SUMMARY OF THE MAIN RESULTS AND SCIENTIFIC CONTRIBUTIONS

by

Associate Professor Dr Georgi Ivanov Kondev,

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Associate Professor G. Kondev's publication record comprises 80 articles published in international journals with an impact factor, national refereed journals and scientific conferences. He is participating in this competition with 37 publications, which cover fundamental and applied research in the fields of engineering management, industrial organisations, logistics and quality management. The research covers a broad spectrum of economic sectors — from the extractive industry (extraction of aggregates) and non-ferrous metallurgy, through the biotechnology industry, to the higher education and services sectors.

It is worth noting that these academic achievements were attained whilst maintaining an average annual teaching load of over 500 hours. Since obtaining his habilitation, he has supervised the preparation of 50 degree theses, whilst also writing numerous reviews whilst serving on academic examination boards in the Republic of Bulgaria. The scientific and applied contributions of the works presented by Associate Professor Georgi Kondev can be grouped into several main areas of research:

Section I: The Application of TQM and Process Management in Industry

1.1. TQM in the biotechnology and extractive industries

Total Quality Management (TQM) is a management approach aimed at the continuous improvement of an organisation's operations, increasing customer satisfaction and the efficient use of resources. The implementation of TQM implies that quality is the responsibility of the entire organisation, rather than just a single department or individual staff members. The successful implementation of TQM begins with the active commitment of senior management. It must set clear objectives, provide the necessary resources and foster an organisational culture geared towards continuous improvement. Employee participation also plays an important role, as they can identify problems, propose solutions and contribute to the improvement of work processes.

Publication No. 1 (Kondev, G., 2024, BIO Web Conf.) provides an in-depth analysis of the implementation of the Total Quality Management (TQM) concept in the biotechnology industry. The specific nature of this sector requires the reconciliation of strict regulatory requirements (GMP, GLP) with flexible management practices. The author examines the specific barriers and critical success factors (CSFs), emphasising the need for high process stability and risk monitoring.

In Publication No. 2 (Kondev, G., Springer Cham, 2024) and Publication No. 36 (Kondev & Mihaylova, 2024, Annual UMG), the research is extended to the extractive sector — specifically, the extraction of aggregates. The mining industry is characterised by high capital

intensity, harsh operating conditions and high variability in raw materials. A structured model for the implementation of TQM has been developed, which integrates the processes of extraction, crushing, screening and dispatch with the principles of safety and quality control. Publication No. 23 (Kondev & Mihaylova, 2021) identifies key opportunities for improving business performance in the sector by reducing downtime and transitioning to preventive approaches.

1.2. Principles for continuous improvement and maintenance management

Publication No. 14 (Kondev & Mihaylova, 2019) and Publication No. 19 (Kondev & Mihaylova, 2020) systematise the key management principles for continuous improvement (Kaizen, PDCA cycle). The authors argue that TQM is not merely a set of tools (SPC, Pareto, Ishikawa), but a comprehensive organisational culture based on leadership and customer focus. Publication No. 17 (Kondev & Mihaylova, 2019) proposes a framework for adapting TQM systems to the resources and specific characteristics of small and medium-sized enterprises (SMEs).

An extremely important aspect of process management is equipment maintenance. Publication No. 7 (Kondev & Stefanov, 2016) examines the organisation of maintenance in an industrial enterprise. This thematic strand is further developed in Publication No. 33 (Kondev & Nedelev, 2023) and Publication No. 37 (Kondev & Ganchev, 2025), which analyse the advantages and obstacles to the implementation of predictive maintenance (PdM) in the non-ferrous metallurgy and heavy industries. The use of sensors, vibration analysis and thermography enables a shift from reactive to proactive maintenance, which directly reduces unplanned downtime and production costs.

Another key element is a customer-focused approach. Organisations must regularly collect and analyse customer feedback in order to understand their needs and expectations. The use of data in management decision-making enables the identification of inefficiencies, the reduction of errors and costs, and the improvement of the quality of products and services. However, the implementation of TQM can encounter a number of difficulties. These include resistance to change, insufficient staff training, a lack of support from management, and difficulties in changing established organisational practices. Overcoming these challenges requires good communication, appropriate training, clear and measurable objectives, and continuous monitoring of results.

This is why, according to the research of Assoc. Prof. Kondev, TQM can contribute to increased customer satisfaction, staff engagement, operational efficiency and continuous quality improvement. Its effectiveness depends on whether the organisation views quality management as a long-term process and a shared responsibility, rather than as a short-term management initiative.

Section II: Models of Organisational Excellence (EFQM) and Change Management

2.1. Application of the EFQM Excellence Model

The aim of the research carried out is to analyse the possibilities for applying the EFQM Excellence Model in higher education as a tool for improving the quality of educational and administrative processes, increasing stakeholder satisfaction and achieving sustainable results. The focus is on the model's core principles, its applicability in a university setting and its potential for building a culture of organisational excellence and continuous improvement.

The European Foundation for Quality Management (EFQM) Excellence Model is the focus of a number of the author's works. Publication No. 8 (Kondev & Stefanov, 2017) examines the role and influence of logistics processes within the framework of the EFQM criteria. It is pointed out that operational efficiency in logistics has a direct impact on both 'Customer Outcomes' and the organisation's 'Key Results'.

Publication No. 35 (Kondev, G., 2024, KSI Conference) provides a detailed analysis of the EFQM model in the Bulgarian context, taking into account the specific features of the national business culture, the institutional framework and the need to adapt the self-assessment criteria. Publication No. 18 (Kondev, G., 2019) analyses how the process-based approach forms the core of excellence models, whilst Publication No. 22 (Kondev, G., 2020) examines the impact of organisational excellence on competitiveness in the context of digital transformation.

2.2. Change management and the human factor

Change management is a systematic approach to planning, implementing and monitoring organisational changes. It is particularly important when introducing new technologies, restructuring, changing business processes or transitioning to sustainable and 'green' working models. In the context of dynamic economic, social and technological changes, organisational excellence is establishing itself as a key factor in the sustainable development and enhanced competitiveness of higher education institutions. A key aspect in such an environment is to identify and analyse the key priorities in the management of higher education institutions that lay the groundwork for achieving organisational excellence in the context of a post-crisis environment. The main focus is on strategic leadership, quality management, organisational resilience, human resource development, digital transformation and the creation of a culture of continuous improvement.

Change management is inextricably linked to self-assessment and models of excellence. Publication No. 24 (Kondev, G., 2021) examines how the application of the EFQM model stimulates staff engagement and motivation in industrial companies. Human resources cease to be mere executors and become active participants in innovation processes.

Publication No. 25 (Kondev, G., 2021) emphasises stakeholders as a key factor in effective change management. The organisation's authority depends on balancing the interests of owners, employees, suppliers, customers and society. Publication No. 26 (Kondev & Mihaylova, 2021) examines the combined influence of TQM practices and external risks (e.g. economic crises, pandemic disruptions) on change processes, whilst proposing mechanisms to enhance organisational resilience.

Some of the key benefits relate to the formulation of key management priorities that assist higher education institutions in overcoming the consequences of crises and building sustainable organisational models. The study emphasises the need for an integrated management approach based on strategic vision, innovation, flexibility, effective quality management and a results-oriented approach. The implementation of these priorities creates the conditions for enhancing institutional resilience, improving the quality of higher education and achieving organisational excellence in the long term. Change management and the human factor are closely linked. Even a well-developed strategy may fail to deliver the expected results if staff are not informed, trained

and motivated. For this reason, modern organisations view people, technology and processes as interrelated elements of change.

Section III: Management, Optimisation and 'Green' Supply Chains (GSCM)

3.1. Green Logistics and Sustainable Supply Chains

In today's environment of globalisation, intensified competition, rapid technological development and growing demands for sustainable development, the effective management of supply and logistics chains is becoming increasingly important to organisations. Changes in the business environment, market volatility, the need to optimise costs and the increased focus on the environmental and social aspects of business activity present organisations with new challenges relating to the management of material, information and financial flows.

In this context, the improvement of supply and logistics processes requires the application of integrated management approaches that combine the principles of Total Quality Management (TQM), sustainable development, partnership between supply chain participants and the systematic evaluation of results achieved.

Environmental sustainability is a central theme in contemporary management. Publication No. 5 (Kondev, Panko & Morskaja, 2015) outlines the general guidelines and practices for assessing the sustainability of 'green' supply chains. It examines indicators for environmental efficiency, carbon footprint reduction and the reuse of materials.

Publication No. 10 (Kondev & Ilieva, 2018) and Publication No. 28 (Kondev & Mihaylova, 2022) provide an in-depth analysis of the benefits of establishing an effective green supply chain, with specific examples from the extractive industry. It is demonstrated that environmental measures are not merely a cost, but lead to long-term optimisation of resource costs and an improvement in public image. Publication No. 21 (Kondev & Mihaylova, 2020) proposes a comprehensive strategy for improving quality in green supply chains, integrating environmental standards (ISO 14001) with TQM practices.

In Publication No. 30 (Kondev, G., 2022), environmental orientation is linked to market positioning through the concept of 'green' marketing, analysing the opportunities for achieving a competitive advantage through certified eco-friendly products and supply transparency.

The supply chain is a complex system of interconnected organisations, activities and processes through which the procurement of resources, production, storage, transport and delivery of products and services to end users are carried out. The effectiveness of this system depends not only on the performance of individual participants, but also on the degree of coordination, integration and cooperation between them. Therefore, quality management in the supply chain should be viewed as a systematic process aimed at improving interaction between organisations, reducing losses, minimising non-conformities and creating added value for customers. Furthermore, contemporary requirements for sustainable development necessitate the inclusion of environmental and social criteria in management decision-making, which highlights the need to develop the concept of a 'green' supply chain.

3.2. Optimisation of logistics processes and self-assessment

The optimisation of logistics processes involves the systematic improvement of the flow of goods, materials, information and resources with the aim of achieving lower costs, shorter lead times and a higher quality of service. This study examines the theoretical and practical aspects of applying TQM in supply chain management. Particular attention is paid to the fundamental principles of Total Quality Management, including customer focus, leadership, staff commitment, the process approach, the management of interrelated processes, data-driven decision-making and continuous improvement. These principles are analysed in terms of their significance for enhancing the efficiency of logistics operations and improving interaction between suppliers, manufacturers, distributors and end users.

The application of TQM in the supply chain creates the conditions for establishing a unified quality management system that encompasses not only the organisation's internal processes but also its relationships with external partners. In this context, quality is viewed as a shared responsibility of all participants in the chain, rather than solely as the result of a single organisation's activities. The study examines the importance of coordination between individual logistics units, the exchange of information, the standardisation of processes and the use of common indicators for evaluating results. The focus is on opportunities to reduce order fulfilment times, minimise errors in the handling and delivery of products, improve inventory management and increase customer satisfaction.

Logistics efficiency is subjected to a detailed analytical examination. Publication No. 8 (Kondev & Stefanov, 2017) examines 'Partnerships and Resources' as critical elements of the logistics chain self-assessment model. Publication No. 12 (Kondev & Manolov, 2018) and Publication No. 29 (Kondev & Manolov, 2022) examine the mechanisms for achieving competitive advantage through periodic self-assessment and the identification of key factors affecting the quality of logistics processes.

Publication No. 20 (Kondev & Manolov, 2020) analyses current challenges and guidelines for the effective management of supply chain processes in a context of global uncertainty. Publication No. 27 (Kondev & Mihaylova, 2021) introduces an original model for assessing the influence of people on organisational culture within the logistics chain, confirming that digitalisation and automation must be supported by a corresponding cultural transformation.

A key focus of the research is the sustainable management of supply chains and the need to integrate environmental criteria into the processes of planning, procurement, production, transport, storage and distribution. The main guidelines and practices for assessing the sustainability of 'green' supply chains are examined, with an emphasis on the comprehensive consideration of economic, environmental and social outcomes. Sustainability is interpreted as the supply chain's ability to ensure long-term economic efficiency whilst minimising negative environmental impacts and taking into account the interests of stakeholders. The optimisation of logistics processes and self-assessment are interlinked. Optimisation determines how processes can be improved, whilst self-assessment indicates the extent to which the organisation is actually achieving its set objectives. By regularly measuring KPIs, analysing deviations and applying the

PDCA cycle, the organisation can achieve lower costs, greater efficiency and a more sustainable logistics system.

Section IV: Strategic Management and Competitiveness

4.1. Assessment of Competitive Advantages and Strategic Frameworks

The studies examine the importance of effective strategic planning and management decisions geared towards long-term development, the rational use of resources and adaptation to the changing needs of stakeholders. Particular attention is paid to the role of academic leadership, the commitment of teaching staff and administrative staff, student satisfaction, and partnerships with business and the community as key factors for organisational excellence. The focus is on opportunities for integrating contemporary models of quality management and organisational excellence as tools for self-assessment, identifying areas for improvement and sustainable institutional development.

Strategic management forms the fundamental basis upon which TQM and logistics systems are built. In Publication No. 3 (Nedelev & Kondev, 2024, JCTM), Porter's Diamond is applied to provide an adequate assessment of the competitive advantages of the Bulgarian non-ferrous metallurgy sector. The study analyses the parameters of the factors, demand, related and supporting industries, as well as corporate strategy and competition within the sector.

Publication No. 31 (Kondev, G., 2023) systematises the types of strategies for different industries and specific competitive situations (dynamic markets, crisis conditions, mature industries). Publication No. 34 (Kondev & Nedelev, 2023) examines strategy as a key factor in enhancing competitiveness, emphasising the need for alignment between operational processes and long-term objectives.

The assessment of competitive advantages reveals how an organisation creates value and to what extent this advantage is sustainable, whilst strategic frameworks provide tools for analysing the environment and selecting appropriate actions. Combining SWOT, PESTEL, competitive forces analysis and KPIs enables the establishment of a comprehensive framework for strategic management and supply chain optimisation.

4.2. Strategic flexibility

Strategic flexibility represents an organisation's ability to recognise changes in the external and internal environment in a timely manner and to adapt its objectives, strategies, resources and management decisions in response to these changes. It is an important element of modern strategic management, particularly in the context of dynamic markets, technological change, intensified competition and increasing customer demands.

Publication No. 13 (Kondev & Stanoev, 2018) examines the critical role of higher education in building strategic flexibility among future managers in the new digital and highly competitive environment of the 21st century. Publication No. 11 (Kondev & Stanoev, 2018) analyses the descriptive characteristics of policy and strategy as key elements in the process of organisational self-assessment. Strategic flexibility is also important for the sustainable management of organisations. Changes in the regulatory environment, environmental

requirements, resource efficiency and stakeholder expectations require organisations to review their strategies and business processes.

Section V: Quality Management and Innovation in Higher Education

5.1. Implementation of EFQM and TQM in higher education institutions

In a rapidly changing educational environment, with increasing demands on the quality of teaching and growing competition amongst higher education institutions, the implementation of modern models of organisational excellence is becoming increasingly important. The EFQM Excellence Model is a management approach that provides opportunities for the systematic assessment, improvement and sustainable development of organisations, including higher education institutions.

The higher education sector has been the subject of in-depth research in the author's academic archive. Publication No. 4 (Kondev, G., 2015) explores the possibilities for applying the EFQM Excellence Model in university education. By adapting the criteria for leadership, processes, resources and results, a framework for academic self-assessment is proposed.

Publication No. 15 (Kondev, G., 2019) and Publication No. 32 (Kondev, G., 2023) focus on the application of the TQM approach to improving teaching in logistics and supply chain management. Publication No. 16 (Kondev, G., 2019) examines the improvement of education in engineering disciplines through the sustainable development of the internal quality assurance system.

5.2. Sustainable Development and Leadership in the Academic Environment

Sustainable development and leadership in the academic environment are interrelated concepts that are becoming increasingly important for the development of modern universities and research organisations. A university is not merely an educational institution, but an environment for the creation and dissemination of knowledge, scientific innovation and social values. Academic leadership therefore plays a vital role in integrating the principles of sustainable development into governance, education, research and engagement with society.

In the research carried out by Assoc. Prof. Kondev, the possibilities for integrating the model into higher education institutions' quality management systems are examined through strategic management, effective leadership, the engagement of academic and administrative staff, a focus on students and other stakeholders, process management and the evaluation of results achieved. Particular attention is paid to the role of self-assessment as a means of identifying strengths, pinpointing areas for improvement and setting priorities for organisational development.

Publication No. 6 (Kondev, G., 2015), the mechanisms for achieving sustainable development in higher education are examined. Publication No. 6 (Kondev & Stefanov, 2016) proposes a methodology for improving the quality of teaching through self-assessment of the leadership skills of academic and administrative staff.

Publication No. 9 (Kondev & Stanoev, 2018) examines the key priorities in the management of higher education institutions that lead to organisational excellence in the context of a post-crisis environment. The authors conclude that academic institutions must undergo digital

transformation, be flexible and closely aligned with the needs of the real business world. In the context of TQM and EFQM, sustainable academic leadership can be viewed as a key mechanism for building a culture of quality, continuous improvement and long-term organisational sustainability. It is precisely through the combination of leadership, strategic flexibility and stakeholder orientation that a university can simultaneously develop its educational, research and social functions.

Conclusion and Contributions

The academic output of Assoc. Prof. Dr Eng. Georgi Kondev and his co-authors constitutes a systematic, interdisciplinary body of work with significant practical and applied value. The main contributions can be summarised in the following areas:

1. Theoretical and practical enhancement of the TQM and EFQM models: Adapted methodologies have been developed for the implementation of Total Quality Management in specific sectors (the extractive industry, biotechnology, SMEs and higher education).

2. Development of green logistics: The integrative links between logistics processes, environmental sustainability and the achievement of tangible economic benefits have been analysed.

3. Optimisation of industrial maintenance: Contemporary trends towards digitalisation and the transition to predictive maintenance have been outlined.

4. Modernisation of higher education in engineering and logistics: Specific approaches are proposed to improve the quality of teaching through leadership skills, self-assessment and strategic flexibility.