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Corruption in Context

Institutions, Infrastructure and Economic Development

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and Daniyar Kaldiyarov*

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Corruption in Context:

**Institutions, Infrastructure, and
Economic Development**

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Introduction

This book offers a comprehensive analysis of corruption, examining it through the lenses of institutional economics, political-legal analysis, and empirical research. It aims to identify the stable interconnections between institutional conditions, access to infrastructure, and the perception of corruption, while also proposing well-founded approaches to reforming anti-corruption policies.

Corruption remains a significant structural barrier to sustainable socio-economic development, particularly in transition economies. Despite considerable efforts from national governments, international organizations, and civil society, corruption levels in many countries remain high, and the effectiveness of anti-corruption initiatives is often ambiguous. Beyond direct economic losses, scholarly and expert communities are increasingly focusing on the institutional impact of corruption: the erosion of trust in the state, distortion of market mechanisms, increased transaction costs, and weakening of the law enforcement environment.

In Kazakhstan, corruption is not merely a moral issue but a substantial institutional obstacle to economic modernization, digital governance, infrastructure development, and enhancing regional investment attractiveness and business growth. The problem of corruption becomes even more pressing amidst growing societal expectations for government transparency, equal access to public goods, and fair resource distribution. Despite numerous anti-corruption programs and strategies, public distrust in state institutions and tolerance for everyday forms of corruption persist. This highlights the need to re-evaluate the very nature of corruption as a stable institutional phenomenon deeply embedded in socio-economic and political relations.

The book explores several key areas to provide a comprehensive understanding of corruption. In the first chapter, "Corruption as a Social Phenomenon," we explored and compared various definitions of corruption to identify the essence of this phenomenon. The authors also examined and classified the most common forms of corruption, as studied by the academic community and international experts. We identified and described different types of corruption, ranging from petty or bureaucratic corruption to its manifestations at the highest levels of authority and in the business environment. All kinds of corruption were analysed and explained to foster

a deeper understanding of how corruption is addressed in society and the economy. A separate section is dedicated to the conceptual and categorical apparatus of corruption within the context of economic research, which will be further detailed and examined in subsequent chapters of the book. Finally, Chapter 1 concludes with a brief overview of the history of corruption in Kazakhstan.

Chapter 2, “The Economics of Corruption,” examines the major theoretical approaches to explaining corrupt behaviour, ranging from neoclassical models of rational choice to institutional theory. It explores how corruption distorts market mechanisms, undermines competition, increases transaction costs, and reduces the efficiency of resource allocation. In environments with weak institutions, corruption can become an alternative decision-making mechanism, displacing legitimate procedures. Special attention is given to concepts such as information asymmetry, a lack of formal rules, and ineffective contract enforcement. The chapter also discusses the macroeconomic consequences of corruption, including reduced growth rates, distorted public expenditure structures, and capital flight. This chapter thus lays the theoretical groundwork for understanding corruption as both a legal and an economic phenomenon, emphasizing the need for a comprehensive approach to its study and mitigation.

Chapter 3 “Imperfect Institutions” focuses on institutional imperfection as a key factor contributing to the spread of corruption, including distrust in institutions, weak formal rules, and ineffective enforcement. It demonstrates how the institutional environment shapes economic behaviour, forming “rules of the game” where corruption becomes part of the system rather than an exception. It further addresses the problem of “institutional traps,” where corruption ceases to be an anomaly and becomes a stable norm within the system. Additionally, the authors provide an in-depth analysis of the emergence of the “corruption trap” and its subsequent connection to the “poverty trap”. Analysis of transition economies confirms that weak institutions (such as courts, law enforcement agencies, and public administration systems) increase society's reliance on personal connections and “informal payments.” Undeveloped or distorted institutions create a fertile ground for corrupt practices, as economic agents often rely on informal agreements and patronage networks in conditions of legal uncertainty. This chapter reveals the systemic nature of corruption, rooted in institutional costs, and justifies the necessity of deep institutional reform for a sustainable reduction in corruption levels.

Chapter 4, “Infrastructure as a Strategic Basis,” analyses infrastructure as a strategic factor for economic development and the reduction of corruption risks. It provides a brief overview of studies on the significance of infrastructure for the economy, as well as studies on access to infrastructure in the context of its relationship with corruption.

The chapter also highlights how weak or unevenly distributed infrastructure limits access to resources for entrepreneurs and the population, creating a favourable environment for informal practices and abuses. The authors made an in-depth statistical and economic analysis of the state of various kinds of infrastructure in Kazakhstan. The authors utilise statistical and processed data from different sources, which helps to build a view about access to infrastructure.

Finally, in Chapter 5, the interrelationship between limitations in access to basic infrastructure and the prevalence of corrupt practices is analysed. This chapter presents the results of a sociological survey provided by the authors in the Kazakhstan regions. It reveals how the uneven distribution of infrastructural resources (e.g., land, transport, logistics, energy) creates conditions for officials and interested parties to abuse their positions. The authors identify significant differences in trust in authority, perception of corruption, and its permissibility based on gender, age, region of residence, and income level. The study reveals that, in the eyes of the public, corruption is closely linked to unequal access to basic resources, including land plots, networks, roads, and administrative services. At the same time, tolerance for everyday corruption coexists with a very low assessment of the state's efforts to combat it, indicating institutional cynicism and a deficit of civic participation.

Thus, the book offers both a theoretical understanding of corruption as a systemic phenomenon and an empirical basis for developing practical solutions. Corruption is examined in conjunction with factors such as institutional quality, infrastructure provision, and access to basic public services. The book's unique feature lies in its interdisciplinary approach, combining methods from economic theory, institutional analysis, political science, and applied sociology.

The presented materials are expected to be valuable not only for researchers and students interested in corruption but also for practitioners in public administration, anti-corruption policy, and strategic planning. In transition economies, where institutional transformations play a crucial role, the approaches and conclusions proposed in the book can serve as a foundation for designing more just, transparent, and sustainable governance models.

Chapter 1.

Corruption as a Social Phenomenon: Essence, Classification, Conceptual and Categorical Framework

1. Introduction

Corruption, as a societal phenomenon, has long captured the attention of researchers, politicians, human rights advocates, and the broader public. Amidst intensifying globalization, the expansion of democratic institutions, and the transformation of state power across various countries, the phenomenon of corruption has become a subject of close academic scrutiny.

The turn of the 20th and 21st centuries saw a sharp surge in interest in studying the nature of corruption, its forms, consequences, and countermeasures. This rise is linked both to the amplification of anti-corruption discourses in public policy and the pressing need to develop effective instruments for state governance.

The issue of corruption is particularly acute in developing economies, including post-Soviet states and, notably, Kazakhstan. Despite the country's invigorated anti-corruption policy, which includes the establishment of an Anti-Corruption Agency and the implementation of digital solutions (such as e-government), the level of corruption perception among the population remains high. According to Transparency International's Corruption Perception Index (2024), Kazakhstan ranks 88th out of 181 countries, indicating the systemic nature of the problem.

Thus, examining the phenomenon of corruption within the Kazakhstani context necessitates a comprehensive approach from analyzing its conceptual framework to assessing the specific manifestations of its forms across various spheres of state and societal interaction.

2. The Essence of the Concept of "Corruption," Its Definitions

The phenomenon of corruption lacks a single, universally accepted definition in the scientific literature. As Svensson (2005) asserts, there is no one, most comprehensive, clear, precise definition of corruption. Moreover, corruption can take diverse forms, partly due to its hidden nature, and its various manifestations can correlate with each other, which significantly complicates the problem of measuring corruption. Consequently, there are no definitive answers to questions about where corruption arises, why it occurs, and what its consequences are for society.

In economic research, the focus is most often directed towards identifying various forms of corruption and systematizing them, analysing the causes and consequences of corruption from the perspective of economic agents' behaviour within a given system of economic relations, and proposing anti-corruption strategies.

Within scientific literature, depending on the field, methodology, and type of research, various interpretations of the phenomenon of corruption are offered. For instance, in political science, corruption is presented as a form of deviant behaviour that violates the norms for the functioning of a political system. Economists, in turn, while investigating the manifestations of corruption, draw attention to its role in distorting market mechanisms and redistributing resources within the economy.

According to the classical definition proposed by Nye (1967), corruption is behaviour in which an individual uses entrusted power for personal gain, deviating from established norms. This definition has become the foundation for numerous subsequent conceptualizations of the phenomenon of corruption.

International organizations, such as the United Nations, the World Bank, and Transparency International, among others, regularly conduct periodic studies to measure corruption, examine its mechanisms, and disseminate information about best practices for combating corruption. They also develop recommendations for reducing corruption levels in countries with high corruption levels.

In United Nations and World Bank documents, corruption is defined as the abuse of public power for personal interests.

Transparency International uses a broader interpretation: "corruption is the abuse of entrusted power for private gain."

These organizations strive to encompass and review various forms of corruption, from petty to systemic.

Kazakhstani legislation provides the following definition of corruption (Article 1 of the Law of the Republic of Kazakhstan dated November 18, 2015, No. 410-V "On Combating Corruption"): "Corruption – the illegal use by persons holding responsible state positions, persons authorized to perform state functions, and persons equated to them, officials, of their official (service) powers and associated opportunities, or other use of their position to obtain property benefits, as well as the wrongful provision of such benefits to the persons specified in this article."¹ In the context of this book, this definition is crucial, as subsequent chapters will examine the impact of corruption on access to infrastructure, using Kazakhstan as an example.

3. Classification of Types and Forms of Corruption

There exist various approaches to the classification and typology of corruption. One common approach is to distinguish between "petty" (or "low-level") and "grand" (or "high-level") corruption, depending on the level of involvement of the subjects in corrupt interactions. Petty corruption is often substituted with bureaucratic corruption, as it is the type most frequently encountered by the populace in practice.

In scientific literature, administrative, political, corporate, and institutional corruption are also distinguished. A comparative analysis of these forms enables a deeper understanding of the mechanisms underlying corrupt relations in various countries and spheres.

Theoretical approaches to the study of corruption include rational choice theory (Becker, 1968), institutional theory, which incorporates game theory, principal-agent theory, the concept of "rent-seeking," hypotheses about corruption as "grease or sand" for economic development, concepts of institutional and corruption traps, and others. Each of these theories and concepts explains why corruption arises, how it is reproduced, and what mechanisms can be effective in combating it. In the subsequent chapters of this book, we will delve deeper into them. In the context of Kazakhstan, it is essential to consider both institutional and cultural factors that influence corrupt behaviour.

¹ See Law of the Republic of Kazakhstan dated November 18, 2015, No. 410-V "On Combating Corruption" (with amendments and additions as of May 19, 2025). IPS "Adilet": <https://adilet.zan.kz/rus/docs/Z1500000410>

Corruption manifests in various forms, each possessing its unique characteristics, scale, and consequences. In scientific literature, it is customary to distinguish several types of corruption based on different criteria:

1. By the nature and level of subject involvement: (petty or bureaucratic, "low-level," systemic or institutional, political);
2. By implementation mechanisms: (active, passive, "gray," hidden);
3. By consequences for the economy and society: (systemic, business-related, elite).

Table 1 provides brief characteristics of the types of corruption.

Table 1. Typology of Corruption in scientific and analytical databases

Nº	Type of Corruption	Descriptions and examples
1	Petty	Small bribes, kickbacks, services for "gratitude"; most often found in the areas of public services, healthcare, and education.
2	Systemic	Corruption is an integral part of the daily practices of the authorities and is deeply ingrained in the public administration system. It can encompass entire institutions and influence the formation of political decisions.
3	Political	Illegal party financing, sale of public offices, and lobbying detrimental to public interests.
4	Active	Giving bribes, bribery
5	Passive	Receiving bribes, "tacit consent" to violations.
6	"Gray"	Non-transparent tenders, conflicts of interest (actions formally not violating the law but having a hidden, corrupt effect).
7	Horizontal	Between equal subjects (e.g., between businesses and contractors).
8	Vertical	Between subjects with power asymmetry (citizen-official).
9	Elite	Between subjects in the highest echelons of power, nepotism and "cronyism" scale are significant.
10	Business	Obtaining contracts and licenses by private companies through bribes, tax evasion, and unfair competition.

Note – systematized by the authors

The next chapter of the book will be dedicated to exploring the role of corruption in economic science, providing an overview of theoretical directions and concepts, and examining the forms of corruption's manifestation from the perspective of its influence on long-term economic development. Within the framework of reviewing corruption models, fundamental works will be examined. Therefore, in this chapter, a brief overview of the types of corruption will be provided, along with their corresponding research sources (Table 2).

Table 2. Systematization of Research Sources and Definitions of Corruption

Type of Corruption	Source(-s)	Definition
Petty or Bureaucratic Corruption	Rose-Ackerman, S.; Transparency International; World Bank	Every day, minor acts of corruption occur at the lower and middle levels of public administration. This includes small bribes or informal payments demanded by public servants from citizens for services that should be free or available for an official fee (e.g., speeding up the issuance of licenses, permits, certificates, or access to basic services).
Elite Corruption or "Top-Level" Corruption	Transparency International; United Nations Convention Against Corruption (UNCAC, 2004); Andvig & Fjeldstad (2001)	Large-scale corruption at the highest levels of government. Manifestations include the abuse of power for personal enrichment or the enrichment of associates, the manipulation of policies and laws, the allocation of significant government contracts, the privatization of assets, embezzlement, or the misappropriation of state funds on a large scale.
Political Corruption	Rose-Ackerman, S. (1999); Heywood, P. M. (2017); Kaufmann et al. (1999, World Bank)	Abuse of political power and influence for personal gain or to obtain illegal advantages for parties/interest groups. This can manifest through illicit campaign financing, lobbying, nepotism, favoritism, and the "capture" of the state by private interests that influence the formation of legislation and policy.
Business Corruption	OECD (1997); United Nations Convention Against Corruption (UNCAC, 2004); World Bank	Unlawful acts committed within the scope of business activities, often involving private companies that give bribes to public officials or other private individuals to gain undue advantages (e.g., securing contracts, licenses, tax evasion, unfair competition). It can also occur within the private sector between or within companies.
Systemic Corruption	Johnston, M. (1997); Huntington, S. P. (1968); Transparency International; World Bank	A deeply entrenched and widespread form of corruption that becomes an integral part of how state institutions and processes function. Corrupt practices are routine and an expected element of interaction. It permeates all or most sectors, undermining the rule of law, economic efficiency, public trust, and democratic principles, and is often linked to a lack of transparency and weak oversight institutions.

Note – systematized by the authors

Since there is no universal approach to encompass and identify all types of corruption, and no single methodology for studying this phenomenon, understanding the various forms and types of corruption is crucial for developing effective prevention strategies. In practice, a country's unified anti-corruption strategy typically involves developing and implementing multiple specialized mechanisms for coordination, monitoring, evaluation, and impact.

4. Conceptual and Categorical Framework of the Economics of Corruption

The following chapters of this book will examine and study the key categories that form the foundation of the conceptual and categorical framework of the economics of corruption (Table 3).

Table 3. Key Categories in the Economics of Corruption

Concept/Category Name	Description	Additional Comments
Corruption Rent	Additional income or benefit appropriated by a corrupt actor through the exploitation of their position.	This is a direct result of the distortion of market or administrative processes.
Corruption Tax	Informal payments that businesses or citizens are forced to make to officials to gain access to public services, licenses, permits, or contracts.	This "tax" increases the costs of doing business and undermines the competitiveness of the economy.
Transaction Costs of Corruption	Additional costs (in terms of time, money, and psychology) are incurred by economic agents when interacting with corrupt officials.	Examples of corruption's transactional costs include searching for intermediaries, negotiating bribe amounts, and facing reputational risks.
Economic Consequences of Corruption	A wide range of adverse effects, including slowed economic growth rates, distortion of government spending structures, capital outflow, reduction in foreign direct investment, exacerbation of social inequality, undermining of competition, and deterioration of the quality of public services	An example of distorted government spending structures is the inclusion of expensive infrastructure projects, which can lead to officials easily receiving "kickbacks."
Anti-Corruption Policy	A complex set of measures undertaken by the state and society to reduce the level of corruption.	It includes legislative reforms, institutional transformations, increased transparency, stricter penalties, the development of civil society institutions, and the digitalization of government processes.
Threshold Effect of Corruption	A hypothesis stating that the impact of corruption on economic growth may be non-linear; in other words, if the level of corruption in a country exceeds a certain "threshold," its impact becomes catastrophic.	At relatively low levels of corruption, its negative impact may not be as pronounced.
Corruption Perception Index	Reflects the perception of corruption by experts and business representatives within the public sector of various countries.	One of the most well-known tools for measuring corruption, published annually by Transparency International.

Corruption Cycle	A model describing the recurring dynamics of corruption, including phases of opportunity emergence, commission of a corrupt act, its concealment, and subsequent influence on institutions and incentives.	The corruption cycle demonstrates how corruption in one phase creates new opportunities for corruption in subsequent phases.
Institutional Trap	A term first introduced by Polterovich, meaning "inefficiency and instability of an institution" (Polterovich, 2007). This term describes the acquisition of a stable character by negative phenomena, including barter, non-payments, corruption, tax evasion, and shadow economic processes.	In international sources, the term "institutional trap" is often used to describe a "lock-in effect." According to D. North, this means that a decision, once made, is difficult to reverse. Imperfect economic institutions lead to rent-seeking behavior and the development of corruption.
Corruption Trap	A state where a high level of corruption not only exists but also becomes a self-sustaining equilibrium, from which it is difficult to exit without fundamental systemic transformations.	A model of the corruption trap (Polterovich, 2007).

Note – systematized by the authors

An analysis of the essence and conceptual-categorical framework of the corruption phenomenon in economic research enables an understanding of the evolution of the economics of corruption and the reasons why it has gained recognition in economic science. From the initial observations of classical economists regarding the inefficiency of government interventions to the in-depth analysis of rent-seeking, institutional traps, and behavioural aspects within modern economic science, the understanding of corruption has significantly broadened and deepened. Recognizing corruption as a complex economic issue that requires systemic and multifaceted solutions, grounded in rigorous empirical data and robust theoretical models, is a cornerstone for shaping effective anti-corruption policies and building prosperous economies.

5. Historical and Social Context of Corruption in Kazakhstan

The formation of an institutional and social environment conducive to corruption in Kazakhstan has deep historical roots. Even during the Soviet period, corruption was not viewed as a systemic phenomenon, but rather as isolated instances of "deviant behaviour." However, even then, stable practices of "blat,"² informal exchange of

² Blat is a phenomenon that refers to acquaintances or connections used for personal purposes and infringing on the interests of third parties (from Wikipedia).

favours, and clientelism existed, which over time became customary elements of public life. These elements persisted and transformed in the post-Soviet period, when the legal and administrative system underwent a phase of institutional formation.

After 1991, Kazakhstan inherited a centralized public administration model with limited mechanisms for public oversight. Privatization, weak institutions, and a lack of transparency in decision-making characterized the transition to a market economy. Against the backdrop of insufficient legal regulation, this created fertile ground for corrupt practices. In the 1990s and early 2000s, informal resource distribution schemes became widespread, where access was determined not by law, but by personal connections.

Contemporary studies (Satpayev, 2014; Zharlygassinov et al., 2023) evolved into an institutionalized form. It permeates key sectors: public procurement, land relations, construction, healthcare, and education. It is essential to note regional differences in the perception of corruption. In the western regions, where transnational companies are actively operating, the level of perception is lower, which is associated with the implementation of corporate transparency standards.

The state has taken steps to combat corruption systematically: the adoption of the Law "On Combating Corruption" (2015), the creation of the Anti-Corruption Agency, the digitalization of public services (eGov portal), and the introduction of risk assessment and independent monitoring. Nevertheless, the results remain limited. Key problems persist, including a low level of trust in institutions, formalism in the implementation of anti-corruption policy, and the preservation of informal norms that justify corruption as a "necessary evil" or a "way to solve problems."

Corruption remains one of the key threats to sustainable state development, undermining trust in institutions, violating principles of justice, and reducing governance effectiveness. Research into the phenomenon of corruption yields important conclusions in both theoretical and applied aspects.

First, despite the existence of numerous definitions, corruption, in all interpretations, represents an abuse of trust and power for personal gain. This makes it a universal indicator of institutional weakness and breaches in the system of separation of powers, as well as accountability and transparency.

Second, the diversity of corruption types necessitates adapting anti-corruption mechanisms to their specific forms and conditions of manifestation. Petty, institutional, and political corruption each have distinct channels of reproduction, social legitimacy, and consequences.

Third, Kazakhstan serves as an example of a country where corruption has evolved from sporadic practices into an institutionalized phenomenon integrated into the public administration system. Despite ongoing efforts to eradicate it, structural and cultural obstacles to reducing corruption levels persist, including low public trust, weak civil society participation, and formalism in implementing the anti-corruption agenda.

Understanding the specifics of corruption in Kazakhstan necessitates an interdisciplinary approach, considering historical, cultural, and institutional factors. Achieving sustainable results demands a cross-sectoral anti-corruption strategy, including institutional reform, fostering a culture of intolerance towards corruption, digitalizing processes, ensuring transparent financing, and implementing effective public oversight. Learning on international experience (e.g., the Transparency International Corruption Perception Index, United Nations anti-corruption conventions, World Bank instruments) can contribute to developing a realistic and effective strategy for combating corruption in Kazakhstan.

Only a comprehensive shift in political and managerial practices, supported by the efforts of civil society and the international community, can ensure real progress.

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Chapter 2.

The Economics of Corruption and Its Position in Economic Research

1. Introduction

Numerous studies over the past century have consistently demonstrated that corruption, as a multifaceted phenomenon, stands among the most detrimental factors severely impacting a nation's sustainable economic development and societal well-being. From an economic analytical perspective, examining corruption extends beyond mere moral considerations; the analysis often transcends ethical and moral boundaries.

As Svensson (2005) asserts, there is no single, universally comprehensive, or precise definition of corruption. Moreover, corruption can manifest in diverse forms, partly due to its clandestine nature, and these various forms may correlate significantly, complicating its measurement. Consequently, there is no universally accepted view on corruption, nor are there canonical answers to questions regarding its origins, causes, or societal consequences.

In economic research, the focus most often centres on identifying and systematizing various forms of corruption, analysing its causes and effects from the perspective of economic agents' behaviour within specific economic systems, and proposing anti-corruption strategies.

Various global reports and studies define corruption as a socio-economic phenomenon where a public official (or civil servant) abuses their authority, granted by society, for personal economic gain. The key emphasis here is the utilization of public power or state employee status to achieve private benefit or selfish objectives. The pursuit of self-interest or "economic egoism," in its general form, is a regular occurrence in an economic environment, implying the generation of profit or income.

As early as Adam Smith's studies, one can find references to personal and self-interested goals of economic agents, which stimulate them to seek new solutions and strategies to achieve market equilibrium. However, in economics, the principle of pursuing personal

benefits should not contradict legislative principles in order not to become a characteristic of crime. Although this is a somewhat controversial point for the researcher, it is a well-known and widely held statement that at the heart of any capital crime is a crime. Or to be more precise, as Karl Marx said, “there is no crime that capital is not ready to commit”. In our opinion, such a theoretical basis should not justify the phenomenon of corruption. However, it can provide a perspective on economic research. In addition, there are many works, including modern ones, on the positive role of corruption in the economy within the framework of the well-known theory of corruption as “grease for the wheels” of economic development, which we will discuss further on.

Returning to the presented definition of corruption as the abuse of power for personal gain, it is worth noting that this definition is widely accepted. Although in practice, especially from a legal standpoint, it is more accurate to point to a two-sided process between the “bribe-taker” and the “bribe-giver.” Nevertheless, we will stick to this definition, which will be analysed in more detail later and potentially expanded depending on the specifics of a particular study and a given economic theory or paradigm.

2. Retrospective of the Development of the Economics of Corruption

Further analysis will trace the historical retrospect of corruption studies within fundamental economic research. The phenomenon of corruption is evident in the works of ancient thinkers, as reflected in a substantial body of material in scientific and analytical literature across various fields of study. However, within the framework of economic theory, the study, research, and analysis of corruption began relatively recently, approximately since the mid-20th century (Figure 1).

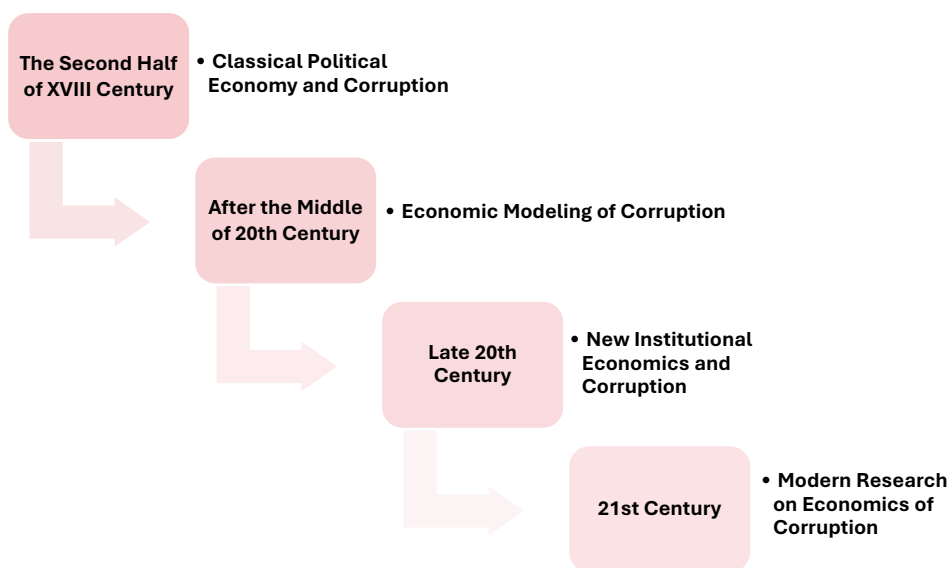


Figure 1. Historical Retrospective of the Development of the Economics of Corruption
Note – compiled by the authors.

Before the emergence of the economics of corruption as a distinct field of study, scholarly attention often focused on the moral, ethical, or legal dimensions of corruption in research, rather than its economic nature.

The Period of the Second Half of the 18th Century. The works of classical political economy did not focus on the phenomenon of corruption. However, Adam Smith's famous work, *Wealth of Nations* (1776), posits that efficient market operation fundamentally relies on honest governance and minimal state intervention in the economy. It has now been widely accepted that corruption often stems from excessive government involvement in the economy, which underscores the enduring relevance of Smith's ideas. He critically viewed monopolies and the privileges they gain in the economy as sources of market inefficiency. In this context, Smith concluded that monopolies result from the abuse of state power, distorting interactions among market agents. He can pave the way for personal gain at the expense of public welfare.

Institutional Approach. Since the second half of the twentieth century, the emergence of the 'economics of corruption' within the institutional approach, as part of the development of public choice theory, has become observable. The leading figures in this field are T. Buchanan and G. Tullock, whose works 'Calculus of Consent' (1962) and 'The Organization of Inquiry' (1966), which laid the foundation for the application of economic methods to analyse non-market decisions in pursuit of profit

(rent), including those of government and its bureaucratic apparatus. These American economists were the first to demonstrate that public employees, like other economic agents (firms, households, government, foreign residents), seek to maximize their utility within the economy. In this context, the concept of “utility” covers the personal benefits of officials.

A significant influence on the study of corruption in economics was the work of Gary Becker, *Crime and Punishment: An Economic Approach* (Gary S. Becker, 1968). In this work, Becker applied the rational choice model to the analysis of crime, including corrupt behaviour. He hypothesized that individuals would commit crimes if the expected benefits outweighed the expected costs, including the probability of exposure, the severity of punishment, and reputational risks. This approach paved the way for the economic modelling of corruption based on rational choice.

Building on Becker's work, a new field of economic science emerged, proposing various models for corruption. One influential researcher in this field is S. Rose-Ackerman, whose works include 'The Economics of Corruption' (1975) and 'Corruption'. One of the most influential researchers in this field is S. Rose-Ackerman, whose works include *The Economics of Corruption* (1975) and *Corruption: A Study in Political Economy* (1978), and 'Corruption and Development' (1997) had a significant impact on the further development of the economics of corruption. The theory of rent-seeking and rent extraction is applied to the study of specific corruption problems. Rose-Ackerman's work analyses the reasons for the emergence of corruption within the structure of society. She also considers economic losses and the benefits from corruption, as well as ways to combat it. She combines economic modelling with a political approach.

The Rose-Ackerman model identifies four reasons for the development of corruption. First, the state, acting as a monopolist, has the power to redistribute society's limited resources; therefore, corruption in the form of bribery is often the only way to achieve market equilibrium in the economy. The second scenario assumes a positive correlation between the low salaries of state employees and corruption. This creates an environment in which bribes become a motivation for officials to increase their incomes. According to the third scenario, a bribe to an official helps reduce the costs to other members of society of evading taxes, lowering tariffs, and other payments. The fourth variant of corruption development is that the established system of bribes enables criminal groups to conduct their illegal activities without fear. Rose-Ackerman was the first to perform a positive analysis of this phenomenon of corrupt interactions by modelling the rational behaviour of economic agents in a competitive market, acting based on political and bureaucratic incentives.

'New Institutionalism'. Since the end of the 20th century, a new phase of development in institutional economics has emerged, known as 'new institutionalism'. The ideas of Douglass North influence institutionalism. The growth of interest in studying the role of institutions in society has been driven by rethinking the role of the state and non-market institutions as a way of explaining differences in the economic development of countries, as well as corruption. Thanks to North's work, 'Institutions, Institutional Change and Economic Performance' (1990), corruption began to be conceptualized in the context of imperfections in the institutional environment. North reconsidered the role of formal and informal institutions in shaping the economic incentives of market agents. In his view, weak and inefficient institutions contribute to the growth and spread of corruption in society. This is because institutions do not effectively protect property rights, and the legal system does not guarantee fairness. Consequently, imperfect institutional frameworks lead to distorted market mechanisms, increased uncertainty, and transaction costs for society, thus leading to increased corruption.

In parallel with the development of new institutionalism, two opposing hypotheses about corruption emerged. The first considers corruption as 'grease for the wheels' of economic development. This theory is also known as the 'grease in the wheels' theory. The second is a theory of 'grease in the wheels' that originated in foreign scientific literature. The second hypothesis proves that corruption hinders economic development. It works like 'sand in the wheels'.

According to the first hypothesis, corruption hinders economic development in conditions of inefficient public administration and rigid bureaucracy; it speeds up decision-making by circumventing administrative barriers, 'greasing the wheels' of economic development. It is worth noting that numerous supporters of this idea exist, and both quantitative and qualitative studies demonstrate its effectiveness. For example, Locatelli et al. (2017) found that corruption could be efficient.

Despite the abundant evidence for the feasibility of the first hypothesis, most current research categorically refutes this view, highlighting its profoundly negative long-term consequences. Paolo Mauro's (1995) cited paper, 'Corruption and Growth', empirically demonstrated that corruption steadily slows economic growth by reducing investment and distorting the structure of public spending. Political stability, the effectiveness of public administration, regulatory quality, and adherence to the rule of law form the institutional conditions that determine the level of trust, protection of rights, and predictability for economic agents (Abegaz et al., 2023; Sendra-Ponsa, 2022).

Current research. To conclude this paragraph, let us turn to contemporary research paradigms on the economics of corruption in the 21st century. Since the beginning of

this century, economic research on corruption has become more multifaceted, on the one hand. It relies on rigorous empirical grounding through the construction of complex econometric models and the use of diverse datasets, on the other hand.

Several trends (directions) in modern corruption research in economic science can be distinguished.

1. The concept of asymmetry of information and the theory of contracts or agents ('agency theory') based on analyses of principal-agent interaction has become widespread. In this bundle, a public employee acts as an 'agent' and acts on behalf of the 'principal' (society or the state), which has endowed him with public power. Asymmetry (distortion) of information creates fertile ground for the corrupt behaviour of the 'agent'. Principal-agent relations are often employed by various economists when modeling corrupt situations in specific areas and spheres, such as taxation, education, and healthcare.

2. The second trend relates to the development of methods for measuring corruption and the creation of various quantitative and qualitative indices. The most well-known of these is the Corruption Perceptions Index (CPI), which assesses the level of state corruption in 180 countries and is published annually by Transparency International. The World Bank measures the efficiency of public administration and calculates the Corruption Control Index. The development of such tools has to enable the conduct of large-scale empirical studies that can be compared across countries to identify correlations between the level of corruption and various economic indicators. However, the CPI is subject to considerable criticism due to its inherent subjectivity; yet it remains a vital tool for monitoring and analysing corruption at a global level.

3. Modern research is actively studying the impact of corruption on: Indicators of sustainable economic development. Economists focus on investment, innovation, and social issues, including inequality. Researchers are concerned about how corruption affects the flow of direct foreign investment (FDI) around the world, the level of innovation activity of companies, and the population's welfare (income and social inequality). Many studies have proven that a high level of corruption negatively affects investment decisions, consequently leading to FDI flows being directed towards countries with reliable and transparent institutions that guarantee stable business conditions (fulfilment of contractual obligations), protection of investors' rights, and low risks of profit loss.

Corruption reduces incentives for businesses to innovate, resulting in a negative impact. This affects the adoption and spread of new technologies in countries. Bribery and abuse of state power led to a limited number of individuals receiving preferential

treatment. This results in an unequal distribution of income within the country. Due to corruption, most agents in the economy are deprived of access to basic resources, including infrastructure, thereby increasing social inequality.

4. The characteristics of the fourth trend are driven by the rapid development of the digital transformation process in society, which also affects the public service sector. Digitalization is becoming a powerful tool for increasing the transparency of economic transactions, thereby reducing corruption. The application of digital technologies in public services contributes to inevitable institutional reforms. These reforms aim to improve the transparency of public services. It also makes public authorities more accountable and helps to develop an independent judicial system. As Sanka and Cheung (2019) observe in their study, new technologies such as blockchain protect against unauthorized access. They are transparent, traceable, and controllable, and protect against unauthorized access. Guerra et al. (2020) also concluded that smart contracts facilitate process automation by eliminating the need for third parties. This means that no one can manipulate information. These studies confirm that introducing smart contracts based on blockchain technology could be a key tool for developing countries to reduce corruption, as it increases transparency and reduces government agency interference.

3. The Concept of "Rent-Seeking" as a Basis for Understanding the Economics of Corruption

The concept of "rent-seeking," although not synonymous with corruption, has become a fundamental aspect of understanding it in economic theory. The term "rent" is generally attributed to David Ricardo, a British economist and follower of Adam Smith, in the 1800s. The idea of "rent-seeking" was first articulated by Gordon Tullock in 1967 and further developed by him in 1988.

"Rent-seeking" refers to the collective efforts of individuals or groups aimed at obtaining economic rent (in this context, income exceeding classical profit) not by creating new value, but by manipulating economic and societal institutions. In this light, corruption represents one of the most direct forms of private rent extraction, where officials use their position to extract private benefits.

Thus, the concept of "rent-seeking" is used in economics to describe situations where an individual economic agent (an individual or organization) attempts to increase their wealth at the expense of society. This is a financial gain achieved through manipulative or "smart" management of resources. A prime example is the creation of an artificial,

unproductive monopoly to generate excess profits, often through corrupt schemes, to push competitors out of the market. Such behaviour is considered anti-innovative in economics because efforts are directed not at creating unique, new profit-generating strategies, but at the "cunning exploitation" of naturally occurring national wealth.

A classic archetypal example of "rent-seeking" is when a landowner, whose property includes a river, erects a barrier on the river and charges a fee to boat owners who must pass through their land. From an economic perspective, this agent extracts personal gain without adding any value to the river. This illustrates how they found a way to extract private rent from national wealth, from something naturally occurring on their private land, without any effort on their part. This example can be projected onto any other type of economic activity to describe rent extraction through corrupt schemes by officials wielding power.

In classical political economy, the historical roots of the term "rent" can be traced back to Adam Smith's work (1776). He referred to rent as the income derived from owning land or other natural resources. The economic purpose of such "natural rent" is to motivate economic activity, including the creative endeavours of natural resource owners, who aim for normal profit, a path known as "profit-seeking."

Consequently, establishing a monopoly through artificial restrictions on competitors is an act of "rent-seeking," aiming to obtain "monopoly rents" or incomes exceeding normal profits in a naturally competitive environment. This "monopoly rent," acquired through "rent-seeking," disrupts the market because the extracted rent benefits only a single economic agent, the monopolist, at the expense of others. By definition, a monopoly's essence is the market power held by one economic agent. In the context of the economics of corruption, an official wielding state power and creating artificial barriers for other agents acts as an artificial monopolist.

Analysing the adverse effects of monopolies on the market helps us understand how market mechanisms are distorted and project these distortions onto the adverse consequences of corruption in the economy:

1. Distortion of market mechanisms or destruction of the competitive environment.
2. Reduced efficiency in economic agent interactions due to a lack of competition.
3. Irrational allocation of economic resources and destruction of the market pricing mechanism.

4. Inefficient use of economic resources occurs when private interests, driven by the "rent-seeking" behaviour of rent-seekers in the market, prevail over societal interests.

Thus, the reasons behind the "rent-seeking" behaviour of economic agents have been systematized in Figure 2.

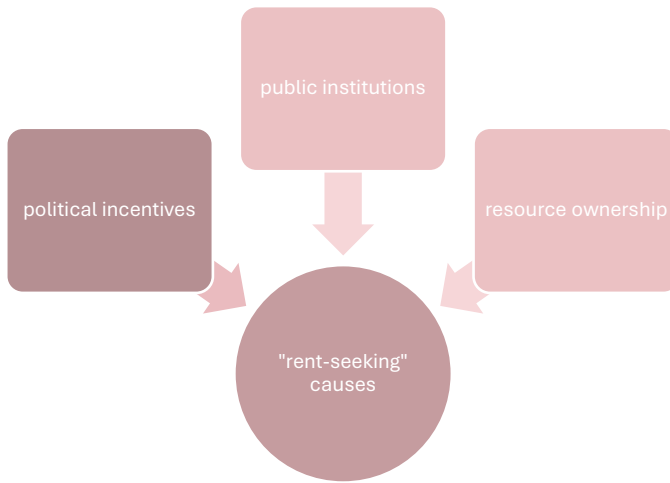


Figure 2. Reasons for Rent-Seeking
Note – compiled by the authors.

An analysis of the reasons for rent-seeking outlined in Figure 2 requires examining them through the lens of game theory in economics, which focuses on the strategic behaviour of agents. In any game, there are winners and losers, and in economic terms, this boils down to the ratio of costs to benefits for each side. It has been proven that the benefits of private rent are disproportionately high compared to the costs to society, a phenomenon known in economics as *Tullock's Paradox*.

Political bribery offers a good example. Rent-seekers may engage in corruption to influence political decisions in their favour. The cost of bribing politicians is often relatively small compared to the potential benefits of favourable policies. *Tullock's Paradox highlights the mismatch between the advantages enjoyed by rent-seekers and the relatively low costs associated with such behaviour, leading to inefficiency and distortions in economic activity.* Resolving this paradox often involves reforms aimed at mitigating incentives for rent extraction, encouraging competition, and improving governance mechanisms to ensure fair and equitable resource distribution.

A causal analysis of rent-seeking behaviour within the economics of corruption suggests that a country's government may allow and even encourage rent extraction for the winners of political elections. In other words, societal political incentives often provide significant advantages to a limited and well-organized group of agents, rather than to most of society. Second, because rent extraction at society's expense is highly profitable, the most probable methods of rent-seeking involve using public institutions, such as state power, which possess mechanisms for redistributing societal resources. In simpler terms, government officials can extract benefits by reallocating resources among different societal groups without creating new wealth. Here, it is crucial to note that the quality and strength of a country's institutions are vital for successful rent-seeking.

4. The "Grease the Wheels" and "Sand in the Wheels" Hypotheses: Micro and Macro Level Manifestations of Corruption

As discussed earlier, economists frequently refer to two hypotheses in modern studies on the economics of corruption (Figure 1).

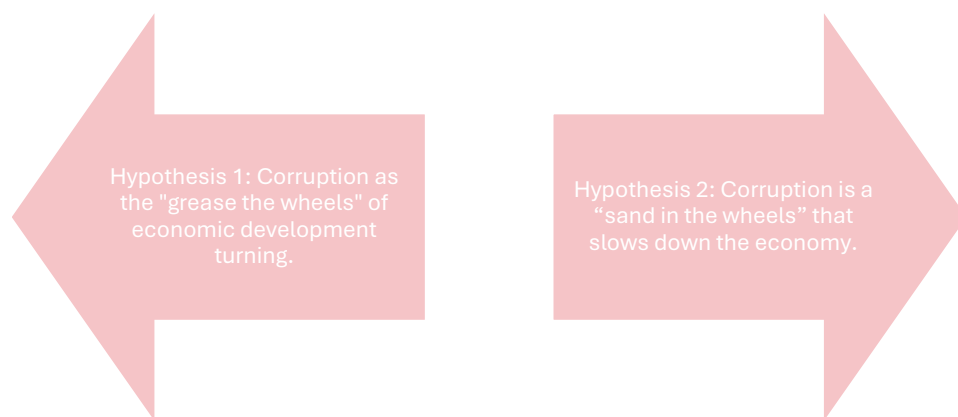


Figure 3. Scientific Hypotheses on the Impact of Corruption on the Economy
Note – Compiled by the authors

An analysis of economic literature reveals that research on the impact of corruption on the economy frequently revolves around these two hypotheses. Both hypotheses have their proponents, despite clear evidence of corruption's long-term adverse effects on society and a country's economic development.

The primary condition for Hypothesis 1, which posits that corruption serves as "grease in the wheels" for economic development, is the presence of weak institutions and high bureaucracy within a country. In other words, Hypothesis 1 suggests that under conditions of excessive regulation and lengthy administrative procedures, bribes and other forms of corruption can expedite decision-making, allowing one to bypass administrative obstacles, essentially "greasing the wheels" of a bureaucratic and inefficient state apparatus. The idea is that businesses can obtain the necessary permits, licenses, and access to infrastructure and other resources more quickly, which ultimately benefits economic development.

Among the earliest proponents of Hypothesis 1 is Leff (1964), who cautiously suggested in his work "Economic development through bureaucratic corruption" that a positive influence of corruption might be possible under "certain conditions." He advanced his ideas specifically for developing countries. Huntington (1968), in "Political Order in Changing Societies," also proposed that corruption could accelerate administrative processes in countries with "inflexible bureaucracies." With renewed interest in corruption research in the new century, Hypothesis 1 has once again garnered attention in the following studies (Méon & Weill, 2010; Mendoza et al., 2013; Khadim et al., 2021; Mohammad et al., 2024; Habibov & Auchynnikava, 2025). Practice indicates that Hypothesis 1 is well-supported for developing countries, where the institutional framework is considerably weaker than in developed nations. Svensson (2005) states in his work on the causes and scale of corruption that countries with the highest levels of corruption are predominantly developing nations, including post-socialist and transitional economies.

Proponents of Hypothesis 1 often argue that in situations with "bottlenecks" and high administrative barriers, bribes might be the lesser evil compared to complete stagnation. For instance, a study in Pakistan provided practical support for this theory. Khadim et al. (2021) investigated the consequences of bureaucratic corruption on infrastructure projects in Pakistan. Alongside the negative impacts of corruption on infrastructure construction, they identified a positive effect: the simplification of bureaucratic procedures and acceleration of work processes. This implies that corruption acts as a strong material incentive for bureaucrats to "diligently" provide their services. The authors noted that a positive perception of corruption, where it has replaced institutions in the country and become normalized, is the main challenge for practical systemic anti-corruption efforts.

We believe that the hypothesis of corruption as "grease in the wheels" also applies to Kazakhstan. To support this, a forthcoming Chapter of this book presents the results of a sociological study (2024) that confirms the validity of Hypothesis 1 for the republic as well.

As for Hypothesis 2, corruption as "sand in the wheels" of economic development, there is an enormous body of supporters and research confirming it. This hypothesis posits that any form of corruption, acting as "sand in the wheels," is a significant impediment to sustainable economic development. Corruption weakens institutions, transforms incentives for honest behaviour into disincentives, fosters a corrupt mindset among economic agents, distorts the resource redistribution mechanism, increases the costs of doing business, and so forth. In other words, research supporting Hypothesis 2 demonstrates that the short-term benefits from corruption (as per the "grease the wheels" hypothesis) cannot outweigh its systemic, long-term negative consequences.

One of the first to refute Hypothesis 1 was Mauro (1995), in his fundamental work "Corruption and Growth." Based on an assessment and analysis of data from 67 countries, he convincingly demonstrated a negative correlation between high levels of corruption and investment, which in turn reduces economic growth. Following Mauro's work, studies began to emerge that support Hypothesis 2, which focuses on the destructive impact of corruption on economic development. For example, Johnson et al. (1997) examined economic processes in transitional economies and concluded that corruption increased uncertainty in these countries, contributed to rising transaction costs, and exacerbated economic inefficiencies. Wei (2000), researching the relationship between economic openness and government bodies, found that corruption, acting as a "tax" on business, served as a significant barrier to foreign direct investment. Among other fundamental works confirming Hypothesis 2, which significantly influenced research in the economics of corruption, Rose-Ackerman (1999) must be mentioned. Her work spurred the development of corruption models designed to investigate specific corruption problems across various economic sectors. These models will be briefly discussed later.

Analysing various studies that support one hypothesis or the other, we have systematized the primary forms of corruption's manifestation in each (Table 1). It is crucial to note that these forms were analysed based on their potential impact on economic processes.

Table 1. Comparative Analysis of Corruption within Two Hypotheses

Hypothesis 1: «grease the wheels»		Hypothesis 2: «sand in the wheels»	
Corruption can activate, optimize, or accelerate administrative procedures in conditions of rigid bureaucracy and excessive regulation.		Corruption does not accelerate; instead, it generates or amplifies artificial administrative barriers, deforms the competitive environment, undermines the rule of law, and hinders the formation of effective market institutions.	
<i>Forms of Manifestation</i>	<i>Results</i>	<i>Forms of Manifestation</i>	<i>Results</i>
Bribes for Acceleration	Prompt receipt of licenses, permits, acceleration of customs procedures, or provision of public services.	Extortion and Bribes for Creating Obstacles	Deliberate delays in issuing documents and creation of excessive control checks.
"Petty Nepotism" and Favoritism at the Local Level	Bypassing formal, but inflexible, rules in the sphere of hiring or resource distribution.	State Capture	Systematic manipulation of legislation, government policy, and institutional structure.
Informal payments to secure access	Gaining access to the market or public services.	Misuse of budget funds and embezzlement	Direct appropriation of state assets or financial resources by officials.
		Inflated government spending and projects ("kickbacks")	Artificially inflated costs of government contracts or the initiation of economically inefficient projects – "white elephants" (costly, useless objects).
		Influence peddling	Impact on the process of government decision-making.
		Systemic nepotism, favoritism, and cronyism	Undermining the principles of meritocracy and competition.
		"Rent-seeking behavior"	Manipulation of the institutional environment.

Note – systematised by authors

So, while Hypothesis 1 traditionally focuses on relatively minor corruption, Hypothesis 2 encompasses large-scale and systemic corruption. Modern empirical studies generally show that even the supposed "greasing" effects of corruption in the short term ultimately create "sand" that will, in the long run, destroy a country's entire institutional structure and prevent its economy from developing sustainably and at an accelerated pace.

5. Models of Corruption in Economic Research

In contemporary economic research, numerous mathematical models of corruption exist that examine various aspects of this phenomenon. The features of these models allow them to be grouped into the following categories:

1. External corruption
2. Internal corruption
3. Dynamic models of corruption
4. Specific models of corruption

As mentioned earlier, many researchers employ game theory, monopoly models, and agency theory (also known as contract theory) to study the impact of corruption and assess its consequences. This often involves "principal-agent" game interaction models, where the state (society and the population) acts as the principal, empowering the agent. This public servant acts on the principal's behalf in transactions (contracts). In some models, the chain of interactions can expand to include additional players, such as "principal-agent-client," "principal-controller-agent," and others.

Models focusing on external corruption investigate and analyse "agent-client" corrupt interactions regarding resource distribution. This approach enables a thorough examination of the causal link between external corruption (interactions between officials and the public or businesses). These models assess the mutual influence of competition and corruption as well as the impact of corruption on inefficient resource allocation, and the effect of anti-corruption policies on corruption.

Models focusing on internal corruption analyse "principal-agent" interactions. This approach includes the problem of eliminating internal corruption within hierarchical organizations. The principal either aims to optimize this hierarchy to maximize profit (e.g., in a commercial structure) or seeks to eliminate corruption (as might be the case for the state acting as a generalized principal). Internal corruption arises when, in a "principal-agent" pairing, the "agent" refers to a group (hierarchy) of agents in asymmetrical relationships.

A third significant approach to analysing corruption focuses on studying dynamic processes within corrupt systems. This includes examining stationary states, stability mechanisms, and phenomena like cyclicalities and reactions to external shocks, such as anti-corruption campaigns.

Dynamic models in corruption research can be microeconomic, analysing the behaviour of individual agents, or macroeconomic, examining corruption at the level

of an entire state or economy. This approach provides a deeper understanding of how corruption evolves and adapts over time. Specific models investigate various aspects of corruption in very narrow areas, or corruption in specific sectors, including agriculture, education, healthcare, and others.

Thus, with the rise of new institutionalism, economists have increasingly employed mathematical tools and game theory to study corruption. Models of non-competitive markets have enabled a deep analysis and justification of the cause-and-effect relationship between corruption and agent interactions, grounded in agency theory. An analysis of some fundamental works by new institutionalists (late 20th century) and their followers has enabled the systematization of their models according to the directions outlined in Table 2 above.

Table 2. Classification of “New” Institutionalism Corruption Models

Author(-s)	Year	Model description
<i>External corruption models</i>		
Rose-Ackerman S.	1997	The "agent-client" model examines the conditions for obtaining a contract through bribery, as well as the size of the bribe itself, considering both client behavior and contract terms. Corruption is determined not only by oversight but also by the structure of relations between the state and the private sector. Fewer motives for bribery arise if public procurement is carried out in a competitive market. For specialized goods, explicit formalization of requirements is necessary. The effectiveness of combating corruption is not limited to high fines but depends on the probability of exposure and the firm's characteristics. Potentially corrupt firms must be more efficient in paying bribes and concealing their activities, thereby reducing moral costs.
Shleifer A., Vishny R.W.	1994	The model offers a microeconomic perspective on corruption. The research focuses on how monopoly power and institutional architecture influence the scale of corrupt activities. Key findings: the level of bribes is maximal under the monopoly of a single official and decreases with competition between various departments. The total volume of corrupt revenues can remain high even with significant bribe rates, provided there is no competition. Being illegal, corruption requires secrecy, which generates significant distortions in the rational allocation of resources, directing investments towards less optimal but more covert projects. Consequently, economic and political competition are capable of effectively curbing and minimizing the adverse effects of corruption.

Chander P., Wilde L.	1992	The "agent-client" model examines corruption in tax authorities through an analysis of the interaction between taxpayers and auditors. Key findings: The presence of corruption readiness on both sides leads to a decrease in audit frequency. Moreover, even with corruption present, equilibrium can be achieved with a full audit. The model also reveals an asymmetry: eradicating corruption among taxpayers contributes to a complete cleansing of the system, whereas a similar reduction in the number of corrupt auditors only partially improves the situation, without eliminating corruption.
Acemolgu D., Verdier T.	1996 1997	The model aims to investigate the internal causes of corruption arising from the interaction between bureaucrats (agents) and private businesses (clients). The latter has incentives to bribe bureaucrats, seeking to increase profit, but its investments in production are curtailed. The main conclusion of the model: even an optimally organized society will have corruption, "rent-seeking" behavior among officials, and an inefficient allocation of talents. The second model clarifies that, despite the presence of corruption, rent, and the risks of an expanding public sector, this is not a sufficient argument in favor of state non-intervention in the economy. For this, the state must genuinely strive to correct "market failures."
<i>Internal corruption models</i>		
Hillman L., Katz E.	1987	The model analyzes corruption in a hierarchical bureaucracy, focusing on the social costs caused by competition among bureaucrats themselves for access to rent. In this structure, bribes received from clients for the "sale" of rent are distributed up the hierarchy. Key findings: if there is competition for corrupt positions using material resources, the bureaucracy is likely to be multi-layered. An increase in the number of hierarchical levels significantly increases social costs, which supports arguments in favor of limiting the size and structure of the public sector.
Kofman F., Lawarree J.	1993	The model considers the possibility of corrupt transactions between a superior (agent-controller) and a subordinate (agent), as well as scenarios where such a possibility is absent, although its elimination requires additional costs. In such a hierarchy, if it becomes a "mafia," bribes are distributed and transferred from lower-level agents to higher-level agents. The main conclusion is that complete eradication of corruption may not always be economically viable or possible, even in effectively designed systems.
<i>Dynamic models</i>		
Lui F. T.	1996	The model explains the persistence of corruption: its level can increase sharply even if punishments remain unchanged. The model also shows that conventional anti-corruption measures in highly corrupt societies are ineffective and too costly. A high level of corruption, once it appears, tends to persist, which explains the differences between societies despite similar deterrent schemes.
Feichtinger G., Wirl F.	1994	The model explains the cyclical nature of corruption: periods of struggle against it are replaced by its acceptance. Politicians balance between popularity and personal income. Equilibrium can be unstable or cyclical. Differences in popularity requirements (democracy/dictatorship) affect stability, but not the level of corruption, which can be high in both regimes.

Bicchieri C., Rovelli C.	1995	The model analyzes the cyclical nature of corruption, linking it to the re-election of politicians who incentivize voters. The duration of the corrupt period depends on the resources accumulated during a period of "honest" governance. Cycles arise due to the cessation of payments to contractors or the rapid depletion of political resources due to excessive compensation.
Tirole J.	1993	The model explains the complexity of fighting corruption by introducing the concept of "collective group reputation," which is formed based on the past behavior of its members and determines their motivation. In this model, both low- and high-corruption equilibria exist. The main conclusion is that the history of a society is critically important, as corruption is "remembered" by the economy. This leads to a "vicious circle," where a new generation suffers from preceding bribery, making the transition from a low level of corruption to a high one more likely and requiring continuous efforts to combat it.
<i>Specific models</i>		
Myerson R.B.	1993	The model uses game theory to compare the effectiveness of different electoral systems in reducing corruption. The main conclusion is that majority voting is only partially effective, as it allows for the exclusion of corrupt parties. At the same time, voting by the "Borda rule" is recognized as ineffective, as it does not guarantee the non-participation of corrupt individuals in government.
Gupta M.R., Chaudhuri S.	1997	The model analyzes the competition between formal (through a bribing bureaucrat) and informal (through a moneylender) lending to farmers. In equilibrium, the effective interest rates of both types of loans are equal. This explains why informal loans often have high interest rates, which is linked to the specifics of government subsidy programs.

Note – compiled by the authors

As our in-depth analysis of the economic scientific database showed, these models served as a basis for many other models.

6. Forms of Corruption in Economic Research

It is crucial to differentiate between various forms of corruption, as each has its economic consequences and, therefore, requires different methods of combating it. The following forms of corruption are most frequently examined by economists (Figure 3).

The forms of corruption presented in Figure 1 are not exhaustive; there is also fraud (a deceptive transaction to gain financial or other benefits), the use of front shareholders, falsification of fictitious bankruptcy procedures, money laundering, and other financial criminal schemes. Systematizing the conceptual and categorical framework has allowed us to analyse the following forms of corruption.

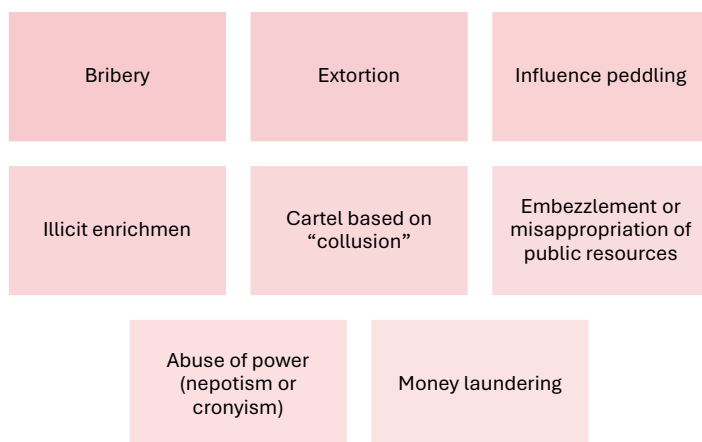


Figure 3. Forms of Corruption in Economic Research

Note – Constructed by the authors based on an analysis of economic research

1. *Bribe or Bribery*. This is the most common and widely understood form of corruption. Let us examine the definition of bribery provided by GIACC.³ "Bribery is when a benefit is offered, given, requested, or accepted to induce a person to perform a function improperly or as a reward for improper performance of a function." Here, a benefit is anything of value (such as money, a gift, hospitality, or a donation), and "acting improperly" refers to improper conduct by a person in the performance of their duties. It is also important to consider the distinction between actual and presumed bribes in the business world, which, as GIACC points out, depends on intent. For example, gifts and hospitality in business relationships are considered bribes if they encourage or lead to improper conduct for the benefit of another person. In economic theory, the concept of rent-seeking is often referenced when discussing bribery, and we will delve into that theory in more detail later.

Another widespread form of bribery is a "kickback," which is when a recipient of public funds for a project gives a portion of the total contract amount back to the public servant responsible for decisions on allocating and spending those funds.

2. *Extortion*. This form of corruption differs from bribery because the official plays an active role, demanding a bribe in exchange for performing their direct duties. It can also involve an official actively seeking a bribe in exchange for "patronage" to an economic agent (the potential victim of extortion) to prevent wrongful actions against them. GIACC defines extortion as "when someone demands money or other benefits

³ GIACC - The Global Infrastructure Anti-Corruption Centre.

in return for not inflicting personal harm or damage."⁴ This definition of extortion also encompasses hidden forms of behaviour and intentions of those involved in the corrupt transaction, such as blackmail, threats, and instilling fear. In economic research, this is studied within the framework of behavioural economics.

3. *Nepotism or "Cronyism"*. This form of corruption involves an official using personal or family connections for their gain. Nepotism is also synonymous with the abuse of power. An official might give economic advantages to close associates (friends, relatives, acquaintances) or "patronize" third parties in hiring, resource distribution, contract agreements, or other interactions with economic agents, based purely on personal ties. Often, the qualifications and other characteristics of the economic agents receiving these advantages are disregarded. This type of corruption is common in many Asian countries, Central Asian states, and the post-Soviet space, where autocratic or totalitarian regimes have historically practiced nepotism. In some cases, the abuse of power can also be considered a type of fraud.

4. *Embezzlement or Misappropriation of State Resources*. This involves the direct theft of state funds or resources by public officials at any level, including the squandering of public money. According to GIACC, "embezzlement is when an official appropriates funds that they are obliged to safeguard." History provides numerous examples of such state-level theft. For instance, in the USSR, the infamous Uzbek Cotton Affair⁵ in the late 1970s and 1980s, it led to the conviction of over 4,000 people in Uzbekistan. More recently, Kazakhstan has faced its own sad stories, like KazakhGate⁶ in the 1990s and 2000s, and the controversial construction of the LRT (Light Rail Transit) in its capital. These types of corruption often involve unprecedented scales of falsification, theft, and embezzlement of public funds, utilizing complex schemes for money laundering and involving numerous intermediaries.

5. *Influence Peddling*. This form of corruption involves a high-ranking official receiving a bribe in exchange for using their position or connections⁷ to influence or manipulate the decisions of state bodies in favour of third parties. Examples include the collateral

⁴ <https://giaccentre.org/what-is-corruption/>

⁵ The Cotton Affair in Uzbekistan. <https://mytashkent.uz/2008/09/23/hlopkovoe-delo-v-uzbekistane/>

⁶ A corruption scandal involving American businessman James Giffen and the first president of Kazakhstan, Nursultan Nazarbayev. See also: Ariel Cohen. Kazakhstan: The Road to Independence. Central Asia-Caucasus Institute & Silk Road Studies Program, 2008. ISBN 978-91-85937-36-3.

⁷ The Cotton Affair in Uzbekistan. <https://mytashkent.uz/2008/09/23/hlopkovoe-delo-v-uzbekistane/>

auctions in Russia or the non-public PSAs⁸ with foreign companies in Kazakhstan during the 1990s.

In academic literature, there is also the concept of lobbying, which can sometimes be equated with a form of corruption. In some countries, legislation even defines lobbying as a conflict of interest, where it leads to the pursuit of private interests at the expense of public interests. While conflicts of interest are common and not inherently criminal, unregulated conflicts carry a high risk of leading to corruption through fraud or abuse of power. In this context, we are discussing illegal lobbying methods, such as the direct bribery of politicians or other forms of financing that are explicitly prohibited by law. In economic research, lobbying can often be viewed as a form of corruption.

6. Illicit Enrichment. This situation occurs when a public official is found to have an excessive increase in their assets that does not correspond to their lawful income, and the sources of these assets cannot be explained. It is well-known that public officials are obligated to declare all their income, and the appearance of undeclared assets serves as indirect evidence of corrupt activity, in violation of anti-corruption legislation.

7. Cartels or Alliances Based on Collusion. In the classic understanding of microeconomic theory, a cartel is a voluntary association of several monopolistic firms aiming to maximize the cartel's overall profit, which is then distributed among its members proportionally to their invested capital. In practice, cartels are considered unsustainable because members lose economic independence in deciding production volumes and pricing, making them a temporary association created for a specific goal. Closely related to the concept of cartel in microeconomics is “collusion,” which can be legal or hidden.

An alliance, unlike a cartel, is a means for two or more parties to unite for cooperation to achieve common goals or protect shared interests from common threats. Alliances are common in political and business communities; a prime example is NATO (the North Atlantic Treaty Organization, also known as the North Atlantic Alliance, formed in 1949). Unlike a cartel, an alliance can be temporary or permanent.

The study of corruption in the context of cartel or alliance activities focuses on the presence of secret (or hidden) collusion among their participants. Thus, a cartel or alliance represents a situation where two or more economic agents unite through secret collusion to obtain necessary contracts illegally during bidding processes or when setting prices for equipment and material supply or service provision. Such associations are often referred to as secret cartels or secret alliances. In this context, corruption enables them to reap maximum benefits without market competition. Secret collusions are prohibited by antitrust laws, and upon exposure, participants are punished with

⁸ PSA – Production Sharing Agreements

substantial fines. Nevertheless, international practice is aware of models of legal cartels that have operated effectively for a long time, such as the oil cartel OPEC (the Organization of the Petroleum Exporting Countries).

8. *Money Laundering*. In economic research, money laundering receives close attention because it represents not only a financial problem, but also a significant social and legal issue, tied to criminal activities within society. In the context of corruption, money laundering is viewed as a way to clean “dirty money” (illegal assets) obtained through corrupt means. Experts note that money laundering is among the most complex and dangerous financial processes, becoming even more critical with the rise of digitalization, financial technologies, cryptocurrencies, and widespread electronic payments.

Ultimately, the economic essence of corruption boils down to the redistribution of national wealth and resources from society to individuals or groups who hold power. From an economic perspective, these mechanisms explain the irrational expenditure of public funds and the undermining of trust in institutions. Due to these factors, corruption creates distorted incentives for specific economic agents, such as officials, prompting them to develop bureaucratic barriers and complicated procedures for other economic agents (the public, businesses). This might happen, for instance, when accessing infrastructure or state resources, thereby increasing opportunities for officials to extract economic rent.

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Chapter 3.

Imperfect Institutions as a Basis for the Development of Corruption

1. Introduction

As many experts observe, the abuse of state power and a weak institutional foundation are strongly correlated processes, particularly characteristic of most post-Soviet countries. This implies that in nations with weak institutions and rampant corruption, rent-seeking is far more profitable than in countries with a strong institutional framework.

This idea is supported by the work of 2024 Nobel laureates D. Acemoglu and J. Robinson in their book *Why Nations Fail: The Origins of Power, Prosperity, and Poverty* (2012), which demonstrates that political and economic institutions determine the differences in countries' prosperity. Rashid et al. (2023) further demonstrate that countries with low regulatory quality tend to have high levels of corruption. The authors concluded that under such conditions, corruption becomes a "forced" necessity to overcome administrative barriers, which in turn increases the cost of doing business.

A key finding from Tonoyan et al.'s (2010) research was that in the context of underdeveloped institutions, corruption becomes an integral part of the business environment. These conclusions are vital for understanding many processes in Kazakhstan, which Transparency International (2024) identifies as a country with a high level of corruption. A study by Kalyuzhnova and Belitski (2019) revealed the negative impact of corruption on businesses in Kazakhstan, showing that it increases their operational costs and reduces competitiveness.

The primary issue in post-Soviet countries with low levels of public administration is that corruption directly impacts the relationship between the government and businesses. "Rent-seeking" behaviour leads to "informal communication and agreements" becoming the key determinants of state decisions. These processes significantly expand the scope of clandestine relationships between officials and

business representatives, pushing any civilian and official oversight outside the decision-making sphere.

Combined with the inefficiency and selectivity of government bodies, this situation fosters the development of patron-client relationships (where officials favour certain groups in exchange for loyalty or benefit). This, in turn, reduces the accountability of public servants, as the principle of meritocracy, where positions are earned based on merit rather than connections, is devalued. Most importantly, state institutions gradually move beyond the official structure of power.

As Morozova and Miroshnichenko (2019) note, shadow players are becoming the primary "investors of political capital," wielding significant influence over the development of state strategies and projects. This trend contributes to the formation of a "second core" of public administration, which effectively determines how public goods and resources are distributed.

In economic science, the concept of a "shadow state" (Reno, 1995; Duffy, 2000) is well-known. According to this concept, informal networks and corrupt structures operate in parallel with official state bodies, substituting their functions and reallocating resources. As a result, the state loses its functions as a public institution.

Thus, it can be argued that corruption significantly distorts the structure of public administration, simultaneously destroying the link between the state and society. This becomes a persistent factor in citizens' distrust of government bodies, as state decisions are often dictated by "rent-seeking" interests that aim to redistribute public resources in favour of a minimal segment of society. As a result, there is a further weakening of institutions in the country. We have generally analysed the negative relationship between "corruption-institutions." Next, we will try to focus on the interconnectedness of "institutions-corruption."

2. "Institutional Traps"

Let us look at the meaning of the term "trap" in economic research. Generally, "trap" in economic studies refers to a deep, persistent, and difficult-to-eradicate problematic situation. The economic meaning of a *"trap" is a self-sustaining mechanism that prevents an inefficient system from transforming into an efficient one, instead perpetually maintaining it in that inefficient state.* In economics, we differentiate between poverty traps, liquidity traps, and institutional and corruption traps, among others.

The low effectiveness of public administration and the weakness of institutions destabilize the economic system to such an extent that, as a result, "institutional traps" form when attempts are made to introduce changes to the system to increase its stability. The term "institutional trap" is viewed as referring to the "inefficiency and instability of an institution" (Polterovich, 1998, 2007).

In our view, the institutional paradox is that any attempt by the state to remove or reduce artificially constructed administrative barriers meets active resistance from the authorities themselves. This is because their economic activities directly depend on these barriers remaining. Obviously, corrupt individuals will resist, as they would lose potential rent; we already know this from the concept of "rent-seeking." Another reason for their resistance might be the loss of the opportunity to recoup the costs they have already incurred in creating these barriers.

This phenomenon is described in detail within the framework of new institutional economics, where the behaviour of actors extracting rent from inefficient institutions is a key factor in their persistence (North, 1990). Thus, administrative barriers serve as a tool for institutional corruption; therefore, eliminating these barriers should logically contribute to removing the conditions for corruption to grow.

The problem of "institutional traps" has become a subject of close attention for new institutionalism (late 20th century). In Western academic literature, this phenomenon is referred to as the "lock-in effect."⁹ In the context of the economics of corruption, this can be explained as follows: corruption, because of the intertwining of disincentives created by institutions and other agents, blocks any attempts to change inefficient corruption. However, the system remains relatively stable despite its inefficiency, as corrupt incentives are self-sustaining.

From the perspective of new institutional theory, *an "institutional trap" is a self-sustaining, stable, and inefficient norm*. It is challenging to escape an institutional trap because doing so demands significant resources to transform inefficient norms into new, anti-corruption ones. As a result, reforms are implemented slowly, since corrupt agents can obstruct them, leading the institutional trap to persist for a long time.

Just like with any inefficient system caught in an institutional trap, there are traditionally specific ways to find a way out (Figure 1).

⁹ The "lock-in effect" means that inefficient paths of technical or institutional development can be self-perpetuating (Arthur, 1988; North, 1990).

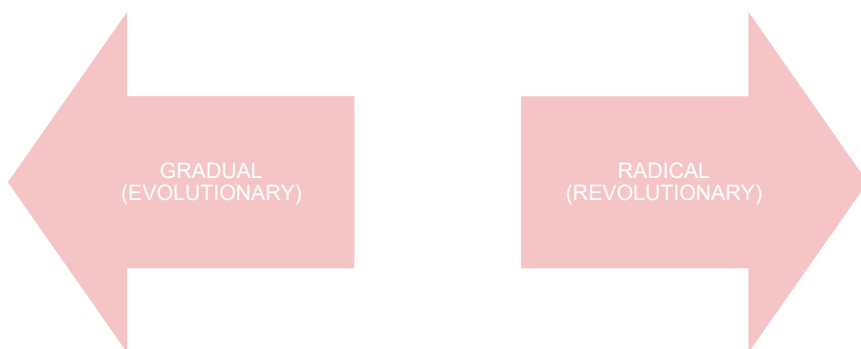


Figure 1. Ways out of «institutional traps»
Note – constructed by the authors

In the first scenario, the conditions for institutional reform must arise from within the system itself. Practically, this usually means a systemic economic crisis (like a deep recession) or accelerated economic growth (a boom) that can dismantle inefficient institutions. In economic terms, this means the costs of maintaining an inefficient norm start to outweigh the costs of abolishing it or replacing it with an effective one. It is crucial to consider the cost-benefit analysis of these measures.

The radical path out of an institutional trap involves the forced and targeted elimination of inefficient norms (corrupt practices and schemes)¹⁰. Such revolutionary reforms might involve changing society's cultural values and are typically driven by the state¹¹ or by influential elites. The pace of reforms depends on whose public interests are being served by the redistribution of property. If the reform affects most social groups, resistance is likely to be significant, and the process could be prolonged. The success of the reform will depend on the resources allocated and the strong political will of the state.

In a systemically corrupt environment, the transaction costs of obeying laws become higher than the costs of using illegal norms. This is because the likelihood of punishment is low, as most agents operate under a system of "mutual guarantee." In a less corrupt system of values, the situation is reversed: the costs of deviating from formal norms (reputational risks) are too high, as most of the society adheres to them, and the probability of avoiding punishment is too low. Therefore, in countries with low corruption, the system's stability is maintained by the law-abiding behaviour of economic agents, as it is simply unprofitable for them to act otherwise. These are the

¹⁰ Georgia's case under President M. Saakashvili's rule serves as a vivid example.

¹¹ The policy to build a "New Kazakhstan" by President K. Tokayev serves as an example.

criteria for the strength and effectiveness of institutions in these countries. Consequently, reforming public institutions to combat corruption is a necessary condition for significantly reducing corruption in the economy and society.

Significant researchers who have studied the phenomenon of "institutional traps" include Tirole (1996), Johnson et al. (1998), and Polterovich (2004, 2007). Polterovich's work is particularly known for developing a theory of institutional trap formation in the post-Soviet space. He demonstrated that during institutional reforms, informal norms such as tax evasion and corruption, despite their differences, shared similar mechanisms of self-sustainment and reinforcement. According to Polterovich, a norm (or institution) is a rule of behaviour in society that applies to everyone, where each member of society has the right to choose from existing (current and alternative) norms and incurs different transaction costs for adhering to them.

Next, let us analyse the processes described above through the lens of a market equilibrium model in economic theory, modelling an "institutional trap" scheme. Imagine our hypothetical system is in an "institutional trap." Let us denote the old, inefficient norm as corruption, which needs to be reformed and replaced by a new, efficient norm as anti-corruption. We will refer to the costs of reforming the norm as the transformational costs for society.

Therefore, the stability of an inefficient norm (corruption) can be shaken if the following condition is met: the difference between the cost of corruption and the expenses for a new, alternative norm (anti-corruption) becomes higher than the costs of societal transformation. A crucial and necessary condition is that economic agents must adopt the new norm (anti-corruption) as a rule of behaviour, where deviating from it becomes unprofitable, dangerous, or impractical for them. Put differently, the new norm (anti-corruption) must consistently and firmly take root in the behaviour of agents. If this happens, it is possible to ensure the conditions for system stability (equilibrium in the economic system of coordinates).

Polterovich referred to the stabilizing mechanism as the "coordination effect." Its essence is that any deviations from the new norm (anti-corruption in our case) lead to an increase in transaction costs, which ultimately preserves the equilibrium condition in the system. Based on this, the emergence or formation of an "institutional trap" in a system is a result of a "failure" of the coordination mechanism within the state's governance system (analogous to "market failure" in microeconomic theory). Incidentally, among the "failures" of coordination (in other words, anti-coordination)

can be not only institutional traps but also, for example, “poverty traps”¹² (Matsuyama, 2005).

Alongside the importance of coordination in systemic transformations, such as a new anti-corruption policy, it is essential to consider the spillovers from learning, network development, and cultural inertia. These collectively contribute to embedding a particular norm in societal behaviour and can influence the effectiveness of the entire system (Polterovich, 2007). Thus, the stability of an institutional trap depends on how firmly corrupt practices are embedded in the system and how resiliently it resists external transformations. In other words, if the external impact is insignificant, the system will absorb the equilibrium-disturbing factor and return to its previous state (remaining in the “institutional trap”).

Let us model a situation: for instance, a new norm (which we referred to as anti-corruption) is introduced that encourages paying taxes rather than evading them. This may involve improvements to current tax policy or the adoption of a new tax code with lower tax rates. There are *two possible scenarios* in this example.

In the first scenario, a specific portion of agents previously engaged in corruption begin to follow the new norm (anti-corruption) and change their behaviour. This process scales up until it reaches a “critical mass”, meaning more and more of society becomes involved in adhering to the new norm. As a result, the new norm takes hold and gradually displaces the old one (tax evasion, or what we refer to as corruption). It enables the government to reap its benefits from the tax reform, such as effective anti-corruption efforts, increased tax revenues, businesses moving out of the “shadow economy,” and informal practices declining. This triggers other positive economic processes, ultimately leading to an increase in overall societal well-being. In economic terms, the new norm (anti-corruption) has brought about a Pareto-improvement to the system, potentially enabling it to achieve a state of Pareto-efficiency.¹³

The second scenario suggests the following: a portion of agents begin to follow the new norm (anti-corruption) and change their behaviour. However, for the rest (the majority) of agents, the old norm of tax evasion (corruption) is still more profitable. In other words, the losses from “exiting” corruption outweigh the gains from reduced taxes. This means there is a high risk that the new norm (anti-corruption) will not take hold. The number of those who decide to adhere to a policy of honesty and paying

¹² “Poverty traps” are a stable equilibrium of low income that cannot be overcome without significant external intervention.

¹³ Pareto efficiency is a state in the economy in which it is impossible to improve the position (welfare, utility) of at least one economic agent without worsening the position (welfare, utility) of any other agent.

taxes at reduced rates does not reach the "critical mass". In this case, the system punishes the early adopters (they suffer significant losses due to the "institutional trap"), thereby eliminating the destabilizing factor. The system then reverts to its old corrupt practices. Therefore, the new tax policy is sabotaged and fails to yield effectiveness, ultimately failing to provide benefits for the state. As a result, the system remains in an "institutional trap"; moreover, it falls into a "corruption trap." This results in a Pareto-inefficient state for both the economy and society.

We have outlined corruption reform schemes in isolated hypothetical scenarios. These have limitations, and events can unfold in many other ways. After all, an economy is a dynamic system and can have numerous different solutions over time. For example, it is reasonable to assume that a system might transition into a new state after reform, which could potentially become another institutional trap. Alternatively, it could revert to its previous state (the old institutional trap), even if the new norm initially takes hold, meaning it remains inefficient overall. This can depend on the development path that preceded the new reform. This was the case during the transition period of post-Soviet states, a time of significant reforms and transformations across all economic, governmental, and societal structures. "Institutional traps" can also be found in the history of developed countries, such as the United States in the first half of the 19th century, when significant political institutional reforms were underway. These examples are well-described in Polterovich's works (2004, 2007).

To summarize, it can be argued that poor coordination or its absence is the primary reason for the persistence of "institutional traps" in society. Therefore, the mechanisms of sustainable transformation described above (coordination, spillovers from learning and networks, and cultural inertia) must be considered and monitored to eliminate "institutional traps." At the same time, it is important to understand that these mechanisms can also work in reverse, contributing to the entrenchment of old norms (corruption).

Thus, the main conclusion is that once a system falls into an "institutional trap," it chooses an inefficient development path, and returning to efficient development over time can become extremely difficult. Nevertheless, economic analysis is vital because it allows us to model options and strategies for solving economic problems. Research on "institutional traps" suggests that they are only stable in the medium term. According to the mainstream in economic science (neoclassical economic theory), in the long run, the economy always returns to an equilibrium state, albeit in a new period under new conditions. Therefore, it is possible to assume that an economic system is capable of developing mechanisms that enable it to escape "institutional traps." The question then becomes: what are the conditions for ensuring the functionality and effectiveness of these mechanisms?

In the context of our analysis above on implementing a new norm (anti-corruption), it is logical to assume that for successful transformations, the following conditions must be met. Firstly, the transaction costs of the inefficient norm (corruption) must become prohibitively high. Secondly, the transaction costs of the efficient norm (anti-corruption) must be low. Thirdly, the costs of transformation for society (the transition from corruption to anti-corruption) must be low. Only if these conditions are met will society accept the new rules of behaviour, and the effect of reforming systemic institutional corruption will be achievable.

It is vital to develop effective strategies for transforming corruption into anti-corruption, which can include a complex set of measures at both the macro and micro levels. At the macro-level (state level), this involves a system of measures to improve fiscal, social, and industrial policies, along with state programs to support and develop businesses, innovation, and digitalization, among others. At the micro-level, these measures can include targeted interventions such as stricter punishments and increased fines for corruption, rotation in public service, the creation of mechanisms to raise reputational risks for participation in corruption (e.g., registries of debtors, corrupt individuals, and "blacklists"), bankruptcy procedures, and amnesties.

All these measures can influence the cost of transaction expenses, as well as the nature and speed of inertial effects in the economy. In any case, when developing an anti-corruption strategy, it is essential to remember that any measures can either stimulate or demotivate society towards or away from participation in corruption, illegal activities, or the shadow market.

3. The “Corruption Trap” or Corruption as the “Only Effective” Way to Interact in the Market

An “institutional trap,” defined as a situation of institutional inefficiency leading to instability across the entire economic system, can, in the long run, lead to a “corruption trap” if coordination is absent and corruption remains unchecked.

A “corruption trap” represents a critically important concept in modern economic research, especially within institutional economics and public choice theory. It describes *a state where a high level of corruption not only exists but also becomes a self-sustaining equilibrium, making it incredibly difficult to escape without fundamental systemic transformations*. Here, the concept of a “vicious cycle” of corruption is highly relevant.

The formation of a corruption trap occurs when the following strong interconnections of conditions are present (Figure 3).

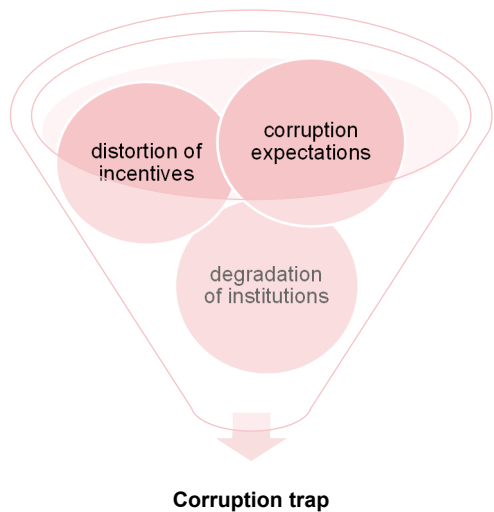


Figure 3. Structure of the corruption trap
Note – constructed by the authors

The analysis of the conditions assessment that lead to the emergence of corruption traps, the identification of their causes, and the evaluation of their consequences have been systematized in Table 2.

Table 2. System of interrelationships of corruption traps

Factor	Conditions	Consequences
Expectations	Economic agents, including officials, business representatives, and the population, begin to assume that other participants in the system will act corruptly.	In this situation, choosing corrupt behavior can be seen as a rational strategy for achieving personal goals (e.g., obtaining permits, winning government contracts, avoiding administrative sanctions).
Distortion of incentives	Systemic corruption distorts incentives. Conditions are created for the development of “collective responsibility”. It is a situation in which a vast number of participants at all levels of government are involved in corruption.	Being honest becomes disadvantageous or risky, as “disagreement” with informal rules can lead to isolation, slowdowns in activity, or direct losses. Participation in corruption schemes brings tangible personal or group benefits.
Institutions erosion	Formal institutions (legislative framework, law enforcement agencies, judicial system) are either weak from the outset or deeply affected by corruption themselves.	Institutions lose their ability to effectively combat corruption, creating a vacuum that is filled by informal norms such as mutual services and “circular responsibility.” The corruption trap is closing in.

Note – systematized by the authors

From the perspective of corruption economics, as Paolo Mauro (1995) pointed out, a “corruption trap” is a state of the economy and society characterized by a stable equilibrium with deeply entrenched and self-perpetuating high levels of corruption. In his seminal work, *Corruption and Growth* (1995), he empirically proved that corruption hurts investment and, consequently, economic growth.

In a “corruption trap,” corrupt practices become ingrained in the system to maintain its balance. Corruption is systemic, with informal corrupt norms replacing formal rules and becoming the dominant model of behaviour. In such a system, non-corrupt behaviour can be associated with costs or a lack of expected benefits. In other words, not participating in corruption becomes disadvantageous.

To understand how corruption becomes a “*vicious circle*” in society, it is necessary to conduct a causal analysis of the emergence of corruption and its spread throughout the entire economy and society. The corruption trap can be represented as follows (Figure 4).



Figure 4. The “vicious circle” of the corruption trap
 Note: constructed by the authors.

An in-depth analysis of the content of Figure 4 is as follows.

Stage 1. This stage is characterized by the emergence of individual corrupt transactions between agents who have “found” a way to extract potentially high rents, including through the low efficiency of institutions.

Stage 2. The “success” and impunity of corrupt transactions attract other agents, whose thinking about honest behaviour changes, because of which moral incentives to be frank weaken, while incentives to participate in corruption strengthen.

Stage 3. The speed of corruption’s spread increases, penetrating all levels of the system on a massive scale and evolving into a “circle of mutual responsibility.” At this stage, formal norms are replaced by informal ones, and the impunity of corruption distorts the consciousness of agents, who act according to the principle of “everyone pays bribes.” In other words, the idea that corruption is the only practical way of interacting becomes entrenched in the minds of agents.

Stage 4. This stage is characterized by the degradation of the institutional framework, which means that institutions are weakened by the “circular responsibility” of corruption, involving not only government officials and businesses but also law

enforcement and the judiciary. As a result, the system ceases to be transparent, and laws cease to work or are applied selectively.

Stage 5. The negative impact of corruption on the economy is growing, as evidenced by significant economic losses in the form of a corruption tax on business, which increases transaction costs and reduces competitiveness. Companies lose incentives to invest in innovation, the quality of goods declines, and economic growth slows down. In the long term, this results in a decline in infrastructure investment.

Stage 6. High levels of government corruption led to increased social inequality, resulting in a sharp division in society based on income levels. Most of the national wealth is concentrated among the corrupt elite, which leads to increased social tension in society, and the population loses trust in the government and public institutions.

Stage 7. At this stage, corruption is so deeply ingrained in the system that corrupt norms and practices operate more efficiently and effectively than weakened institutions. As a result, the vicious circle of corruption closes, and the corruption trap collapses. On such fertile, corrupt ground, new corrupt practices and schemes emerge to replace outdated and ineffective ones; in other words, corrupt practices evolve and improve.

Thus, the “corruption trap” has a multifaceted and extremely destructive impact on economic stability. This manifests itself in the following trends.

- 1) Slowing economic growth.
- 2) Institutional degradation.
- 3) Worsening social inequality.
- 4) Decline in the country's intellectual capital.

First, economic growth is slowed down by a reduction in both domestic and foreign investment. The fact is that high levels of corruption create risks and increase uncertainty for investors, as transaction costs rise, business conditions are opaque, and there is a high probability of expropriation of profits from investments (North, 1990; Mauro, 1995).

Economic development is also hindered by the corruption of the resource allocation mechanism, as the criteria for allocation are often influenced by bribes and kickbacks rather than productivity and efficiency. Consequently, those who offer potentially large bribes or agree to kickbacks offered by officials gain access to resources, leading to inefficient use of capital and labour in the economy and, in the long term, to a slowdown in economic development. The same can be said about innovation, which is a key factor in long-term economic growth.

This is proven in the Solow model.¹⁴ According to this, technological progress is the only factor in sustainable long-term economic growth. In the context of the “corruption-innovation” relationship, the following can be observed: enterprises and companies in the economy are inclined to invest in R&D and implement the results of scientific and technical developments if the risks of losing potential profits due to high corruption are significant.

In addition to the above, the formation of a so-called “corruption tax” in the economy is becoming a reason for slowing economic development. Just like how chronic inflation in the economy devalues people's real income, acting as an inflation tax, corruption in the form of bribes and “extortion” works as an informal tax on businesses, increasing their operating costs. All this reduces the competitiveness of enterprises in both domestic and foreign markets, which, in the long run, hurts the economic development of the entire economy.

Second, the degradation of institutions in the economy and society manifests itself in the form of a “devaluation of the rule of law,” which leads to the undermining of the entire legal and judicial system in the country. Due to corruption, laws are applied selectively, with the most solvent or influential economic agent being considered “correct,” and justice losing its impartiality. In addition to violating the principle of the rule of law, the mechanism of state governance is being destroyed. It loses its effectiveness, as corruption does not motivate civil servants to serve the interests of society; instead, personal enrichment becomes their incentive. The bureaucratic apparatus turns into a tool for creating artificial obstacles to extort bribes. As a result of all this, the population and business naturally lose trust in state institutions, and the principles of transparency and efficiency of their activities deteriorate. Consequently, business begins to evade taxes, the shadow economy and poverty grow, and there is an intense polarization and stratification of society.

Thirdly, social inequality is exacerbated by corruption. The nation's wealth and economic opportunities are concentrated in the hands of elites (a limited circle of people) who have privileged access to state resources and infrastructure and influence state decisions in their favour. For example, in 2019, the people of Kazakhstan learned from a public report by KPMG¹⁵ that only 162 people in the country own more than 50% of the national wealth (KPMG, 2019). This situation inevitably leads to growing social tensions in society and increasing income inequality. In the history of

¹⁴ Robert Solow is a renowned economist in the neoclassical school of economic thought and winner of the 1987 Nobel Prize “for fundamental research in the field of economic growth theory.”

¹⁵ KPMG report “Development of the direct investment market in Kazakhstan”, 2019.

Kazakhstan, a notable event known as “Bloody January” occurred in 2022, triggered by the exacerbation of social contradictions within the society and economy.

Fourth, high levels of corruption have a profoundly negative impact on the country's long-term intellectual development, as they lead to a decline in the quality of public goods. Budget funds allocated for the construction of schools, hospitals, roads, bridges, and other public goods are not used in a targeted (effective) manner, which affects the quality and service life of these facilities. As a result, the population has limited access to decent education, healthcare, and infrastructure, which significantly impact the quality of life. In the long term, this hurts the country's human and intellectual capital.

Next, we will analyse the causes of the “corruption trap” (Figure 5), which will allow us to determine the mechanism of its formation.

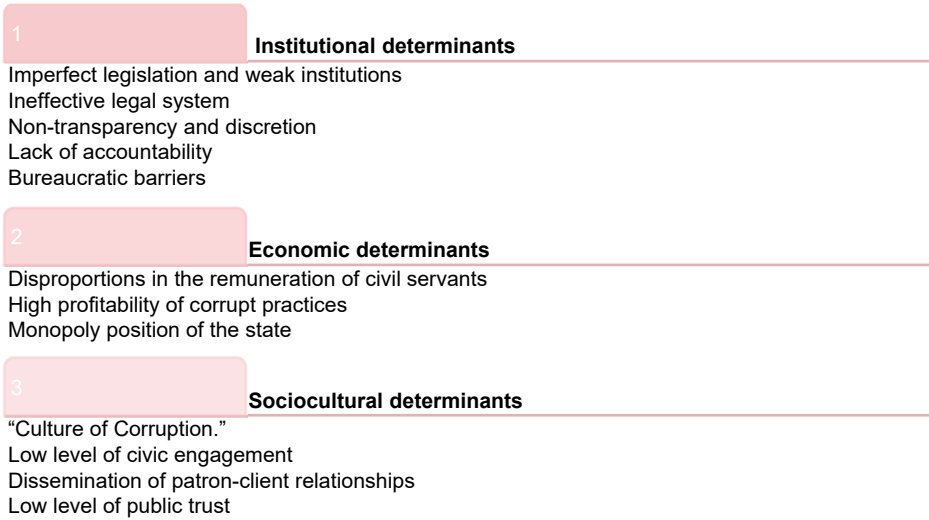


Figure 5. Causes of the “corruption trap”
Note - constructed by the authors

The analysis of the causes of the corruption trap in Figure 5 suggests that the “corruption trap” is the result of a complex interaction of multiple factors that, acting cumulatively, form a self-sustaining vicious circle. It is challenging to escape from the “corruption trap,” as the introduction of new anti-corruption practices and regulations requires vast resources, and transaction costs can be very high.

Consequently, the following strategies are required to combat systemic corruption:

- 1) Radical, comprehensive reforms affecting the entire system and strong-willed political decisions at the very top of the power hierarchy, despite potential resistance from corrupt elites.

- 2) Fundamental strengthening of the rule of law and elimination of selectivity in the judiciary, which must become independent and effective and apply the laws to all, regardless of status, decisively and courageously.
- 3) Increasing transparency and accountability in all areas of public services by increasing access to public information, digitally transforming public services and the public procurement system, and establishing civilian oversight mechanisms.
- 4) Reforming public administration to increase its efficiency by reducing bureaucracy and eliminating administrative obstacles, improving and updating ethical standards of behaviour of public servants, eliminating nepotism and cronyism, increasing meritocracy in the system of selection of public servants, and in building a career in public service.
- 5) Development of mechanisms to activate civil society and independent media, which will exercise civil control and publicly report on the facts of corruption, conduct independent investigations into corruption schemes and practices, and thereby exert pressure on state power through “soft power.”
- 6) Systemic economic reforms by stimulating competition in markets and active re-monopolization of the economy to reduce opportunities for extracting corrupt rents.

Obviously, the list of reforms does not end with the above. However, it is essential to understand that the corruption trap syndrome implies corruption is systemic, thereby making it sustainable and self-reproducing. Such large-scale and deep-rooted corruption causes enormous damage to the economy and society in the long run, as it provokes the emergence of many interrelated negative problems, such as the “poverty trap”. To conclude this chapter, let us look at the issue of poverty traps in the context of the relationship with “institutional” and “corruption traps”.

4. Corruption and the “poverty trap”

The phenomenon of the “poverty trap” is closely linked to the issues of income inequality and access to resources within the population. The analysis of institutional and corruption traps has shown that higher income inequality is associated with increased corruption; in other words, it is an irreversible consequence of systemic corruption, which is rooted in weak and inefficient institutions in the country. To understand the relationship between these phenomena, let us examine this issue in more detail. Recall that the “trap” has a self-sustaining mechanism, which does not allow overcoming it from within or resisting it within the system itself. Consequently, over a long period, the “trap” can capture other economic agents within it (spread) and begin to self-reproduce.

In current economic theory, the phenomenon of a “poverty trap” is associated with a stable state of low welfare that persists over a long period, becoming self-reproducing. In other words, it is a state of extremely low income levels for economic agents, from which it is impossible for them to “get out” by their efforts, despite their significant efforts. At the same time, the “poverty trap” can be inherent even in entire countries.

Thus, poverty traps can be found at both micro and macro levels. At the micro level, the poverty trap affects households (individuals or families), while at the macro level, it affects the whole country. In the latter case, countries rely on humanitarian aid, as the poverty trap leads to complex and deep-seated social problems, including hunger, poverty, increased morbidity and mortality, and a lack of access to drinking water and basic health services (e.g., in Third World countries or some impoverished countries in Africa or Asia).

In the context of economic science, the essence of this phenomenon is that the “poverty trap” describes a recursive (self-sustaining) cycle in which the initial level of poverty prevents the accumulation of savings of economic agents, which they can invest in the economy and further ensure the growth of their incomes and increase their welfare. The essence of the “trap” at the country level is that it poses a threat to the country's survival and development as a state, as significant resources are required to overcome extreme poverty. Investments are needed in infrastructure, including health and education, to improve the quality of human capital. Additionally, developing domestic production of goods and services is crucial to ensure food security, as well as to support housing, business development, and institutional development, which requires substantial funding. Speaking of the latter, we point to the fight against corruption and the elimination of “institutional and corruption traps” in the economy and society.

“Poverty trap” for an individual is a kind of vicious circle, where the initial lack of resources leads to the entrenchment of poverty in the future. Thus, at the individual level, the poverty trap operates according to *the following scheme*: at the point of reference, low income and poverty limit access to resources and investment. This leads to a lack of funds to cover basic needs; furthermore, we observe a lack of savings and limited access to credit for investing in their development, including the realization of their talents and starting a business. The lack of a “financial cushion” limits networking and assistance from the environment, leading the poor person to the next point on the circle: low productivity and limited opportunities for earnings. All this happens against the background of deteriorating health and ability to work, due to the inability to receive quality nutrition and health services. Poor physical stamina contributes to the choice of low-skilled, low-paid labour. As a result, there is no possibility of accumulating assets to start one's own business or utilize effective labour methods. In such conditions, we observe the reproduction of low income, which is insufficient to cover basic needs (food and shelter) and save for improving the current situation or the

future of children. The circle closes, and we observe the *reproduction of poverty*, which can lead to poverty of the next generation (children, etc.).

It is also essential to consider the influence of external factors. For example, suppose a poor people fall ill, loses their job, or external forces intervene in their life (such as natural disasters or epidemics). In that case, they fall into deep poverty, from which it is almost impossible to recover. Comprehension of this scheme allows us to assert that poverty cannot be defeated without outside help and support. This means that the state should support the poor and help to overcome some of the barriers in this scheme to allow poor people to be able to “break” the “vicious circle” of poverty.

Returning to the analysis of the potential link between poverty traps and corruption, we systematized the causes of poverty traps at both the macro and micro levels. We constructed the following scheme of their formation (Figure 6a).

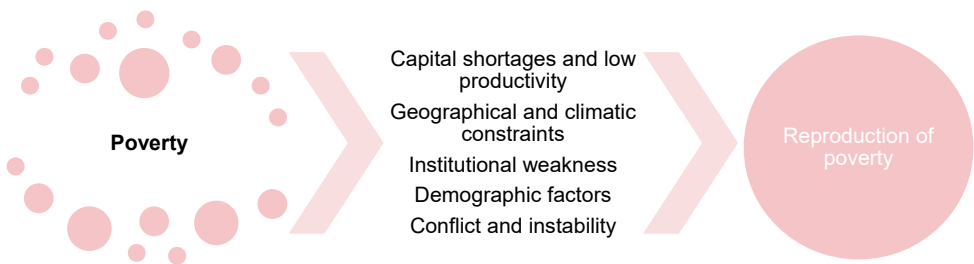


Figure 6a. Causal analysis of the poverty trap
Note - compiled by the authors

The content analysis of the scheme in Figure 6a allows us to conclude that corruption has a direct impact on the formation and maintenance of poverty traps in the country. As we already know, weak and ineffective institutions create an “institutional trap”, which in turn is the basis for the formation of a “corruption trap” in the country. Consequently, considering these findings, we can transform the original scheme of poverty traps in Figure 6a into the scheme in Figure 6b.



Figure 6b. Interrelationship of traps in the conditions of systemic corruption
Note - compiled by the authors

Thus, the diagram in Figure 6b demonstrates that all three "traps" are closely interrelated and interdependent. In other words, institutional and corruption traps can rightfully be considered the reasons for the formation or persistence of the "poverty trap" in the country. Because poor groups of the population are less able to monitor or resist corrupt practices, they are more vulnerable to the adverse effects of corruption than the wealthy elite, who are also more prone to bribery. This fact allows us to assert that, in order to overcome the "poverty trap", as in the cases of institutional and corruption traps, comprehensive and coordinated reforms of the entire economic system and society (including the culture of behaviour and rejection of corruption) are necessary. At the same time, some studies prove that government efforts to address the issue of overcoming the "poverty trap" should not be "one-time" or short-term. As was rightly noted by Sachs (2005) and Azariadis & Stachurski (2005), minor, incremental improvements do not contribute to a qualitative breakthrough but only allow us to maintain existence at a minimum level.

Since the mid-twentieth century, a significant trend in development theory has emerged in economics, in which scientists have been discussing the "big push" strategy. Significant Research in this direction includes the works of Nurkse (1953), Lewis (1954), Rostow (1960), Sen (1999), Acemoglu and Robinson (2012), and Banerjee et al. (2020). According to proponents of the theory of development and the concept of the "big push", large-scale investments and coordinated actions are needed to overcome the "poverty traps" in developing countries, namely:

- 1) large-scale investments in infrastructure (and complementarity of investments is important),
- 2) Education and healthcare subsidy programs,
- 3) targeted support for agriculture,
- 4) Systemic reforms to strengthen institutions and fight corruption.

The primary distinction between these measures and similar instruments within the framework of other theories or concepts lies in the following investment requirements that are imposed.

- 1) Investments should be implemented simultaneously and in strict coordination to achieve a synergistic effect and stimulate sustainable growth.
- 2) Investments must be significant and indivisible to initiate economic growth (for example, investments in large-scale infrastructure projects such as the construction of large power plants or the creation of extensive transport networks).

- 3) Investments should be synchronous to generate positive externalities that stimulate overall economic activity.

Considering the scale and complexity of the investment challenges described above, proponents of the “big push” concept emphasize the pivotal role of the state or international institutions in implementing such a coordinated and large-scale investment policy. In their view, only then is it possible to break the “vicious circle of poverty,” as the fundamental idea posits that entrenched conditions of poverty can absorb insignificant investments and will not create sufficient impetus or a “big push” for sustainable economic development. Thus, infrastructure investments are also one of the key factors for overcoming “traps” in the economy; in the following chapters of the book, we will explore specific aspects of the infrastructure sector and analyse the results of a sociological study on the relationship between corruption and access to infrastructure in Kazakhstan, conducted by the authors.

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Chapter 4.

Infrastructure as a Strategic Basis for Sustainable Economic Development

1. Introduction

In the preceding chapters, we focused our attention on the essence and impact of corruption on economic development, identified its primary forms of manifestation, and concluded that acute problems such as the formation of “traps” in the institutional environment led to an increase in corruption and exacerbated inequality in society. Within the overall structure of the inequality problem, the issue of access to infrastructure occupies a distinct and crucial place, as its limitations exacerbate poverty and impede the country's economic development, preventing nations from achieving sustainable rates of economic growth.

From an economic perspective, the issues of achieving sustainable growth and building a viable economy are always relevant, meaningful, and within the public's purview. However, resolving these issues becomes more complex under an authoritarian and corrupt regime, especially amidst escalating geopolitical and global climate changes. In this chapter, we focus on infrastructure research, defining its role and significance for the economy and society, and identifying the main problems, risks, and barriers to implementing infrastructure projects, particularly in developing countries. This is crucial for assessing the role of corruption in access to infrastructure in Kazakhstan, as an example of a developing economy, according to international organizations.

In economic literature, infrastructure is often viewed in close connection with the production of public goods as a complex of sectors that create them. Consequently, the provision of access to it and its regulation fall within the sphere of state regulation. It is well-known that private business does not finance infrastructure projects, except in cases where the governments of developing countries require transnational companies, when granting them access to the country's natural resources, to implement specific infrastructure projects that demand significant financial investments.

Global statistics indicate a significant disparity in access to infrastructure worldwide. For example, in 2023, approximately 750 million people worldwide lacked access to electricity¹⁶, over 2 billion people lacked access to clean water, and 3.5 billion people did not have adequate sanitation facilities¹⁷. Approximately one-third of the world's population lacks access to paved roads that can be used regardless of weather conditions.

The implementation of infrastructure projects requires substantial investment; this is well understood from both theoretical considerations and the practical experience of implementing similar programs in various countries. Interesting discussions can be observed in the context of development theory and the “*big push*” concept, which posits that only a well-coordinated implementation of large-scale investments, particularly in infrastructure development, will stimulate positive dynamics in addressing inequality and a country's economic development.

Experts from the World Bank assert that eliminating disparities in access to various types of infrastructure globally will require an annual investment of between \$ 1 and \$1.5 trillion US. It is essential to consider that the cost of investments encompasses a complex and lengthy factor, which consequently impacts the return on such investments. For instance, the estimated service life of infrastructure ranges from 20 years for paved roads to over 100 years for concrete bridges, sewerage, and water supply facilities. Due to the influence of the time factor on the return from infrastructure investments, they are not popular or attractive to private businesses from a commercial efficiency standpoint. However, there is a general understanding that both business and various communities, the population, and the state will benefit from consolidating efforts in this direction. This refers to the societal efficiency of such projects, which will, in the long term, enable the development of all other related areas, such as conducting business, attracting investments, developing new industries, promoting tourism, improving well-being, ensuring security, and so on.

At the same time, it is important to recognize and understand the fact that infrastructure not only ensures the uninterrupted production of goods and services and the development of social spheres, but is also designed to protect the economy and society from the influence of exogenous shocks such as natural disasters and man-made catastrophes, wars, and epidemics; therefore, it is crucial to make infrastructure resilient to them.

¹⁶ *Tracking SDG 7: The Energy Progress Report 2024*. World Bank.

¹⁷ World Bank. (2024, May 20). *Water security is critical for poverty reduction, human well-being, and climate resilience, World Bank says in new report*. The World Bank.

According to the ‘Future for the Growth’ global report (World Economic Forum, 2024), the assessment of economic development and growth in any country encompasses numerous infrastructure indicators as a vital component of the economy. Among the factors for new economic growth in the 21st century, investments in infrastructure and innovations for infrastructure transformation are highlighted. According to global experts, building a resilient economy requires developing infrastructure and reducing inequality, which is the root cause of poverty and limited access to resources and infrastructure.

A substantive analysis of the scheme in Figure 1 allows for the following conclusions. In this "infrastructure-inequality-resilience" nexus, all three elements are crucial for the sustainable development of any country. Investigating the interrelationship between "infrastructure" and "inequality" in the nexus, we conclude that these are mutually dependent phenomena. In other words, the level of access to infrastructure determines the degree of inequality, either significantly exacerbating or, conversely, reducing it.

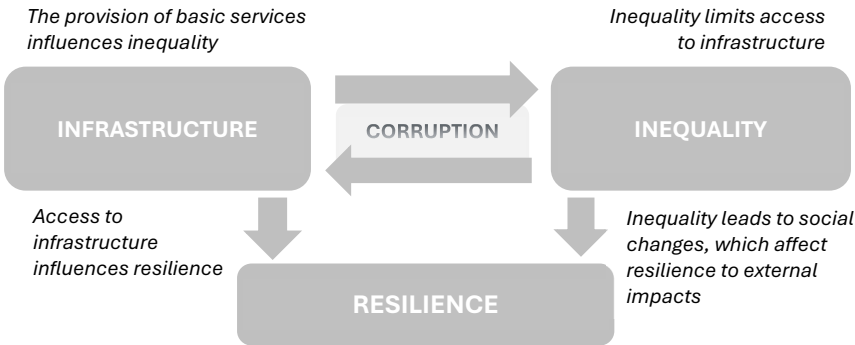


Figure 1. The Impact of Infrastructure on Inequality in the Economy and Its Resilience to External and Internal Shocks
Note: Compiled by the authors

The question is – What, then, is the role of corruption in this nexus?

The answer is: Corruption restricts the access of poor people to infrastructure (a problem of inequality), contributing to the persistence of "poverty traps."

The Global Multidimensional Poverty Index (2023)¹⁸ merely confirms the acute problem of global inequality. It is estimated that 35% of all poor people live in low-

¹⁸ Global Multidimensional Poverty Index 2023: Unstacking global poverty: Data for high-impact action.

income countries, while 730 million people (almost two-thirds of all poor people) live in middle-income countries (including Kazakhstan). Thus, we conclude that inequality in economic systems, whose stability is supported by systemic corruption (due to inefficient public administration and weak institutions), will negatively impact the effectiveness of infrastructure project implementation (due to irrational and selective resource allocation, low-quality control and management, etc.).

Consequently, the sustainability and resilience of the economy and society in the 21st century will depend not only on the level and state of infrastructure and the resolution of the inequality problem, but also on how these two phenomena "interact" and how issues of combating corruption are addressed within this nexus of interactions. In this regard, the state's role as the primary regulator of all processes in the country is significant. It must ensure that conditions for equal access to infrastructure are available to all members of society and manage it effectively, as well as implement measures to reduce corruption in accessing it. As a result, inequality decreases, and the economic system's resilience is strengthened, enabling it to resist external threats and challenges effectively.

2. Overview of Studies on the Infrastructure Impact on Economic Development

In the economic scientific literature, there are numerous definitions of infrastructure, and many studies have examined various interrelationships between infrastructure and other economic and social indicators, such as economic growth, the Human Development Index, and others.

Different types of infrastructure, as individual studies show, influence economic growth to varying degrees. For instance, the transport sector was more significant for certain countries than the water sector. However, if businesses face limitations in accessing modern transport routes and infrastructure, this complicates the transportation process and increases delivery costs. This circumstance points to a significant fragmentation of research in this context, as noted by Vålilä (2020) in his study. The author examined an extensive database of empirical works on the relationship between infrastructure and economic growth. According to the author, these studies began at the end of the 20th century; they are heterogeneous in terms of measurements, methods, observed period, research geography, and econometric approaches, which often lead to imprecise and inconclusive results.

Nakamura et al. (2019) thoroughly investigated and systematized the key principles of infrastructure, with an emphasis on case studies and best practices. The scholars point out that infrastructure produces services that other sectors of the economy cannot, and it possesses special characteristics. These include high demand for infrastructure, its joint use by all economic agents, the specificity of infrastructure, its non-excludability from consumption, the need for enormous investments, economies of scale, its status as a regional monopoly, and external effects or externalities. Due to these properties, infrastructure facilities have become vital and strategically important for the state, its economy, and society. Consequently, investment decision-making, management, and control concerning them require the collective participation of all stakeholders.

Infrastructure that meets the modern requirements of economic development, on the one hand, allows businesses to increase productivity and income, reduce production downtime and negative environmental impact, and positively affects the well-being of the population. On the other hand, infrastructure ensures the safety of businesses and civil communities during natural disasters and global challenges, such as the COVID-19 pandemic. Infrastructure is the foundation for the production, transmission, and distribution of electricity and water, as well as the development of alternative energy sources and the provision of digital transformation to create new and emerging business forms. More detailed information on the impact of infrastructure on business is presented in the study of Rakhmatullayeva et al. (2024).

The problem of infrastructure is particularly relevant for developing countries, with extensive research on this topic in the scientific literature. For example, an article on the growing infrastructure needs of African countries¹⁹ and related business opportunities notes that weak and inadequate infrastructure in continental Africa is the main obstacle to realizing its potential for economic growth. Global reports indicate that nearly 60% of Africa's population lacks access to electricity, 90% do not use the Internet, and there are significant problems with transport infrastructure – only a quarter of existing roads are paved. Poor and worn-out equipment serving this sector leads to an average 35% increase in the cost of goods, making businesses uncompetitive and severely limiting the inflow of foreign direct investment (FDI); consequently, businesses struggle to reap the benefits of FDI.

World Bank experts assert that poor-quality infrastructure in Africa reduces business productivity by 40% and slows economic growth by 2% annually. Thus, the issue of infrastructure renewal and development in Africa is a pressing concern. Among the measures for infrastructure reconstruction and renewal, it is expected that by 2025,

¹⁹ Infrastructure Africa (2021). <https://www.infrastructure-africa.com/>

national governments of African countries will invest up to \$ 180 billion in infrastructure projects.²⁰

The issues of access to transport infrastructure and its impact on regional economic growth in China were investigated by Banerjee et al. (2020). They concluded that rapid income growth in the country's regions resolves the problem of internal placement of transport networks. In turn, the proximity of these networks yields positive externalities for the Chinese economy, with a positive effect on GDP per capita across various sectors. However, this effect does not persist over time in terms of GDP growth. According to the authors, the mobility of factors of production significantly predetermines the economic benefits of infrastructure development. However, in China, there is significant inequality in access to infrastructure, which may limit the long-term positive impact of infrastructure on economic growth. These findings are beneficial for other developing countries seeking to enhance their infrastructure through substantial capital investments.

The problem of inadequate infrastructure is pressing for India's developing economy, which, as Agrawal (2020) believes, is the most significant barrier to its growth and development. The author highlights issues with funding deficits in the infrastructure sector, bureaucratic hurdles in land acquisition and formalization, and low efficiency in decision-making and price formation for infrastructure within the Indian economy. Among the recommendations, the author emphasizes the need to create a favourable investment climate that stimulates private investment in infrastructure projects. As a source of private capital, the author suggested utilizing the country's population's accumulated considerable savings, which could be invested in infrastructure development. This refers to the necessity of implementing an adequate public-private partnership (PPP) model in India's infrastructure sector, as well as involving banking capital and the bond market in infrastructure projects.

In another study of Indian infrastructure, conducted by Saini and Giri (2022), the benefits of implementing the PPP model are already asserted, which allowed for the efficient accumulation of financial resources. Furthermore, the PPP mechanism facilitated access to shared use of technologies, the adoption of innovative solutions, and the acquisition of advanced practices. The author predicts that the implemented PPP model will increase labor productivity in the Indian economy. Moreover, the Indian government pursues a conscious policy of further supporting and implementing this model in the infrastructure sector, making significant efforts to involve large Indian corporations in financing the country's infrastructure.

²⁰ See *ibid*

Jimmy and Falianty (2021) drew attention to the risks of state participation in financing infrastructure projects. In their study, they assessed the influence of risk and the share of state participation in financing infrastructure projects in the transport and energy sectors on their effectiveness across fifteen Asian countries, including Kazakhstan. The authors consider rising debt in developing countries as a risk; consequently, the issue of state financing as the primary source of investment raises serious concerns for researchers. The authors derived key conclusions by evaluating an econometric model based on cross-sectional data from almost one thousand infrastructure projects in fifteen Asian countries for the period 2007–2016. The results showed that the impact of financial risks on the effectiveness of infrastructure projects in transport and energy infrastructure is more significant than the impact of political risks. In turn, a comparative analysis of the sectors revealed that the degree of risk is higher in transport infrastructure than in the energy sector.

Environmental risks associated with the implementation of infrastructure projects in developing countries were considered in a study by Sun et al. (2022). In their opinion, the infrastructure of developing economies is particularly vulnerable to the adverse effects of climate change. Among their recommendations for reducing environmental risks in infrastructure project implementation in developing countries, specific measures were identified. In their view, the most important issues are the development of methods for assessing the resource needs of infrastructure projects and ensuring their effective implementation. Furthermore, they emphasized the need to research a complex set of factors necessary for the effective integration of infrastructure into the national economy.

A crucial aspect of research in the field of infrastructure is the evaluation of investments in it or the assessment of the economic impact of infrastructure investments. In this context, the studies by Ramey et al. (2020) and PWBM21 (2020) conducted by American scientists is of interest. As is known, during President Biden's administration, the most extensive and expensive infrastructure investment program in the United States was adopted and is being implemented. The authors assessed and forecasted the macroeconomic effects for the USA from the implementation of this infrastructure program. According to the scholars, the expected effect of investments made in infrastructure depends on the participation and productivity of private capital. However, this effect may not lead to GDP growth if the increase in investments occurs through additional government borrowing. The researchers found a crowding-out effect of private capital by public investments when the latter's share in the program increases by 4.6% annually until 2040 – the share of private capital may decrease by 0.8% in 2040, while the effect on GDP will be zero.

²¹ PWBM - Penn Wharton Budget Model.

The US infrastructure development program also includes expanding public access to broadband internet. Guo et al. (2020) assessed the potential impact of spending on implementing the program to expand broadband internet availability on the United States' GDP and its role in the country's logistics. The authors employed an input-output model to assess broadband internet accessibility and its associated needs across the United States. They concluded that resource allocation occurs rationally; in other words, states particularly in need of increased broadband access indeed receive commensurate funding. Thus, according to their estimates, funding the infrastructure program could lead to the United States' GDP growth of \$ 146 billion over the next five years.

An analysis of the global scientific research database in the field of infrastructure reveals positive publication dynamics in three directions.

1. There is a growing number of studies related to infrastructure projects for the digital transformation of national economies.
2. There is a significant increase in infrastructure research related to the world's economies transitioning to a low-carbon economy.
3. There is a growing interest in the scientific community in applying ESG²² standards and principles of responsible investment in the implementation of infrastructure projects worldwide (Wilson, 2023).

Thus, an overview of foreign research in the field of infrastructure in both developed and developing countries has shown that issues related to the implementation of infrastructure projects are pressing and relevant to everyone, regardless of a country's level of economic development and its status in global rankings. Based on the review of the provided literature, we conclude that access to infrastructure systems and facilities is crucial for a country's economic growth. Against the backdrop of escalating climate change and the global geopolitical situation, our confidence is reinforced by the global sustainable development agenda. This refers to the need for accelerated digital transformation of all infrastructure and ensuring its uninterrupted functioning within the permissible ecological "footprint" for each country.

At the same time, we draw attention to the notable lack of research in the international scientific database regarding the implementation of infrastructure projects, their accessibility, and the impact on the economies of Central Asian countries. Therefore, the authors hope that this study will help fill this gap and serve as a catalyst for their future growth.

²² ESG – Environmental, social, and governmental standards.

3. Overview of Studies on the Impact of Corruption on Infrastructure

Research spanning several decades suggests that issues of corruption and infrastructure are particularly significant for developing countries. In Svensson's (2005) work on the causes and scale of corruption, it is argued that the countries with the highest levels of corruption are developing nations, including post-socialist and transitional economies. Furthermore, the author presents an additional argument, namely the strong correlation between high corruption and low incomes in these countries. He provides examples from countries in Africa and Asia to support his arguments. At the end of the last century, widespread corruption in ensuring access to public services in Uganda led to the misappropriation of funds allocated for educational reform. As a result, public schools were able to access only 13% of the allocated funds because local officials and politicians embezzled the money through various corrupt schemes (Svensson, 2005).

A similar situation was observed in Indonesia during road construction, according to Olken (2004), who found that one-third of the allocated government funds were embezzled through corrupt schemes. Thus, the inefficient expenditure of public funds on infrastructure due to corruption results in poor-quality infrastructure in highly corrupt countries. These countries spend less money on the operation and maintenance of infrastructure facilities, as stated by Tabish and Jha (2012).

A critical analysis of numerous publications on corruption in the infrastructure sector revealed that most of them focus on the construction of infrastructure facilities or the implementation of infrastructure projects. According to Transparency International (2016), the construction industry and its infrastructure projects are the most corrupt sectors in countries with high corruption. By their calculations, annual losses of global infrastructure investments due to corruption exceed 10%.

Many studies confirm this fact, with some pointing to widespread instances of corruption in construction projects across various countries, where cost overruns and reduced construction quality have been observed (Kenny, 2009; Le et al., 2014). The causes of corruption and the behavioural patterns that lead contractors to engage in corrupt practices were investigated by Brown and Loosemore (2015) and Bowen et al. (2015).

An analysis of the shocking consequences of earthquakes in Turkey, which periodically claim many lives, revealed that widespread corrupt practices uncovered during the construction of the destroyed housing were among the leading causes (Kinzer, 1999; Gunduz & Önder, 2013). The authors raised concerns about the quality of housing

construction and corruption, as well as the ineffectiveness of government measures, including tax incentives for developers.

The topic of high corruption in the construction sector is also highly relevant to China. For instance, Shan et al. (2016) investigated the main factors of corruption in public construction in the country, using mixed research methods. They revealed that immorality is the primary motive for corruption; accompanying factors include a lack of transparency, unfairness, and civil procedural violations. There is also a large number of more recent studies on the Chinese infrastructure sector (Wang & Ma, 2019; Zheng & Xiao, 2020, among others).

Thus, an overview of various studies on the interrelationship between corruption and infrastructure has shown that issues of inefficient infrastructure project implementation due to the negative impact of corruption are urgent and relevant worldwide. Access to infrastructure systems and facilities is crucial for a country's economic growth.

This problem is also very relevant for Kazakhstan. The few studies evaluating the impact of corruption on the economy and inequality in the republic confirm this fact. Zharlygassinov et al. (2023) attempted to quantitatively identify the relationship between corruption and the Human Development Index (HDI) in Kazakhstan. The authors concluded that areas such as education, healthcare, and population incomes are negatively correlated with corruption.

The main finding of the study is that corruption contributes to the exacerbation of social inequality. Aitzhanova et al. (2024) assessed the impact of corruption on business activity in Kazakhstan. The authors utilized macroeconomic data from national statistics and found that corruption exacerbates the country's investment climate, contributing to an increase in poverty.

A recent sociological study on access to infrastructure in Kazakhstan's regions, conducted by Rakhmatullayeva et al. (2024), revealed that among the main problems and barriers, heads of small and medium-sized enterprises (SMEs) identified systemic corruption as a significant issue. Entrepreneurs complained that due to corruption, the process of accessing infrastructure is complicated and excessively bureaucratized. As a result, the process of obtaining permits for implementing projects becomes lengthy, which negatively affects their operational activities. Moreover, due to the impossibility of connecting to infrastructure without a bribe, the transaction costs of doing business in the regions of the republic increase manifold. The authors also calculated an infrastructure accessibility index for SMEs, assessing access to power grids, land, water supply systems, logistics, and the Internet. The index values were low for all regions of the country, as they did not exceed the average level.

As GIACC's²³ experts assert that corruption is one of the main barriers to developing adequate and safe infrastructure. Numerous studies have confirmed that low accessibility and poor quality of infrastructure are closely correlated with a high level of corruption, negatively affecting a country's overall well-being. In the long run, the negative consequences of corruption intensify, as confirmed by some global statistics on the potential scale of corruption in infrastructure worldwide (GIACC, 2024).

For example, in 2016, Transparency International estimated that the annual losses of developing countries due to corruption totalled 1.3 trillion US dollars. In 2021, RICS²⁴ projected annual losses from corruption to be \$ 5 trillion by 2030 if significant anti-corruption measures are not adopted and implemented. However, the world reached this figure as early as 2023. This implies that the cost of global corruption is rapidly increasing year by year; consequently, anti-corruption measures are not effective enough.

Thus, based on the analysis of various studies, we conclude that, in the context of access to infrastructure, corruption is often the norm rather than an exception. It manifests in the form of giving (receiving) bribes, gifts when receiving (providing) public services, obtaining (issuing) permits when connecting to infrastructure facilities, including accelerating this process, as well as in the form of kickbacks during tenders for the implementation of infrastructure projects.

4. Statistical and Economic Analysis of the State of Infrastructure in Kazakhstan

In this part of the chapter, a brief overview of infrastructure statistics in Kazakhstan will be conducted, including a regional breakdown of the republic. Based on national statistical data, a statistical-economic analysis will be conducted of the leading and available indicators for specific types of infrastructure. The data, in general, were obtained from the official website²⁵ of the Bureau of National Statistics of the Republic of Kazakhstan for the last five years, depending on the year of publication availability.

In addition, openly published data from private organizations and various ministries and departments that conducted relevant analytical studies in one or another area of

²³ GIACC - Global Infrastructure Anti-Corruption Centre.

²⁴ RICS - Royal Institution of Chartered Surveyors.

²⁵ <https://stat.gov.kz/ru/industries/>

Kazakhstan's infrastructure were used. For example, data from Mordor Intelligence, IBC Global, Samruk-Energy, Energyprom, and the Ministry of Ecology and Natural Resources of the Republic of Kazakhstan were utilized.

According to a recent study²⁶ by the “Sange” Research Center (2023), which assessed investors' perceptions of the business climate in Kazakhstan, up to 40% of respondents cited corruption as a barrier to investment in the country. As the study showed, a high level of corruption was identified in the infrastructure sector (transportation and warehousing, information and IT technologies, electricity and water supply, as well as healthcare). The study also revealed that businesses face poor road quality and low access to transport infrastructure. Furthermore, there are serious problems not only with access to utility networks (gas, electricity, communications, water supply, sewage) but also with very high connection tariffs for infrastructure.

Access to Transport Infrastructure and Logistics

The Kazakhstani transport infrastructure market shows rapid growth year after year. According to Mordor Intelligence,²⁷ the volume of the freight and logistics services market in Kazakhstan was \$11.36 billion in 2024 and is expected to reach \$14.80 billion by 2029, potentially.

Following the global Logistics Performance Index (LPI), which assesses the level of logistics development in various countries, Kazakhstan has significantly improved logistics efficiency – the indicator increased by 0.58 points (from 2.12 in 2007 to 2.70 in 2023). In our opinion, this occurred due to the significant investment in transport infrastructure development during the period under review. However, despite the country's positive dynamics in the global logistics ranking, a component-by-component analysis of the index showed that the increase in investments did not sufficiently contribute to improving the quality of trade and transport infrastructure.

According to the Bureau of National Statistics of the Republic of Kazakhstan,²⁸ there has been an increase in freight turnover in recent years (Figure 1).

²⁶ <https://invest.gov.kz/upload/iblock/7b3/0r7i7euh4l4rr504s1tihuttuo8d3ejv.pdf>

²⁷ <https://www.mordorintelligence.com/ru/industry-reports/kazakhstan-freight-and-logistics-market>

²⁸ <https://stat.gov.kz/ru/industries/business-statistics/stat-transport/>

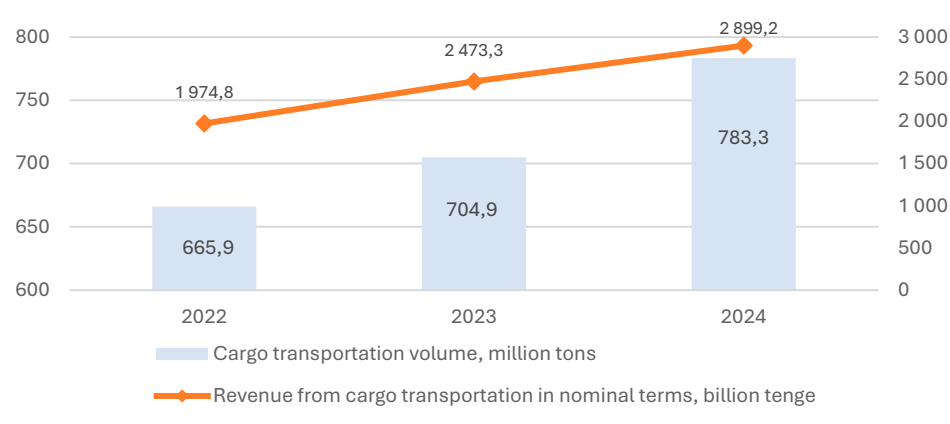


Figure 1 – Main Indicators of Freight Transportation by Various Modes of Transport (excluding pipeline transport)

As illustrated in Figure 1, in 2024, the volume of freight transportation increased by 10% compared to the previous year. A positive dynamic is also observed in transportation revenues, with nominal growth reaching 47% over the past two years. Breaking down by mode of transport, the picture is as follows: the largest share of freight transportation falls to railway (59%) and road transport (41%).

According to a report by IBC Global,²⁹ one hundred thirteen violations in the realm of public procurement were identified within Kazakhstan's transport sector in 2022, totalling 12.3 billion Tenge. A significant majority of these irregularities were associated with the procurement of services (51.3%), followed by the acquisition of goods (43.4%) and construction works (5.3%).

Analysis of national statistics for the period from 2016 to 2024 indicates significant changes in Kazakhstan's warehousing logistics sector. A stable twofold increase in revenue from storage and warehousing services is observed, rising from 68.8 billion tenge in 2016 to 153.2 billion Tenge in 2024. In our opinion, this surge was driven by the development of e-commerce, which began in 2021, following disruptions in global supply chains during the COVID-19 pandemic. The subsequent increase in warehousing capacity occurred due to the commissioning of new logistics hubs in 2024. Figure 2 demonstrates the dynamics of revenues from warehouse rental in the country.

²⁹ IBC Global. Analysis of Corruption Risks in Public Procurement in the Transport Sector. 2022.

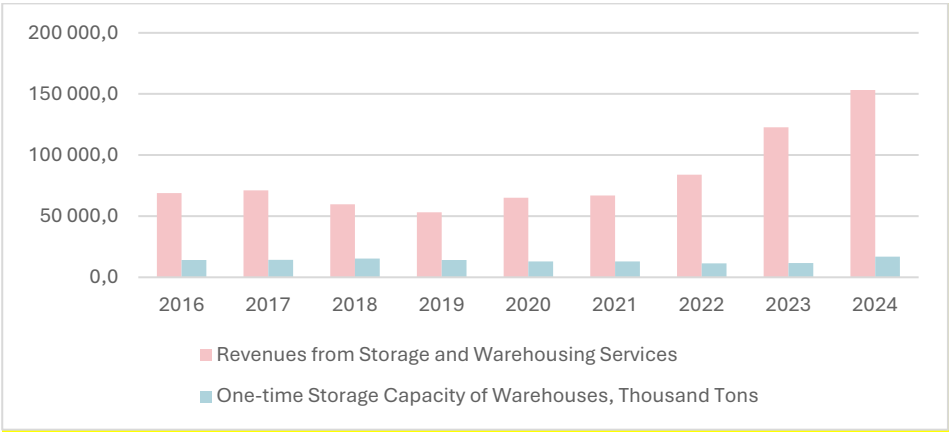


Figure 2 - Dynamics of Revenues from Warehousing Services

Note - constructed based on data source³⁰

Analysis of the data in Figure 2 reveals a significant increase in warehousing rental revenues nationwide, despite a persistent shortage of warehouse space. Consequently, the growth in revenues can be attributed to an increase in the cost of logistics services, as the rental rate doubled from 2021 to 2024.

According to national statistics for 2023, the construction sector for infrastructure facilities shows consistent growth in commissioning new assets (Figure 3).

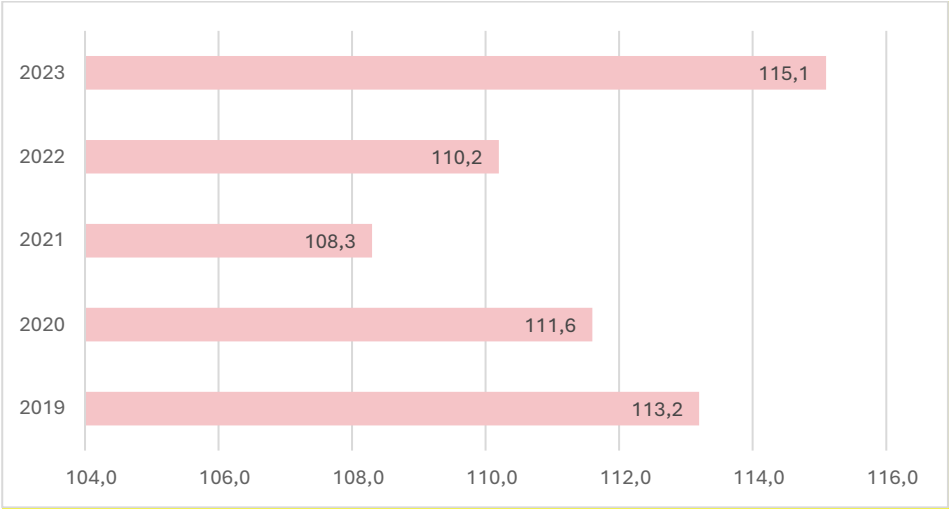


Figure 3 – Volume of Completed Construction and Commissioning of Facilities in the Republic of Kazakhstan, %, 2019-2023.

Note: Compiled by the authors based on data from the source: stat.gov.kz

³⁰ <https://stat.gov.kz/ru/industries/business-statistics/stat-transport/>

As Figure 3 illustrates, the lowest volume of completed construction works (services) occurred in 2021, due to quarantine measures during the pandemic. This represented a 3.3% decrease compared to 2020. However, in 2023, the volume of construction works (services) in Kazakhstan increased by almost 7% compared to 2021.

An analysis of the structure of this indicator reveals that state construction accounts for only 0.5% of the total. Over 82.2% of the total construction volume is attributed to private domestic construction companies, with 17.3% attributed to foreign construction organizations.

Regionally, Atyrau Province leads in the volume of commissioned construction facilities in 2023, while Ulytau Province recorded the lowest volume of construction works (services) (Figure 4).

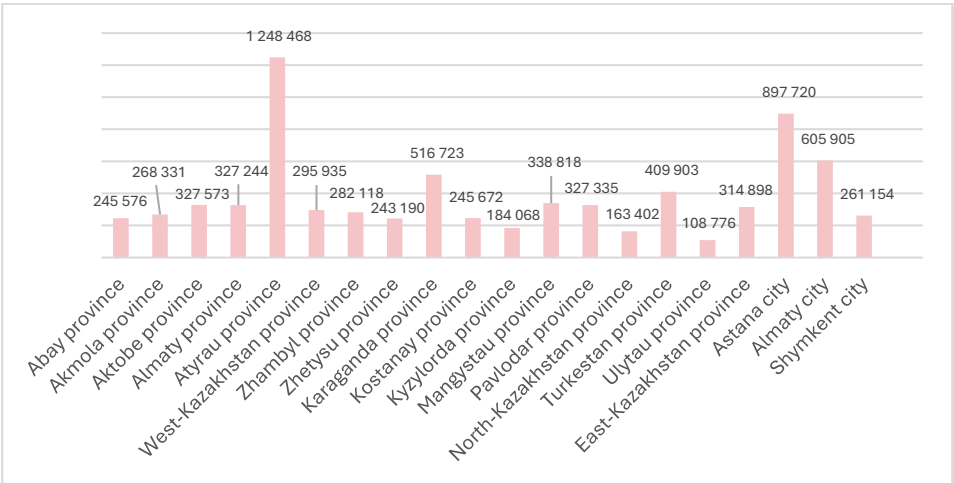


Figure 4 – Regional Volumes of Completed Construction Works (Services), 2023
 Note: Compiled by the authors based on data from the Bureau of National Statistics

A substantive analysis of the indicator's dynamics revealed that the volume of construction works increased in 18 out of 20 regions of the republic. The most significant increase in construction in 2023 occurred in Zhetyysu Province (65.3%), while the smallest increase was in Shymkent city (13.6%). We observed a decrease in construction volume in two regions: Akmola and Ulytau provinces, by 7% and 5.7%, respectively.

Regarding the structure of commissioned construction facilities, Figure 5 illustrates the types of primary social and cultural facilities that were put into operation in Kazakhstan between 2001 and 2023.

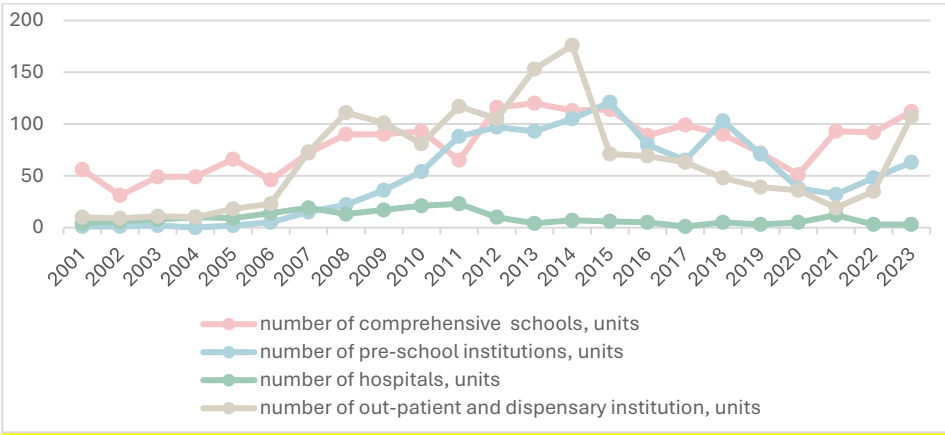


Figure 5 – Commissioned Socio-Cultural Infrastructure Facilities, Units, 2001-2023
 Note: Compiled by the authors based on data from the Bureau of National Statistics

Analysis of the data dynamics regarding the commissioning of socio-cultural infrastructure facilities, as shown in Figure 5, reveals a decline across all indicators since 2018. Starting from 2020, we observe an increase in the number of commissioned hospitals, which was linked to the urgent need to expand bed capacity during the COVID-19 pandemic. However, from 2022 onwards, we observe a decrease in the number of constructed hospitals, despite the high demand for such infrastructure facilities, particularly at the provincial level.

The number of commissioned full-fledged schools also increased. However, in our opinion, this was also related to the completion and commissioning of educational facilities whose construction had begun before the pandemic and was halted until the quarantine was lifted.

Energy Grid Accessibility

An analysis of current indicators in Kazakhstan's electricity supply system reveals structural problems. As of today, the total length of electricity networks in the republic is 467,422 km.

In 2024, Kazakhstan's electricity production volume reached³¹ almost 117.9 billion kWh, representing a 4.5% increase compared to 2023. However, due to increased electricity consumption in 2024, the republic faced a deficit of 2.01 billion kWh, which was covered by electricity imports from neighbouring countries, Kyrgyzstan and the

³¹ <https://www.samruk-energy.kz/>

Russian Federation. Figure 6 presents the electricity deficit across the 17 provinces of the republic (excluding the three cities of national significance – Almaty, Astana, and Shymkent).

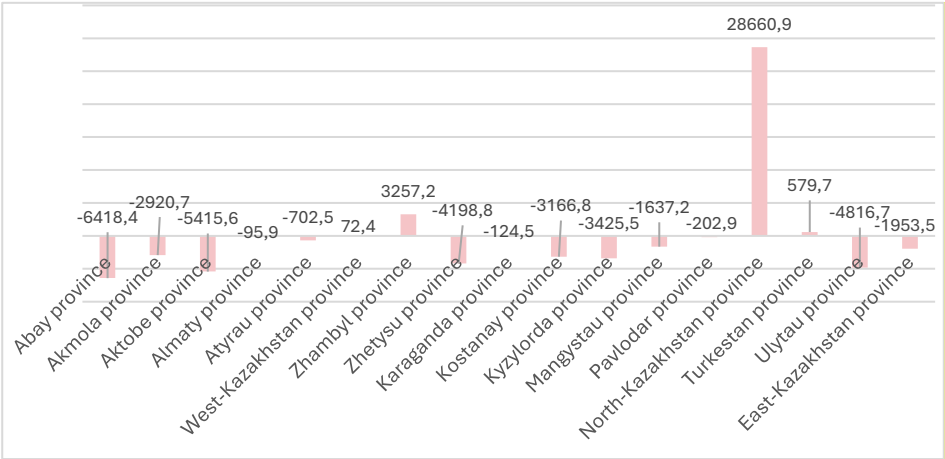


Figure 6 – Electricity Production and Consumption Balance across Kazakhstan's Provinces, 2024, Billion kWh
 Note: data are taken from the source: <https://www.samruk-energy.kz/>

A substantive analysis of Figure 6 reveals that the balance of electricity production and consumption is positive in only 4 out of the republic's 17 provinces: West Kazakhstan, Zhambyl, North Kazakhstan, and Turkestan provinces. All other provinces face an electricity shortage, with the most significant deficit in Abai Province (-6418.4 billion kWh). A severe shortage of electricity is also observed in Aktobe, Zhetysu, Kostanay, Kyzylorda, and Ulytau provinces, where the deficit exceeds 2900 billion kWh.

The reasons for the electricity deficit include low transmission capacity and a high level of wear and tear on energy grids. According to some estimates, "out of 19 regional power grid companies, the wear and tear on five exceeds 85%."32 The obvious solution is the development of additional energy sources, specifically the use of alternative, renewable energy sources.

According to Energyprom33, in 2024, renewable energy facilities in Kazakhstan generated 6.43% of the country's total electricity output. Five years ago, the share of renewable energy sources in Kazakhstan's total electricity production was only 1.2%. By 2023, it had grown more than fivefold. The increase in electricity volume from

³² <https://lsm.kz/kazakhstan-teryet-elektroenergiyu-2024/>

³³ <https://energyprom.kz/>

renewable energy sources in 2024, compared to 2023, was 14%³⁴. Such dynamics indicate qualitative changes in the energy sector: new generation facilities have been launched, the state supports the development of "green" energy, and financing for renewable energy sources is increasing. These measures suggest that the use of renewable energy sources in Kazakhstan is gaining strategic importance (Figure 7).

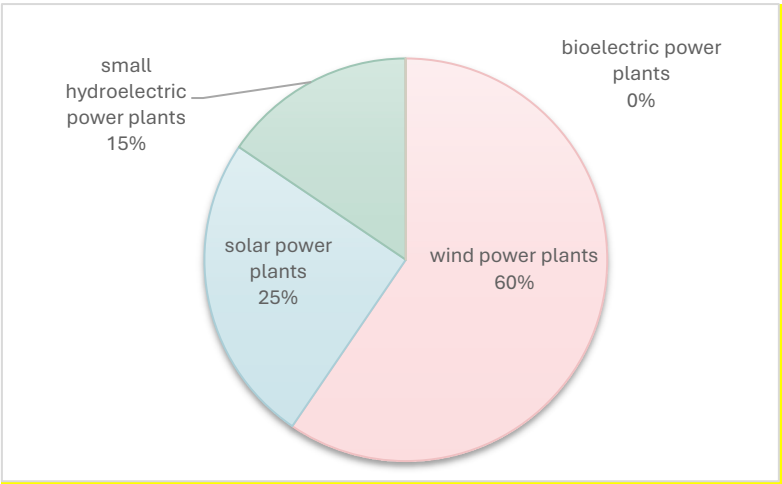


Figure 7 – Structure of RES Electricity Generation, 2024
Note: Taken from source: <https://energyprom.kz/>

Figure 7 shows that wind power plants provided the main contribution to renewable energy sources generation in Kazakhstan in 2024 (60% of the total volume), followed by solar power plants (25%) and small hydropower plants at 15%. Bioenergy's contribution remains less than 0.02% of the total volume of "green" energy.

The natural and climatic conditions in the northern and western provinces of Kazakhstan facilitate a high potential for wind energy. At the same time, in the south of the country, due to the abundance and duration of sunny days throughout the year, solar power plants are more viable. Small hydropower plants make a tangible contribution to ensuring the country's energy balance, as they are located in the most water-rich regions. The bioenergy sector remains underdeveloped to date, despite Kazakhstan having high potential for its development, primarily in agricultural and processing regions.

³⁴ <https://qazaqgreen.com/news/kazakhstan/2513/>

Access to Water Supply Systems

The objective reality today is that Kazakhstan is a country with limited water resources. Under conditions of accelerated negative climate changes (global warming and reduction of glacial cover) and increased anthropogenic load, this leads to growing ecological and infrastructure risks. This is because only 56% of Kazakhstan's water resources originate from the country's internal surface sources, with a total volume of approximately 101 km³ per year. The remaining 44% comes from the inflow of transboundary rivers originating from China, Uzbekistan, Russia, and Kyrgyzstan.³⁵ Consequently, Kazakhstan is dependent on the actions of these countries' authorities regarding water abstraction and use.

Added to this is the problem of a consistent reduction in river flow since the republic gained independence. It is estimated that the long-term average values of river flow have decreased by 26 km³ per year, with local flow reduced by 10.8 km³ per year and transboundary flow by 15.8 km³ per year. Figure 8 presents the structure of water consumption in Kazakhstan in 2023, broken down by economic activity.³⁶

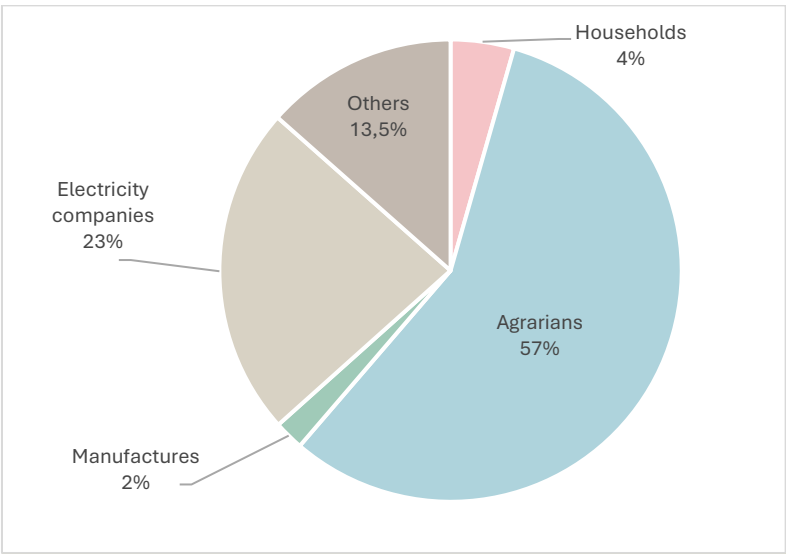


Figure 8 – Structure of Water Consumption in Kazakhstan in 2023
Note: Compiled by the authors based on data from the Bureau of National Statistics

According to national statistics, in 2023, the agricultural sector accounted for 57% of all water consumption, while electricity generation companies used 23%. The

³⁵ <https://ecogofond.kz/>
³⁶ https://stat.gov.kz/en/ecologic-indicators/28428/water_consumption%5Cn/

remaining volume was distributed among the population, manufacturing enterprises, and other sectors.

Another significant challenge in the republic's water supply issue is the deterioration of up to 43% of water supply networks and over 55% of sewage pipes (Ministry of Ecology and Natural Resources of the Republic of Kazakhstan, 2023).

All these points underscore the need for a systemic, resource-conserving approach to water resource management in the country. This can be achieved by reducing inefficient use through the implementation of new water-saving technologies and undertaking a comprehensive, large-scale modernization of Kazakhstan's water infrastructure. Amid increasing climatic and anthropogenic pressures, maintaining a balance between consumption and available resources becomes critically important.

Access to Digital Technologies and the Internet

In 2024, Kazakhstan saw a 3.5% increase in the physical volume of communication services compared to 2023. The total volume of communication services comprises internet services, telecommunication services, and mobile communication. An analysis of structural changes in the use of communication services in 2024, compared to 2023, revealed that internet usage increased by 16.7%; demand for telecommunication services remained unchanged, while mobile communication experienced a decrease of 23.7%. In our view, the development of digital technologies (such as messengers like WhatsApp and Telegram, Facebook Messenger, social networks like Instagram and TikTok, as well as Zoom and many other digital tools) is displacing traditional communication services. For instance, instead of making expensive mobile phone calls, it is now more convenient and cheaper to make audio and video calls worldwide with an internet connection.

According to the Global Digital 2024 report,³⁷ Kazakhstan is a leader in the Central Asian region in terms of internet penetration, with a rate of over 92% in 2024. This indicator is up from 86% in 2022, representing a 6% increase over the past two years. This indicates a high level of digital and internet coverage in Kazakhstan, which is further corroborated by national statistics for 2024, showing 18.19 million internet users³⁸ in the country (a very high figure for a population of 20 million).

Of the total internet users, 14 million actively use social media in their daily lives and for business. A household survey revealed that 99.3% of households use mobile phones,

³⁷ <https://datareportal.com/reports/digital-2024-kazakhstan>

³⁸ <https://stat.gov.kz/en/industries/business-statistics/stat-it/>

and the usage rate of devices (including computers, laptops, and tablets) is 91% of the total population. These data demonstrate a high level of digitalization and widespread internet access among the population.

The Bureau of National Statistics of the Republic of Kazakhstan evaluates the "Digital Literacy Level of the Population" indicator, which shows the proportion of users aged 6 to 74 (as a percentage of the total population) who possess skills in using personal computers, smartphones, tablets, laptops; standard software; and obtaining services via the internet.³⁹ Table 1 presents dynamic data on the digital literacy level of Kazakhstan's population for the period from 2018 to 2024.

Table 1. Digital Literacy Level of the Population of the Republic of Kazakhstan aged 6-74, % of total population

Region	2018	2019	2020	2021	2022	2023	2024
Republic of Kazakhstan	79.6	82.1	84.1	87.3	88.3	90.2	91.2
Abay province*	-	-	-	-	79.9	85.5	86.6
Akmola province	68.9	74.7	74.9	81.5	83.1	85.8	90.7
Aktobe province	78.0	80.0	81.0	86.8	89.6	90	90.2
Almaty province*	-	-	-	-	91.9	92.4	93.3
Atyrau province	81.2	82.6	83.1	85.2	85.4	86.6	87.3
West Kazakhstan province	76.4	78.4	78.8	79.2	82	84.6	85.2
Zhambyl province	78.2	79.8	80.9	85.8	85.8	87	88.3
Zhetysu province*	-	-	-	-	85.3	87.1	88.7
Karaganda province*	-	-	-	-	86.2	88.8	90.2
Kostanay province	80.8	82.9	85.8	90.8	90.9	91.7	91.9
Kyzylorda province	78.6	80.1	83.0	89.3	89.4	90.6	91.1
Mangystau province	78.1	78.7	79.6	84.9	86	84.9	85
Pavlodar province	79.6	82.4	83.5	85.1	85.1	86.7	87.7
North Kazakhstan province	74.8	77.1	78.8	80.2	82.1	82.6	82.8
Turkestan province	76.9	77.7	82.1	87.2	89.9	93.9	93.5
Ulytau province*	-	-	-	-	91.8	94.1	91.2
East Kazakhstan province*	-	-	-	-	84.8	87	89.1
Astana city	85.4	88.7	91.3	94.7	95.2	97	97.1
Almaty city	87.2	89.0	91.4	91.5	93.8	95.5	96.9
Shymkent city	80.8	81.5	82.3	87.5	87.5	89.9	90.9

Note - taken from the source <https://stat.gov.kz/>

* These provinces were transformed in 2021, and there are no data on them before 2022.

³⁹ See *ibid*

A substantive analysis of the data in Table 1 shows that Kazakhstan's digital literacy rate increased from 79.6% in 2018 to 91.2% in 2024. Given that this indicator covers the population aged 6 to 74, it is fair to say that nearly the entire population of the country possesses digital technology skills and has access to the internet.

Access to Healthcare and Education

According to the Bureau of National Statistics of Kazakhstan, by the end of 2024, the volume of services provided by healthcare and social service organizations amounted to 1.2 trillion Tenge,⁴⁰ with 52.4% of these services provided by hospitals.

Healthcare organizations, by form of ownership, had the following structure: 63% were state-owned medical organizations, 35% were privately owned, and 2% were foreign-owned. Thus, an analysis of healthcare services indicates that most of them are state-funded (Table 2).

Table 2. Structure of Medical Service Funding in Kazakhstan in 2024, %

Indicator	Total	Government	Population	Private companies
Hospital Services	45.6	53.2	23.7	37.4
Services of Other Hospitals	25.3	29.7	12.9	19.9
General Medical Practice Services	20.0	20.6	19.1	18.4
Other Human Health Services	16.9	12.8	19.2	34.0
Total Services Provided in the Field of Social Services with Accommodation	3.9	5.6	0.5	0.2

Note – from the source <https://stat.gov.kz/>

According to the data in Table 2, the structure of healthcare service expenditures reveals the following: nearly 71% of services were funded by the state budget, the population's funds covered 16%, and private companies accounted for 13%.

Regarding the accessibility of education, data on the population in higher education were analyzed. This analysis does not cover school education data, as Kazakhstan boasts nearly 100% coverage in secondary education. Free school education is guaranteed to every citizen of the Republic of Kazakhstan by the country's Constitution.

Regarding access to education after school (e.g., university studies), we focus on data on the tertiary education sector in Kazakhstan by 2024.

⁴⁰ <https://stat.gov.kz/en/industries/social-statistics/stat-medicine/publications/>

Figure 9 presents data on the gender distribution of students in higher education institutions across the country's provinces as of September 2024 (the start of the academic year in the Republic of Kazakhstan).

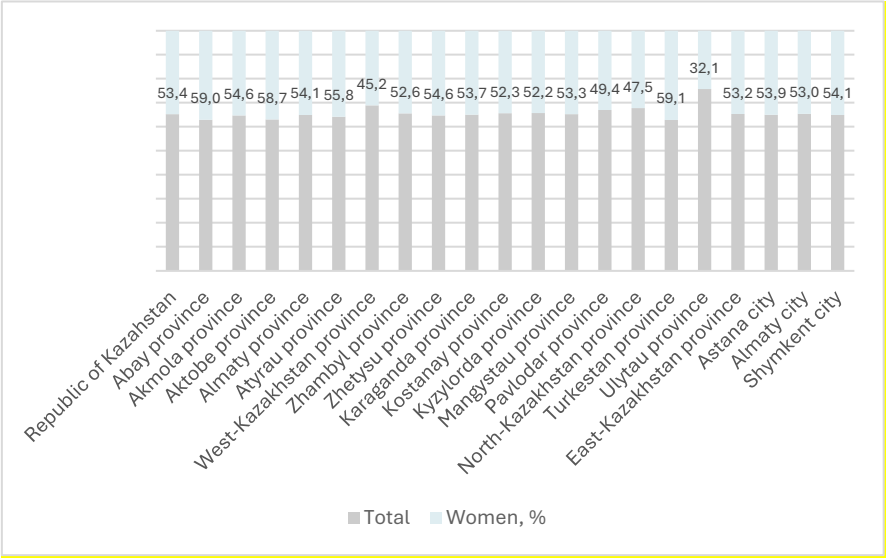


Figure 9 - Gender Structure of Student Enrollment, 2024
 Note: Constructed based on data from <https://stat.gov.kz/>

As the analysis of the diagram in Figure 9 reveals, women's access to higher education in the country's universities, when viewed provincially, shows a participation rate above 50%, with the sole exception of Ulytau Province, which was established only a few years ago.

Based on data concerning the total number of students enrolled at the beginning of September 2024 across all universities in the country, alongside information on the total building area of universities (sq. m.), the area of educational and laboratory buildings (sq. m.), student dormitory space (sq. m.), the book collection in university libraries (number of copies), and the number of computers in universities (including those with internet access), per-student indicators were calculated and are presented in Table 3.

Table 3. Estimated Data on the Provision of Essential Educational Infrastructure for Students in Kazakhstan's Universities, 2024

No.	Indicator	Value
1	Total building area per student, sq. m.	11
2	Number of computers per student, units	0.14
3	Number of computers with access to the Internet per student, units	0.13
4	Library stock per student, copies	120
5	Total area of educational and laboratory buildings per student, sq. m.	5
6	Area of dormitories per student, sq. m.	3

Note - calculated by the authors based on initial data from the source: <https://stat.gov.kz/>

A substantive analysis of the calculated data in Table 3 indicates a relatively low provision of necessary educational infrastructure for students in the country's universities. It is essential to consider certain aspects here: firstly, the calculations did not account for the ratio of out-of-town students to those residing in the university's location who do not require dormitory accommodation, secondly, nor did they factor in the number of students who own personal computers.

Nevertheless, these calculations can be used for a general analysis of student access to educational infrastructure, as the problem of dormitory space shortages is pressing for many universities, especially those located in major cities (Figure 10). In our view, this indicator accurately reflects the reality of providing necessary accommodation for non-local higher education students at the country's universities.

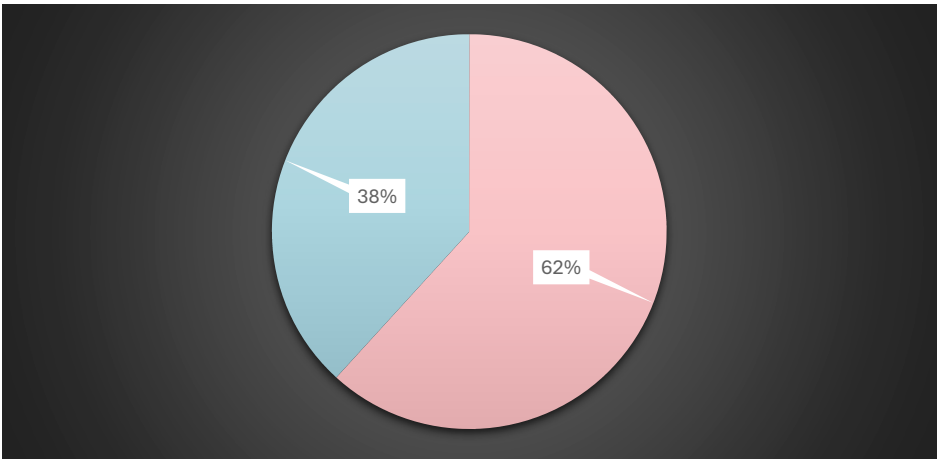


Figure 10 – Percentage of Students Needing and Residing in Dormitories, 2024
Note: Constructed based on data from <https://stat.gov.kz/>

As evident from Figure 10, the provision of essential student housing is low, with the number of students needing housing twice exceeding those who do not. This represents

a pressing issue for universities and Kazakhstan's Ministry of Science and Higher Education. The housing capacity of universities does not meet the actual demand for accommodation among individuals pursuing higher education in the country.

Thus, in this section of the chapter on infrastructure in Kazakhstan, we have selectively analysed specific infrastructure sectors using publicly available data to present a general picture of access. The next chapter will present the findings of a sociological study assessing the impact of corruption on infrastructure access in Kazakhstan's provinces.

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Chapter 5.

Access to Infrastructure and Corruption: A Sociological Study in Kazakhstan

1. Introduction

As we learned from the previous Chapter, the functioning of any economic system is impossible without reliable and efficient infrastructure. Access to infrastructural systems and facilities is crucial for a country's economic growth, reduction of social inequality, and achievement of sustainability. Kazakhstan, a country with a relatively small population (20 million people) occupying a vast territory (the 9th largest in the world), faces the pressing issue of inadequate infrastructure capacity and significant deterioration of existing infrastructure, much of which was built during the Soviet era.

Various studies, both domestic and global, confirm that corruption impedes the resolution of infrastructure issues in Kazakhstan. For example, a Transparency International report indicates that Kazakhstan is among countries with a high level of corruption in the energy sector, construction, and transport infrastructure. A World Bank report (2023) on Central Asia identified deep problems in Kazakhstan regarding the implementation of infrastructure projects: inefficient management and a lack of transparency in contracts for the construction of roads, bridges, and energy facilities. According to their estimates, over 40% of infrastructure projects in Kazakhstan's transport sector face corruption-related problems.

The annual report of the Anti-Corruption Agency of the Republic of Kazakhstan confirmed that the most corrupt crimes in the country occur in the spheres of public administration, construction, and public procurement, which, in turn, significantly impact the implementation of infrastructure projects in the country. OECD experts (2019) concluded that two-thirds of the country's transport infrastructure requires

replacement. Furthermore, a forecast was made that the annual investment deficit in this area would reach \$ 84 billion by 2040.

From the preceding chapters of the book, we learned that corruption hinders the efficient allocation of public resources and creates excessive administrative barriers to obtaining permits for infrastructure access. Transparency International asserts that in countries with high levels of corruption, infrastructure projects lose up to one-third of their budget due to bribery and abuse of power by officials. The fact that corrupt systems often lead to the utilization of low-quality materials and technologies in infrastructure construction results in a reduction in their lifespan and increased future maintenance costs.

The significance of the infrastructure factor can also be delineated by analysing the Global Competitiveness Index (GCI), which is calculated annually by the IMD among 67 countries worldwide and presented at the World Economic Forum.⁴² The GCI is one of the key analytical tools for comprehensive assessment and comparative analysis of institutions, policies, and factors determining countries' productivity and national well-being in the medium and long term. Additionally, the GCI serves as an essential guide for government bodies, investors, and the academic community worldwide, helping them identify strategic priorities for reforming and stimulating economic growth.

In the context of this book, the index is important because its structure assesses the state of infrastructure in a country, as well as the quality of state institutions. Table 1 presents data on the dynamics of Kazakhstan's position in the GCI ranking, also indicating the country's positions by the infrastructure factor (IMD, 2025).

Table 1 - Kazakhstan in the GCI Ranking for Five Years

Year	Position in the GCI Ranking (among 67 countries)	Position by Infrastructure Factor
2020	42	51
2021	35	47
2022	43	46
2023	37	47
2024	35	49

Source: <https://www.imd.org/>

Analysing the data in Table 1, we conclude that these figures are not very favourable for Kazakhstan, especially considering that the global ranking includes 67 countries and

⁴² IMD - International Institute for Management Development.

the maximum index value is 100 points. An analysis of the GCI components revealed that the situation concerning the infrastructure factor has worsened, with a 2-position decrease and a final score of 35.2 points. For comparison, Singapore (1st place in the GCI-2024 ranking) scored 77.1 points for its infrastructure factor, Sweden's infrastructure scored 81.8 points, the USA scored 73.7 points, China scored 68.8 points, and so on. All these values are almost twice, or even higher, than Kazakhstan's infrastructure assessment. Furthermore, according to IMD's assessment, the development of utility and energy infrastructure is one of the main economic challenges currently facing our republic. All of this confirms the poor state and existing problems with access to certain types of infrastructure in Kazakhstan.

Regarding global assessments of corruption for Kazakhstan, the Corruption Perceptions Index (CPI), published annually by Transparency International, serves as a benchmark. In the 2024 global report, Kazakhstan ranked 88th among 180 countries worldwide (Transparency International, 2025). The dynamics of the country's position in the CPI ranking are presented in Figure 1.

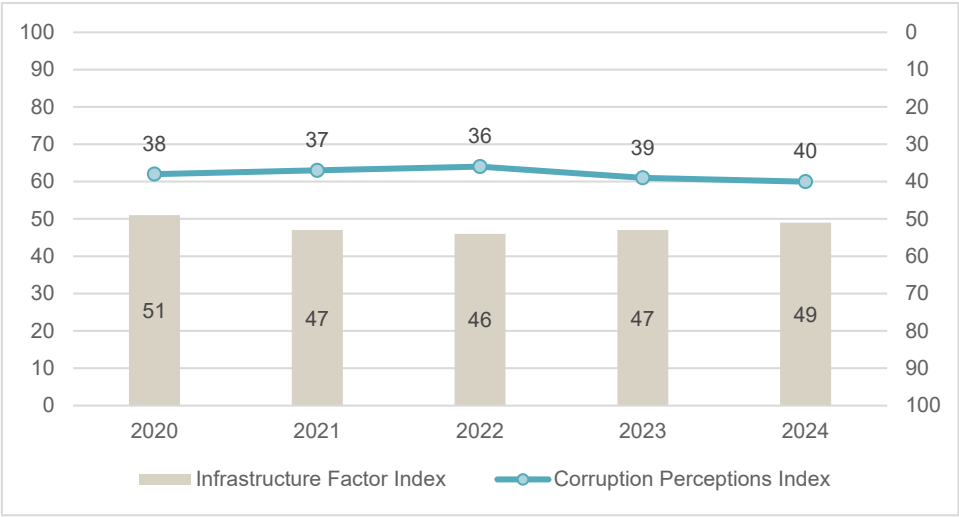


Figure 1 – Interrelationship of CPI with Infrastructure Index for Kazakhstan over five years
Note: Compiled by the authors based on sources: Transparency International, IMD.

As Figure 1 shows, Kazakhstan has only managed to improve its CPI position by 2 points since 2020. According to Transparency International's methodology, a low CPI rating indicates a high level of corruption, while a higher rating signifies a more transparent and "clean" system. Kazakhstan scored 40 out of a possible 100 points;

consequently, the global CPI ranking confirms that it belongs to countries with a high level of corruption.

Continuing our overview of global corruption assessments in Kazakhstan, we will mention another indicator: "Control of Corruption," assessed by the World Bank in its monitoring of government effectiveness worldwide (World Bank, 2023). According to 2023 data, the dynamic of the "Control of Corruption" indicator for Kazakhstan is negative, ranging from -1.2 to -0.2. This leads us to conclude that, as of today, the country's anti-corruption efforts are largely ineffective.

However, it is essential to acknowledge a significant drawback of all global indices: they do not account for countries' varying starting conditions, cultural, or religious differences between Western and Eastern values. Therefore, as many experts believe, it is advisable to complement global statistics with microdata or subjective indices specific to a given country. This is precisely why our research, based on a sociological survey, is essential for a better understanding of the problem and is intended to complement existing domestic studies.

Thus, global statistics indicate that Kazakhstan remains a highly corrupt country, despite its high GDP per capita, which enabled the World Bank to categorize the republic as a middle-income country globally, and despite its substantial mineral wealth and leadership in attracting foreign direct investment (FDI) in the Central Asian region. We believe that corruption, combined with the poor state of infrastructure in the republic, hinders normal business development and leads to ineffective government decisions, slowing the country's economic growth and nullifying the government's efforts to improve the population's welfare.

2. Research Methodology and Data Sources

The primary objective of this study is to assess the perception of corruption by various economic agents in Kazakhstan, particularly regarding access to infrastructure. The study also evaluated their perception of the country's current anti-corruption policy. Three working hypotheses were put forward and subsequently tested.

- Hypothesis 1: In Kazakhstan, there is a tolerant attitude towards corruption, regardless of gender, age, or geographical aspects.
- Hypothesis 2: In Kazakhstan, there is a high probability that a bribe may act as "grease for the wheels" of the country's economic development.

- Hypothesis 3: High levels of corruption, combined with the poor state of infrastructure in the republic, reduce people's trust in anti-corruption policies in Kazakhstan.
- Hypothesis 4: The creation of accessible, transparent, and effective institutions and the development of an ethical culture in Kazakh society will contribute more to the formation of anti-corruption behavior than the “punitive” measures of anti-corruption policy.

For the sociological study, the authors employed quantitative and qualitative analysis methods: a survey and in-depth semi-structured interviews. The interview questions and questionnaire were based on publicly available research reports previously conducted in Kazakhstan and the Central Asian region. Five questions were developed for the interviews, and 13 questions for the questionnaire⁴³. The authors also relied on various global reports that, over the years, highlighted the results of corruption assessments in Kazakhstan.

The survey questionnaire covered the period from April to November 2024. The survey was conducted online, and it was crucial to ensure data confidentiality due to the sensitive nature of the topic of corruption, which most residents of the republic often prefer not to discuss. The issue is that discussing corruption may seem unsafe in Kazakhstan, unlike in other countries, such as those in Europe, due to fear or beliefs about potential negative consequences. In this regard, the survey organizers took all possible steps to ensure the anonymity of the questionnaire and the protection of the personal data of respondents who participated in the survey. All respondents were informed that the information collected was anonymous and would be used solely for the stated purposes of the scientific research.

To address the issue of "survey fatigue," the authors developed a concise questionnaire (Appendix 2) and utilized social media channels accessible to the country's residents for its distribution. Additionally, the questionnaire was compiled and distributed in both Kazakh and Russian: in Kazakh for the convenience of the republic's indigenous residents, and in Russian for other ethnic groups. To improve the representativeness of the sample, an additional study was conducted in December 2024 and January 2025.

The selected sample was formed by targeted distribution of invitations to complete the online questionnaire. Invitations were sent only to respondents with characteristics relevant to the objectives of the ongoing research. The number of respondents totalled 500 people from twenty regions of the country (17 provinces and three cities of

⁴³ See Appendices at the end of the book.

republican significance) and various types of economic activity, following the methodology of the Bureau of National Statistics of the Republic of Kazakhstan.

Due to the significant demographic differentiation of the population by region, it became necessary to combine the 20 regions into five groups: "North," "South," "West," "East," and "Centre." This ensured that economic agents from all regions of the country were covered, taking into account the demographic and age-gender characteristics of the population, as well as the geographical aspect.

It was essential to adhere to the principle of gender equality, as slightly more than half of the respondents were women (51%).

To involve the economically active population in the survey, an age limit of 18 to 63 years was set (the maximum retirement age in Kazakhstan). This allowed the respondents to be distributed into four age groups:

- Group 1 – 18 to 29 years old
- Group 2 – 30 to 49 years old
- Group 3 – 50 to 59 years old
- Group 4 – 60 to 63 years old.

After "cleaning" of empty or incorrectly filled questionnaires, a total of 422 questionnaires were selected for further processing. MS Excel and SPSS were used for primary data processing, while the AI tool was utilized for transcribing interview results.

3. Sociological Study Results

According to the study's findings, over half (57.3%) of respondents admitted that corruption impacts their lives. However, it was also revealed that a third of those surveyed had never encountered corruption (Figure 2).

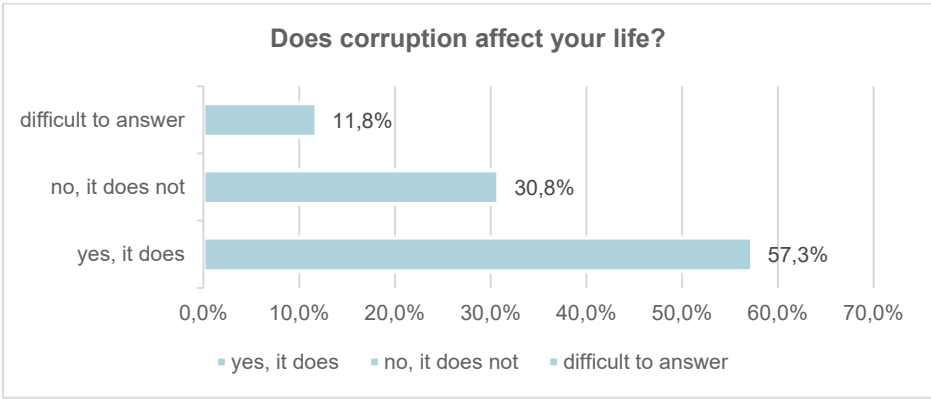


Figure 2 – Distribution of Respondent Answers to the Question:

"Does corruption impact your life?"

The analysis of respondent answers to this question, broken down by age group, is presented in Figure 3⁴⁴.

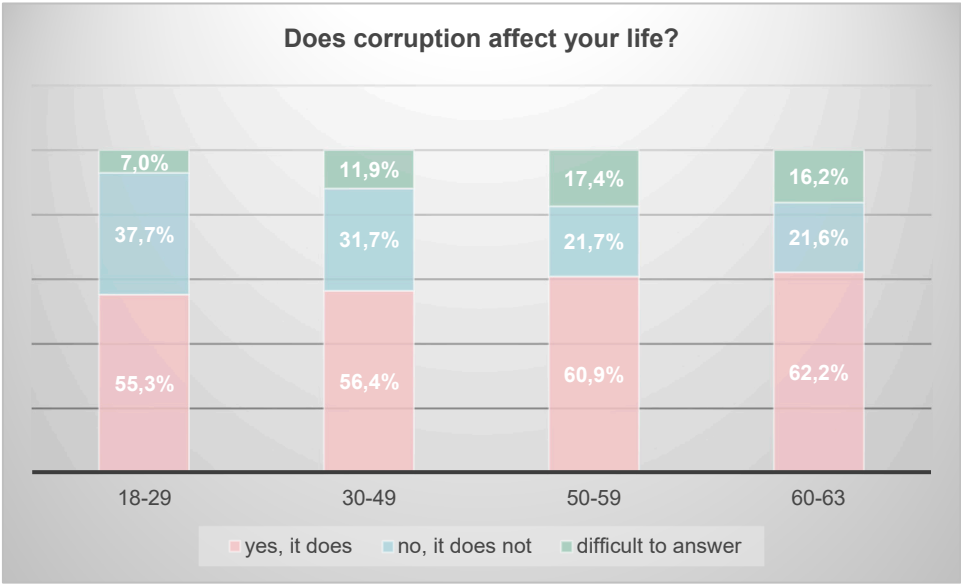


Figure 3 – Distribution of Respondent Answers to the Question:

⁴⁴ It was previously stated that the survey included people from four age groups, ranging from 18 to 63 years old.

"Does corruption impact your life?" by age

The analysis revealed some interesting facts: the older the respondents were, the more frequently they encountered corruption in their lives or found themselves in a corrupt situation. We will see additional confirmation of this later. At the same time, among those who affirmatively stated that corruption does not impact their lives at all, the largest share belonged to the younger generation (under 30 years old). In our view, this could indicate a positive trend and offer hope for a decline in corruption in the future.

At the provincial level, the answers to this question are also noteworthy (Figure 4). All 20 regions of the republic were grouped into five categories: "North," "South," "West," "East," and "Center."

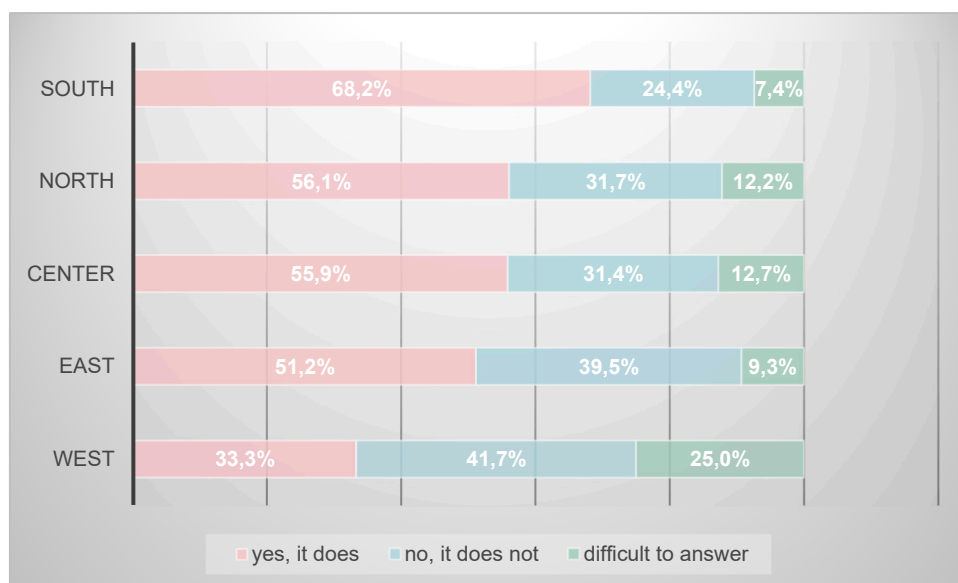


Figure 4 – Distribution of Respondent Answers to the Question:

"Does corruption impact your life?" by region

Analysis of the geographical distribution of respondent answers revealed that people in the northern (44%) and southern (47%) parts of Kazakhstan experienced the impact of corruption more frequently than those in the western and eastern parts of the country.

Furthermore, the ratio of positive to negative responses showed that the western parts had the lowest proportion of respondents who experienced the impact of corruption,

at 8.3%. Simultaneously, a high proportion of people found it difficult to answer (25%) in this region. As is known, large transnational companies engaged in the extraction and development of mineral resources operate in the western part of the country, conducting business according to international standards. Their presence may contribute to the lower perceived influence of corruption in this region.

People's Attitudes Towards Corruption

The next objective of the study was to determine how people perceive corruption. It was found that nearly 80% of respondents who had encountered a corrupt situation perceived corruption in a positive light. In other words, for them, corruption (such as giving bribes or using connections) plays a positive role in resolving necessary issues.

A cross-analysis of respondent answers to questions regarding their attitude towards corruption and its impact on their lives showed the following results (Table 2).

Table 2 – Cross-Analysis of Respondent Perceptions of Corruption's Influence

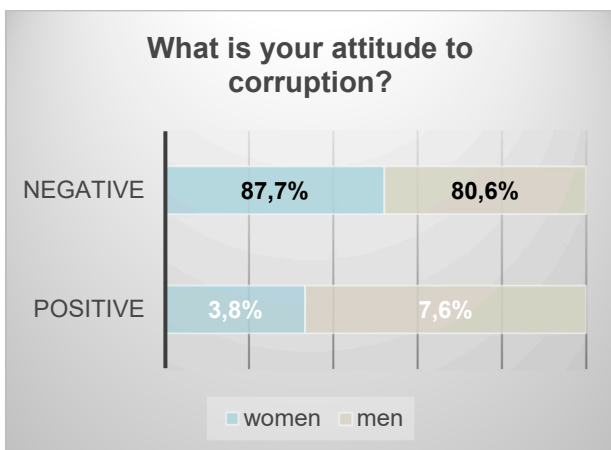
Does corruption affect your life?	What is your attitude to corruption?			
	Positive	Negative	I don't care	Difficult to answer
Yes, it does	55,3%	79,2%	50,0%	76,2%
No, it doesn't	31,5%	20,8%	40,9%	19,0%
Difficult to answer	13,2%	0,0%	9,1%	4,8%
Note: Compiled by the authors using SPSS software.				

The analysis also revealed that, regardless of their personal stance on corruption, all respondents stated that it hurts their lives. Specifically, over half of the respondents (55.3%) who expressed a negative attitude towards any manifestations of corruption still noted its significant influence.

A gender analysis of respondents' attitudes towards corruption and the necessity of combating it showed that men are more tolerant of corruption than women (Figures 5a and 5b). However, among women, there is a high proportion who are pessimistic about the fight against corruption.

The survey revealed that the majority (88%) of respondents unanimously agree that corruption must be fought, with no significant gender or age differences, as shown in Figures 5a and 5b. Nevertheless, some specific details caught our attention.

a)



b)

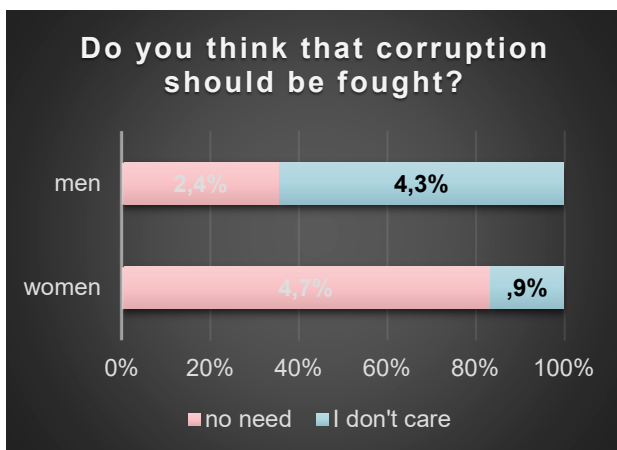


Figure 5 – Ratio of Respondent Answers by Gender

a) Attitude towards manifestations of corruption

b) Necessity of combating corruption

For instance, an analysis of responses by age group revealed that the proportion of older individuals (over 92%) with a negative attitude towards corruption is significantly higher than in other age categories (Figure 6). Conversely, people aged 50 to 59 were found to be the most tolerant of corruption. Indifference towards corruption was most prevalent among younger people (around 8%).

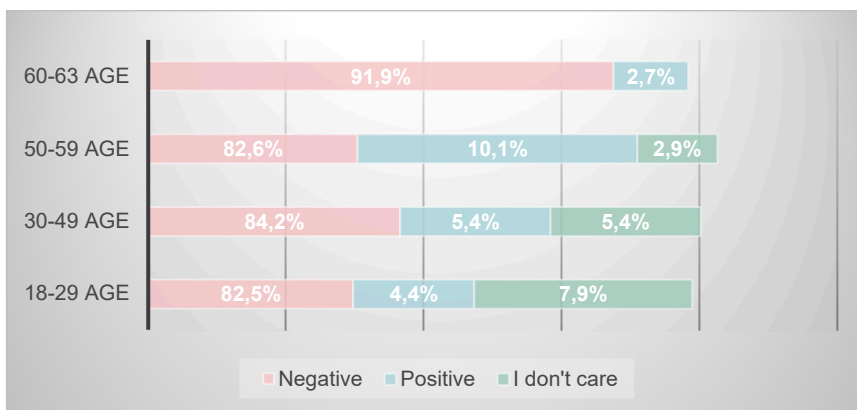


Figure 6 – Distribution of Respondent Answers to the Question:

"What is your attitude towards corruption?" by Age Group

Regional analysis showed that across all regions, the negative attitude towards any manifestation of corruption was approximately similar, ranging from 81% to 88%. As Figure 6 shows, the different groups of people have a positive attitude towards corruption, from 2.7% to 10.1%. The distribution of positive perceptions by regions is presented in Figure 7.

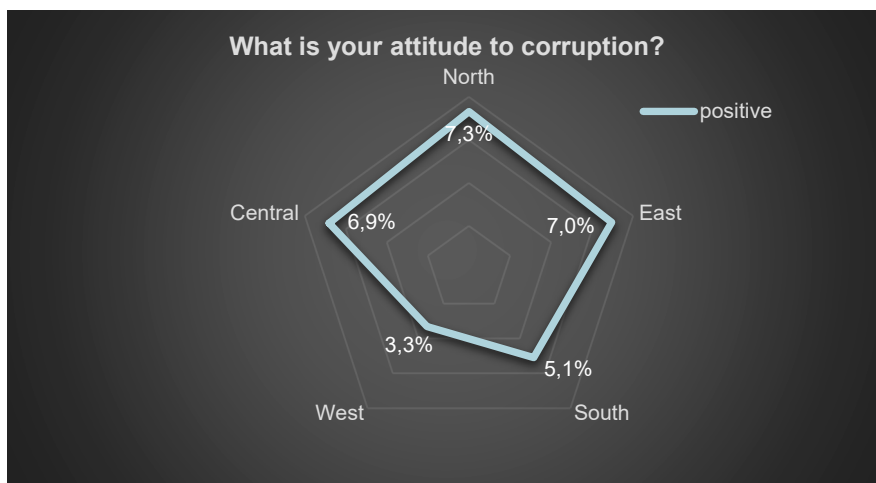


Figure 7 – Distribution of Respondent Answers Positive Towards Corruption Across Five Regional Groups, %

As Figure 7 shows, the most minor proportion of respondents with positive perceptions of corruption (3.3%) was found in Western Kazakhstan. It is well-known that in this region, many oil-extractive transnational and local large companies operate. In our opinion, the international corporate standards of these companies play a positive role in this trend.

Combating Corruption

A cross-analysis of respondent answers revealed that the absolute majority (91%) of respondents who view corruption negatively also believe it's essential to fight it. However, it's concerning that among respondents who are tolerant of corruption, a high proportion (60%) believe there is no need to combat it (Table 3).

Among these groups, there's also a high percentage of respondents who found it difficult to answer. As we mentioned earlier, this could be due to instances where manifestations of corruption become normalized in people's lives. Among those who have a negative attitude towards corruption, nearly a third don't believe in the fight against it. The proportion of people indifferent to corruption is even higher (46%), and they are also completely unconcerned with combating it.

Table 3 – Cross-Analysis of Respondent Answer Distribution, %

Do you think corruption needs to be fought?	What is your attitude to corruption?			
	Positive	Negative	I don't care	Difficult to answer
Definitely	90,6%	2,1%	3,1%	4,2%
No need	26,7%	60,0%	13,3%	0,0%
I don't care	27,3%	18,2%	45,5%	9,1%
Difficult to say	14,3%	35,7%	21,4%	28,6%
Note: Compiled by the authors using SPSS software.				

An analysis of respondent answers regarding the necessity of fighting corruption, broken down by region, is presented in Figure 8.

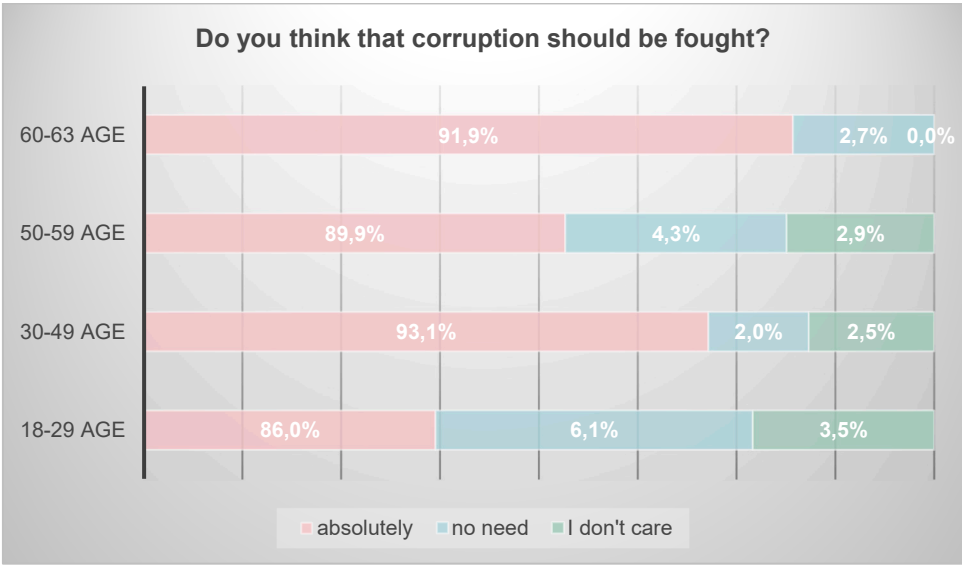


Figure 8 – Distribution of Respondent Answers to the Question:

"Do you think corruption needs to be fought?" by Age Group

Those absolutely confident that corruption must be fought are predominantly individuals aged 30 to 49 (93.1%), as well as older people. Interestingly, among the youth, there is a higher proportion (6%) who do not believe in the fight against corruption.

Most Corrupt Infrastructure Sectors

Responding to the question about which type of infrastructure most frequently involves abuses by officials, most respondents (48%) affirmatively stated it was access to land plots and premises in the regions. This is one of the most pressing problems in the republic, despite Kazakhstan being a country with a vast territory, ranking ninth globally. It is worth noting that the country's population size and urbanization level are relatively low for such an extensive area, resulting in many territories lacking infrastructure and being unsuitable for human habitation and economic development. Consequently, all economic activity and positive demographic trends are concentrated in just three major cities and the south of the country. As noted in a World Bank report, the formalization and registration of land rights are critically significant and highly sensitive, affecting most of the population. Corruption in land management seriously

undermines land reforms and erodes citizens' trust in the government (World Bank, 2020).

Transport infrastructure ranked second at 13%. In the energy grid sector, in 11% of cases, and in logistics, in 10% of cases, issues were resolved only through corruption. According to respondents, the water supply system appeared to be the least corrupt at 5%. Additionally, respondents indicated other areas, such as access to healthcare and education (3%), as well as services from law enforcement and government agencies (3%).

Thus, by assessing the level of corruption perception and people's attitudes towards anti-corruption policy in Kazakhstan, we were able to identify the most corrupt sectors of the republic's infrastructure industry. We could conclude that access to infrastructure in Kazakhstan is limited, which is consistent with IMD's assessment, as we noted earlier.

Corruption Situation: Yes or No

Further analysis was conducted based on respondents' answers to the question of whether they had ever found themselves in corrupt situations, aiming to identify a cause-and-effect relationship. We were interested in understanding what prompted people to enter a corrupt deal or to refuse it, and what results they ultimately achieved.

It turned out that among those who had not encountered a corrupt situation, women outnumbered men by 10%. Also, there were more often young respondents aged 18 to 29 (over 70%). A fifth of men admitted that circumstances forced them into a corrupt deal – this was 6% higher than for women.

A cross-analysis of the respondents' age structure confirmed earlier findings that the older the respondents, the more frequently they encounter corruption compared to younger individuals (Table 4).

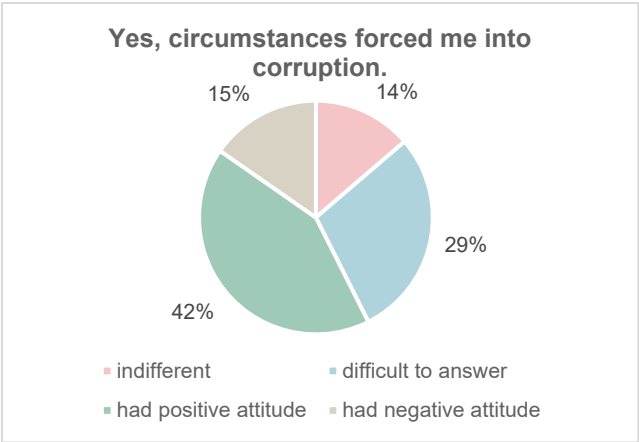
Table 4 – Cross-Analysis of Respondent Answer Distribution, %

Have you ever been in a situation involving corruption?	Age group			
	18-29	30-49	50-59	60-63
No	70,2%	57,4%	43,5%	51,4%
Yes, circumstances forced me into corruption	8,8%	19,8%	20,3%	24,3%
Yes, but I refused.	10,5%	12,4%	17,4%	16,2%
Note: Compiled by the authors using SPSS software.				

Reasons Why People Participated in Corruption Deals

We found that respondents cited "compelling circumstances" as the primary reason for their involvement in corruption. The analysis showed that the proportion of respondents who were compelled to participate in bribery was, as expected, high among those who are tolerant of corruption, over 40% (Figure 9a).

a)



b)

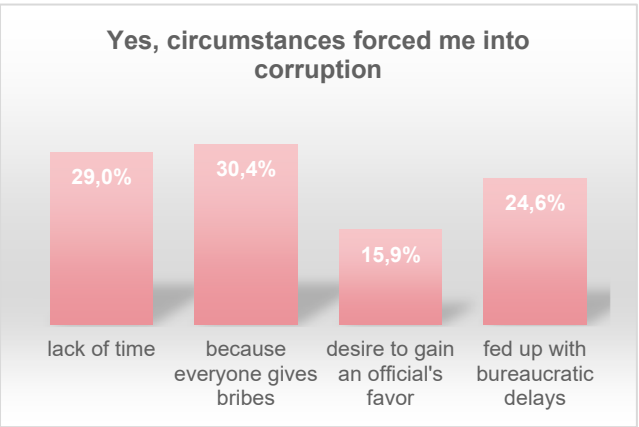


Figure 9 – Distribution of Respondent Answers, %
a) Attitude towards corruption among people compelled to participate in a corrupt deal
b) Reasons for "compelling circumstances" that pushed people into corruption

Figure 9b presents the specific reasons that force respondents to engage in corrupt dealings.

A significant percentage (30.4%) stems from the conscious belief that "everyone gives bribes." Slightly fewer respondents (29%) cited a simple lack of time or an unwillingness to spend time navigating established legal timelines for resolving an issue, while around 25% reported feeling "fatigue" from bureaucracy. Additionally, a considerable number of people (16%) wish to gain the favour of officials and take concrete actions through corruption to resolve their issues.

Overall, we conclude that regardless of their personal stance on corruption, all individuals found themselves in situations where they were compelled to engage in corrupt transactions. This included 13% to 15% of respondents who either held a negative view of corruption or were indifferent to it. Approximately one-third of respondents found it difficult to answer this question, which, in our opinion, may indicate their reluctance to admit involvement in corrupt dealings.

Respondents who encountered a corrupt situation but managed to refuse it were most prevalent in older age groups, specifically those aged 50 to 63 (over 33%). Although young people faced corruption less frequently than others, 10.5% admitted they were offered a way to resolve an issue through it but declined (Figure 10). In turn, middle-aged individuals were less likely to engage in corrupt transactions than younger ones.

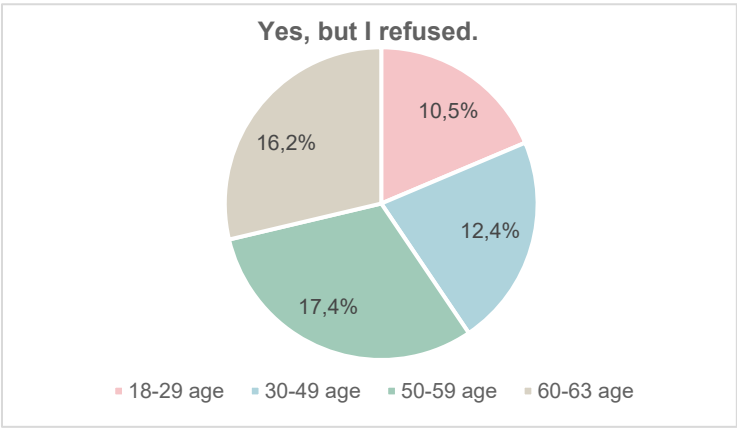


Figure 10 - Distribution of Respondent Answers to the Question:

"Have you ever been in a situation involving corruption?" by Age Group

As Figure 11 illustrates, the survey results show that regionally, the highest proportion of people pushed into participating in corrupt deals due to various circumstances resides in Southern Kazakhstan (51%), while the lowest proportion is in the western part of the country (8%).

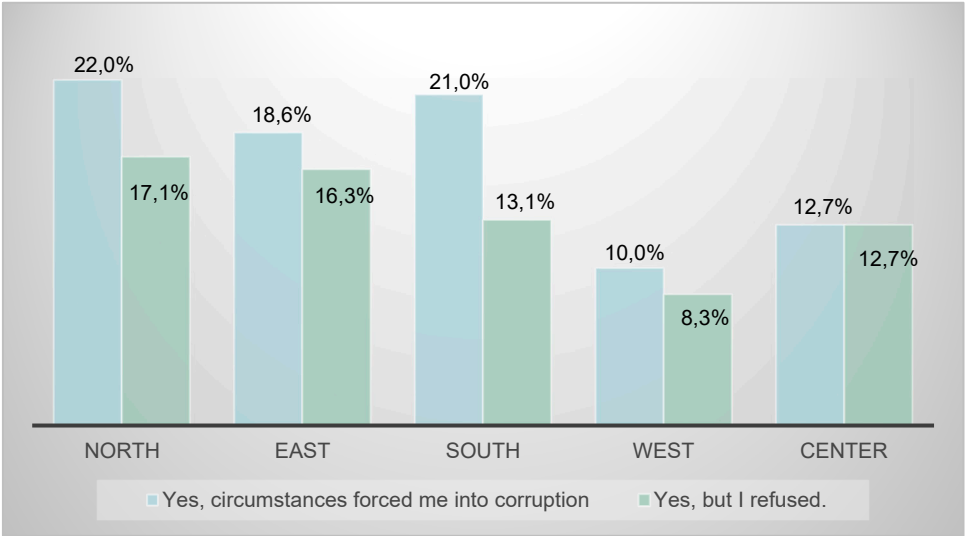


Figure 11 - Distribution of Respondent Answers to the Question

“Have you ever been in a situation involving corruption?” by Region

In the central part of the republic, this figure accounted for almost 18% of the population, with even lower rates in the north and east of the country (11-12%). It's worth noting that the southern provinces of the country have the highest population density. Consequently, a larger number of respondents from these provinces participated in the survey, four times more than from the northern or eastern provinces, and three times more than from the western provinces of the republic.

Accordingly, based on these ratios, we can conclude that the participation of respondents in corrupt transactions is approximately the same in the south, north, and east of the country. Following this logic, it can be confidently stated that respondents in the western part of the republic participated in corruption three times less frequently, and in the central part of Kazakhstan, one and a half times less frequently than in the other regions of the country.

Reasons for Refusing to Participate in Corruption Deals

Alongside the prevalence of corrupt practices, an anti-corruption culture is gradually forming in society, which is reflected in the behaviour of the population when faced with a demand for a bribe. The presented data allow for an analysis of the motivational attitudes underlying the refusal to participate in corrupt transactions (Figure 12).

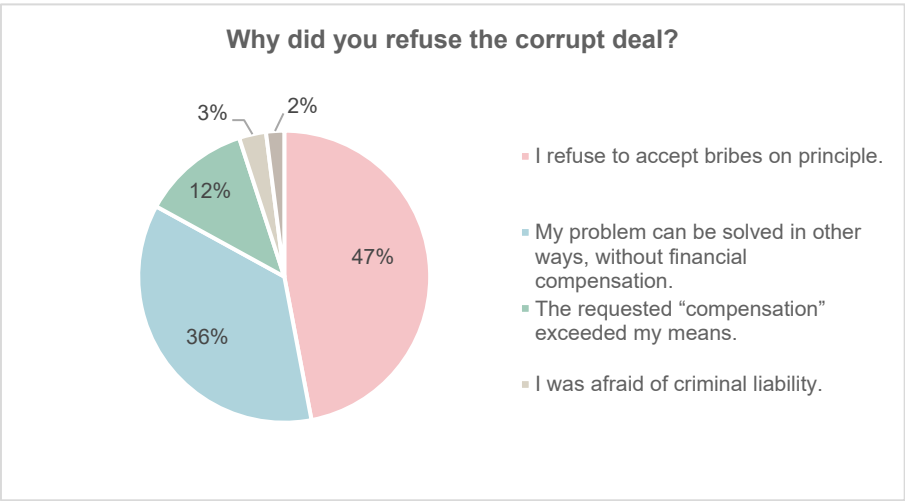


Figure 12 – Structure of Motivation for Refusing to Participate in Corruption Deals, %

The data presented in Figure 12 indicate that the most common reason for refusing a corrupt offer is fear of punishment (42.5%). This suggests that the apprehension of legal consequences, such as fines or imprisonment, plays a significant role in deterring people from engaging in corrupt practices.

The second most important reason is a moral stance (27.5%). This highlights that a substantial portion of the population adheres to ethical principles and is unwilling to participate in corrupt deals, even if it could bring them personal benefit.

Approximately 15% of respondents noted that they do not believe in the effectiveness of corruption. This could be because they feel that corruption does not always lead to the desired outcomes, and the risk of being caught and penalized outweighs the potential gain.

The remaining 15% of respondents cited other reasons for refusing to engage in corruption, such as an unwillingness to support corruption in society or a lack of necessity for corrupt services.

Overall, the data suggest that both deterrents to participating in corruption (fear of punishment, moral principles) and factors contributing to it (belief in its effectiveness) exist within Kazakhstani society.

A substantive analysis of Figure 12 revealed that the most frequent reason respondents gave for refusal was the principled stance of "I do not pay bribes" (47%). This indicates the presence of firm personal convictions that preclude corrupt actions even under administrative pressure. However, a significant alternative motivation for counteracting corrupt schemes was the possibility of resolving the issue through other means (36.1%). This suggests a growing awareness of legal tools for interacting with government agencies and the pursuit of legitimate workarounds.

An analysis of gender differences in motives for refusing corrupt transactions reveals interesting nuances in how men and women perceive and respond to ethical dilemmas. Women are more principled in their stances: 50.5% of women, compared to 42.3% of men, stated "I do not pay bribes." This could indicate a more pronounced ethical stance among women or a greater social acceptance of such a response within the female group. The differences between men and women in this case are confirmed by the results of Pearson's chi-squared test ($\chi^2 = 31.910$; $df = 12$; $p = 0.001$), indicating statistically significant differences in the perception of corruption based on gender.

Men are slightly more likely than women to explain their refusal by the possibility of "resolving it differently" (37.2% versus 35.2%). They also cite the high cost of a bribe more frequently as a deterrent (15.4% of men versus 9.5% of women), which may suggest a more pragmatic or rationalized approach.

Fear of criminal liability as a reason for refusal is cited relatively infrequently, but it still demonstrates gender differences: 3.8% of men versus 1.9% of women (Figure 13). This might suggest greater legal awareness or caution among men in such situations.

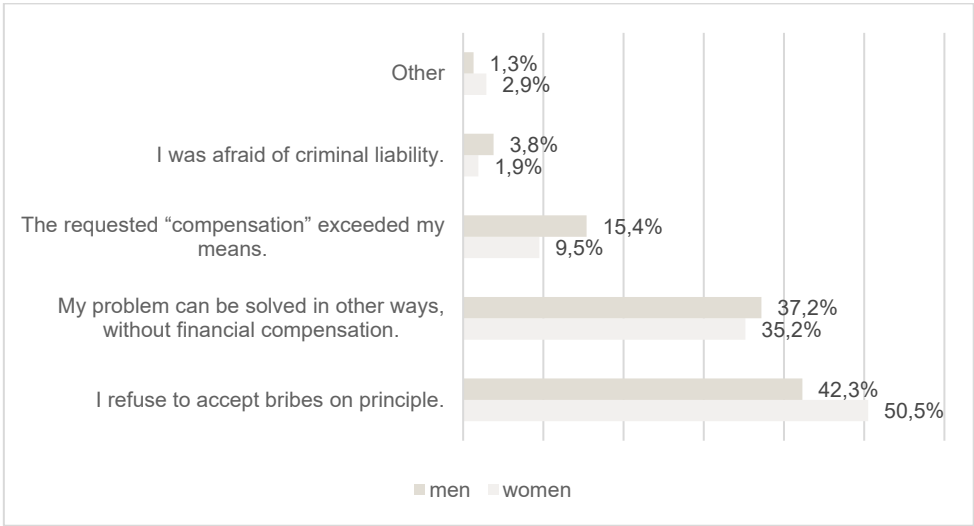


Figure 13 – Motives for Refusing to Participate in Corruption Schemes by Gender, %

A deeper analysis by respondent categories reveals differences in motivation structure. For instance, among those who have never encountered corruption (Figure 14), the principled stance (73.7%) overwhelmingly dominates, while fear of criminal liability is hardly mentioned. This suggests that, in this group, personal convictions rather than external threats are the predominant factor.

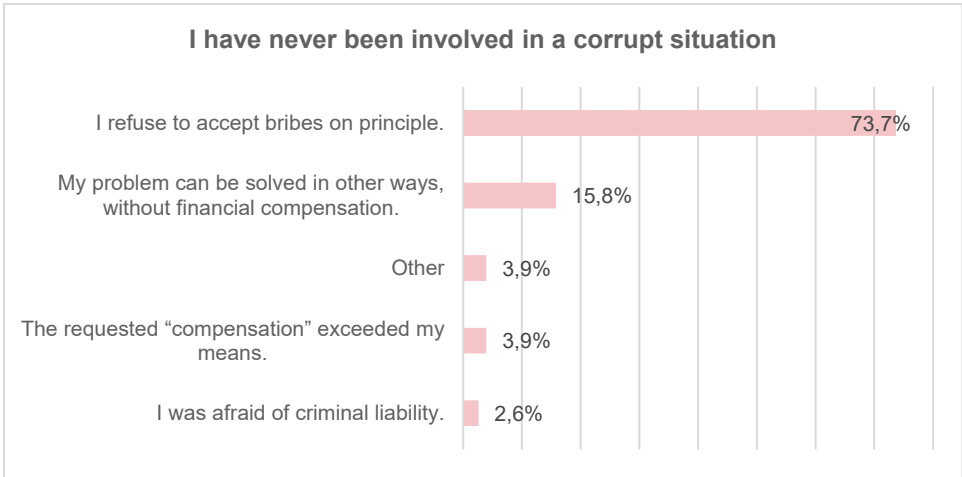


Figure 14 – Motivation Structure for Those Who Have Never Encountered Corruption, %

In contrast, within the group where corruption was perceived as a forced necessity (Figure 15), the motivation becomes more pragmatic: refusal is primarily linked to an inflated cost of the offer (36%) and the possibility of resolving the issue through other means (36%).

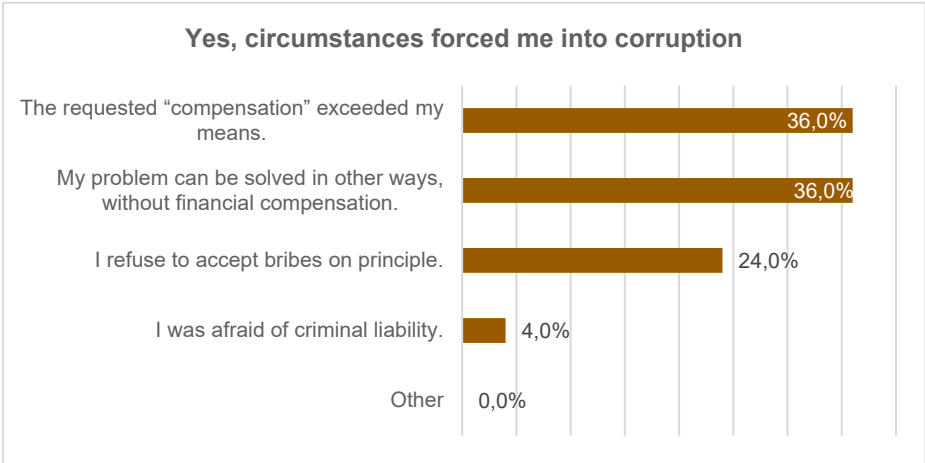


Figure 15 – Motivation Structure for Those Who Were Compelled to Participate in Corruption, %

A group of particular interest consists of those surveyed who refused a bribe despite real pressure (Figure 16). For them, ethical motives (31.3%) combine with a rational strategy of seeking legal alternatives (50%). This may indicate a higher level of legal literacy and the ability to resist corrupt practices by understanding proper procedures and available resources.

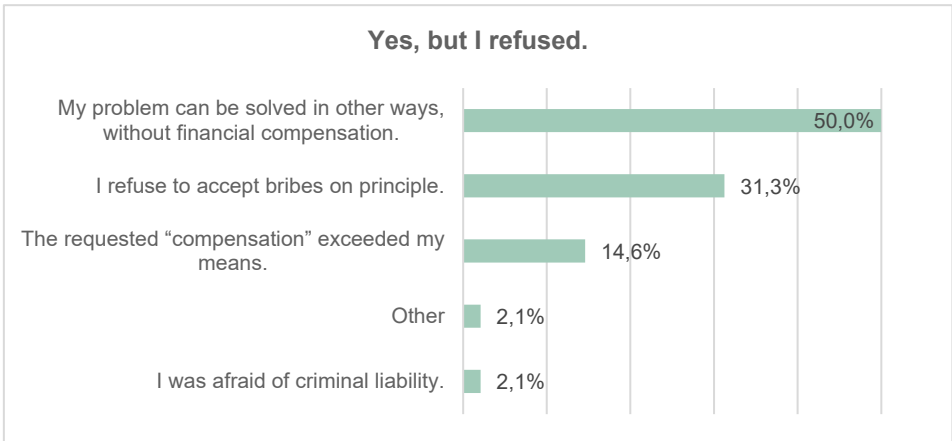


Figure 16 – Motivation Structure for Those Who Encountered Corruption but Managed to Refuse, %

At the same time, it is worth noting that criminal liability is not considered a deterrent in practice: only a few respondents across all categories mentioned it. We concluded that this may indicate a low level of fear of punishment and a weak preventive function of anti-corruption legislation, which demands special attention from state institutions.

Data from the group that recognized the situation as corrupt but did not participate in the transaction (Figure 17) is also interesting. Here, the most significant factor was the ability to avoid a bribe through alternative actions (55.6%), and fear of punishment was not mentioned at all. In this case, anti-corruption behaviour is built more on the possibility of rational circumvention rather than on the pressure of sanctions.

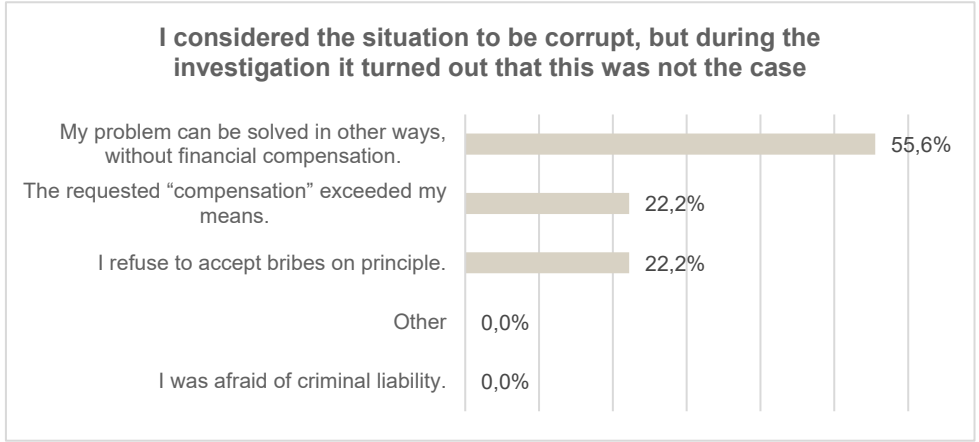


Figure 17 – Motivation Structure for Those Who Recognized Corruption but Did Not Participate, %

Thus, the analysis of motivational attitudes for refusing bribes shows that ethical values and the availability of alternatives remain key determinants of anti-corruption behaviour. This confirms the importance of a comprehensive approach to combating corruption; punitive measures alone are insufficient. Instead, there is a need to develop an institutional environment that provides accessible, transparent, and effective mechanisms for interaction between businesses and the state. Furthermore, supporting an ethical culture through education, public awareness, and public initiatives is crucial.

The age aspect in this matter is also quite interesting (Figure 18).

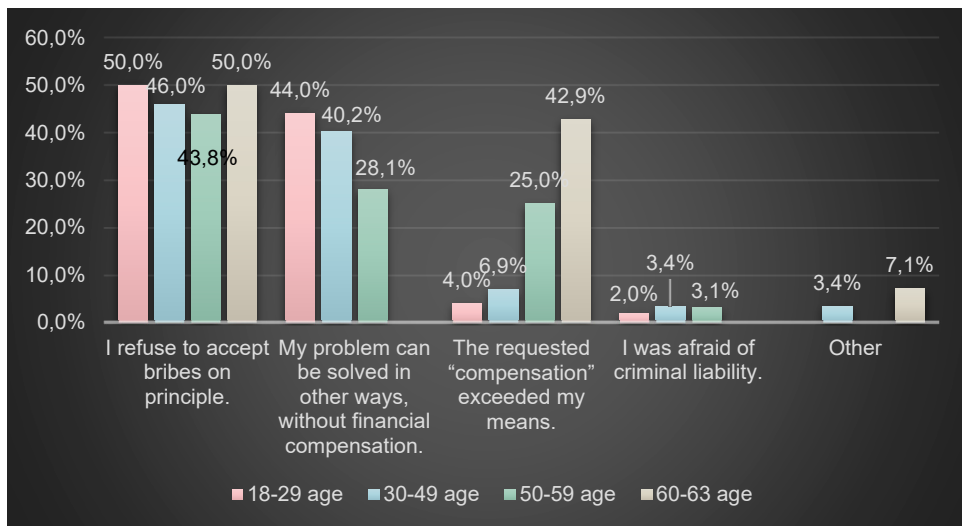


Figure 18 – Motives for Refusing to Participate in Corruption Schemes by Age Group, %

Young people aged 18-29 and older respondents aged 60-63 show a slightly greater principled refusal of corrupt practices: 50% of both age groups stated that they do not pay bribes. Meanwhile, among those aged 30-49, this figure is 46%, and for those 50-59, it is 43.8%. This suggests a varying willingness to refuse based on age, which may be related to life stages, re-evaluation of values, or simply differing attitudes and tolerance levels toward corruption across generations.

It is also interesting to note that the willingness to "solve the issue differently" also decreases with age: from 44% in the 18-29 age group to a complete absence of such responses among respondents aged 60-63. This might indicate a decline in optimism about alternative problem-solving methods with age, or a loss of faith in the effectiveness of legal mechanisms.

The argument "too expensive" was most frequently mentioned by middle-aged and pre-retirement respondents (25% and 42.9% respectively), whereas only 4% of the youth group chose this answer. This is likely because younger respondents encounter corruption less often due to their shorter "adult life experience," while the older generation, entering retirement, assesses their financial expenditures differently.

Thus, age differences reveal both varying levels of principled stance and different reasons for refusing to participate in corrupt practices. Economic barriers are particularly pronounced among the older generation, whereas younger people tend to show a greater belief in alternative solutions.

An analysis of responses to the question, "Was your issue resolved after you refused to participate in a corrupt practice?" showed the following (Figure 19).

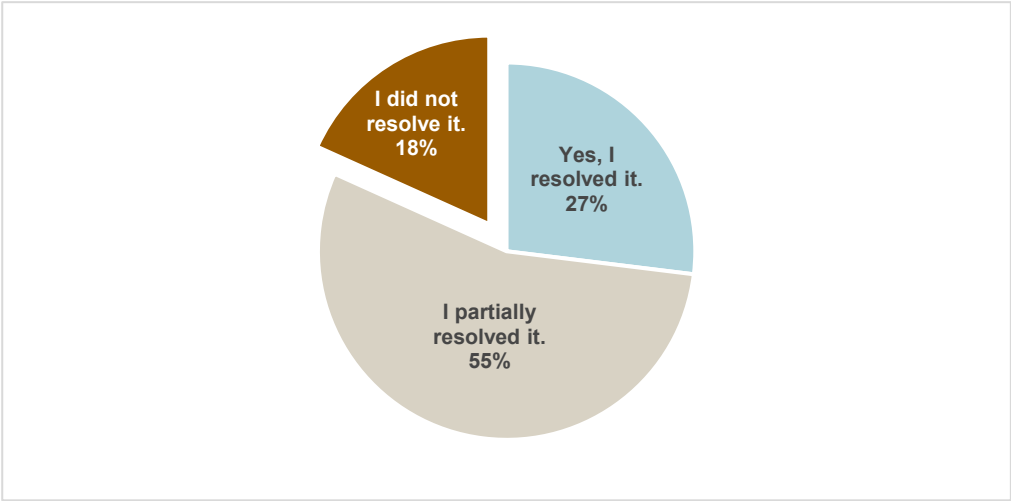


Figure 19 – Distribution of Responses to the Question:

"Was your issue resolved after you refused to participate in a corrupt practice?", %

Even when refusing to pay a bribe, applicants sometimes achieved a positive outcome: out of 115 respondents (27% of the total sample) who provided valid answers, 27% reported their issue was entirely resolved, and for 54.8%, it was partially resolved. Only 18.3% failed to resolve their problem at all.

This indicates that over 80% of cases resulted in either a full or partial resolution without engaging in corruption. Such a result suggests that, despite the prevalence of corrupt practices, there is still room for legal means to protect one's interests, especially if citizens are willing to act persistently and consistently.

However, it is also worth noting the high proportion of skipped answers (35% of those who indicated they had encountered a corrupt situation). This could indicate the sensitivity of the question or the difficulty respondents had in recalling such situations.

According to our study data, the highest proportion of positive outcomes ("issue resolved") is observed in the 18-29 age group (54.5%). In contrast, among respondents aged 30-49, the proportion of such answers is half that of the younger age group, at only 25.5%, and this indicator continues to decrease in older age groups (Figure 20).

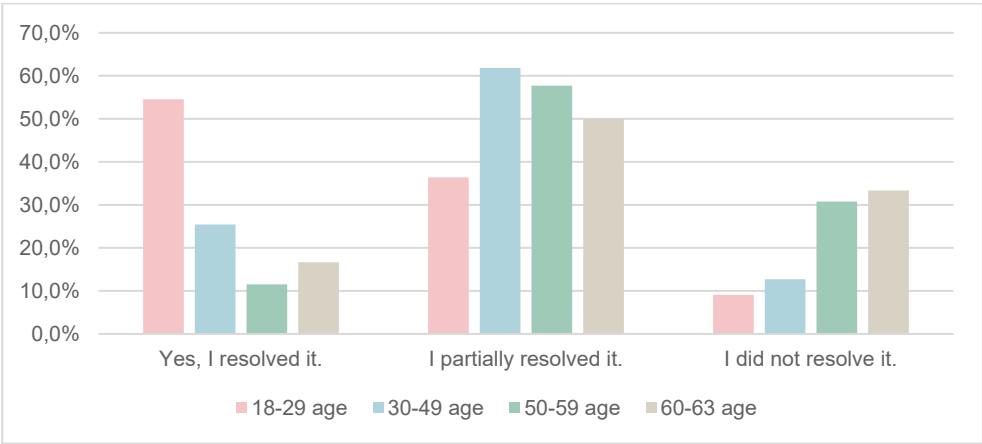


Figure 20 – Distribution of Responses to the Question:

"Was your issue resolved after you refused to participate in corrupt practice?" by age group, %

Conversely, a negative outcome, where the issue "was not resolved," is more common among respondents aged 50-59 (30.8%) and 60-63 (33.3%). This could suggest greater confidence, activity, or adaptability among younger people in asserting their position without resorting to corruption.

Statistical analysis using Pearson's chi-squared test confirmed the significance of these differences: $\chi^2 = 16.628$, $df = 6$, $p = 0.011$, which indicates significant age-related differences in the outcomes of refusing to participate in corrupt schemes.

While there are noticeable differences in responses between men and women, statistical analysis using Pearson's chi-squared test revealed that these differences are not statistically significant: $\chi^2 = 3.681$, $df = 2$, $p = 0.159$.

Therefore, age is a significant factor influencing the outcome of a situation after refusing corrupt practices, while gender differences were not found.

Bribe or Gratitude?

In conclusion, below are the results of a cross-analysis of respondent assessments on whether they consider a reward or gift to an official for a service rendered as a bribe, based on gender (Figure 21), age, and respondent location (Figures 22a and 22b). A "NO" answer to this question means that gifts and rewards given as thanks for a service are NOT considered a bribe in Kazakhstani society.

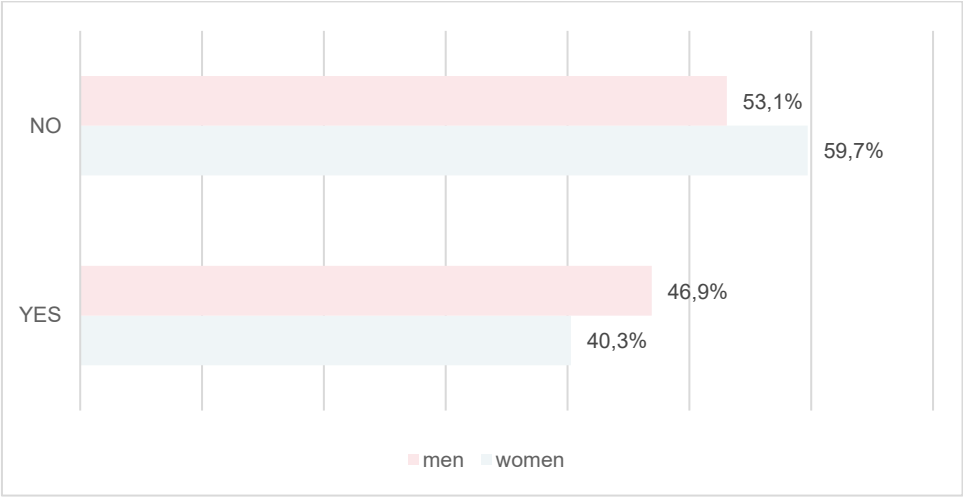
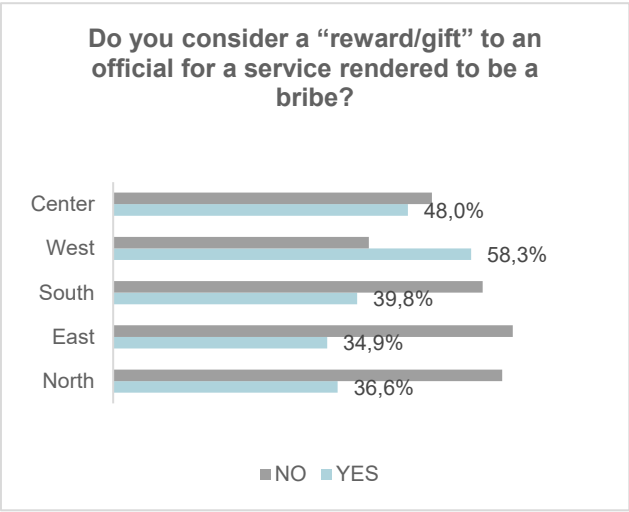


Figure 21 – Distribution of Respondent Answers to the Question "Do you consider a 'reward/gift' to an official for a service rendered a bribe?" by Gender, %

As seen in Figure 22a, a positive attitude towards corruption prevails over a negative one. Notably, the proportion of such respondents is higher among young people.

a)



b)

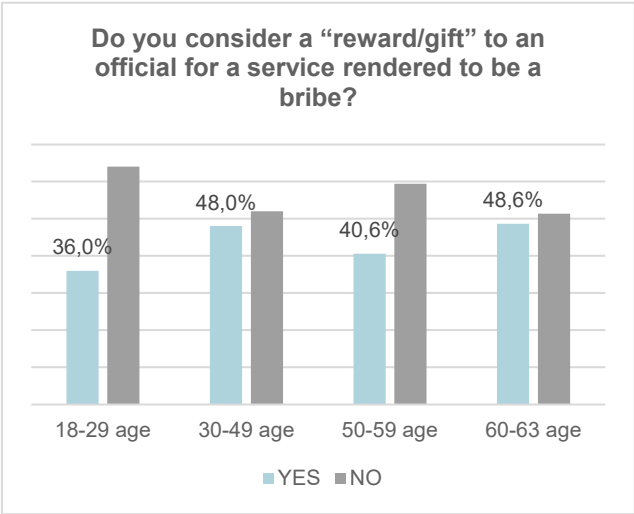


Figure 22 – Cross-Analysis of Respondent Answer Distribution, % a) By Age Group; b) By Region

In terms of regions, as Figure 22b shows, the proportion of those against bribery prevails in Western Kazakhstan (around 60%). Conversely, the share of those who condone bribery is highest in the east and north of the country (64% on average).

Thus, by assessing the level of corruption perception and people's attitudes towards anti-corruption policy in Kazakhstan, we identified the most corrupt sectors of the republic's infrastructure industry. We also evaluated the reasons why corrupt transactions occurred and conducted a thorough analysis of the motives behind respondents' behaviour in various situations.

Reporting Corruption

An analysis of respondent answers to the question of whether they had to report corruption when obtaining permits or access to infrastructure showed that an absolute majority of people did NOT report corruption – 89.1%.

This was expected for us, as the practice of "silence" is widespread in Kazakhstan, and this applies not only to the issue of corruption. In the first chapters of the book, it was argued that under conditions of systemic corruption, people lose trust in state institutions and do not feel safe due to the violation of the rule of law, where laws are applied selectively.

Another apparent reason is the lack of an "anti-corruption culture," meaning a culture of zero tolerance for corruption, where any manifestation of corruption is considered "evil" in people's minds. Furthermore, it is necessary to consider the ingrained stereotypical thinking that informing is a shameful activity, as it was widely believed in Soviet society.

Only 9.7% of respondents admitted to reporting instances of corruption, which may suggest that specific anti-corruption policy measures, such as providing opportunities for people to report corruption anonymously, can be effective. For example, in Kazakhstan, phone numbers for reporting corruption around the clock, free of charge, and most importantly, anonymously, are prominently displayed everywhere (in government buildings, educational and healthcare organizations, workplaces, etc.).

Digitalization and Corruption

Respondents were also asked about the influence of digitalization on reducing corruption – "Is the digitalization of public services in the infrastructure sector a guarantor of transparency in their provision?".

An analysis of the answers provided by the surveyed people yielded mixed results (Figure 23).

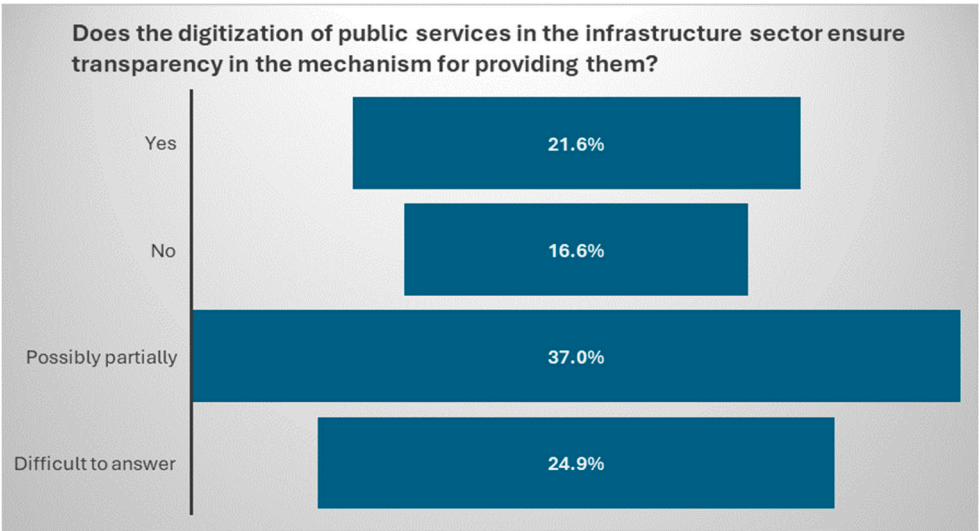


Figure 23 – Distribution of Respondent Answers to the Question: "Does the digitization of public services in the infrastructure sector ensure transparency in the mechanism for providing them?", %

Only a fifth (21.6%) of respondents affirmatively believe that digitalization of public services can increase transparency and thereby reduce corruption in the country.

A larger portion of respondents (37%) think that digitalization can partially increase transparency in the activities of public servants, while about 17% of those surveyed do not believe in it at all. A third of respondents found it difficult to answer.

Such a structure of responses raises questions. On one hand, people actively use e-government online services, and digital technologies have allowed them to reduce direct contact with public servants. The digitalization of public services has significantly contributed to lowering bureaucratic corruption by simplifying many routine activities. At the same time, people expect more effective measures to increase transparency and minimize nepotism and cronyism regarding issues related to land access.

Awareness of Kazakhstan's Anti-Corruption Policy

The final question of the survey was, "Are you familiar with the main measures for combating corruption in our country?"

An analysis of respondent answers revealed interesting facts: only a third of people reported being well-acquainted with the country's anti-corruption measures.

About half (48.6%) of those surveyed admitted to having heard about them, but their knowledge was limited.

Approximately 20% of respondents, or one in five people, reported having no information whatsoever about anti-corruption methods in Kazakhstan.

Such results lead us to conclude that the popularization of anti-corruption measures is not effective enough, and authorities must address this issue.

According to a survey conducted by the Bureau of National Statistics of the Republic of Kazakhstan in April-May 2025, 43.4% of respondents fully trust the anti-corruption service, 32.6% partially trust it, 5.7% tend not to trust it, 5.5% do not trust it, and 12.8% of those surveyed found it difficult to answer.⁴⁵

Recent studies conducted by the Bureau of National Statistics of the Republic of Kazakhstan correlate with our results.⁴⁷ For instance, 12.5% of those surveyed do not

⁴⁵ <https://ranking.kz/reviews/socium/pochemu-kazahstantsy-otkazyvayutsya-doveryat-antikorrupsionnoy-sluzhbe.html>

⁴⁷ <https://ranking.kz/reviews/socium/pochemu-kazahstantsy-otkazyvayutsya-doveryat-antikorrupsionnoy-sluzhbe.html>

believe that the Anti-Corruption Agency can protect them, 11.1% are afraid of its employees, and about 18% accuse the agency of lacking transparency.

Ensuring equal access to infrastructure is a relevant issue not only for developing countries like Kazakhstan but also for developed ones. However, in developed countries, a low level of corruption allows these issues to be resolved effectively. Kazakhstan is considered a highly corrupt country, and corruption hinders the country's economic and social development, despite its high GDP per capita, mineral wealth, and leadership in attracting foreign direct investment in the Central Asian region.

4. Key findings

Thus, this micro-sociological study allows us to analyse the situation of corruption in the case of Kazakhstan more deeply. We achieved the primary objective of this study, and all working hypotheses were tested and confirmed.

The analysis of the research results allowed for the following key findings.

Impact of Corruption on Life in Kazakhstan

Over half of the surveyed respondents across all regions of the country admitted that corruption impacts their lives to varying degrees. Men experienced the influence of corruption more than women. The older the respondents, the more frequently they encounter corrupt transactions. Regionally, residents of the southern part of the country were most affected by corruption (two-thirds of respondents), although population density in this region is also significantly higher. In the north, east, and central parts of Kazakhstan, the influence of corruption is slightly weaker than in the south but significantly stronger (more than half of those surveyed) than in the west of the country.

Low Trust in Anti-Corruption Policy in Kazakhstan

We confirmed that public trust in anti-corruption policy in Kazakhstan is low. Although the survey showed almost unanimous agreement on the need to combat corruption in the country (with over 90% of respondents), a significant number of them (a third of respondents) do not believe in the effectiveness of the fight against corruption in Kazakhstan. A concerning fact is that more than half (60%) of people

tolerant of corruption are convinced that there is no need to fight it. The proportion of people indifferent to corruption (46%), who are also completely unconcerned with combating it, is even higher. All of this suggests the limited effectiveness of anti-corruption policies in Kazakhstan.

Tolerance Towards Bribes

A large proportion of respondents were tolerant of bribes; moreover, they do not consider gifts and rewards to officials for their services as bribes. The proportion of people tolerant of corruption is high among those aged 50 to 59, and they were also most likely to encounter corrupt situations. In the northern and eastern regions of Kazakhstan, people are more likely to be inclined towards corruption than in other parts of the country. The positive perception of corruption was lowest in the western provinces of the republic.

Most Corrupt Infrastructure Sectors in Kazakhstan

By assessing the level of corruption perception and people's attitudes towards anti-corruption policy in Kazakhstan, we identified the most corrupt sectors of the republic's infrastructure industry and evaluated the reasons for corrupt transactions. Every second respondent stated they encountered corruption when obtaining access to and processing permits for land. Following this, the transport infrastructure remains the most corrupt, as stated in previous studies by international organizations. Problems with corruption are also observed in energy infrastructure, which aligns with the World Bank's global energy report (2024). Obtaining access to the water supply system was found to be the least corrupt of the three.

Reasons for Forced Participation in Corruption

The primary reasons for forced involvement in corrupt transactions were the Soviet-era stereotype that giving bribes is the standard, people's unwillingness to spend time waiting despite legally established deadlines, and "bureaucracy fatigue." In this regard, we dare to suggest that for Kazakhstan, the hypothesis of corruption as "grease for the wheels" is a working one.

Motivation for Refusing Corruption

Analysis reveals that ethical values and the availability of alternatives are key to refusing bribes. This necessitates a comprehensive approach to combating corruption, encompassing not only punitive measures but also the development of transparent mechanisms for interacting with the state, as well as ethical education. Age influences the reasons for refusal: older generations are more often faced with economic barriers, while younger people have greater faith in alternative solutions. Gender differences are absent in such situations.

Thus, the sociological study of the interrelationship between corruption and access to infrastructure allowed us to assess the overall picture of this issue in Kazakhstan. Through the survey, the authors attempted to evaluate the impact of corruption on daily life and access to infrastructure in the country's regions.

Overall, we believe that corruption, combined with the poor state of infrastructure in the republic, hinders normal business development and slows down the country's economic growth, leading to ineffective government decisions and anti-corruption measures.

Nevertheless, the intensified mass digitalization in public service provision after the COVID-19 pandemic, as well as the successful functioning of e-government eGov.kz, the development of the "listening state" reform, and the new anti-corruption law, should enhance information transparency and the effectiveness of government bodies in the republic.

The authors are convinced that the practical results of this study will be of interest to government decision-makers, foreign investors, and local businesses and will be helpful to researchers across a wide range of fields.

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Conclusion

Corruption in the modern world remains one of the most acute and systemic problems hindering the sustainable socio-economic development of nations. In the inevitable transformation of economic systems, increasing international competition, and the digitalization of governance, the study of institutional and infrastructural factors contributing to the spread of corrupt practices takes on particular significance. Kazakhstan, as a country with a transitional economy and active efforts to modernize public administration, offers a unique space for analyzing these processes.

Often, imperfect institutions, limited access to quality infrastructure, and uneven regional development create fertile ground for the formation of shadow schemes and abuses. Corruption, in turn, not only undermines trust in authority and legal mechanisms but also significantly stifles investment activity, limits entrepreneurial development, and exacerbates social inequality.

Kazakhstan, like many other countries, faces the urgent task of developing new anti-corruption policy strategies based on a comprehensive understanding of the factors that influence corruption risks. In particular, the interrelationship between economic interests, institutional costs, and access to basic infrastructure warrants more thorough theoretical and empirical examination.

In this regard, the study of corruption in the context of institutional imperfections and infrastructural limitations is not only scientifically significant but also practically demanded. Its results can serve as a basis for developing practical solutions aimed at increasing transparency, institutional stability, and economic investment attractiveness.

This study is dedicated to a systemic analysis of the impact of corruption on the development of institutions and infrastructure, as well as on the sustainability of economic growth in Kazakhstan. The book draws on modern theoretical concepts, empirical data, and case studies, which allow not only for identifying key dependencies but also for proposing directions for institutional and structural reform.

There are many forms of corruption in a society's life that we attempted to investigate in the first chapter of the book. We classified the forms of bribery and systematized the

conceptual and categorization apparatus of the corruption phenomenon from the perspective of economic studies.

Corruption, as emphasized in the second chapter, represents not only a legal offense but also a form of informal institutional practices rooted in the socio-economic context. Through the lens of economic theory, the ability of corruption to transform agent behavior, reduce the efficiency of resource allocation, and hinder innovative development has been demonstrated. In conditions of weak institutions, it becomes an adaptive mechanism that substitutes for legal procedures. Thus, the fight against corruption requires institutional renewal rather than merely repressive measures.

In the third chapter, we examined the institutional traps that society falls into when there is a lack of political will, weak law enforcement, and a failure to hold individuals accountable for violating norms. The imperfection of institutions leads to the reproduction of inequality, a decrease in trust, legal nihilism, and political apathy. The analysis demonstrates that the inefficiency of the judicial system, the absence of independent regulators, and the monopolization of power create a stable environment for corrupt behavior. The development of a rule of law state is impossible without a reform of institutions of accountability and transparency.

The third part of the book focuses on infrastructure as a strategic basis for development. It is demonstrated that access to high-quality infrastructure (transport, energy, digital) significantly influences the opportunities for regions to achieve economic growth and social integration. At the same time, infrastructural projects under conditions of corruption lose their effectiveness, as deadlines, quality, and public trust suffer. This is especially true for public procurement, where corruption risks are high. The absence of transparent procedures leads to the misuse of funds and a deterioration of the investment climate.

The chapter dedicated to access to infrastructure is supported by empirical analysis. Based on a conducted sociological survey, barriers faced by entrepreneurs and citizens were identified, including administrative obstacles, selective decision-making, and direct corruption when accessing resources. The analysis of the research results showed that residents of rural and remote areas are particularly susceptible to infrastructural discrimination, which exacerbates regional inequality. The population notes high transaction costs associated with "informal" access to basic services.

The key conclusion of the study is that corruption and unequal access to infrastructure contribute to institutional inertia, which hinders sustainable development. These phenomena should not be considered in isolation, but rather as interconnected elements of a comprehensive system. Solutions must lie simultaneously in the legal,

economic, and social spheres: strengthening judicial independence, digitalizing public services, ensuring budgetary transparency, and developing civic control.

Thus, the fight against corruption is impossible without the participation of all segments of society. It is a long and complex process that requires not only reforms but also a change in societal attitudes. It is essential to foster a culture of intolerance towards corruption, support public initiatives, and create institutions that will work in the interests of the majority, not privileged groups. Only in this case can one count on the formation of a competitive, fair, and sustainable economy.

It was an economist's view on the corruption phenomenon, which differs from others' understanding of it. We considered the process of corruption born through institutional and market asymmetry, and show our research results, which we conducted in Kazakhstan. It is another valuable opportunity to focus our attention on the significance of studying corruption issues in the Central Asia region.

Appendix 1

Questions for an in-depth interview

Dear respondent!

Thank you for agreeing to participate in a study on the relationship between access to infrastructure and corruption in the Republic of Kazakhstan, conducted by a research group from the university.

Your answers will help inform the expert community's opinion on reducing corruption when accessing infrastructure in Kazakhstan.

The information will be used only in a generalized statistical form, and anonymity and confidentiality are guaranteed.

Thank you for your time!

1. Does corruption have an impact on your life? Why? How does it affect you?
2. What are the THREE most important factors for reducing corruption in Kazakhstan?
3. Do you think that corruption should be combated?
 - Why do you think that is? Name the main reasons.
 - What solutions can there be for this?
4. Now I would like to discuss access to infrastructure.

- How would you rate access to the power grid? Are there any difficulties for businesses and the public in this area? What are the difficulties? How could they be overcome?
 - What about the situation in your industry/region with the acquisition of land (or lease) for business, production, and personal goals? What are the difficulties? Is it expensive? Is there any land at all?
 - As a rule, there is also the question of connecting to water... How are things going in your region?
 - Transportation and warehousing. How do they currently affect the livelihoods of the population and businesses? Are there any special features here?
5. **Have you ever reported cases of corruption when obtaining permits or access to infrastructure?**
- If so, how often? What feelings did you feel at the same time? Was there fear, for example?
 - If not, why not? Don't you trust it? To whom?
 - Do you think the use of digital (information) technologies can help reduce corruption in the country? Can you provide examples, both positive and negative?

Appendix 2

Questions for the survey

According to the legislation, *corruption* is the illegal use by government and other officials of their official powers and related opportunities to obtain or extract, personally or through intermediaries, property and non-property benefits and advantages for themselves or third parties, as well as bribery of these persons by providing benefits and advantages. Corruption can manifest itself in various forms, including the abuse of official position and/or authority, the giving and/or receiving of bribes, commercial bribery, or other illegal activities.

Survey form

Dear respondent!

We invite you to participate in a small-scale sociological study examining the relationship between corruption and access to infrastructure in Kazakhstan.

Well-developed infrastructure (electricity, water, land, transport, logistics) facilitates business and improves the quality of life of the population. However, the prevalence of corruption (in the form of abuse of office and/or authority, giving and/or receiving bribes, commercial bribery, or other illegal forms) in obtaining permits and accessing infrastructure exacerbates inequality and hinders the country's economic development and sustainable growth.

Therefore, this study aims to identify the forms and mechanisms of corruption in accessing Kazakhstan's infrastructure. This survey will enable us to address a research problem within the context of a scientific project being conducted by scientists.

The questionnaire is anonymous and does not include your name. All received data will be used only in a generalized form. Your opinion is critical to us!

GENERAL INFORMATION

Your gender

- Male
- Female

Your age

- 18 – 29 years
- 30 – 49 years
- 50 – 59 years
- 60 years and older

The region where your business is located

Abai

Akmola

Aktobe

Almaty

Atyrau

East Kazakhstan

Zhambyl

Zhetysu

West Kazakhstan

Karaganda

Kostanay

Kyzylorda

Mangystau

Pavlodar

North Kazakhstan

Turkestan

Ulytau

Astana city

Almaty city

Shymkent city

QUESTIONS

1. Does corruption have an impact on your life? (Check one answer option)

- Yes, it does
- No, it doesn't.
- Has little impact
- I find it difficult to answer.

2. What are your thoughts on corruption? (Check one answer option)

- Negatively, I do not agree with any facts of its manifestation
- Positively, as it allows you to resolve any issues quickly.
- I do not care
- I find it difficult to answer

3. Do you think that corruption should be combated? (Check one answer option)

- It is necessary to fight
- There is no need to fight corruption
- I do not care
- I find it difficult to answer

4. In your opinion, in which type of infrastructure are the most frequent manifestations of abuse among officials? (Check one answer option)

- Connection to power grids
- Water supply system
- Allocation of land plots and premises
- Transport infrastructure
- Logistics
- other (please specify)_____

5. Have you ever been in a corrupt situation when accessing infrastructure or obtaining permits? (Check one answer option)

- No, never
- Yes, I was forced by circumstances (answer question 6)
- Yes, but I refused (answer questions 7, 8)
- I considered the situation corrupt, and it turned out during the trial that it was not
- I find it difficult to answer

6. What was the reason that pushed you to find yourself in a corrupt situation? (Check one answer option)

- lack of time or opportunity to solve the problem legally
- because everything is given "on the paw", so it is accepted
- the desire to gain favor or better work from an official
- tired of delays on the part of the official (he extorted a "reward")
- other (please specify)_____

7. Why did you reject the corrupt deal? (Check one answer option)

- As a matter of principle, I do not give a "paw"
- My problem can be solved in other ways, without financial reward.
- other (please specify)_____
- The required "reward" was "beyond my means"
- I was afraid of criminal liability

8. Has your issue been resolved after you rejected the corrupt deal? (Check one answer option)

- Yes, I have decided
- Did it work out, but partially, or did it take a longer time

- No, I haven't decided.

9. How often have you come across unfair performance of their duties by officials when accessing the infrastructure? (Check one answer option)

- sometimes
- constantly
- very rarely
- never

10. Do you consider it a bribe to reward an employee of a government agency as a sign of gratitude for a quality service provided?

- no
- yes

11. Have you ever reported cases of corruption when accessing infrastructure or obtaining permits? (Check one answer option)

- Yes
- No
- Other (please specify) _____

12. Is the digitization of public services in the field of infrastructure a guarantee of transparency in the mechanism of their provision? (Check one answer option)

- Yes
- No
- Maybe partially
- I find it difficult to answer

13. Are you familiar with the main anti-corruption measures in our country? (Check one answer option)

- Yes, I know them well.
- I know a little bit about anti-corruption measures.
- No, I don't have any information about anti-corruption measures.

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Corruption in Context

Corruption is one of the most pressing and systemic issues of the 21st century, significantly hindering sustainable socio-economic development across nations. It undermines trust in authorities and legal institutions, which in turn diminishes investment activities, restricts entrepreneurial growth, and exacerbates social inequality. Kazakhstan, as a country actively working to modernize public administration in the Central Asian region, provides a unique context for analyzing these issues. Thus, studying corruption in Kazakhstan – within the framework of imperfect institutions, limited access to quality infrastructure, and uneven regional development – holds both scientific significance and practical relevance. The republic faces an urgent challenge: to develop new anti-corruption policy strategies grounded in a comprehensive understanding of the factors influencing corruption risks. This research aims to systematically analyze the impact of corruption on institutional and infrastructural development, utilizing contemporary theoretical concepts, empirical data, and case studies from Kazakhstan. This research report has been supported by funding from the Science Committee of the Ministry of Science and Higher Education of the Republic of Kazakhstan (Grant No. AP19680320) and the financial support from the European Commission's Horizon MSCA Staff Exchanges projects, MOCCA (Project No. 101085855) and MARS (Project No. 101130177).

