Summaries of the Main Results and Scientific Contributions

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I. Indicator B 3 – Habilitation Thesis – Monograph.

1. Terzieva, A., *Organization, Technological Development and Competitiveness of the Clothing Manufacturing Sector*, ES Print Ltd. Publishing House, Sofia, 2026, 153 p., ISBN 978-619-7121-72-8.

The "Manufacture of Clothing" sector is a traditional sector of the light industry in Bulgaria. Moreover, textile and clothing manufacturing are among the oldest sectors of the Bulgarian economy, with long-standing traditions and good potential for development. From the perspective of the present study, the issue of the technical and technological provision of enterprises in Bulgaria is of particular relevance, as it determines their position on the local, regional and global markets. The moral and physical obsolescence of equipment in industrial enterprises is often one of the main reasons for the lower efficiency and competitiveness of Bulgarian manufacturing. The decline in the investment activity of Bulgarian companies over the years has reduced their ability to continuously modernize and remain competitive on the global market. This provides grounds for considering the introduction of new technologies and production equipment, even at the level of individual enterprises, as a factor for successful operation and future development. The main objective of the study is to examine the organization of production, technological development and competitiveness of enterprises in the "Manufacture of Clothing" sector by analyzing the specific features of the production process, the technologies and equipment used, investment activity, foreign trade and personnel training.

A specific feature of the study is the combination of theoretical analysis with a concrete technological and production study. In examining the manufacture of men's trousers, the stages of the production process, the organizational and technological scheme, and the machinery and equipment used are traced, making it possible to demonstrate the relationship between the selected product, the organization of production, the technological solutions and the equipment employed. The monograph defines the objective of this specific study as examining the main stages in the manufacture of trousers and analyzing the technological processes that ensure high-quality and efficient production.

The main objectives of the study are:

First, to systematize the theoretical aspects of production organization in clothing manufacturing enterprises related to the production process and production structure, forms and methods of production organization, production line design, workplace layout and working conditions;

Second, to examine the main characteristics of finished clothing products, including the purpose and classification of products, the raw materials and materials used, and the requirements concerning labeling, marking, packaging, quality assessment, storage and transportation;

Third, to analyze the production process involved in the manufacture of a specific men's trousers model, including the characteristics of the selected model, the organizational and technological scheme, the machinery and equipment used in the cutting and garment-making departments, as well as the possibilities for modernization through the implementation of software systems and equipment;

Fourth, to analyze the competitiveness of enterprises in the “Manufacture of Clothing” sector by examining production, the number and structure of enterprises, employment and their territorial distribution, foreign trade, investment activity and personnel training.

The study is structured into four chapters. Chapter One presents the theoretical foundations of production organization. It examines the production process and production structure of the enterprise, the forms and methods of production organization, production line design and workplace layout. The requirements concerning working conditions and the workplace, which are important for the efficient organization of the production process, are also discussed.

Chapter 2 examines the characteristics of the “Manufacture of Clothing” sector and finished clothing products. Particular attention is paid to the purpose and classification of finished clothing, the requirements concerning labeling, marking and packaging, quality assessment, storage and transportation. The raw materials and materials used in clothing manufacturing, defects in textile materials and their quality assessment systems, as well as the range of fabrics according to their composition, are also examined.

Chapter 3 is devoted to the study of production processes involved in the manufacture of finished garments in clothing manufacturing enterprises. A substantial part of the chapter focuses on the analysis of a specific men's trousers model, including the characteristics of the product and the organizational and technological scheme of the production process. The machinery and equipment used in the cutting and garment-making departments are presented in detail, together with the possibilities for modernization of the production process through the

implementation of software systems and equipment. Waste management and the legal requirements applicable to clothing manufacturing are also examined.

Chapter 4 presents an analysis of the competitiveness of enterprises in the "Manufacture of Clothing" sector. Particular attention is paid to the general characteristics and structure of the sector, the dynamics of key indicators of enterprise development, competitiveness from the perspective of foreign trade, investment activity and its impact on the sector. Personnel training for the "Manufacture of Clothing" sector is also examined, with emphasis placed on the relationship between education, personnel qualifications and the needs of production.

II. Indicator 5 – Published Book Based on a Dissertation Successfully Defended for the Award of the Educational and Scientific Degree of "Doctor" or the Scientific Degree of "Doctor of Sciences".

2. Terzieva, A., *Technological Transfer and Commercialization of Scientific Results – A Follow-up Book to the Dissertation on "The Impact of Technological Transfer on the Activities of Textile Clothing Manufacturing Enterprises"*, ES Print Ltd. Publishing House, Sofia, 2026, 96 p., ISBN 978-619-7121-73-5

Technological transfer is an essential prerequisite for the successful functioning of the modern economy. It is fundamental to the development of the contemporary enterprise and, at the same time, is a factor contributing to high productivity, competitiveness and economic growth. Technological transfer is a means of successfully overcoming technical and economic disparities between individual countries, as well as of achieving effective economic integration. Technology transfer encompasses all forms and methods of applying technologies, know-how and cooperation, primarily in two directions – from science to practice, when new knowledge is created for the first time, and between individual economic entities in connection with its subsequent application and/or modification.

The main objectives of the study are:

First, to clarify the essence, content and specific characteristics of technological transfer, its types and main channels of implementation, as well as its relationship with technological modernization, innovation activity and competitiveness;

Second, to examine the interaction between higher education, science and business in the context of the commercialization of scientific research, including the relationship between technological transfer, innovativeness and investment, as well as the opportunities for technology transfer between higher education institutions and business;

Third, to examine the opportunities for the commercialization of scientific research and the protection of intellectual property by presenting the main types of intellectual property and the institutions responsible for its protection.

The study is structured into three chapters.

Chapter 1 examines the theoretical aspects and the current state of the issues related to technological transfer. Its essence, classification and main channels for technology transfer are clarified, as well as its relationship with technological modernization, innovation activity and the competitiveness of enterprises.

Chapter 2 examines the interaction between higher education, science and business organizations in the context of commercialization. The relationship between technological transfer, innovativeness and investment, the opportunities for technology transfer between higher education institutions and business, research and development expenditures, and the commercialization of scientific research are examined.

Chapter 3 is devoted to the opportunities for intellectual property protection. The main types of intellectual property and the institutions responsible for its protection in Bulgaria are presented.

II. Indicator G 6 – Scientific Publications (Articles and Conference Papers) Published in Journals and Proceedings Indexed in World-Renowned Scientific Information Databases.

3. **Terzieva, A**., *Analysis and Evaluation of Trade with Chemical Products*, Journal of Chemical Technology and Metallurgy, 59, 5, 2024, pp. 1263–1268, ISSN 1314-7471 (print), ISSN 1314-7978 (online), DOI: 10.59957/jctm.v59.i5.2024.30

The article analyzes and evaluates trade in chemical products based on statistical data for the period 2015–2021. Production, imports and exports of chemical products are examined, and the main trading partners by country are identified.

Based on the analyzed data, the main trends in the production and foreign trade of chemical products are identified, and the leading partner countries in exports and imports are determined. An assessment is made of the significance of trade in chemical products for the development of the sector under review and the national economy.

III. Indicator G 7 – Scientific Publications (Articles and Conference Papers) Published in Non-Refereed, Peer-Reviewed Journals or in Edited Collective Volumes.

4. **Terzieva, A.,** "Clarifying the Nature and Content of Technology Transfer", International Scientific Conference – UCTM 2015, *Post-Crisis Management in Business*, pp. 35–41, ISBN 978-954-2940-19-8

The paper provides an analysis of the scientific literature devoted to the implementation and management of technology transfer. The essence, content and main forms of technology transfer are examined, as well as its various manifestations according to the direction of transfer, field of application, activity of the participants and degree of contractual agreement. The relationship between technology transfer, knowledge dissemination and innovation activity is also examined.

Based on the review of the literature and the authors who have addressed this area of research, it can be noted that technology transfer is a complex process of deliberate, purposeful and generally contractual interaction between two or more organizations aimed at transferring

and applying new and useful information and knowledge, methods and processes, as well as physical objects (products, machinery and equipment, components, facilities, plants and others) within the recipient organization. It is closely related to innovation in the production sector and should serve as a key means of implementing innovation activities in the business sphere and of applying the achievements of scientific research in practice.

5. Karev, N., **A. Terzieva,** Clarification of the correlation between the technological transfer and the enterprise competitiveness, Science, Engineering & Education, Volume 1, Issue 1, S, 2016, pp. 121-124, ISSN 2534-8507 (print) ISSN 2534-8515 (online)

An analysis of a technological transfer and competitiveness essence is presented aiming to clarify the correlation between the technological transfer and the individual enterprise competitiveness.

In the article is clarified the essence of the two indexes which brings about a higher profit achievement, market positions improvement and production of higher quality products.

6. **Terzieva, A.**, *Technological Undates and Innovation Activities in Enterprises*, International Scientific Conference – UCTM 2019, "Contemporary Paradigms in Management in the Context of Continuous Change", Sofia, November 29, 2019, Academic Publishing Ltd., pp. 27–32, ISBN 978-954-2940-22-7

The paper analyzes and evaluates the impact of technological modernization and innovation activity in enterprises in the "Manufacture of Clothing from Textiles" sector. The importance of technological modernization, the implementation of new technologies and innovative solutions for enterprise development is examined, along with the main results of their implementation. The possibilities for technological and product modernization and their impact on production costs, productivity and product quality are also analyzed.

Based on the analysis, it was established that technological and product modernization are a necessary prerequisite for increasing the competitiveness of enterprises in the "Manufacture of Clothing from Textiles" sector. The main areas of technological modernization were identified as technological innovation, technological diffusion, technological substitution and technological expansion. It was established that the implementation of new technologies creates opportunities to reduce production costs, increase productivity and improve the quality of manufactured products.

7. **Terzieva, A.,** *Role of Education in the Preparation of Staff for the "Production of Textile Clothing"Sector* **,** Science, Engineering & Education, Volume 6, Issue 1, S, 2021, pp. 74-81, ISSN 2534-8507 (print) ISSN 2534-8515 (online)

The article provides an overview of staff training for the "Manufacture of Clothing from Textiles" sector. The regulatory framework, the role of higher education and vocational training, as well as mechanisms and approaches for promoting employment and the professional development of young people in the sector are analyzed. The relationship between the education system, the labor market and enterprises' demand for qualified personnel is examined. Data on

the number of students enrolled in selected professions related to clothing and textile manufacturing are presented.

Based on the analysis, the main problems associated with the shortage of skilled labor and the mismatch between staff training and the needs of businesses are identified. The importance of vocational and higher education for developing the necessary knowledge, skills and competencies of personnel is established. Conclusions are drawn regarding the need for closer cooperation between education and the labor market in order to ensure a qualified workforce for enterprises in the sector.

8. **Angelina Terzieva**, *Opportunities for Upgrading and Modernizing Processes in the Cutting Department*, Industrial Management Journal, Technical University of Sofia, Faculty of Management, No. 1, 2021, pp. 53–59, ISSN 1312-3793.

The paper analyzes the opportunities for upgrading and modernizing processes in the cutting department of clothing manufacturing enterprises. The technologies and technical equipment used, the possibilities for implementing modern software products and automated solutions, as well as the organization of the main processes in the cutting department are examined.

The analysis identifies the main problems and potential opportunities for improving the technological level of production. Opportunities for upgrading and modernizing the processes through the implementation of modern software products, production technologies and automation are outlined, with the aim of increasing productivity and production efficiency. The upgrading and optimization of processes create opportunities for the modern enterprise to develop and, at the same time, constitute a factor contributing to competitiveness, high productivity and economic growth.

9. **Terzieva, A.**, *Eurofinansing as a Means of Increasing the Competitiveness of Enterprises in the "Production of textile clothing" Sector*, International Scientific and Practical Conference, *Sustainable Development and Socio-Economic Cohesion in the 21st Century – Trends and Challenges*, Svishtov, November 8–9, 2021, pp. 266–273, dedicated to the 85th anniversary of the establishment of D. A. Tsenov Academy of Economics, ISBN 978-954-23-2069-2 (print), ISBN 978-954-23-2070-8 (online).

The paper provides an overview and analysis of the opportunities for European funding available to enterprises in the "Manufacture of Clothing from Textiles" sector. The main programs and financial support mechanisms aimed at modernizing the technological base, introducing new technologies and innovations, and developing small and medium-sized enterprises are examined. The funding opportunities within the 2014–2020 and 2021–2027 programming periods are reviewed, including the "Competitiveness and Innovation in Enterprises" Programme, the Employment and Social Innovation Programme (EaSI), the CRAFT CODE project, and the Operational Programme "Innovation and Competitiveness" (OPIC).

The main areas in which European funding supports the development of enterprises in the sector are identified, including technological modernization, the implementation of

innovations, production investments and increased competitiveness. The importance of diverse funding sources for implementing technical and technological modernization and creating opportunities for developing new ideas and products through investments in tangible fixed assets is established.

10 **Terzieva, A.,** St. Dobrev, *Regulatory Framework of the Activities of Companies from the Chemical Industry*, IV National Forum *Business in the 21st Century: "Recovery and Sustainability after the Crisis"*, Sofia, 2022, pp. 176–182.

The report analyzes the regulatory framework governing the production, import and export of chemical products. The main European Union regulations – REACH, CLP and PIC – are examined, as well as the requirements for the classification, labeling, packaging, storage and transportation of chemical products. Safety requirements for the transportation of dangerous goods are also analyzed.

The main regulatory requirements related to trade in chemical products and ensuring safety during their production, import, export and transportation are identified. The importance of complying with the requirements for the classification, labeling, packaging and transportation of hazardous chemical substances for the protection of human health and the environment is highlighted. The procedures and methods for conducting safety assessments during the transportation of hazardous chemical substances are outlined, together with the requirements applicable to international transportation of chemical products.

11. **Terzieva, A.**, *Analysis and Evaluation of the Demand and Supply of Perfumemy and Cosmetic Products*, IV National Forum *Business in the 21st Century: "Recovery and Sustainability after the Crisis"*, Sofia, 2022, pp. 182–189.

The paper analyzes the raw materials used in the production of perfume and cosmetic products, as well as the production, imports and exports of the products under review. Data on the production of key raw materials and finished products are presented, and the dynamics of foreign trade in perfume and cosmetic products, soaps and cleaning preparations for the period 2015–2021 is examined.

The main trends in the production, imports and exports of the products under review are identified. An increase in the production of key raw materials, including oil-bearing rose and lavender, as well as in the production of cosmetic products, is established. The importance of the raw material base and national comparative advantages for the development and international market realization of perfume and cosmetic products is highlighted.

12. **Terzieva, A.,** Dobrev, St., *Development of the Production program of the Enterprise*, Scientific Conference *Management in an Unpredictable Business Environment*; 60th Anniversary of the Department of Economics and Business Management, Sofia, 2023, pp. 16–20.

The paper clarifies the essence of the production programme and examines the main groups of indicators and factors influencing its development. The stages of developing a

production programme are analyzed, including the study of market demand, production capacities and available resources, as well as the allocation of production tasks by quarters and months.

The main conditions and sequence for developing the production programme are identified, highlighting the importance of coordinating market demand with the production capacities, resources and capabilities of the enterprise. The main factors that should be taken into account when allocating production tasks across different periods are identified, including seasonality, foreign trade turnover, the production process, production capacities and workforce employment.

13. **Terzieva, A.**, *Analysis of the Requirements Related to the Warehousing and Storage of Chemical Substances and Mixtures*, 60 Years of the Department of Economics and Business Management, Proceedings of the Scientific Conference *Management in an Unpredictable Business Environment*, UCTM – Sofia, 2023, pp. 11–15, ISBN 978-954-465-154-1.

The paper analyzes the regulatory requirements related to the safe warehousing and storage of chemical substances and mixtures. The requirements for classifying substances according to their specific hazardous properties, storage conditions, requirements for storage facilities, and the obligations of persons storing hazardous chemical substances and mixtures are examined. The main risks associated with improper storage, including fire, explosion, spills and environmental pollution, are also analyzed.

Based on the analysis, the main requirements for the safe storage of chemical substances and mixtures are identified, and measures for limiting risks to human health and the environment are outlined. The importance of the proper classification of hazardous substances, compliance with regulatory requirements and the maintenance of up-to-date safety data sheets is highlighted. It is established that storage safety is ensured by adapting storage conditions to the specific hazardous properties of substances and by implementing measures to prevent and limit fire, explosion and other emergency situations.

14. **Terzieva, A.**, *Application of the Cluster Approach in Grain Production*, Round Table held on the occasion of the 75th anniversary of the establishment of the "Industrial Business and Entrepreneurship" programme and the 70th anniversary of the establishment of the Department of "Industrial Business and Logistics", under the theme *"Industrial Business – Prospects and Opportunities"*, University of Economics – Varna, 2023, pp. 81–88, ISBN 978-954-21-1164-1.

The paper examines the possibility of applying the cluster approach to the production and marketing of grain products. The essence and types of clusters and their role in increasing the competitiveness of enterprises are examined. Sunflower and wheat production activities are analyzed, and opportunities for optimizing them through the application of No-Till technology are explored, as well as opportunities for improving product marketing through the establishment of a cluster structure.

Opportunities for optimizing production through the application of No-Till technology are identified, including reductions in time, labor and fuel costs and the limitation of soil

erosion. Two options for establishing a cluster structure for marketing the manufactured products are proposed, creating a more direct link between production and consumption and reducing losses associated with intermediary trading entities.

15. **Terzieva**, **A**., *Research of the Investment Activity in the Enterprises in the "Manufacture of Textile Clothing" Sector*, Industrial Growth Conference 2024, September 27–29, 2024, Nessebar, Bulgaria, pp. 234–245 https://doi.org/10.53656/igc-2024.21

The paper examines the investment activity of enterprises in the "Manufacture of Textile Clothing" sector for the period 2014–2020. Based on data on tangible and intangible fixed assets and using horizontal financial analysis, the dynamics of investments are examined and the economic impact of the investments made on production is determined. Changes in revenues, total expenditures and realized profit, as well as the dynamics of profitability, are analyzed.

Based on the analysis, a decrease in investments in tangible fixed assets and an increase in investments in intangible fixed assets and realized profit are established. A decrease in revenues and total expenditures over the analyzed period is also identified, with the decrease in expenditures being more significant. Despite the negative trends in investment activity compared with the period 2009–2014, an increase in profitability was established towards the end of the period under review, indicating that the investments made were effective. The importance of investments in machinery and technologies made in previous periods, as well as investments in intangible assets, for the economic results achieved by enterprises is highlighted.

16. Karev, N., **A. Terzieva,** *Modernization Opportunities in Electrical Equipment Manufacturing Enterprises* , 2025– *forthcoming publication*

The paper investigates the production process in the preparatory workshops of enterprises manufacturing electrical equipment, specifically power transformers. Based on a techno-economic study, the main production operations, the equipment used, and the organization of the production process were analyzed. The condition of the machinery and equipment was assessed, and the main factors limiting production productivity and efficiency were identified.

Based on the analysis conducted, it was established that the hydraulic guillotine shear represents a **"**bottleneck" in the organization of the preparatory workshop, affecting the duration of the production cycle, cutting accuracy, product quality, and productivity. Opportunities for modernization through the implementation of modern computer-controlled laser equipment were examined. A specific proposal was made to introduce a Bystronic BySmart Fiber 3015 – 4 kW laser cutting machine, and the expected results of its implementation were assessed in terms of reducing cutting time, minimizing production waste, shortening setup and changeover times, and increasing the level of automation and digital integration of the production process.

17. **Terzieva., A**., *Foreign Trade Dynamics in the Clothing Manufacturing Sector* – forthcoming publication

The article examines the foreign trade dynamics of the clothing manufacturing sector in Bulgaria over the period 2019–2023. The analysis covers the number of enterprises, the volume of manufactured production, clothing imports and exports in both physical and value terms, as well as the main foreign trade partners. Changes in foreign trade flows and the geographical orientation of imports and exports are also examined.

Based on data from the National Statistical Institute, the main trends in the development of the sector and its participation in international trade are identified. A decline in the number of enterprises was established, accompanied by a recovery in production output following the decline observed in 2020–2021. The analysis of imports and exports reveals significant changes in both physical and value volumes, as well as a concentration of trade flows towards specific partner countries. The results obtained make it possible to assess the current state of the clothing manufacturing sector, its position within Bulgaria's manufacturing industry, and the importance of foreign trade relations for the development and competitiveness of enterprises operating in the sector.

IV. Indicator E 21 – Published University Textbook or Textbook Used in the School Education System.

1. Karev, N., **A. Terzieva,** *Microeconomics – Textbook Supplement*, University Publishing House of the University of Chemical Technology and Metallurgy, Sofia, 2025, ISBN 978-954-465-173-2.

The *Microeconomics* textbook supplement provides methodological knowledge on key issues related to microeconomics. In order to develop practical skills, each topic includes, in addition to theoretical knowledge, solved problems and questions for discussion.

The textbook supplement is intended for UCTM students enrolled in the Bachelor's degree programme in "Industrial Management". It may also be useful for students enrolled in other degree programmes and for professionals with an interest in the field of economics.

Съставил:

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