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IMPROVEMENT OF THE ORGANIZATIONAL STRUCTURE OF THE NSI – PROBLEMS AND PROSPECTS

ABSTRACT

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CONTENT

I. GENERAL CHARACTERISTICS OF THE DISSERTATION

1. Relevance of the topic

In the global information space, the demand for comprehensive analyses of the economic, social, and demographic conditions of nations, their developmental trends, and the factors influencing them continues to grow. Consequently, the need for accurate and detailed statistical information is increasingly critical. Providing reliable, sufficient, diverse, detailed, and comparable statistical data represents a fundamental responsibility of a country's statistical authority.

In Bulgaria, statistical surveys conducted by the National Statistical Institute (NSI) and related statistical authorities serve as the primary source of information on economic and social phenomena and processes. The organizational structure of the NSI plays a pivotal role in ensuring the effective performance of its functions through the rational allocation and utilization of resources.

A comprehensive analysis of the state and development of the organizational structure of the National Statistical Institute is warranted, given the dynamic changes the institution has undergone in recent years. These changes are aligned with contemporary standards aimed at enhancing access to statistical data, integrating advancements in information and communication technologies, reducing the burden on respondents, improving data quality, and increasing user satisfaction.

To address the rising demand for statistical information, the NSI has undergone numerous transformations throughout its history. These include adjustments to its functional and organizational structure, modifications to its name and administrative subordination, advancements in resource provision, and the adoption of updated research methodologies. In the current context, evolving user requirements and the widespread adoption of information and communication technologies necessitate further restructuring of the NSI, both at the Central Government level and within the Territorial Statistical Offices.

2. Object and subject of the study

The object of the study is the organizational structure of the National Statistical Institute (NSI). This includes examining changes in the institution’s administrative subordination, the constituent elements of its structure, and the interaction mechanism between the central government and the territorial structures of the NSI.

The subject of the study focuses on the transformations in the organizational structure of the NSI and the evaluation of the resource provision supporting activities of the NSI with staff.

3. Purpose of the dissertation

The purpose of the dissertation is to analyze and evaluate the changes in the organizational structure of the National Statistical Institute (NSI) and its resource provision in terms of personnel. The study aims to identify patterns and uncover structural changes in the composition of the NSI's workforce, focusing on educational qualifications and age distribution.

4. Objectives and methodology of the study

To fulfill the goal, the following **research tasks have been set**:

- **First**, clarification of the essence and elements of the organizational structure of management and derivation of its main parameters and characteristics.
- **Secondly**, conducting a retrospective review of the establishment and functioning of the State Statistical Authority of Bulgaria and characterizing the place and role of the NSI in the national and European statistical system.
- **Thirdly**, clarification of the main aspects of the organizational structure of the NSI and tracking the changes in the organizational structure of the NSI for the period 2003-2024.
- **Fourth**, identification and modeling of trends in the change of NSI staff in general, by education and age.
- **Fifth,** analyzing the educational and age structure of the NSI staff.

5. Research thesis

The author's research thesis asserts that for the production of high-quality and reliable statistical information, the National Statistical Institute (NSI) must maintain an organizational structure that is both contemporary and adaptable to changes driven by the rapid advancement of information and communication technologies (ICT). In addition to producing statistical data through traditional methods, it is essential to broaden its scope of activities, including data validation derived from alternative sources such as administrative data, Big Data, smart statistics, and other innovative approaches.

This presents new challenges for NSI management in terms of integrating ICT advancements, enhancing existing information systems, improving the quality of statistical information, and increasing user satisfaction. Furthermore, efforts must be made to reduce the workload of respondents while ensuring the organization's activities and processes are staffed with highly educated, competent, and responsible specialists with specific professional expertise and knowledge.

Information base

The study is based on a study of official statistical documents – decrees, laws, regulations, policies, programs, archival materials and other documents, publications dedicated to anniversaries of the establishment of the Bulgarian state statistics, the strategies for the development of the National Statistical System of the Republic of Bulgaria and the reports on the implementation of the National Statistical Program and the activities of the National Statistical Institute.

The information provision of the survey is grounded in official sources of information such as Annual Reports of the National Statistical Institute, Reports on the implementation of the National Statistical Program and on the activities of the National Statistical Institute, Rules of Procedure and others for the period 2004 - 2023.

6. Research methodology

The methodology of the research in the dissertation includes the deductive and inductive approaches, the method of analysis and synthesis, the interdisciplinary approach and the statistical approach in the study of changes in the organization, management and resource provision of the national statistical authority of Bulgaria. In the process of the study, publications of Bulgarian and foreign authors in the field of management theory have been studied and systematized. types of organizational structures, human resources, statistical methods for analysis of time series, analysis of structural changes and differences, etc. The calculations were carried out using the MS Excel software product.

7. Restrictive conditions of the study

Restrictive conditions of the study. In this dissertation, the focus is on the changes in the organizational structure of the NSI on the basis of the Rules of Procedure of the NSI for the period 2004 - 2023. employed in the NSI by age and education for the period 2009 - 2023, employed by age and education at the NSI Central Office for the period 2015 - 2023, employed by age and education in RSO for the period 2015 - 2023

The author expresses his gratitude to the academic staff of the Department of Statistics and Applied Mathematics at the *D. A. Tsenov Academy of Economics* in Svishtov for their support in the preparation and formation of the dissertation.

II. STRUCTURE AND CONTENT OF THE DISSERTATION

The dissertation consists of 233 pages, with 195 pages dedicated to the main text. Structurally, it includes an introduction, an exposition, and three chapters, followed by a conclusion, a list of references with 135 sources (111 in Cyrillic and 24 in Latin), 20 appendices, and a declaration of originality. The main text features 26 figures and 42 tables.

The structure of the dissertation is as follows:

INTRODUCTION

CHAPTER ONE. THE ORGANIZATIONAL STRUCTURE OF MANAGEMENT AS A KEY COMPONENT OF THE SUCCESSFUL FUNCTIONING OF INSTITUTIONS

1.1. Nature, elements and principles of the organizational structure of management

1.2. Establishment and functioning of the State Statistical Authority of Bulgaria

1.3. Place and role of the National Statistical Institute in the national and European statistical system

CHAPTER TWO. ORGANIZATIONAL STRUCTURE OF THE NSI – COMPARATIVE ASPECTS OF THE STRATEGIC OBJECTIVES AND THE RESULTS ACHIEVED

2.1. Projects and Strategies for Changing the Organizational Structure of the NSI

2.2. Characteristics of the organizational structure of the NSI for the period 2004-2023

2.3. The Territorial Structures of the National Statistical Institute – Creation, Development and Modern Organization

2.4. Administrative capacity – a condition for the implementation of the policy in the field of statistics

CHAPTER THREE. ANALYSIS OF THE RESOURCE PROVISION OF THE NSI ACTIVITIES WITH STAFF

3.1. Statistical Methods for Analysis of Developments and Structural Changes

3.1.1. Statistical Methods for Developmental Research

3.1.2. Statistical Methods for Studying Structural Changes

II. SUMMARY OF THE DISSERTATION

Introduction

In the global information space, the demand for analyses of the economic, social, and demographic situation of countries, development trends, and the factors influencing them is continually increasing, which in turn heightens the need for reliable statistical information. Providing accurate, sufficient, diverse, detailed, and comparable statistical data is the primary task and responsibility of the country's statistical authority. The main source of information on ongoing economic and social phenomena and processes in Bulgaria is the statistical surveys conducted by the National Statistical Institute (NSI) and other statistical authorities.

Throughout its 144-year history, Bulgarian state statistics has achieved significant results. During this period, numerous changes have occurred in the organizational structure of the state statistical body—ranging from its name and subordination to its resource provision. Over the years, the activity of the statistical institution has been characterized by completeness and objectivity in the study of social reality, efficiency, and reliability, consistency in the methodology of socio-economic indicators, and a correct distribution of information flows according to the needs of governing bodies. Bulgarian national statistics have consistently adhered to world and European principles and standards. The principles guiding statistical activities in Bulgaria are legally defined, including professional independence, impartiality, objectivity, reliability, statistical secrecy, and cost-efficiency. The quality criteria for statistical work are clearly outlined in the Statistics Act: adequacy, accuracy, timeliness, punctuality, accessibility, clarity, comparability, and logical coherence.

The National Statistical Institute performs independent state statistical activities and other responsibilities assigned to it by law (Art. 6 of the Statistics Act). It is tasked with collecting, processing, and disseminating statistical information on various aspects of Bulgaria's economic, social, and demographic processes. To effectively fulfill its responsibilities—such as coordinating the state's statistical activities, identifying public needs for statistical information, developing a strategy for the national statistical system in line with the European Statistical Programme, conducting surveys, and maintaining databases—a well-functioning management system and an adequate organizational structure are essential.

Chapter One. The organizational structure of management as a key component of the successful functioning of institutions

The first chapter focuses on clarifying the main aspects of the essence, elements, and principles of the organizational structure of management. A retrospective analysis of the establishment and functioning of the State Statistical Authority of Bulgaria is

conducted, along with an examination of the place and role of the National Statistical Institute (NSI) within both the national and European statistical systems.

Paragraph 1.1 delves into the essence, elements, and principles of the organizational structure of management from the perspective of management theory. Emphasis is placed on understanding the core of the organizational structure and, based on this foundation, deducing its primary parameters and structural factors. It is asserted that the management structure reflects the internal organization of the system and the hierarchical sequence of connections between its elements. Organizational structure is defined as "a specific form of labor division in the execution of management functions, characterized by a clearly defined hierarchical sequence of management bodies and units—such as directorates, departments, sectors, etc.—encompassing all organizational relations and interactions in the process of achieving the organization's goals."

Drawing upon research from leading authors in management theory, including P. Drucker, D. Panayotov, K. Kamenov, E. Zahariev, M. Alexandrova, M. Harizanova, M. Kuzmanova, N. Angelova, V. Hadzhiev, H. Mintzberg, H. Willmott, J. Thompson, W. Orlikowski, Ph. Selznick, M. Tushman, Ph. Anderson, D. Nadler, Newman, Romanelli, E. Ferlie, B. Czarniawska, Ch. Perrow, P. Lawrence, J. Lorsch, R. Daft, and G. Jones, the essence, elements, principles, and types of organizational structure are elucidated. The main characteristics of the organizational structure include functional labor division, hierarchy expressing the presence of structural units at different levels, the functionality of separate units, synchronization of organizational relations, and relationships between the elements of the organizational structure of management.

Key organizational and structural parameters are explored, including the type of structure, levels of management, span of control, number of organizational and structural units, personnel count, types of organizational relations, and the degree of centralization and decentralization. The scope of management is crucial for the functioning and effectiveness of the organization, as it indicates the number of individuals a leader can oversee. It is argued that personnel numbers must be sufficient to meet the organization's goals and tasks, ensuring both optimal structure and efficient functioning. The main structural factors, elements of the organizational structure of management, organizational activities, and guiding principles are clarified.

In **Paragraph 1.2**, the development of the statistical institution from its establishment in 1880 to the present day is presented. Emphasis is placed on the main challenges and problems faced by the state statistical authority in different periods, the changes in its subordination, and the significance of structural and organizational changes, as well as the resulting outcomes.

The development of Bulgarian state statistics is characterized by a gradual evolution, where early changes primarily focused on the institution's name and subordination, with lesser emphasis on changes to its organizational structure. Based on

this, a periodization of the main stages through which national statistics have evolved is proposed:

- **Stage I**: Creation and approval of Bulgarian state statistics from 1880 to 1944
- **Stage II**: Bulgarian State Statistics in the Conditions of a Planned Economy
- **Stage III**: Bulgarian State Statistics in the Context of Transition to a Market Economy and EU Membership
- **Stage IV**: Bulgarian State Statistics in the Context of EU Membership

Drawing on the research of authors such as I. Balev, D. Balevski, I. Stefanov, D. Michev, P. Kiranov, along with archival materials from the NSI, laws, and other normative acts, the changes in the name and subordination of the statistical institution are presented chronologically. It is established that significant changes occurred predominantly in the years following its establishment, driven by the need to build a functional institution that meets the country's information needs for governance. These changes incorporated international experiences while adapting them to the national context.

A systematization of changes in the name and subordination of the statistical institution (see Table 1), as well as modifications in its organizational structure (see Table 2), has been carried out.

Table 1. Name and subordination of the State Statistical Authority of Bulgaria

Year of creation/ alteration/	**Name**	**Subordination/ in the structure of:**
1879	***Idea to create a*** Department of Home Affairs – ***it did not work***	Russian Commissariat
1880	Statistics Department	Ministry of Justice
1880	Statistical Organizational Division	Ministry of Finance
1880	Statistical Organizational Division	Ministry of Public Education
1881	Bureau of Statistics	Ministry of Public Education
1894	Bureau of Statistics	Ministry of Trade and Agriculture
1897	Directorate of Statistics	Ministry of Trade and Agriculture
1910	General Directorate of Statistics of the Bulgarian Kingdom	Ministry of Trade, Industry and Labour
1946	Directorate-General of Statistics	Ministers
1947	Directorate-General of Statistics	State Planning Commission
1953	Central Statistical Office	Ministers
1971	Central Statistical Office	Ministry of Information and Communications
1976	Central Statistical Office	Ministers
1977	Central Statistical Office	Committee on the Unified System for Social Information (without the rank of Ministry) at the Council of Ministers
1991	National Statistical Institute	National Assembly
1999 to present	National Statistical Institute	Ministers

Source: NSI. Archival materials.

It has been established that over the past 60 years, the statistical institution has been subordinated to the Council of Ministers, with the exception of the years from 1991 to 1999, when it was subordinated to the National Assembly. The National Statistical Institute (NSI) has remained under the Council of Ministers even after Bulgaria's accession as a member of the European Union. This stability in subordination serves as a foundation for the successful functioning of the institution, ensuring the proper formulation of its mission, value characteristics, vision, and primary tasks for Bulgarian statistics.

Table 2. Name and structure of the statistical institution of Bulgaria in the period 1910 - 2023

Year of creation/ alteration/	**Name**	**Structure**
1910	General Directorate of Statistics of the Bulgarian Kingdom	Three departments have been created, including two departments each, in which there are two or three bureaus.
1946	Directorate General of Statistics - for ***the first time local authorities are established***	1. Regional statisticians – in rural and urban municipalities and in the largest cities. In urban municipalities with a population of more than 50 thousand. people – City Statistical Office. 2.District statistician 3.Regional statistical offices
1953	Central Statistical Office	1. District statistical offices 2. District, city and district statistical inspectorates 3. District inspectors
1959	Central Statistical Office	District Statistics Departments – with double subordination
1959	Central Statistical Office	District Statistics Departments
1976	Central Statistical Office	County Statistical Offices
1977	Central Statistical Office	Departments of TIICs
1987	Central Statistical Office	District statistical offices
1991	National Statistical Institute	Territorial statistical offices – 28
2015 - 2023	National Statistical Institute	Territorial statistical desks – 6 pcs. /28 departments/

Source: Archival materials of the NSI.

In **paragraph 1.3.** The role and place of the National Statistical Institute (NSI) in the National Statistical Council of the Republic of Bulgaria (NCSR) and in the European statistical system are characterized. The legal framework and regulation of the National Statistical System (NCSR) of Bulgaria are described, highlighting that the NSI plays a leading methodological and coordinating role as the main statistical body in the country. The Statistics Act outlines the "statistical bodies," which, in addition to the NSI,

include structural units within ministries, departments, and other bodies of both central and local administration responsible for statistical activities.

The NSI's leading role in both overall statistical activity and the functional integration of statistical surveys is emphasized. It is evident that the role and functions of other statistical authorities in Bulgaria are limited to conducting statistical observations and surveys within their respective areas of competence, with the subsequent presentation of data to the NSI.

According to the current Strategy for the Development of the NCSR System of the Republic of Bulgaria, the main principles guiding the activities of the NCSR are professional independence, impartiality, and objectivity, high quality, confidentiality, and strict adherence to statistical secrecy, adequacy of resources, cost efficiency, and, last but not least, active cooperation and coordination both within the NCSR and within the European Statistical System (ESS).

Following Bulgaria's accession to the EU, three distinct periods have been identified in the activities of the NCSR: from 2008 to 2012, from 2013 to 2020, and from 2021 to 2027.

As a result of implementing these strategies, notable achievements include the modernization of systems, the introduction of new technologies, the expanded use of administrative sources, the improvement of the quality of statistical information produced, and the dissemination of information. Additionally, user satisfaction with statistical data and services has increased. The results indicate that most of the set goals are continuous, focusing on increasing trust in official statistics, ensuring high-quality statistical products, enhancing user confidence, digitizing processes, and improving the statistical literacy of both users and the general population. Active international cooperation also plays a significant role.

The NCSR, as part of the European Statistical System (ESS), organized and coordinated by Eurostat, oversees the production of statistical information in line with European statistical standards and the principles of the Code of European Statistical Practice. Key aspects evaluated in the role of the NCSR in the ESS include: the collection and submission of statistical data to Eurostat, adherence to European standards and methodologies ensuring comparability of data for EU member states, coordination with Eurostat and other national statistical institutes in the EU for joint development and implementation of new statistical methodologies and indicators, preparation of national reports, and participation in European statistical programs, projects, and conferences.

Important characteristics of the surveys conducted by the NCSR are highlighted, emphasizing their consistency in content, methodology, periodicity, and deadlines for publication with the relevant regulations, guidelines, and methodologies of Eurostat.

Chapter Two. The Organizational Structure of the NSI – Comparative Aspects of the Strategic Objectives and the Results Achieved

The second chapter of the dissertation focuses on characterizing the organizational structure of the National Statistical Institute (NSI), emphasizing the period of Bulgaria's membership negotiations and accession to the European Union, covering the years from 2004 to 2023. It examines the changes in the organizational structure of Bulgarian state statistics and evaluates projects and strategies for modifying the organizational structure of the NSI at both the Central Office and Territorial Statistical Offices (RSOs).

Paragraph 2.1

The activities of the NSI are highly specialized, focusing primarily on the collection, processing, and dissemination of statistical information, rather than administrative functions. However, the NSI operates as a state administration and is involved in implementing reforms, especially in optimizing human resources to meet new challenges. These challenges include the development of e-government, establishment of websites for individual administrations, computerization of workplaces, electronic sources of information, and the development and maintenance of integrated information systems.

Between 2005 and 2014, two external and international expert teams worked on projects under the PHARE program to address structural issues within the NSI. The first project led to the preparation of a "Concept for Reorganization of the Regional Structure of the National Statistical Institute," which proposed creating an intermediate structure—Regional Statistical Offices (RSOs)—that would combine several districts from the respective planning regions. This restructuring aimed to modernize the NSI, allowing for more efficient data collection, processing, and dissemination, while also addressing outdated economic systems and integrating modern methods.

The second project, completed in 2009, focused on improving the condition of RSOs and proposed measures for their development into effective local centers. The project addressed quality policy elements such as staff training, introduction of reporting and control systems, and the optimization of processes between the Central Office and the RSOs.

The third project, implemented with collaboration from DESTATIS Germany and INSEE France, began in March 2008 under Twinning BG06IBFI01 "Sustainable Development of the National Statistical System – Reorganization of the Regional Statistical Structure." This initiative concentrated on enhancing statistical information management, personnel management, and quality management. It aimed to reduce the workload on respondents through extended use of administrative sources and electronic questionnaires.

In 2014-2015, the fourth project, titled "Modernization of the Organization and Functioning of the National Statistical Institute," was implemented with financial support from the Operational Program "Administrative Capacity" 2007-2013, co-financed by the European Union through the European Social Fund. This project focused

on improving the efficiency of the NSI by eliminating redundant and duplicate functions, restructuring units, and optimizing resource allocation. The proposed consolidation of territorial structures led to a reduction in their number from 28 to 6, reflecting the most significant structural reform within the NSI. The aim of this reorganization was to create a modern, integrated organization capable of efficiently fulfilling the objectives outlined in the Strategy for Development of the National Statistical System and the tasks of the National Statistical Program.

In **paragraph 2.2.** The organizational structure of the NSI plays a crucial role for the effective and efficient performance of its functions and responsibilities under the Statistics Act, such as the development of the methodology and planning of statistical surveys, the receipt, collection, processing, storage of individual data and statistical information, the analysis, provision and dissemination of data. statistical information.

The National Statistical Institute carries out independent statistical activity of the state on the basis of a solid legal base, including laws, policies, regulations, strategies, programs, etc. A very important role for the establishment and functioning of the organizational structure of the NSI is played by the Rules of Procedure of the NSI, as well as the other regulations, namely: Rules for the dissemination of statistical products and services; Regulations for the provision of anonymized individual data for scientific and research purposes; Regulations for Library and Information Activities at the NSI; Regulations on the Status and Structure of the Journal "Statistics"; Instruction on the record keeping and document flow in the Central Office of the NSI, on access to information and on the protection of statistical secrecy, etc. According to the Rules of Procedure, the main purpose of the NSI is to "collect, process and disseminate statistical information on all areas of socio-economic and cultural life in the Republic of Bulgaria".

The organisational structure of the NSI plays a crucial role in the effective and efficient performance of its functions and responsibilities. On this basis, it is justified that the statistical institution is a complex entity, for the successful functioning of which a necessary and mandatory condition is the establishment of a functioning, shock-resistant, manageable organizational structure.

On the basis of the Rules of Procedure of the NSI for the period 2004-2023, the main aspects of its organizational structure are outlined. The principles on which the organizational structure of the NSI is built are efficiency, reliability, effectiveness and adaptability. The hierarchical structure of the NSI has been clarified – at the top of the organizational structure of the NSI is a chairperson who is responsible for the overall management and control of the activities of the institute and is appointed by the Council of Ministers. The NSI has three Vice-Presidents who assist the President in the performance of his duties, Secretary General, directors of directorates who manage their constituent departments and RSOs. The functional units in the NSI are structured around several main functions or directions, with each department responsible for specific areas of activity contributing to the implementation of the overall mission. The NSI is

structured around the following main functions or areas, which include: research methodology; data collection; data processing and dissemination of information; information technology; finance and administration.

Based on the Rules of Procedure of the NSI from 2004 to 2023, a chronological review of the organizational structure was carried out, focusing on the key changes and important achievements of the institution for the respective year. The following conclusions are drawn:

- In the period 2004-2023, the NSI is headed by a chairman. In 2009, the number of Vice-Presidents was changed, increasing from two to three. The administrative management of the NSI is carried out by a Secretary General / Art. 17, para 1 of the Rules of Procedure of the NSI/.
- The NSI consists of a central office located in the city of Sofia. Sofia and territorial statistical offices, which until 2015 were 28 in number and are located in the 28 regional centers in the country, and since 2015 there are 6 in number, located in the cities of Sofia, Plovdiv, Burgas, Varna, Ruse and Pleven. The RSOs have an identical structure to the one in the central management and include general and specialised administration. The specialized administration includes the "Statistical Surveys" departments, which are the existing 28 territorial statistical offices.
- During the entire period, only 3 of the directorates in the Central Office of the NSI remained unchanged: "Business Statistics", "Demographic and Social Statistics" and "Macroeconomic Statistics".
- In the period 2004 to 2012 /Until the adoption of the Ordinance on the Implementation of the Classification of Positions in the Administration/, in the organizational structure of the Central Office of the NSI there were 8 directorates with 34 departments. The departments in the directorates are many in number and are formed in more detail in accordance with the tasks they perform, strictly focused on the types of activities assigned to the respective directorate. The names of three of the statistical directorates remain unchanged, and during the years of the period, new departments were formed, old departments were closed or existing departments were merged in order to meet the needs for statistical information accurately and competently.
- Until 2012, the directorates in the NSI Central Office were organized into one common administration.
- With the implementation of the Ordinance in 2012, the number of departments in the central administration has changed significantly, as it has decreased to 29, and in 2012 it reached 24, 22 of which are included in the specialized administration, and 3 of the departments are in the general administration. In 2013, the consolidation of the departments in the general administration was carried out, and from 7 they decreased to 3. The number of departments in the

specialized administration remains almost unchanged. Analyzing the data for the entire period 2012 – 2023, the specialized administration retains the number of departments in it – 22. In 2022 alone, departments increased their number by two.

- In 2012 and 2013 the number of directorates in the Central Office of the NSI decreased by 1, and from 2014 until the end of the period under review they were 6.
- Since 2012, the number of specialised departments has fluctuated between 21 and 24 in different years, and from 2014 to 2021 their number has not changed and is 21. The number of general administration departments increased to 7 in 2012,
- The structures directly subordinate to the President are formed in stages, and at the end of 2011 there are 3 - Internal Audit, Inspectorate and Financial Controller. Over the years, their number has changed from 4 to 9 in the period from 2009 to 2015, and from 2016 to the present their number has not changed and are 7. The formation of new directorates and units directly subordinate to the President of the NSI is usually due to the requirements of a certain normative act concerning the structures within the state apparatus

Table 3. Organizational structure of the NSI for the period 2012-2023

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Председател	1	1	1	1	1	1	1	1	1	1	1	1
Заместник председатели	3	3	3	3	3	3	3	3	3	3	3	3
Главен секретар	1	1	1	1	1	1	1	1	1	1	1	1
Дирекции	7	7	6	6	6	6	6	6	6	6	6	6
Отдели	29	24	27	27	28	28	26	26	26	26	28	28
Специализирани	22	21	22	22	22	22	22	22	22	22	24	24
Обща администрация	7	3	5	5	6	6	4	4	4	4	4	4
ТСБ	28	28	28	6	6	6	6	6	6	6	6	6
Структури на пряко подчинение на председателя	5	5	9	8	7	7	7	7	7	7	7	7

Source: Rules of Procedure of the NSI for the period 2009-2023

The significant changes in the organizational structure of the NSI are also confirmed by the dynamics in the number of staff according to the establishment plan (Table 4). It is clear from the data that the changes in the organizational structure, in addition to the number of directorates and departments in the Central Office and the number of territorial structures, are also expressed in a decrease in the number of staff according to the establishment plan – from 1719 in 2003 to 968 from 2015 until now, with a decrease of 751 staff members or by 43.7%. The number of staff under the establishment plan decreased in the Central Office of the NSI by 135 or by 29.1%, and for the RSO the decrease was by 615 or by 49.04%. It is evident that the optimization of the staff has covered to a higher extent those employed in the RSO. After the reorganization of 2015, the number of staff according to the establishment plan has not changed, and at the moment this is an optimal structure allowing the fulfillment of the goals and tasks of the statistical institution.

Table 4. Number of staff according to the establishment plan by year of change

Години	НСИ	ЦУ	ТСБ
2003	1719	464	1254
2008	1352	384	968
2010	1130	344	786
2015	968	329	639

Source: Rules of Procedure of the NSI for the period 2003-2023.

In paragraph 2.3. traces the creation, development and modern organization of the territorial structures of the NSI. A chronological review of the development of the

territorial structures of the NSI is carried out. On the basis of studies of a number of publications dedicated to the anniversaries of the Bulgarian state statistics, it was summarized that as early as the Law on the General Directorate of Statistics, issued in 1910, it was determined that employees should be appointed in the municipalities who "should have a statistical service", but only in 1946 a structure of local statistical bodies was formed, which included regional statisticians in rural and urban municipalities. district statistician, heads of regional statistical offices, and all urban municipalities with a population of more than 50 thousand people should have their own statistical office. The statistical inspectorates at the regional departments underwent many changes, and in 1948 they switched to the territorial information and computing centers, which at that time were territorial divisions of the Committee for a Unified System for Social Information.

According to the first Statistics Act (Law on Statistics, promulgated SG 25, of 29 March 1991), the National Statistical Institute consists of a central office and 28 territorial statistical bureaus located in the respective regional centers of the country, which carry out the functions and tasks of the National Statistical Institute for the production and dissemination of statistical information at regional level. This structure of the NSI has been maintained for almost 25 years.

The main functions and tasks of the Territorial Statistical Offices are summarized by stages in the process of statistical information production, namely: data collection, data processing and analysis, dissemination of information, cooperation and partnership.

On the basis of the survey carried out as of 31.12.2014, three types of RSO structures have been identified in accordance with their size, as follows:

- RSO with two departments – General Administration Department and Statistical Surveys and Surveys Department – 16 pcs.
- RSO with three departments – General Administration Department, Economic and Business Statistics Department, Demographic Statistics Department – 10
- RSO with more than three departments – Sofia City and Plovdiv.

As a result of the restructuring of the NSI in 2015. The territorial structures are united in six RSOs with centers in Pleven, Ruse, Varna, Burgas, Plovdiv and Sofia, which consist of General Administration Departments and Statistical Surveys Departments with former RSOs centers. The restructuring is aimed at improving the administrative capacity, flexibility in the distribution of tasks, optimization of work processes, full use of information systems, improvement of the management process, control by the Central Administration, efficient use of resources. As a result of the reorganization, conditions are created for improving the administrative capacity through the implementation of organizational measures aimed at its further development.

A significant achievement as a result of the reorganization is the implementation of the Common Model of the Statistical Production Process, meeting the requirements

of GSBPM, version 5.0, consistent with the specifics of the Bulgarian statistical system for the activities of collecting, processing, analyzing and disseminating statistical information. At the same time, the activities carried out at the different stages of the process are different in the specialized administration in the Central Office of the NSI and RSO and are consistent with the functional characteristics of the two types of structures.

Table 5. Structure of the Territorial Statistical Offices from 01.10. 2015 to 2024

TSB	Departments	Sectors
Territorial Bureau of Statistics - South-West	OSI Sofia	1. Economic Business Statistics
		2. Multisectoral statistics
		3. Social Statistics
		4. Survey Surveys
	OSI Blagoevgrad	There are no separate sectors
	OSI Kyustendil	
	OSI Pernik	
	OSI Sofia Region	
Territorial Bureau of Statistics - South	OSI Plovdiv	1. Business statistics
		2. Statistics of households and individuals
	OSI Kardzhali	There are no separate sectors
	OSI Pazardzhik	
	OSI Smolyan	
	OSI Haskovo	
Territorial Bureau of Statistics - South-East	OSI Burgas	1. Business Statistics
		2. Social Statistics and Survey Surveys
	OSI Sliven	There are no separate sectors
	OSI Stara Zagora	
	OSI Yambol	
Territorial Bureau of Statistics - North-East	OSI Varna	1. Business Statistics
		2. Social Statistics
	OSI Dobrich	There are no separate sectors
	OSI Targovishte	
	OSI Shumen	
Territorial Bureau of Statistics - North	OSI Ruse	There are no separate sectors
	OSI Veliko Tarnovo	
	OSI Gabrovo	
	OSI Razgrad	
	OSI Silistra	
Territorial Bureau of Statistics - North-West	OSI Pleven	There are no separate sectors
	OSI Vidin	
	OSI Vratsa	
	OSI Lovech	

	OSI Montana	

Source: RSO Official Establishment Plans

Many tasks that fall within the scope of the territorial structures, as well as the new responsibilities, as well as the whole process of change, which is associated with difficulties of a different nature, but mostly with a change in the organizational culture, the acceptance of innovations, the expansion of the scope of use of ICT achievements, which are the basis for changing the traditional ways of working and the introduction of innovative approaches, are clarified.

As a result of the analysis of the changes in the organizational structure of the territorial structures of the NSI, it was found that after 2015 it is sustainable and corresponds to modern conditions, corresponds to the vision and the main goal for the development of the NSI and contributes to the production of better information with a smaller amount of resources - human and financial. Tracking the effects of the functioning of the statistical institution after the changes made in the existing regional structures of the NSI, related to the reporting systems and statistical services and activities, is a necessary condition for assessing the readiness of the system to meet new challenges.

In **paragraph 2.4.** Different definitions of the concept of "administrative capacity" are presented. According to most authors, the availability of competent civil servants and quality human resources, including knowledgeable and capable employees with an administrative culture, are essential for the development and implementation of credible policies in administrative reforms. However, it is absolutely necessary for such employees to ensure stability, as well as transparent procedures for career growth and creation of competitive conditions when applying for a position in the administration, precise definition of the rights and competencies of employees, creation of evaluation and control systems, etc. It is clarified that the Europeanization of administrative capacity in Bulgaria is a prerequisite for reforming state institutions, their inclusion in the European administrative space and building public governance that meets the expectations of society. Two components of administrative capacity are mainly considered: institutions and human resources, in this case – the NSI and its employees, since the NSI is a state agency and is a functional body with special competence. The role of the general administration in the NSI to assist the President in the exercise of his powers, as well as the activities of the specialized administration by carrying out technical activities related to administrative activities, has been clarified. The specialized administration carries out the specific statistical activities. The control over the activities of the structural units of the NSI system is carried out by the Inspectorate under Art. 46 of the Administration Act and the Internal Audit Unit. It is substantiated that the effective management of human resources in the public sector is one of the most important goals of the state policy in the public sector. The issue of the development of human resources in the NSI is defined as topical, as they are an important factor for the

successful functioning of the system and for the fulfillment of the goals and objectives of the institution. The analysis of the state of human resources shows that the NSI employs qualified and educated specialists, most of whom are long-term employees with valuable practical experience in specific statistical areas. In order to increase the administrative capacity of the NSI, it is necessary to continue the policy of serious selection of personnel and recruitment of knowledgeable, capable, competent and motivated employees, constantly encouraging their development and improvement.

It has been clarified that the NSI system strictly complies with the normative provisions regarding the educational level and professional experience for occupying individual positions, and all changes in the official or employment relationship of employees are made in accordance with the legal requirements. The NSI applies the appraisal system, which assesses the individual performance of official duties, aimed at an objective assessment of personal merits and decisions regarding professional growth and remuneration.

It is concluded that the high requirements for the activities of the NSI to provide comparable, reliable and meeting the requirements for confidentiality and information protection, produced in accordance with international standards, necessitates the need for a systematic policy to increase administrative capacity, to conduct an adequate policy for human resources management, to introduce ICT achievements, implementation of information security measures, financial security of the activity, etc.

Chapter Three. Analysis of the Resource Provision of the NSI Activities with Staff

Third chapter is devoted to an empirical analysis of the resource provision of the NSI's activities with staff, initially presenting the statistical methods used for analysis of development and statistical methods for analysis of structural changes and differences. The empirical analysis was carried out in the following directions:

- Analysis of the dynamics of indicators characterizing the staffing and provision of the NSI
- Analysis of the structure of the staff by age and education.

The main criterion for selecting the analyzed periods is that the data are comparable and comparable and allow both comparative analysis and generalization of conclusions.

In paragraph 3.1. Statistical methods for analysis are presented, which are applied in the empirical part of the dissertation – statistical methods for analysis of the dynamics of phenomena and processes and methods for analysis of structural changes and differences. The requirements that must be met in the construction of the dynamic statistical series are clarified - comparability in time, place, unit of measurement, method of calculation, methodology used, etc., observance of the chronological sequence, analysis of sufficiently long dynamic statistical series. The components of development

are characterized – trend, random fluctuations, seasonal fluctuations, cyclical fluctuations. It is clarified that the main emphasis is on the methods used in the empirical part of the dissertation, namely for studying the speed of development and for revealing and modeling the development trend. It is pointed out that the analysis of the speed of development is based on the descriptive indicators for characterizing the time series, through which a general characteristic of the development of the phenomenon or process is carried out. The descriptive indicators for characterizing the time series include average level of development, absolute growth, average absolute growth, rate of development, average rate of development, growth rate, average growth rate, absolute value of 1% of growth, overtaking coefficient, all of which are presented with the appropriate formula apparatus for their calculation on a constant basis (the first year of the time series is assumed as such in the study) and on a chain basis. It is emphasized that the calculation of the descriptive characteristics of the time series is useful and enriches the analysis when they are used in a complex way as a system of indicators, and not only some of them. At the same time, it takes into account the fact that they are only one of the directions for analyzing the dynamics of phenomena and processes and that their application is useful when they precede the establishment and modeling of the development trend. Of the methods for smoothing of dynamic series, the analytical method is characterized because it is the most accurate, theoretically justified and most often used, because in it the smoothing is carried out according to the equation of a mathematical function - line, parabola, cubic function, hyperbola, etc., taking into account the regularities in the development of the phenomenon or process. To calculate the parameters of the corresponding equation, the method of least squares is most often used.

It is specifically noted that an important stage preceding the modeling of the development trend is the testing of hypotheses for the presence of a trend, using the correlation coefficients of Spearman (ρ) and Kendall (λ), the autocorrelation coefficient of the first order (r_1) and the test characteristics of Box-Leung (BL) and Box-Pierce (). BP An important part of trend modelling is the selection of the most suitable model, and for this purpose the standard error of the model (σ_ε), the adequacy criterion of the model (), F the coefficient of determination (R^2), the corrected coefficient of determination (R^2_{adj}), the information criteria of Akaike (AIC) and Schwartz (BIC). Based on the model adequacy criterion, the coefficient of determination, the corrected coefficient of determination, the model for which they have the highest value is chosen as the most suitable model, and according to the standard error of the model, the information criteria of Akaike and Schwartz, the model for which the lowest value is obtained is chosen as the most suitable model.

It is clarified that in the study of phenomena and processes it is necessary to study their structure in order to establish whether changes have occurred and to assess their

intensity using appropriate statistical methods. Statistical analysis of structures is carried out in several main directions: measurement of structural changes, measurement of differences between two or more structures, measurement of the unevenness of structures. It is indicated that for the measurement of structural changes, absolute increments and indices of relative shares, indices of difference and relative structure, linear and quadratic coefficients of structural changes, generalizing measures of structural changes, are calculated. The analysis of structural changes is presented with the relevant formulaic apparatus, carried out in the following directions: identification of absolute and relative structural changes; study of the variation in relative shares by linear and quadratic coefficients of structural changes; calculation of aggregate measures of structural change. It is justified that it is not enough just to get general characteristics of the differences in the relative shares for the compared periods or moments, since on the basis of them it is not possible to assess the intensity of the structural changes in the population. To establish the intensity of structural changes in the compared populations, the generalizing measures of structural changes are used: the integral coefficient of structural changes (K_S), the Euclidean distance (d) and the aggregate measure of structural change, (K_d), as normalized in the range from 0 to 1 are the integral coefficient of structural changes and the generalizing measure of structural changes, and in the range from 0 to $\sqrt{2}$ is the Euclidean distance.

In paragraph 3.2. The state and trends in the resource provision of the NSI with staff has been analyzed, and the dynamics of the number of staff by establishment plan, of the actually employed in the NSI, in the Central Office of the NSI and in the RSO, of the staff in general and by type of education, of the staff by age groups has been analyzed.

From the analysis of the number of staff according to the establishment plan, it was found that as a result of the changes made in the organizational structure:

- The number of staff according to the NSI staff plan for the period 2003 - 2023 decreased from 1719 staff positions in 2003 to 968 staff positions in 2015, which remained in the following years, with a decrease of 43.7%.
- The staff under the establishment plan decreases for both the Central Office of the NSI and the RSO, as the decrease for the Central Office is by 30.8% from 464 staff positions for 2003 to 321 staff positions for 2023, but the decrease in the number of staff according to the establishment plan for the RSO is much larger - by 48.4% from 1254 for 2003 to 647 for 2023 schedules are much more pronounced for territorial structures.
- The share of posts for Central Offices in the total number increased from 27% in 2003 to 33.2% in 2023, while the share of staff posts for RSOs in the total number decreased from 72.9% to 66.8%.

- The number of staff positions in the general administration in the Central Office of the NSI decreased from 82 in 2012 to 36 in 2023, with a decrease of 56.1%, but the number of staff positions in the specialized administration increased – from 232 in 2012 to 253 in 2023, with an increase of 9.05%.
- There is a tendency to decrease the relative share of the general administration of the Central Office of the NSI – from 24.6% in 2012 to 11.2% in 2023 and the share of the specialized administration in the Central Administration is increasing – from 69.7% in 2012 to 79.1% in the period 2019 - 2022, with a slight decrease in 2023 and its share is 78.8%.

From the analysis of trends in the number of actually employed people in the NSI for the period 2009-2023, the following conclusions were reached:

- Total number of staff in the structural units in the NSI system decreased by 463 employees – from 1338 in 2009 to 875 in 2023, with an average annual decrease of 2.9%. The largest decrease in the total number of employees was in 2010, when their number decreased by 208, or by 15.5%, and the next expressive decrease was in 2015, during which the number of employees decreased by 144, or by 12.95%. The results obtained clearly show that during the period under review new organizational approaches are introduced, both in the management of the processes of collection, processing and production of statistical information, as well as in the management of personnel, as a result of which the number of employees in the NSI system decreases.
- Total number of staff in the Central Office of the NSI decreased by 106 employees from 370 people in 2009 to 264 in 2023, with an average annual decrease of 2.38%, and it follows that the changes in the organizational structure of the Central Office of the NSI have been made gradually over the years of the period, which is why the decrease in the number of employees is less pronounced.
- Number of employees in RSO decreased by 357 employees – from 968 in 2009. to 611 in 2023, with an average annual decrease of 3.23%. A significant decrease of 182 employees was registered in 2010, with a decrease of 18.8% in relative terms, and another significant decrease in the number of employees in JVOs was a fact in 2015, when the restructuring of the JOSA was carried out in accordance with the implementation of the NSS Development Strategy and in implementation of Eurostat's recommendations to improve the coordination and interaction in the functioning of the NSI. As a result of the structural reform carried out in the RSO in 2015, the number of employees in them decreased by 147 employees or by 33.99% compared to their number in 2009 and by 18.7% compared to their number in 2014.

Based on the analysis of the dynamics of the number of employees by education levels for the period 2009-2023, the following generalizations are made:

- NSI system employs qualified and educated specialists, with a predominant share of employees with higher education, who are about 90% in the Central Office of the NSI and about 65% of all employees in the RSO. A significant part of the employees employed in the NSI system have many years of experience gained in specific statistical areas.
- Number of employees with higher education in 2009 is 2.6 times more than the number of employees with secondary and primary education, in 2015 it is 4.4 times more, and in 2023 even 7.5 times more. The change in the number of employees with higher and secondary education and the ratio between them is the result of the policy pursued to attract specialists with higher education, as well as the restructuring carried out in 2015 in order to improve administrative capacity, optimise work and efficiently organise and use resources. The number of people employed in higher education in the NSI decreased by 152 people for the period 2009 - 2023, with an average annual decrease of 1.28%.
- During most years, between 83% and 92% of employees have a Master's degree, but for 2022 and 2023 their share decreases to 77.46% and 78.63%, and with a Bachelor's degree they are between 6% and 18%, with the highest share for 2022 and 2023 – 17.25% and 18.01%, respectively. There is a tendency towards a decrease in the number of employees with a Master's degree at the expense of an increase in the number of employees with a Bachelor's degree. In most cases, the reasons for the decrease in the number of employees with a Master's degree are related to the greater opportunities for higher pay that are offered in the city of Sofia. Sofia and in some regional centers, both in other institutions and in the private sector.
- Relative share of specialists with the EQD of Professional Bachelor is between 0.76% and 2.38%, and for 2023 their share is 1.68%.
- In the NSI system, the number of employees with a Doctor's degree is small, but it has gradually increased since 2018 and reaches 15 for 2022 and 13 for 2023.
- Increase in the number of employees with a doctoral degree is a positive trend that should be maintained in the future - on the one hand, because the statistical institution needs staff with high educational qualifications, creativity and competencies, and on the other hand, this provides great opportunities for career development. At the same time, the increase in the number of employees with acquired and trained in the Doctoral Degree will be useful both for the specialists from the NSI and for the higher education institutions training specialists in the field of statistics. In this way, a good symbiosis between science and practice will be obtained and the practical orientation of the educational material will probably increase.
- The number of employees in the NSI with secondary and primary education decreased by 251 people, with an average annual decrease of 8.44%. In almost

all years of the analyzed period, the number of employees with secondary and primary education decreased compared to the previous year, but it was most pronounced in 2010 - by 85 people, in 2013 - by 33 people, in 2015 - by 65 people, and in 2019 - by 39 people. As a positive trend can be highlighted the decrease in the number of employees with secondary and primary education as a result of the implementation of the recruitment policy, as well as strict compliance with the rules for compliance with the minimum requirements for positions in the state administration.

From the analysis of trends in the change in the number of employees by age groups for the period 2009-2023, the following conclusions stand out:

- A significant part of the employees in the NSI system have been working for 10 years or more, during which they have gained valuable practical experience in specific statistical areas, which is a great advantage for the system, since specialists in the field of preparation and conduct of statistical surveys, as well as in the processing of their results, is a multicomponent process.
- Number of NSI employees under the age of 29 increased from 66 in 2009 to 80 in 2016, but in the following years the trend changed and their number decreased to 28 people in 2023. The fact that the number of employees up to 29 years of age in the NSI is not only small, but also decreasing, is indicative of the fact that the work in the state administration is not attractive for young people and in order for a change to occur, it is necessary to update the human resources development strategy, emphasizing the promotion of the NSI's activities and the professionalism of its employees.
- Number of employees in the NSI aged 30 to 45 decreased from 522 people in 2009 to 312 people in 2023, with an average annual decrease of 3.61%. This trend is negative, as this age group is also a priority in order to attract established specialists and retain staff in the NSI system in order to ensure continuity, especially since employees in this age group are at a stage in their careers when they have established themselves, have the necessary qualifications, have accumulated specific professional experience and knowledge. Often, however, for reasons of a different nature, they choose to leave the system and seek employment in other institutions or in the private sector, so it is necessary to take measures to attract new employees, but also to keep the current ones in the NSI system.
- The trend towards a decrease in the number of employees in the NSI at the age of 46 up to 55 is clearly expressed, as their number decreases from 476 people in 2009 to 308 people in 2023, with an average annual decrease of 3.06%. The reasons for the decrease in the number of employees aged 46 to 55 are of a different nature, but they are mainly the result of changes in the organizational

structure, from moving to a higher age group or due to turnover. This trend can also be defined as negative, as these are established specialists with many years of experience in the NSI and its territorial structures. Employees from this age group can ensure stability and continuity in their work, effectively use their specific professional experience and knowledge, have the potential for career development in the NSI.

- Number of employees in the NSI aged 56 to 65 shows that by 2014 it increased from 188 people in 2009 to 358 people in 2014, but in the following years it gradually decreased and in 2023 they were 220.
- Number of employees in the NSI over the age of 65 decreased from 28 in 2009 to 1 in 2016, and in 2023 their number was 7. The reason for the significant decrease in the number of employees over 65 years of age is in two ways - compliance with the requirements of the Civil Servants Act for dismissal of employees who have acquired the right to a retirement pension, as well as the policy for attracting young people with knowledge in the field of ICT and digitalization of processes.
- During the period, there are trends towards ageing of the employed in the NSI system, as well as increased turnover due to low pay.

The verification of the hypothesis for the presence of a trend in the analyzed dynamic statistical series was carried out using the first-order autocorrelation coefficient at a significance level of α = 0.05, and at a row length of n = 15, the critical values of the first-order autocorrelation coefficients were in the range of -0.462 and 0.328. The results obtained show that there is a trend in the following time series: total number of employees in the NSI (), number of employees in the Central Office of the NSI, number of employees in the RSO ($r_1 = 0.869947 r_1 = 0.907016 r_1 = 0.830104$), number of employees with higher education ($r_1 = 0.554734$), number of employees with the Doctor's degree ($r_1 = 0.873441$), number of employees with the Master's degree ($r_1 = 0.859736$), number of employees with the Bachelor's degree ($r_1 = 0.670826$), number of employees with secondary education ($r_1 = 0.92215$), number of employees up to 29 years of age. ($r_1 = 0.88053$), number of employed aged 30 to 45 years. ($r_1 = 0.594931$), number of employees aged 46 to 55. ($r_1 = 0.763335$), number of employees aged 56 to 65. ($r_1 = 0.908995$), number of employed people over the age of 65 ($r_1 = 0.833395$).

Trend modeling is done using the least squares method when testing the following models: straight line, polynomial of the second degree (parabola), polynomial of the third degree (cubic function), logarithmic function, exponential function and power function. The selection of the most appropriate trend model is based on the coefficient of determination (R^2), the corrected coefficient of determination (R^2_{adj}) and the adequacy test (F_{EM}), also taking into account the statistical significance of the model

parameters (*P-value <0.05*). Table 6 contains the selected trend models and their characteristics:

Table 6. Features of trendy models

Trending patterns	R^2	R^2_{adj}	F_{EM}
Number of NSI employees $\hat{y} = 1315{,}858 - 156{,}8818\, ln\, t$	0.9121	0.9054	134.9074
Number of employees of the Central Office of the NSI $\hat{y} = 377{,}863 - 186{,}6627t + 2{,}4839t^2 - 0{,}1198t^3$	0,9169	0,8742	40,4425
Number of employees of the RSO $\hat{y} = 939{,}4726 - 125{,}956\, ln\, t$	0,8764	0,8669	92,1686
Number of employees with higher education $\hat{y} = 920{,}2106 - 50{,}473\, ln\, t$	0,6296	0,6011	22,0965
Number of employees with Doctoral degree $\hat{y} = 5{,}6703 - 0{,}8582t + 0{,}0967t^2$	0,9207	0,9075	69,6562
Number of employees with Master's degree $\hat{y} = 854{,}1969 - 80{,}681\, ln\, t$	0,8516	0,8402	74,5895
Number of employees with Bachelor's degree $\hat{y} = 62{,}6667 + 4{,}725t$	0,6545	0,6279	24,6617
Number of employees with secondary and primary education $\hat{y} = 354{,}63e^{-0{,}087t}$	0,9541	0,9506	270,1208
Number of employees up to 29 years old $\hat{y} = 45{,}4593 + 7{,}0442t - 0{,}5799t^2$	0,5911	0,5229	86721
Number of employees from 30 to 45 years old $\hat{y} = 559{,}2044 - 44{,}7576t + 1{,}9797t^2$	0,9230	0,9101	71,8996
Number of employees from 46 to 55 years old $\hat{y} = 477{,}1275 - 33{,}8925t + 1{,}5767t^2$	0,8190	0,7888	27,1434
Number of employees from 56 to 65 years old $\hat{y} = 152{,}7604 + 33{,}6001t - 2{,}0496t^2$	0,6371	0,5766	10,5316
Number of employees over 65 years old $\hat{y} = 37{,}78022 - 5{,}3619t + 0{,}2199t^2$	0,7535	0,7124	18,3363

Source: Author's calculations.

In the **Paragraph 3.3**. the results of the analysis of the structure of the staff by education and age and the assessment of the intensity of structural changes are presented. In the period 2009-2023, the relative share of employees in the NSI with higher education increased from 72.32% in 2009 to 89.92% in 2022, and the relative share of employees with secondary and primary education decreased from 27.68% to 10.08% in 2022. During the period, the largest changes compared to the basic structure

of 2009 occurred in 2022, for which the integral coefficient was Ks=0.209, and for 2023. Ks=0.1907, from which it follows that during the period of 15 years changes have accumulated, which can be assessed as moderate.

A key aspect of the analysis is the change in the relative share of employees with higher, secondary and primary education in the Central Office and in the RSO, as the period is determined by the available data for the years from 2015 to 2023. Because with the development of statistical science and practice, the requirements for the qualification of employees are also increasing and a higher level of education and technical competence, specific professional experience and knowledge are required for the respective positions.

For RSOs, the share of employees with higher education varies between 75% and 87% in different years, with 75.4% in 2015 and increasing in most years, with 86.8% in 2022 and 84.6% in 2023. The relative share of employees with secondary and primary education decreased – from 24.8% in 2016 to 13.2% in 2022, while in 2023 it slightly increased and was 15.4%. As a positive point, the increase in the number of staff with higher education is reported, as the requirements for the positions are also high and specific knowledge and skills are required, both in conducting field research and in validating the data on the basis of repeated interim checks in the course of the activities of the relevant statistical observation, expert assessments, etc.

The dynamics of the integral coefficient of structural changes on a chain basis is very weak – with values close to zero and even zero for individual years and show that changes in the structure of employees with higher education are minimal and manifest themselves weakly or absently compared to the structure of the previous year. When comparing the values of the integral coefficient in a basic structure from 2009. shows that over the period of 15 years, changes have accumulated - which can be assessed as weak to moderate changes in the structure of employees by type of higher education compared to the basic structure - Ks for 2023 is 0.124, and for 2022 it is 0.1298.

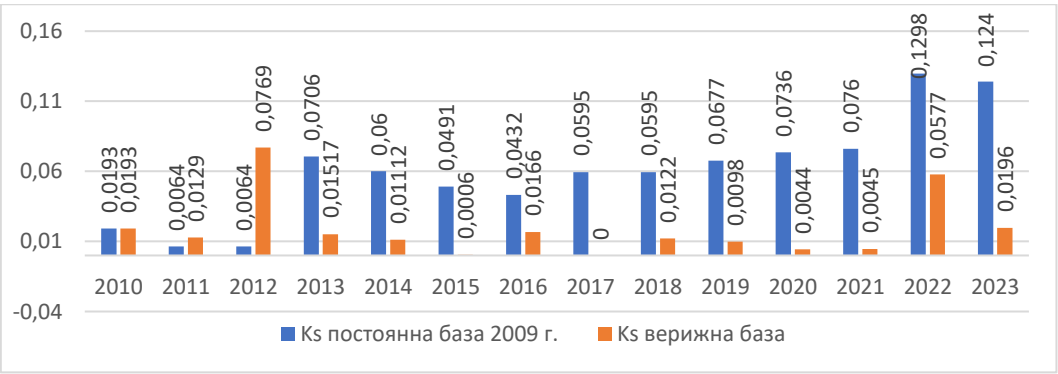

Figure 1. Integral Structural change coefficient of employees with higher education at base 2009 and chain base for the period 2009-2023

In the structure of the education staff, there is a tendency towards a decrease in the share of persons with secondary and primary education from 27.68% in 2009 to

10.08% in 2022, and in 2023 it is 11.77%, since persons with such a level of education are hired in positions that do not require a high level of education and are related to the performance of lower-skilled work and the maintenance of the material base.

From the analysis carried out, there are sufficient grounds to conclude that the changes in the educational structure have been carried out gradually over the years and they are due to: the policy for the appointment of persons with a higher level of education in response to the increased requirements for the staff, in order to ensure the necessary quality in the performance of tasks, which is adequate to the modern conditions for the development of statistical science and practice and the introduction of ICT in all stages of the statistical studies – from the collection of primary data, processing of results, analysis, storage, publication and archiving; the constant process of stimulating the staff to improve their educational level through the acquisition of the Master's degree and the Doctoral degree.

With regard to the age structure of the NSI staff, it was found that at the beginning of the analyzed period, persons aged 30-45 predominate and they account for between 40% and 43% up to 55 years, with its share for 2009 being 37.19% and decreasing during the period, with its lowest value for 2015 being 29.15%, and at the end of the period reaching 35.67% for 2022 and 35.20% for 2023. when the coefficient increased from 0.136679 to 0.278318 in 2015. At the end of the period, the coefficient has values of 0.145492 for 2022 and 0.150116 for 2023, respectively.

The changes in the age structure compared to the structure of the previous year were much more pronounced until 2015, when there were significant changes in the organizational structure of the NSI – the highest value of the coefficient was for 2014, when it was 0.141192; and for 2012 it was 0.12113. In the following years, the differences in the age structure of the staff and the values of the coefficient on a chain basis sharply decreased and reached 0.028979 for 2022 and 0.010002 for 2023 or were close to zero and showed the stability of the age structure.

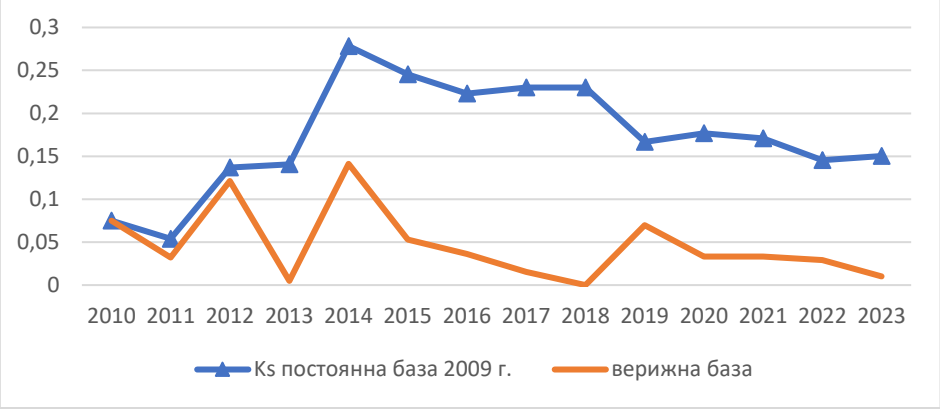

Figure 2. Integral coefficient of structural changes for the age structure of the staff on a basis in 2009 and on a chain basis

Source: Author's calculations.

An assessment of the intensity of the structural changes in the age structure of the employees in the Central Office of the NSI is carried out through the integral coefficient of structural changes and differences on a chain basis and on a permanent basis in 2015, as the year is key in terms of the significant changes made in the organizational structure of the NSI. From the obtained values of the integral coefficient of structural changes, it was found that compared to the baseline structure from 2015, moderate changes in the age structure of the employees in the Central Office of the NSI occurred in 2022 (Ks=0.2823), followed by changes in 2023 (Ks=0.1985) and in 2021 (Ks=0.1853).

Based on the values of the integral coefficient on a chain basis, it is concluded that the changes in the age structure of the employees in the Central Office of the NSI are insignificant to weak, with the highest coefficients obtained being for 2021 Ks=0.0693. This is quite logical, because changes in the age structure occur gradually and manifest themselves over a longer period of time.

Based on the obtained values of the integral structural change coefficient, it was found that compared to the baseline structure from 2015, the changes in the age structure of the employees in the RSO are weak, as the highest value of the coefficient is for 2022 (Ks=0.0878), followed by the coefficient for 2023 (Ks=0.0834).

Conclusion

For its 144-year history, Bulgarian state statistics have achieved significant results – numerous statistical surveys conducted at European and world level, access and the necessary publicity of their results have been provided. During this period, a number of changes occurred in the organizational structure of the state statistical body both in the name, subordination, and in the provision of resources.

On the basis of the study of the theories and concepts of the essence, elements and principles of the organizational structure of management of enterprises and organizations, it has been established that it is of decisive importance for the adequate functioning of any organization. On this basis, the most important requirements for the organizational structure are that it is consistent with the goals of the organization, with the environment for functioning, with the organizational and technological features of the processes and activities. There is a connection between the development strategy of the organization and its organizational structure, since the implementation of the set goals and objectives is related and depends on the management policy of the organization and in cases where problem areas are identified, it is necessary to make adequate decisions and, if necessary, make changes in the organizational structure. Important characteristics by which the effectiveness of management and the adequacy of the organizational structure are evaluated are the degree of performance of tasks, reliability, accuracy, quality, etc. From this point of view, these characteristics are particularly important and their influence is particularly strong in the state institutions in general and in particular in the National Statistical Institute, which is characterized by a clearly expressed and regulated hierarchy, approved by law and other normative documents, on the basis of which the functioning and synchronization of the activities of the individual directorates, departments and units is carried out, as well as the implementation of the set goals and tasks.

Tracing the chronology of structural changes in one of the oldest institutions in Bulgaria, it is concluded that they are an extremely important and responsible task of the leaders of this institution, which carries the charge of the new, modern, advanced, technological. As a result of the chronological review of the development of the Bulgarian state statistics, it was found that in the first years of its creation, most of the changes which have been carried out in relation to its name and subordination to the institution, and to a lesser extent are related to changes in its organizational structure. On the basis of the analysis, a periodization of the main stages through which the approval of the national statistics passes: Creation and approval of the Bulgarian state statistics in the period 1880-1944; Bulgarian state statistics in the conditions of a planned economy; Bulgarian state statistics in the conditions of transition to a market economy; Bulgarian state statistics in the conditions of EU membership.

Chronological review of the changes in the organizational structure of the NSI and especially of the changes in recent years, give us sufficient grounds to assert that

the largest structural reform of the NSI was carried out in 2015, when its territorial structures were consolidated from 28 to 6 in number. With the implementation of this reorganization, the administrative capacity is improved, A single, integrated and simplified model is provided to ensure the fulfillment of the objectives and priorities set out in the Strategy for Development of the National Statistical System and the tasks of the National Statistical Programme. The new organizational structure of the NSI creates conditions for increasing efficiency through the production of better quality information with a smaller amount of resources – human and financial, improvement of the reporting systems for statistical services and activities, increasing the use of ICT in processes and activities, conducting tracking monitoring of the functioning of the system, etc. As a result of the change in the organizational structure of the NSI in 2015, small multifunctional units that perform the administrative functions of the territorial departments "Statistical Surveys", the hierarchical levels are reduced, the work processes are improved, the positions with similar functions are reduced, the process of introducing information systems is accelerated, which facilitate the work not only of NSI employees, but also of respondents and users of statistical products and services.

The National Statistical Institute produces an information product, and its activity is defined rather as production and is fundamentally different from the administrative, and this makes the analysis of its organizational structure even more complicated. This stems from the fact that the formation of the organizational structure of the NSI should combine the specifics of the production process and the statutory requirements for the structures of the state administration in the country. Trust in official statistics is the result of the overall activity and the conditions in which statistical information is produced, and it is achieved through strict adherence to the methodology of statistical surveys, the principles of official statistics, the Code of European Statistical Practice and the implementation of an effective policy for disseminating information and serving users.

The implementation of the achievements of information technologies in the production and dissemination of statistical information poses new challenges to the national statistical system related to its restructuring, optimization and functioning. The organizational, structural, territorial, etc. changes create conditions for improving the quality of statistical information in accordance with Eurostat standards.

At the same time, human resources are a key factor for the successful functioning of the system and for the fulfillment of the goals and objectives of the institution. The analysis of the state of human resources showed that the staff in the NSI is highly qualified and educated, and a large part of the employees have accumulated many years of specific professional experience and knowledge. of which about 80% have a Master's degree. At the same time, the increase in the number of employees with acquired and trained in the Doctoral Degree will be useful both for the specialists from the NSI and for the higher education institutions training specialists in the field of statistics. In this way, a good symbiosis between science and practice will be obtained and the practical

orientation of the educational material will be increased. Effective management of human resources in the NSI is an important goal that requires the continuous selection of knowledgeable, capable, competent and motivated employees, as well as their development and improvement.

On this basis, the opportunities for improving the organizational structure of the NSI are in the context of increasing digitalization of processes and activities, expanding the use of online systems for entering data on the observations carried out by the NSP, upgrading the existing information systems, expanding the scope of activities and participating in the validation of data obtained in alternative ways on the basis of administrative sources, Big data, smart statistics and others, ensuring information security and information protection, increased control over the confidentiality of statistical information, improving the quality of statistical data, reducing the workload of respondents and increasing user satisfaction.

At the same time, there should be processes of continuous upgrading of the knowledge, skills and competencies of the employees in the NSI and the implementation of a system of measures to transform the professional realization in the NSI system as sought after and desired, providing various opportunities for career development in the national and European statistical system.

V. INFORMATION ON THE SCIENTIFIC AND SCIENTIFIC-APPLIED CONTRIBUTIONS IN THE DISSERTATION

The theoretical and practical significance of the dissertation and its main contributions are expressed in the following:

Before anything else. On the basis of the study of the literature on the essence, elements and principles of the organizational structure of enterprises and organizations, it is substantiated that the organizational structure of management is of decisive importance for the adequate functioning of each organization. This influence is especially strong in the state institutions in general and in particular in the National Statistical Institute, which is characterized by a clearly expressed and regulated hierarchy, approved by law and other normative documents, on the basis of which the functioning and synchronization of the activities of the individual directorates, departments and units is carried out, as well as the implementation of the set goals and tasks.

Second. A chronological review of the development and subordination of the statistical body of Bulgaria is made, and a periodization of the main stages through which the approval of the national statistics passes: Creation and approval of the Bulgarian state statistics in the period 1880-1944; Bulgarian state statistics in the conditions of planned economy; Bulgarian state statistics in the conditions of transition to a market economy; Bulgarian state statistics in the conditions of EU membership.

Third. Based on a study of the Rules of Procedure of the NSI for the period 2003-2023, a comparative analysis of the organizational structure of the NSI has been carried out, while at the same time the administrative capacity of the NSI has been examined in accordance with the adopted state standards and requirements for public state bodies.

Fourth. On the basis of the empirical analysis, objective regularities and trends in key indicators characterizing the staffing of the NSI activities both in general and in terms of education and age have been established. An assessment of the intensity of changes in the educational and age structure of the employees in the NSI has been carried out and specific conclusions and generalizations have been formulated.

Fifth. On the basis of the studies, analysis and evaluation carried out, it is recommended that the organizational structure of the NSI should be improved in the direction of digitalization and implementation of ICT achievements by expanding existing and building new information systems, as well as integrating

them with the information systems of other institutions. In order for this activity to be successful, it is necessary to combine it with permanent processes of upgrading knowledge, skills and competencies of the employees in the NSI. Only in this way, by encouraging employees to implement innovations and implementing good practices, as well as by stimulating initiative with the help of specific measures, professional realization in the NSI system would become in demand, desired and providing a variety of career opportunities in the national and European statistical system.

PhD student: ....……..

/Tsvetozaria Gateva/

V. LIST OF PUBLICATIONS OF THE PHD STUDENT

Articles: 2 pcs.

1. **Gateva, Ts.** The Organizational Structure of the National Statistical Institute – Synthesis between Traditions and Modernity. Annual Almanac "Scientific Research of PhD Students. Issue IX - 2016, Book 11 - Articles. Svishtov, Tsenov Publishing House, pp. 433-447.
2. **Gateva, Ts.** Some Aspects of the Changes in the Organizational Structure of the National Statistical Institute. Annual Almanac "Scientific Research of PhD Students. Issue X - 2017, Book 13 - Studies and Articles. Svishtov, Tsenov Publishing House, pp. 387-399.

Reports: 3 pcs.

1. **Gateva, Ts.** Analysis of Key Performance Indicators of the National Statistical Institute. Proceedings International Scientific and Practical Conference "Business Development Opportunities – Economic, Managerial and Social", Svishtov, 30 November 2018, Vol. II, pp. 155-164.
2. **Gateva, Ts**. Analysis of key aspects of the organizational structure of the National Statistical Institute. Proceedings International Scientific Conference "Problems and Challenges to Economic Science and Education in the XXI Century". Svishtov, 22 November 2024 Tsenov Publishing House, pp. 316-326.
3. **Gateva, Ts.** The Territorial Structures of the National Statistical Institute – Creation, Development and Modern Organization. Proceedings Scientific and Practical Conference "Statistics as Science and Practice – Traditions and Contemporary Dimensions", Svishtov, 20 October 2017 Tsenov Publishing House, pp. 362-369.

VI. REFERENCE FOR COMPLIANCE WITH THE NATIONAL REQUIREMENTS UNDER THE REGULATIONS FOR THE IMPLEMENTATION OF THE ACADEMIC STAFF DEVELOPMENT ACT IN THE REPUBLIC OF BULGARIA

National requirement in number of points: **40,00**

Number of **articles** published in non-refereed journals with scientific peer review or published in edited collective volumes: 2 pcs.
Number of points for the author: **20 points**

Number of **papers** published in non-refereed journals with scientific peer review or published in edited collective volumes: 2
Number of points for the author: **20 points**

Compliance with the requirements for registration in NACID: 40 points > 30 points

VII. DECLARATION OF ORIGINALITY OF THE DISSERTATION

The dissertation in the volume of pages under the title: **Improvement of the organizational structure of the NSI – problems and challenges** and the abstract to it are authentic and represent the author's own scientific production. They use author's ideas, texts and visualization through graphs, schemes, tables and formulas, complying with all the requirements of the Copyright and Related Rights Act through proper citation and reference to someone else's copyright. Thought, as well as data, including:

1. The results achieved in the dissertation and the outputs are original and are not borrowed from research and publications in which the author has no participation.

2. The information presented by the author in the form of copies of documents and publications, personally compiled references, etc. corresponds to the objective truth.

3. Scientific results that have been obtained, described and/or published by other authors are duly and thoroughly cited in the bibliography.

Date: 12.12.2024 **PhD student**: ....……..

/Tsvetozaria Gateva/