

IMPROVING EDUCATIONAL MANAGEMENT SYSTEMS BY INTEGRATING QUALITY AND INNOVATIONS

Principal Assistant Tzvetelin Gueorguiev, PhD

Department of Machine Tools and Manufacturing,
“Angel Kanchev” University of Ruse, Bulgaria
Tel.: +359 82 888 493
E-mail: tzgeorgiev@uni-ruse.bg

Assoc. Prof. Boris Sakakushev, PhD

Department of Machine Tools and Manufacturing,
“Angel Kanchev” University of Ruse, Bulgaria

Assoc. Prof. Boris Evstatiev, PhD

Department of Electronics,
“Angel Kanchev” University of Ruse, Bulgaria
Phone: +359 82 888 371
E-mail: bevstatiev@uni-ruse.bg

***Abstract:** The paper presents a method for improving the educational management system at university level. Traditionally integrated management systems comprise of requirements for quality, environment, and occupational health and safety. The proposed method for improvement involves the synergy between the latest editions of several international standards such as ISO 9001 for quality, ISO 21001 for educational organizations, and ISO 56002 for innovation management systems. Recommendations for the practical implementation of the integrated management system are made.*

***Keywords:** Quality, Innovation, Integrated Management System, Education.*

***JEL Codes:** I23, L15.*

INTRODUCTION

Universities have been the driving force of societies for centuries. They are not only educational centres, but also research institutions that bring life to new ideas. By the definition given in ISO 56000:2020 an innovation is ‘a new or changed entity (product, service, process, model, method, etc.) realizing or redistributing value’. The degree of novelty and the value are relative to, and determined by, the perception of the university and its relevant interested parties.

Fig. 1 presents the general idea for improving the educational management system. The concept for creating the integrated management system is to use the internal quality system of the University of Ruse (2020) as a basis. Its most recent edition is based on the Law of Higher Education, the criteria set out by the National Evaluation and Accreditation Agency, the requirements for quality specified in ISO 9001, and the requirements for management systems of educational organizations with guidance for use outlined in ISO 21001.

The innovation management system (IMS) will be based on the guidance set out ISO 56002. For the time being ISO does not plan to publish a standard with requirements for an IMS. The position of the Technical Committee which develops the ISO 56000 series of standards is initially to give guidelines so that organizations can develop their IMS. When such systems are already implemented, maintained and improved the feedback from users and auditors will be used to draft a standard with requirements- the expected ISO 56001. Organizations can also use CEN/TS 16555-1 (2013) Innovation Management - Part 1: Innovation Management System for this purpose.

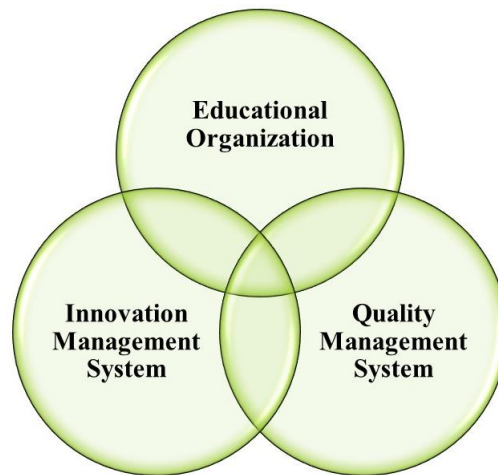


Fig. 1. The general idea for improving the educational management system

EXPOSITION

Chronological Development of Management Systems

The flagship ISO standard and the undisputed leader among management systems standards- ISO 9001 is currently in its fifth edition (ISO 9001, 2015) since 1987 when it was first published (see Fig. 2). Three years later, ISO issued the first edition of ISO 21001 which specifies requirements for management systems for educational organizations (ISO 21001, 2018).

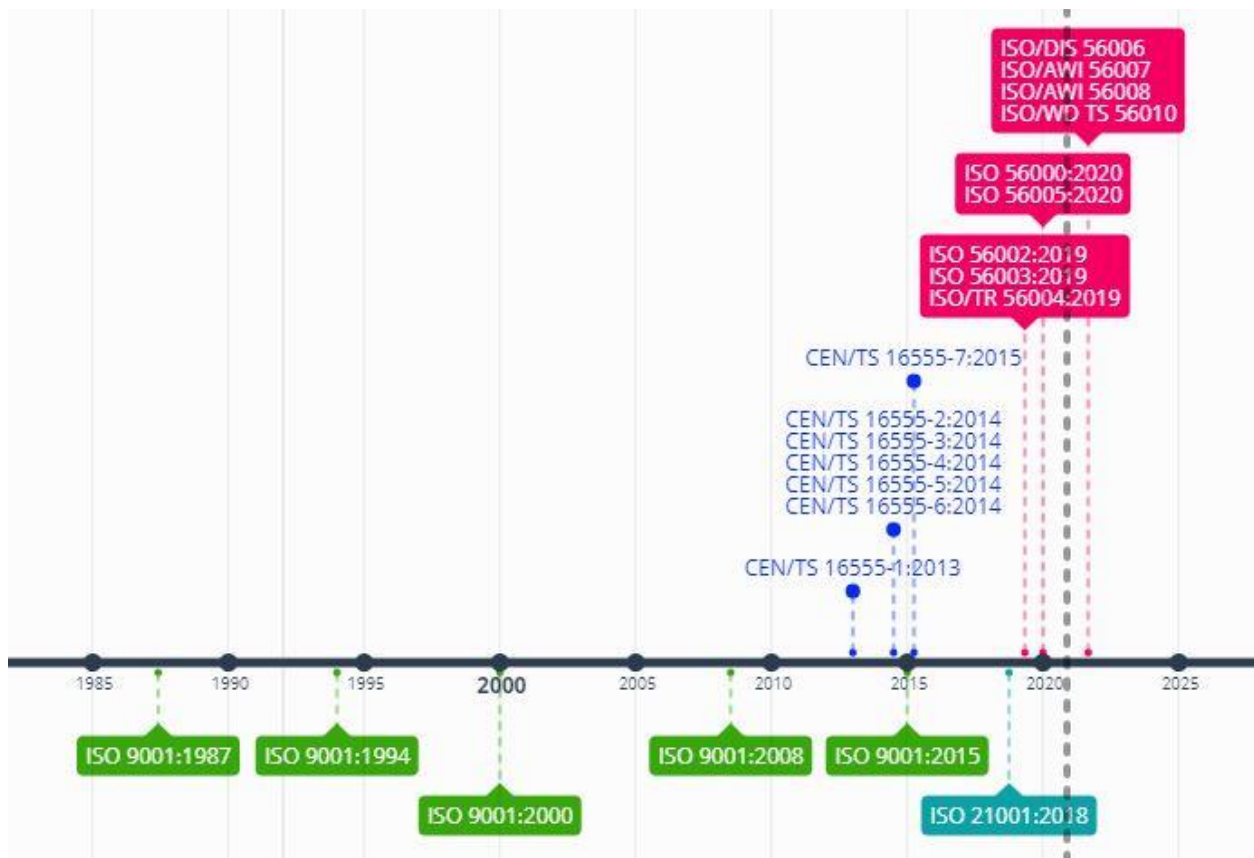


Fig. 2. Timeline of management system standards

Innovation Management Standards

As shown on Fig. 2, the first innovation management standards are first developed and published by the European Committee for Standardization, CEN/TC 389 - Innovation Management. Between 2013 and 2015, a series of 7 technical specifications summarized best practices in innovation management:

- CEN/TS 16555-1:2013 Innovation management - Part 1: Innovation management system (CEN/TS 16555-1, 2013);
- CEN/TS 16555-2:2014 Innovation management - Part 2: Strategic intelligence management;
- CEN/TS 16555-3:2014 Innovation management - Part 3: Innovation thinking;
- CEN/TS 16555-4:2014 Innovation management - Part 4: Intellectual property management;
- CEN/TS 16555-5:2014 Innovation management - Part 5: Collaboration management;
- CEN/TS 16555-6:2014 Innovation management - Part 6: Creativity management;
- CEN/TS 16555-7:2015 Innovation management - Part 7: Innovation management assessment.

Four years later, the ISO Technical Committee ISO/TC 279 ‘Innovation Management’ first published three standards related to innovation management. In 2020 it published two more standards and/or is in the process of developing four additional innovation management standards. The ISO 56000 series includes the following international standards:

- ISO 56000:2020 Innovation management — Fundamentals and vocabulary;
- ISO 56002:2019 Innovation management — Innovation management system — Guidance (ISO 56002, 2019);
- ISO 56003:2019 Innovation management — Tools and methods for innovation partnership — Guidance;
- ISO/TR 56004:2019 Innovation Management Assessment — Guidance;
- ISO 56005:2020 Innovation management — Tools and methods for intellectual property management — Guidance;
- ISO/DIS 56006 Innovation management — Tools and methods for strategic intelligence management — Guidance;
- ISO/AWI 56007 Innovation management — Idea management;
- ISO/AWI 56008 Innovation management — Tools and methods for innovation operation measurements — Guidance;
- ISO/WD TS 56010 Innovation management — Illustrative examples of ISO 56000.

Integrating Quality and Innovations

Table 1 presents a matrix comparing the structure of ISO 9001:2015- the standard with requirements for quality management systems to the structure of ISO 56002:2019- the international standard with guidance for an innovation management system. Note that the text in *Italic* highlights the main differences.

Table 1. Comparison between the structure of ISO 9001:2015 and ISO 56002:2019

ISO 9001:2015		ISO 56002:2019	
Clause	Title	Clause	Title
	Foreword		Foreword
	Introduction		Introduction
1	Scope	1	Scope
2	Normative references	2	Normative references
3	Terms and definitions	3	Terms and definitions
4	Context of the organization	4	Context of the organization
4.1	Understanding the organization and	4.1	Understanding the organization and

	its context		its context
4.2	Understanding the needs and expectations of interested parties	4.2	Understanding the needs and expectations of interested parties
4.3	Determining the scope of the <i>quality</i> management system	4.3	Determining the scope of the <i>innovation</i> management system
4.4	<i>Quality management system and its processes</i>	4.4	<i>Establishing the innovation management system</i>
		4.4.1	<i>General</i>
		4.4.2	<i>Culture</i>
		4.4.3	<i>Collaboration</i>
5	Leadership	5	Leadership
5.1	Leadership and commitment	5.1	Leadership and commitment
5.1.1	General	5.1.1	General
5.1.2	<i>Customer</i> focus	5.1.2	<i>Focus on value realization</i>
		5.1.3	<i>Innovation vision</i>
		5.1.4	<i>Innovation strategy</i>
5.2	Policy	5.2	<i>Innovation</i> policy
5.3	Organizational roles, responsibilities, and authorities	5.3	Organizational roles, responsibilities, and authorities
6	Planning	6	Planning
6.1	Actions to address <i>risks and opportunities</i>	6.1	Actions to address <i>opportunities and risks</i>
6.2	<i>Quality</i> objectives and planning to achieve them	6.2	<i>Innovation</i> objectives and planning to achieve them
6.3	<i>Planning of changes</i>	6.3	<i>Organizational structures</i>
		6.4	<i>Innovation portfolios</i>
7	Support	7	Support
7.1	Resources	7.1	Resources
7.1.1	General	7.1.1	General
7.1.2	People	7.1.2	People
7.1.3	<i>Infrastructure</i>	7.1.3	<i>Time</i>
7.1.4	<i>Environment for the operation of processes</i>	7.1.4	<i>Knowledge</i>
7.1.5	<i>Monitoring and measuring resources</i>	7.1.5	<i>Finance</i>
7.1.6	Organizational knowledge	7.1.6	<i>Infrastructure</i>
7.2	Competence	7.2	Competence
7.3	Awareness	7.3	Awareness

7.4	Communication	7.4	Communication
7.5	Documented information	7.5	Documented information
		7.6	<i>Tools and methods</i>
		7.7	<i>Strategic intelligence management</i>
		7.8	<i>Intellectual property management</i>
8	Operation	8	Operation
8.1	Operational planning and control	8.1	Operational planning and control
8.2	<i>Requirements for products and services</i>	8.2	<i>Innovation initiatives</i>
8.3	<i>Design and development of products and services</i>	8.3	<i>Innovation processes</i>
8.4	<i>Control of externally provided processes, products and services</i>		
8.5	<i>Production and service provision</i>		
8.6	<i>Release of products and services</i>		
8.7	<i>Control of nonconforming outputs</i>		
9	Performance evaluation	9	Performance evaluation
9.1	Monitoring, measurement, analysis and evaluation	9.1	Monitoring, measurement, analysis and evaluation
9.1.1	General	9.1.1	General
9.1.2	<i>Customer satisfaction</i>	9.1.2	<i>Analysis and evaluation</i>
9.1.3	<i>Analysis and evaluation</i>		
9.2	Internal audit	9.2	Internal audit
9.3	Management review	9.3	Management review
10	Improvement	10	Improvement
10.1	General	10.1	General
10.2	Nonconformity and corrective action	10.2	<i>Deviation, nonconformity, and corrective action</i>
10.3	Continual improvement	10.3	Continual improvement

Auditing and Assessment of the Integrated Management System

The globally recognized guidelines for auditing management systems are specified by ISO 19011 which is currently in its third edition after 2002 and 2011 (ISO 19011, 2018). The auditing of the integrated educational quality and innovation management system shall respect both the standards for requirements and guidelines for such systems, as well as the two assessment standards

- CEN/TS 16555-7:2015 Innovation management - Part 7: Innovation management assessment (CEN/TS 16555-7, 2015), and
- ISO/TR 56004:2019 Innovation Management Assessment — Guidance (ISO/TR 56004, 2019).

All such audits and assessments shall be based on performance criteria and metrics for the innovation management system. Once the findings of the assessment are documented, they shall be

reported and communicated to the top management of the university in order to plan and implement the necessary improvements.

CONCLUSION

The paper has presented the chronological development of management systems standard with specific focus on quality, educational organizations and innovations. A detailed matrix compares the structures of the standard for quality- ISO 9001 used at the University of Ruse, and ISO 56002 for innovation management systems. The latter is planned for implementation as an integral part of the internal management system of the university.

The improvement of such an integrated management system upon its implementation can be facilitated by auditing the system, as well as by collecting and analysing data on its maturity. In addition, some recommendations for the practical implementation of an innovation management system can be made:

- To acquire knowledge from the source, i.e. from the official publications of ISO/TC 279 Innovation Management, and its members. For example, attending seminars, webinars and workshops led by renowned members of this technical committee, trainers and consultants like Peter Merrill (<https://questmgt.com/>). He is also the author of numerous articles and four books on innovation management systems;
- To develop internal projects for the implementation of: innovation vision, strategy, policy and objectives; creation of an innovation culture; developing and maintaining innovation portfolios; managing strategic intelligence and intellectual property; using appropriate tools and methods for innovation management; supporting and carrying out innovation initiatives; managing innovation processes, etc.

REFERENCES

CEN/TS 16555-1 (2013) Innovation Management - Part 1: Innovation Management System.

CEN/TS 16555-7 (2015) Innovation management - Part 7: Innovation Management Assessment.

Internal Quality System of the University of Ruse. Accessed at <https://www.uni-ruse.bg/university/accreditation/audits> on 2020-09-18.

ISO 9001 (2015). Quality management systems - Requirements.

ISO 19011 (2018). Guidelines for auditing management systems.

ISO 21001 (2018). Educational organizations - Management systems for educational organizations - Requirements with guidance for use.

ISO 56002 (2019). Innovation management - Innovation management system - Guidance.

ISO/TR 56004 (2019). Innovation Management Assessment - Guidance.