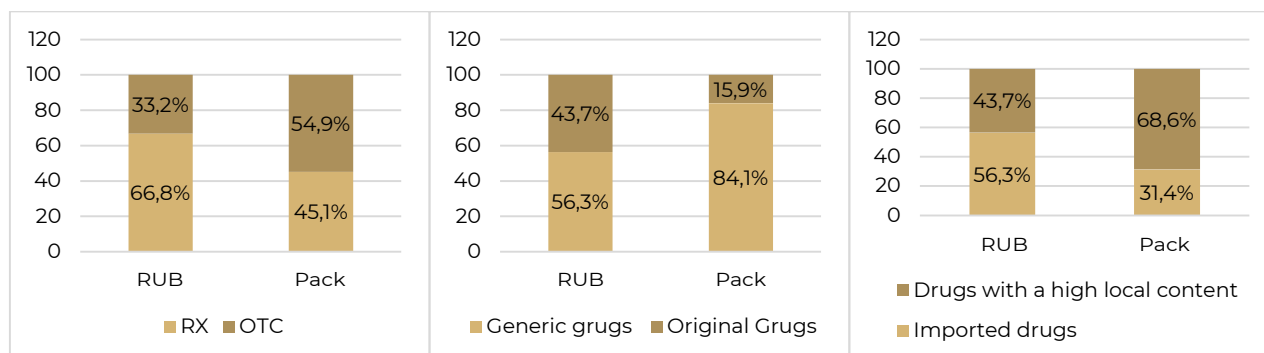


Fig. 6. Market structure in various sections, 2021.

Source: compiled by the author based on: Russia's Pharmaceutical Market 2021. Annual report // DSM Group. Analytical reports. URL: https://dsm.ru/docs/presentations/Фармрынок_2021_Итоги_12месяцев.pdf (Accessed 02 September 2023).

Thus, following the end of 2021, the share of foreign-made drugs in monetary terms is 56.3% (31.4% in physical terms). At the same time, the increase in sales of packages of drugs produced in Russia amounted to only +1.9%, and the increase in imported drugs in physical terms amounted to +10.0%. Both categories of drugs show positive dynamics in monetary terms: for locally produced drugs, the sales volume increased by 12.2%, for foreign-made drugs, by 16.6% [12]. Over the year, the weighted average cost of a package of locally produced drugs increased by 10.2% amounting to an average of RUB 191.4 per pack. At the same time, the price of imported drugs increased by 6.0% up to RUB 395.3 per pack [13]. Thus, the ratio between locally produced and imported drugs in monetary terms is in favor of foreign-made drugs.

Despite the fact that the pharmaceutical industry is among the leaders in terms of innovation development in the world economy, the Russia pharmaceutical market is characterized by a consistently high share of generic drugs. The growth of the share of generic drugs is due to both a decrease in real incomes of the population and public procurement regulations, which determine the winning bid in tenders based on the lowest price per product unit (initial maximum contract price) and a number of legislative initiatives regulating medical prescriptions of drugs based on INN, which leads consumers to choose the most affordable generic drug at the pharmacy level [14]. Generic drugs—analogs of reference drugs produced by competitors after the expiration of the patent—are popular primarily due to their lower cost compared to reference drugs. This trend is caused by the high costs associated with the development and promotion of innovative drugs. For example, according to the Pharmaceutical Research and Manufacturers of America, the average cost of developing an innovative drug from the invention stage to delivery to pharmacies ranges from \$600 million to \$2.7 billion, while for a generic drug it takes on average \$5–25 million [15].

In Russia, the market share of generic drugs in recent years has ranged from 84 to 90% in packages and from 55 to 64% in value terms. These figures are among the highest in Europe [16].

Taking into account the specifics of consumer demand and the prioritization of tasks according to the algorithms of the public procurement system, foreign multinational corporations ranked as leaders in the Top 20 of manufacturers in 2021 (with a combined market share of about 53% in value

terms): Bayer AG (Germany), Novartis International AG (Switzerland), Sanofi (France), Stada Arzneimittel AG (Germany), Teva Pharmaceutical Industries Ltd (Israel), Les Laboratoires Servier (France), Abbott Laboratories (USA), KRKA (Slovenia), GlaxoSmithKline (UK), Menarini Group (Germany), etc. There are five Russian manufacturers with a combined market share of 11.6%: OTCPharm, Pharmstandard, Binnopharm Group, Valenta Pharm, and Ozon Pharmaceutical Company [17].

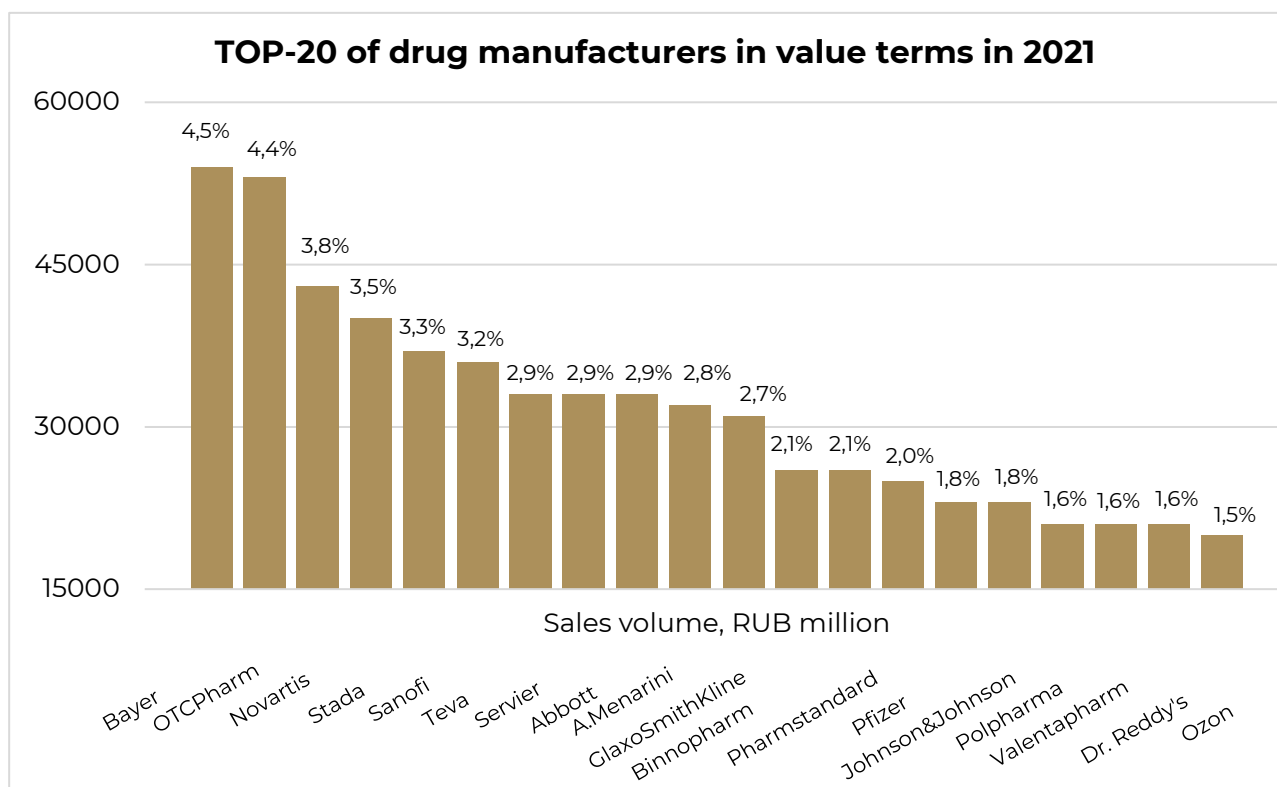


Fig. 7. TOP-20 of drug manufacturers in value terms in 2021.

Source: compiled by the author based on: Russia's Pharmaceutical Market 2021. Annual report // DSM Group. Analytical reports. URL: https://dsm.ru/docs/presentations/Фармрынок_2021_Итоги_12месяцев.pdf (Accessed 07 September 2023).

Another feature of the Russian pharmaceutical market that determines the sales volume of pharmaceuticals is the type of drug dispensing. Due to the current specifics of the healthcare system and the inclination of the Russian population to independently choose medicines without consulting the doctor first, over-the-counter drugs (OTC drugs) prevail. The share of OTC drugs in physical terms is consistently growing due to their lower price, which in 2020 amounted to 54.9% (33.2% in monetary terms) [18]. The growing share of OTC drugs is also supported by the passed legislation that allows remote sale of drugs, which primarily applies to OTC drugs. 97% of OTC drugs are sold through pharmacies [19]. Prescription drugs (hereinafter referred to as Rx drugs) lead in public procurement of drugs with a share of 90% in monetary terms [20].

Thus, at the moment, the key features of the Russian pharmaceutical market are as follows:

- dependence on imports of pharmaceutical substances;
- predominance of generics in the structure of the pharmaceutical market and a low share of innovative, original medicines;
- predominance of foreign-made drugs (when assessing the segment in monetary terms);
- a significant share of OTC drugs in the structure of drug sales.

THE IMPACT OF SANCTIONS POLICY ON THE PHARMACEUTICAL MARKET OF THE RUSSIAN FEDERATION

In March 2022, against the backdrop of a changed geopolitical situation and the sanctions policy pursued by the Western nations, the largest foreign pharmaceutical companies (Big Pharma) made statements about changes in their operations in Russia despite the partial localization of their production in Russia.

Thus, the pharmaceutical companies Bayer AG (Germany), Pfizer (USA), Takeda Pharmaceutical Company (Japan), Astellas Pharma (Japan), and a number of other innovative multinational corporations suspended investments in Russia, maintaining the volume of supplies of non-innovative drugs for ethical reasons. Eli Lilly and Company (USA) has restricted its supplies of drugs not included in the list of vital and essential drugs to Russia. Johnson & Johnson (USA) and Reckitt Benckiser Group Plc. (UK) have suspended their supplies of care and personal hygiene products for patients with mobility impairments. Certain restrictions on supplies of several drugs were introduced by Roche Group (Switzerland), Sanofi (France), AstraZeneca plc (UK, Sweden), Boehringer Ingelheim

(Germany), Novartis International AG (Switzerland), and a number of others [21]. A distinctive feature of the above mentioned manufacturers is that they belong to a group of innovative pharmaceutical companies that invest significant shares of their budgets in the development of original innovative drugs.

Unlike these corporations, generic pharmaceutical companies from Eastern Europe, for example, Gedeon Richter (Hungary), KRKA (Slovenia), Polpharma (Poland), Menarini Group (which includes Berlin-Chemie, Germany, which is better known in Russia), with localized production in Russia have not wound down their operations and have been providing an uninterrupted supply of medicines despite the anti-Russian public rhetoric of their national authorities.

Thus, the COVID-19 pandemic and the trends of the sanctions policy pursued against Russia have once again drawn the attention of the legislative and executive authorities, the medical community, and citizens to the vulnerability of national security in the field of drug supply to the population and the relevance of the ongoing import substitution policy for a number of areas, including one of the key ones—developing and establishing a full production cycle of Russian innovative drugs and vaccines.

Taken together, the above factors once again raise the question of key strategies for the development of the national pharmaceutical industry, its competitiveness in the current social, economic, and geopolitical conditions, and the competence of management taking tactical decisions both in the production sector and in the segment of promotion of manufactured drugs.

Since the Russian pharmaceutical market has been highly profitable for the third decade in a row (the average gross margin of the Top 20 pharmaceutical companies by revenue has remained in the range from 50 to 54% for more than 10 years) [22], it remains attractive for both foreign pharmaceutical companies and Russian manufacturers. Investment projects and clinical trials of innovative drugs wound down by the leading multinational corporations in 2022 provide an opportunity to significantly increase the share of Russian-made pharmaceutical products and allow previously underrepresented drug manufacturers from Turkey, Italy, Cyprus, Macedonia, Croatia, and China to enter the market. The decreasing purchasing power of the population will also have an effect on the market share growth of the Russian pharmaceutical industry. This highlights the relevance of the key vectors for the development of the Russian pharmaceutical industry in the short and medium term.

PROSPECTS FOR THE DEVELOPMENT OF THE RUSSIAN PHARMACEUTICAL INDUSTRY IN THE NEW ECONOMIC AND GEOPOLITICAL CONTEXT

When assessing the prospects for the development of the Russian pharmaceutical industry, it is necessary to consider that it is highly competitive: 80% of the market in value terms is held by more than 100 pharmaceutical manufacturers, most of which are foreign ones, while the share of the market leader in monetary terms has not exceeded 5% for decades [23]. In addition, Russian pharmaceutical manufacturers have been under the influence of constantly changing and mutually reinforcing crises brought about by various reasons for decades: the economic crisis of 2008 developed into the first stage of geopolitical confrontation in 2014 intensified by the social and economic consequences of the pandemic and at present is experiencing a significant sanctions pressure from the leaders of the pharmaceutical industry.

The depreciation of the ruble, the decrease in consumption and economic growth rates, restrictions in the information and technological spheres, disruption of established supply chains, the withdrawal of research programs of Big Pharma companies from Russia, etc., on the one hand, give an impetus to the import substitution policy, giving an advantage to Russian and foreign manufacturers with a high local content, and, on the other hand, significantly hinder the modernization of the Russian pharmaceutical industry.

The prospects for the development of the industry were extensively discussed in March 2022 within the framework of a research and practice conference organized by the Kommersant publishing house [24]. The Government of the Russian Federation presented a state project for potential areas of development of the Russian pharmaceutical industry—‘Pharma — 2022: Launching the Strategy for the Development of the Pharmaceutical Industry until 2030’ (‘Pharma – 2030’) focusing on the prospects for the Russian drug market in the new social, economic, and geopolitical context [25].

This document provides a comprehensive analysis of the market situation with a number of key conclusions, in particular stating the following fact: the major drawback in the technological modernization of the Russian pharmaceutical industry is the limited resources of pharmaceutical companies as releasing innovative products requires a significant increase in investment in development, scientific research, and modernization of production. Investments from the federal budget allocated under the Pharma – 2020 state program were targeted at a moderately optimistic scenario for the development of the Russian economy. Therefore, even though the pharmaceutical industry is one of the fastest growing sectors of the economy, strengthening the competitiveness of Russian manufacturers by putting them on the path of innovative development is hampered by insufficient government support. According to the Pharma – 2030 strategy, an opportunity to partially solve this problem lies in innovative pharmaceutical clusters (IPCs) provided for by the Pharma – 2020 state program that are already developing in Russia.

IPCs are a form of collaboration of research centers, drug manufacturers, equipment suppliers, logistics systems, and specialized universities that enhance the competitive advantages of individual companies and the cluster as a whole. The case of foreign innovative companies sounds convincing as clustering is an effective approach for innovative development of the national pharmaceutical industry [26] and a significant factor in increasing the competitiveness of drug manufacturers.

Biotechmed, the largest forum of the Russian medical and pharmaceutical industry held on 19–20 September 2022, provided an opportunity to take stock of the intermediate results of the Pharma – 2030 strategy. The key conclusion made at the forum is the chosen path for the

development of the industry aimed at providing significant state support to national pharmaceutical manufacturers, which, according to the Deputy Chairman of the Government of the Russian Federation, Minister of Industry and Trade of the Russian Federation Denis Manturov, will secure supplies for the Russian national healthcare system of both generic and innovative drugs and enable Russia to move away from parallel imports of pharmaceutical products in the short term [27].

One of the ways to promptly respond to a number of indirect restrictions imposed on the pharmaceutical and medical industries was 'Products on the Shelf', a new mechanism of state support for the pharmaceutical industry subsidizing the development and registration of medicines under patent protection [28]. This program is a way to reduce the risks associated with drastic decisions of unfriendly countries, which are unfavorable for Russia, and maintain high levels of drug supply to the Russian healthcare system, as the uninterrupted supply of medicines remains a key strategic priority for the development of the Russian pharmaceutical industry. Through the state support program and changes in regulation in the cluster, the share of Russian manufacturers in the total number of issued drug registration certificates over nine months of the current year (still running) reached 80%, which in physical terms amounts to over 740 drugs of various dosage forms.

Another vector of development of the Russian pharmaceutical industry based on the specifics of the Russian industry that emerged after the breakup of the USSR was the path towards independence of the pharmaceutical industry from imported substances, which also entails the need for major investments in the development of biotechnology [29] — these competencies are currently insufficient to reach the objectives of the Russian pharmaceutical industry.

Another important factor determining the competitiveness of the Russian pharmaceutical industry is the ability of manufacturers to quickly respond to changing market conditions by adapting their portfolio of drugs. This requires developing the science and technology infrastructure, production sites; increasing the efficiency of promotion, sales, marketing departments; optimizing supply chains; and, of course, loyal opinion leaders supporting domestic products, which

collectively will enable Russia to quickly market both innovative and generic drugs.

Of course, against the backdrop of supply chain disruptions caused by restrictive measures during the COVID-19 pandemic and unprecedented sanctions pressure on the Russian economy, companies with a full drug production cycle have significant competitive advantages, which is another factor contributing to the competitiveness of the Russian national pharmaceutical industry.

To make the picture complete, we should mention another vector of development of the Russian pharmaceutical sector. Since public procurement of drugs in the near future will remain the main driver for the Russian pharmaceutical market, a real competitive advantage will be achieved by companies that have in their portfolio drugs used within the framework of the 'Healthcare' national project. In the first place, these are drugs for the treatment of oncological and cardiovascular diseases. A high growth potential is expected for drugs used in the treatment of rare (orphan) diseases and the 'Seven Nosologies' program with significant budget allocations.

CONCLUSIONS

The objective of the study was to determine the key directions for the development of the Russian pharmaceutical industry in the context of the

current social, economic, and geopolitical situation and its further development trends. Achieving this objective required several tasks to be set. As a result, the following conclusions were made.

1. The Russian pharmaceutical market keeps growing fast, remains profitable with a high return on investment with a share of the national GDP that is three times higher than the world average, making this segment of the national economy highly competitive.

2. The Russian pharmaceutical sector is characterized by its significant dependence on the import of finished dosage forms and substances, a consistently high share of non-innovative drugs, and a market imbalance on the side of over-the-counter drugs.

3. Five Russian manufacturers rank in the Top 20 of drug manufacturers in value terms with a combined market share of less than 12%. The largest market share (4.4% in value terms) in the Russian pharmaceutical industry is held by a company promoting a range of over-the-counter drugs.

4. The key driver of the Russian pharmaceutical industry in the coming years will be public procurement, while the commercial segment of the market, due to decreasing purchasing power of the population, will lean towards unbranded generic drugs.

5. Government investment in the transition of the pharmaceutical industry to an innovative production model remains a key factor in ensuring its success.

6. Potential vectors for the development of the Russian pharmaceutical industry correlate with the key features of the Russian pharmaceutical industry that have emerged over the thirty years of its existence.

Being an integral part of the unified healthcare system and covering a certain area of national security, the pharmaceutical industry is among the priority areas of development, which a priori should envisage a large-scale investment program to ensure the transition of the Russian pharmaceutical industry to an innovative paradigm.

Key directions for the development of the Russian pharmaceutical industry are set out in the Pharma – 2030 state program and generally reflect the vectors for increasing the competitiveness of pharmaceutical manufacturers with the following focus areas:

- greater importance of companies with a full drug production cycle in Russia;
- maximum import substitution, primarily in the segment of the most popular drugs;
- transition of the industry to an innovative development model;
- prospects for entry of Russian pharmaceutical products into world markets as exporters.

Unfortunately, taking into account the evolving geopolitical crisis and the significant sanctions pressure on Russia, which led to a number of problems in the supply of equipment, technology, software, and logistics of substances, greater presence of Russian pharmaceutical manufacturers in the global pharmaceutical market envisaged in the Pharma – 2030 state program becomes hardly feasible.

On the other hand, the withdrawal of several foreign-made drugs from the Russian pharmaceutical market by a number of international manufacturers; logistical problems in the supply of substances and finished products from European countries and the United States; a trend towards liberalization of industry-specific legislative initiatives; increased funding for both the industry and public procurement within the framework of national healthcare programs; and a reduction, to some extent, in competitive pressure on Russian pharmaceutical manufacturers collectively provide a unique opportunity for such manufacturers to significantly improve their position.

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About the authors:

Elena B. Zavyalova - Ph.D. in Economics, Associate Professor, Head of the Department of Economic Policy and Public-Private Partnerships, MGIMO University. 76, av. Vernadsky, Moscow, Russia, 119454.

RSCI Author ID: 323607

spin-code: 3062-2240

ORCID ID: 0000-0001-6531-7672

Scopus Author ID: 57204059215

Researcher ID (WoS): AAR-7649-2021

Darina V. Polozova - expert, MGIMO University. 76, av. Vernadsky, Moscow, Russia, 119454.

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MANAGEMENT COMPETENCIES ARE THE KEY TO SUCCESS IN ANY COMPETITION

Khachatur E. Pombukhchan

MegaFon PJSC

Abstract

The Russian telecommunications market has undergone tangible changes over the recent years, influenced by various factors, including geopolitical events and changing consumer preferences. In his interview Khachatur Pombukhchan, the CEO of the mobile operator MegaFon, spoke about key trends in the telecom industry, the challenges it faces, prospects and trajectories of its development in the foreseeable future. In his opinion, amid economic turbulence an organized business process management system together with the presence of a top manager with management competencies and well-established interaction within the team play a particularly important role for the company.

Keywords

Russian telecommunications market, leadership culture, management competencies, leadership skills, effective manager, business management system, digital world.

- **Khachatur, you have spent many years working for a large retail company. To what extent does this experience help in managing the federal mobile operator?**

- It certainly helps. Retail is the business characterized by low net profit margins, a constant focus on costs and a large number of personnel, which requires strong competencies in staff management. You constantly keep seeking solutions on how to achieve greater efficiency at lower cost. Apart from that, the retail network operates 24/7, and this requires a high speed of response to any problem and fast solutions should these problems arise. Transactions for in-store purchases are processed and consolidated online, and any error with a product or a technical glitch, such as unavailability of checkout, has an instant impact on revenue. And these losses are irreparable. In this sense, experience in retail develops good skills in operational management of operational business.



The speed of decision making and its quality must be higher and better compared with others on the market. Then it doesn't matter what happens to it, even if it shrinks, you will still win on it.

- **What are the specifics and differences between these businesses?**

- If a person has stopped attending a retail chain, buys less or less than usual, this is immediately visible in the numbers. The operator's interaction with the client is indirect, through the service provided over a wireless channel: how a phone works, what quality of communication a person receives during a call, how the coverage works, how accessible the services are. Often we do not have the opportunity to understand online how satisfied customers are with the service. Negativity can pile up, this is reflected in NPS (approx. Net Promoter Score - consumer loyalty index). To define what specifically does not suit the user you need more thorough work with data and intellectual analysis compared with retail.

Moreover, in telecom the unavailability of services is much more critical for the client than in the retail business. Not finding the right product in one store, he goes to another. In our business if a client is left without a service, this is a reason for him to stop using the operator. Therefore, the focus is more on building long-term relationships than on quickly satisfying demand, as in retail.

At the same time, both in retail and in telecom the consumer cares about money regardless of the budget he spends on these services. For instance, in retail it is tens of thousands of rubles per month and this is a tangible part of the expenses, within which he looks for an opportunity to save. Hundreds of rubles a month are spent on communication services, which is significantly less, but people's sensitivity to these expenses is the same. Here our task is to build the right balance of price and quality, shaping long-term relationships with users, including through transparency of service tariffs.

The businesses are different, but the client's attitude is the same - they

want a quality service at a low price. As long as they get it, they are not bothered by the process. As soon as you stop giving something, the attitude to you as a service provider worsens in no time. Mistakes and errors made by an operator or retail chain lead to customer churn.

- **If you analyze a business from a cultural perspective, what makes company a leader?**

- For me this is nothing impossible. If a company together with managers, teams and employees believes nothing is “impossible”, it means that the leadership culture is well developed. Leaders are those who are ready to become pioneers and look for ways to do better than others, and, importantly, do not stop when everyone believes there is no more room to grow. They are defined by the desire to achieve more and win in a competition race.

This type of culture should be shaped by the CEO and the top team, who then share it at all levels. Then it permeates the company, which starts to operate at a different quality level. First, you need the instigator, then his associates, and then a critical mass of employees who support the culture turn it into an independent driving force of all processes. It can not be forced or happen due to job description. Culture works when the team shares it, seeing what opportunities it creates, and only adds value to the extent that it allows people to unite and achieve both common and their own goals. If everyone stands up and sings an anthem, dances a ritual dance, this is not a culture, this is a sect.

- **What distinguishes a manager-leader from just a manager?**

- In my opinion, not every manager must be a leader. The lower the level of a manager in the company's structure, the less important his leadership role and the more important his executive and expert role. The smaller your team, the less you can achieve through leadership initiatives, and the more you can achieve through expertise. And vice versa, the higher your position in the structural hierarchy, the more significant your leadership qualities. The leader's task is to ensure the achievement of the goals set and effective results through the strength and potential of his team.



Understanding the price and quality standards for each individual client, and offering the solutions they exactly need is the future of the telecom market.

- **It turns out that the CEO is always a leader?**

- In my understanding, the CEO must be a leader. He brings together a team, motivates, sets the trajectory and goals, and creates opportunities to achieve them. But his “leadership” must be assessed by the company's

performance. If, for instance, a business loses its position on a stable market or does not develop on a growing one, it means that the leadership of its managers is weaker compared with its competitors. Financial resources, human capital and opportunities are available to everyone. They win due to leadership ambitions and the team. And in this sense, the managerial competencies of the CEO play a key role in any competition.

- Is leadership innate or acquired; is it possible to develop leadership qualities?

- Like any competence, leadership can be developed, and there are many scenarios for this. People come into this world without any skills - they don't know how to speak, walk, read, write, and they learn everything in the process of life. No one diminishes the role of talent, but the system always beats class. If you need leadership skills and you purposefully invest in their development, you will be a better and more effective manager than someone who acts by intuition. Focus, discipline and consistency always bring about results.

- How to effectively manage a large business today in the context of constant change?

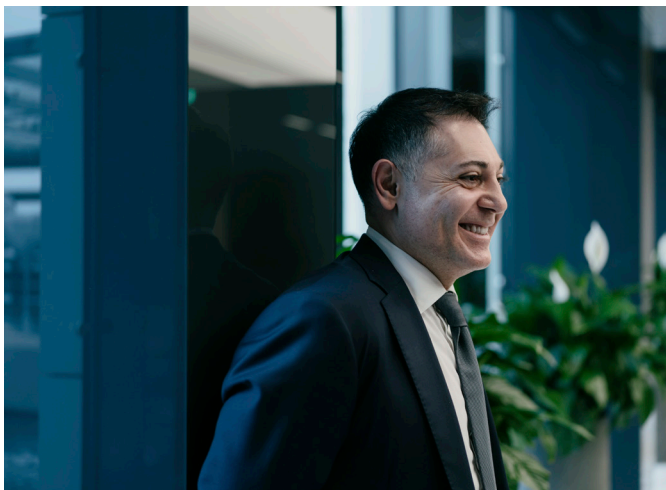
- You need to learn to manage any business in the context of change. The world is changing and that is normal. Over the past 150-200 years, it has not only developed rapidly, but this speed is growing every year. And when the environment is constantly changing, your system of management, goal setting, prioritization, interaction within the team, communication with people must work fast. This sets its own requirements and restrictions on the speed of decision-making. You must quickly understand what has changed, how it affects you, and what to do to use these changes for the benefit of your business or minimize their negative implications. The speed of decision making and its quality must be higher and better compared with others on the market. Then it doesn't matter what happens to it, even if it shrinks, you will still win on it.

The business management system must provide the required flexibility - then the business will be sustainable. And this, in turn, depends on how people inside are able to find such interconnections of what is happening that allow this business to improve and use changes as opportunities, and not as problems or limitations. From any, even the most negative scenario, you can benefit or find a competitive advantage - at least, lose less than others.

- How to shape a business strategy in such conditions?

- In my understanding, now the most effective strategy is the one that sets the right trajectory for development and the boundaries you should not cross, and formulates a set of necessary steps to improve the business within a given time frame. Be it an investment program, or reaching a new level of productivity, or automation. This is a set of priorities that determine the trajectory and path of development of the company, but not clear goals for individual parameters.

It is almost impossible to predict scientific and technological progress, market landscape and the political context. The system of adaptation and constant focus on the priorities which underlie business sustainability are now a strategy.



Leaders are those who are ready to become pioneers and look for ways to do better than others, and, importantly, do not stop when everyone believes there is no more room to grow. They are defined by the desire to achieve more and win in a competition race.

- How will the telecommunications market develop in Russia?

- It's no secret that telecom is gradually turning into "commodity", i.e. a product we sell to people - SMS, minutes, gigabytes. Most likely, it will be compressed to gigabytes; people will go more digital, for instance, using instant messengers for voice and video communication. It is logical that the operator's focus will be on prime cost to become a so-called "pipe" for data transmission. At the same time, many players enter ecosystems and create additional services based on telecom, which in a certain way "ties" clients who, when changing operators, are not ready to give up a set of familiar services.

I believe that the development of the market lies in monetizing the benefits of access to the user. There is no other business so close to the client - we ensure their connection with the digital world. It doesn't matter what they use, a phone with a SIM card, a watch or headphones, their window into the digital world will be a telecom operator. This gives us unlimited access both in terms of understanding our client and anticipating their needs. Another question is how we work with what we know about them. How we study this, what predictive models we build. It all comes down to offering the client what they need today, and better yet, what they will need tomorrow.

And this knowledge about clients does not oblige you to build your own platforms to meet their needs. In my opinion, any specialized solution, streaming music, games, ticket sales, rental housing, will do this better and provide higher quality. It is sufficient to ensure simple and quick access to the products most in demand for the client at the best price, to become their guide in the variety of digital services, which are often difficult to understand on their own.

Understanding the price and quality standards for each individual client, and offering the solutions they exactly need is the future of the telecom market.

About the author:

Khachatur E. Pombukhchan – CEO of MegaFon PJSC, 41, Oruzheyniy lane, Moscow, Russia, 127006.

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