

Management Systems Certification And Accreditation Of Quality In Higher Education

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Abstract

Quality assurance models in higher education allow institutions to be accredited. Also, ISO 9001 quality management systems have been implemented and in 2018 ISO 21001 appears, with specific management requirements for educational organizations. The objective of this article is to analyze how these different models are related. The study is based on the points of contact and differences between the three models, based on the analysis of standards and systems for quality assurance of Higher Education, in Colombia, Cuba and Ecuador. It is observed that the implementation of a management system contributes to the achievement of the institutional objectives and the satisfaction of the interested parties, likewise, it must incorporate the requirements established in the accreditation models in higher education. In addition, the complementarity of quality certification and accreditation and the synergies that may arise from the joint implementation of the external assurance and internal quality management models in higher education is evidenced. In this way, organizations can be better prepared to face risk situations, such as that caused by the pandemic and contribute to the fulfillment of the Sustainable Development Goals.

Keywords: accreditation; quality; certification; higher education; pandemic.

1. Introduction

The 2030 Agenda, adopted unanimously at the United Nations (2015), established the Sustainable Development Goals (SDGs) with which a set of global purposes is adopted to eradicate poverty, protect the planet and ensure prosperity for all. Sustainable Development Goal (SDG) No. 4 seeks to ensure inclusive, equitable and quality education, and promote lifelong learning opportunities for all. Based on this commitment, higher education institutions (HEIs) have taken this objective as a favorable framework to outline their strategies (UNESCO-IESALC, 2020). It starts from recognizing that quality in higher education is achieved from within the institutions, managing their processes and with a focus on satisfying the growing needs of students and other beneficiaries, based on academic excellence, equity and social relevance of the programs. Furthermore, external recognition of the quality of an HEI is achieved through the certification of its quality management systems or through the accreditation granted by the national entity in charge of ensuring the quality of higher education.

Sectoral models, for quality assurance in higher education, allow accreditation of educational institutions and programs. In addition, there are minimum requirements for their authorization. On the other hand, many HEIs have implemented the International Organization for Standardization (ISO) standard, or its national adoptions, ISO 9001 (International Organization for Standardization, 2015b) for quality management. Furthermore, in 2018, a new ISO 21001 standard (ISO, 2018) was approved by the ISO, which, for the first time, establishes specific requirements for management systems for educational organizations (SGOE). These requirements have been established through the consensus of national standards bodies and other interested parties, and seek to contribute to

“quality education and the promotion of training for the construction of more humane, equitable and sustainable societies” (Icontec, 2021b , p. 1).

Risk-based thinking, which forms the basis of management system standards, has contributed to organizations that have implemented them being more prepared to face the challenges caused by the COVID-19 pandemic in the last two years. (Rodríguez-Rojas, 2021).

Since there are different models that allow quality to be demonstrated in higher education, it is necessary to ask: How do these relate to each other? What model should HEIs respond to? The objective of this work is to analyze how sectoral quality accreditation models are related to management systems certification schemes, based on international standards adopted in the countries. This analysis contributes to decision-making by HEI managers regarding which models to adopt, based on their advantages and difficulties. Furthermore, the points of contact and the differences between them are clarified, based on the analysis of the applicable standards and systems for quality assurance of Higher Education, existing in Colombia, Cuba and Ecuador, as well as the documentary analysis of published experiences on the topic of study.

2. Quality Assurance of Higher Education

In the countries of Latin America and the Caribbean, evaluation and accreditation processes have been developed in Higher Education, and international cooperation in this field has been consolidated through the establishment of projects, such as the Ibero-American Network for Quality Evaluation and Accreditation. of Higher Education (RIACES), created in 2003. This network is made up of thirty public or private accrediting agencies, with a presence in 20 countries in Latin America, the Caribbean and Europe, and seven regional and international

organizations. Likewise, several of the entities in charge of the accreditation processes in Higher Education in Latin America belong to the International Network of Quality Assurance Agencies in Higher Education - INQAAHE (International Network for Quality Assurance Agencies in Higher Education), the which is a global association of more than 300 organizations active in the theory and practice of quality assurance in higher education.

In Cuba, external evaluation systems for the quality of HEIs have been developed for more than 20 years (Noda, 2017). Since its creation in 1976, the Ministry of Higher Education (MES) carried out control and evaluation actions on the HEIs, due to its governing nature of this level of training and because all Universities, being public, are subordinate to it. In 2000, the University System of Accreditation Programs (SUPRA) was created and the National Accreditation Board (JAN) was founded, beginning its work with the Evaluation and Accreditation System (SEA) of Master's Programs. In 2003, the SEA for university courses was incorporated, later complemented by the SEA for Doctoral Programs and the Institutional Evaluation System (SEI). In 2015, the System was completed with the SEA of Postgraduate Specialties.

In 2018, SUPRA was replaced by the Higher Education Evaluation and Accreditation System (SEAES), as the only system authorized to accredit higher education programs and institutions, made up of the five Subsystems already mentioned (MES, 2018). The SEAES is a comprehensive system for continuous quality assurance and improvement in HEIs, which is based on self-assessment, external evaluation and accreditation. In all cases, the external evaluation is carried out on the programs or HEIs that have authorized status, granted by the corresponding authorities in the country.

For each subsystem there is a Quality Standard and an Evaluation Guide (with variables, criteria and indicators). In addition, national Technical Evaluation Committees have been established for each type of evaluation. The JAN has established the following higher accreditation categories: Qualified, Certified and Excellence.

For the evaluation of Cuban HEIs the variables are:

1. Institutional context and comprehensive relevance.
2. Human resources.
3. Undergraduate training.
4. Research and postgraduate training.
5. Infrastructure.
6. Social impact.

To request an evaluation from the Executive Secretariat of the JAN, the HEIs must have carried out at least two self-evaluation processes and have at least 60% of the university courses and 60% of the accreditable academic postgraduate programs with a higher category of quality accreditation.

In Colombia, Law 30 of 1992, in its Article 53, creates the National Accreditation System, with the objective of guaranteeing society that HEIs meet high quality standards (Congress of Colombia, 1992). Furthermore, in its Article 54 it establishes that the National Accreditation System has a National Accreditation Council made up, among others, of the academic and scientific communities and depends on the National Council of Higher Education (CESU), which defines its regulations, functions and integration. The Ministry of National Education (MEN)

regulates the Quality Assurance System (SAC) of Higher Education and defines it as:

[...] the set of institutions and instances defined by the current regulatory framework, which are articulated through policies and processes designed, with the purpose of ensuring the quality of the institutions and their programs. This system promotes in institutions the processes of self-evaluation, self-regulation and improvement of their training, academic, teaching, cultural and extension work, contributing to the advancement and strengthening of their community and their academic results, under principles of equity, diversity, inclusion and sustainability. (MEN, 2019, p. 4-5)

The SAC includes three components: evaluation, information and promotion (MEN, 2020). A group of institutions participate in it, which gives it a supra-Ministerial character. Among them, the National Accreditation Council (CNA) has the main function of promoting and executing the accreditation policy adopted by the National Council of Higher Education and coordinating the accreditation processes. Both institutional accreditation and academic program accreditation are granted by the Ministry of National Education based on the recommendation issued by the CNA.

Through its two levels, qualified registration and high-quality accreditation of programs and institutions, the Higher Education Quality Assurance System generates confidence in the quality achieved. Although the first level is mandatory, to allow the programs and institutions to function, the second level, high quality accreditation, is voluntary. High quality accreditation is a voluntary act. The validity of the high quality accreditation can be six, eight or ten years, depending on the “degree of consolidation, sustainability and impact of the Institution or the

academic Program, the degree of maturity of the processes and the way in which The Institution assumes the results or achievements based on continuous improvement” (Correa et al. 2021, p. 136).

Agreement 02 of 2020 (MEN, 2020), by which the High Quality Accreditation Model was updated, establishes the guidelines for self-evaluation processes for HEIs and academic programs. This Model goes beyond management and its results and evaluates the impacts and achievements achieved by the institutions. The Model guidelines are composed of factors, characteristics and aspects to be evaluated. The factors refer to the processes, products and impacts resulting from the fulfillment of the objectives of the IES or the academic program. Through the characteristics, the factors are materialized and reflect the quality of the processes. With the detailed aspects to be evaluated, the performance of the characteristic is measured and trends in its behavior are observed.

The factors to be evaluated for institutional accreditation in Colombia are:

1. Institutional identity.
2. Institutional governance and transparency.
3. Institutional development, management and sustainability.
4. Continuous improvement and self-regulation.
5. Structure and academic processes.
6. Contributions of research, innovation, technological development and creation
7. Social impact.
8. National and international visibility.
9. Institutional well-being.

10. Community of teachers.

11. Community of students.

12. Community of graduates.

The recognition of the high quality of HEIs in Colombia means that it has been achieved:

Development and appropriation of a solid culture of self-evaluation and self-regulation aimed at continuous improvement, supported by an internal quality assurance system that allows evidence of the achievements and permanent development of training, academic, teaching, scientific, cultural and extension work. (MEN, 2020, p. 28)

In Colombia, for the accreditation of programs and institutions, the following process must be complied with:

- a) Appreciation of initial conditions
- b) Self-assessment
- c) External evaluation by academic peers
- d) Comprehensive evaluation
- e) Issuance of the administrative act that grants accreditation or makes recommendations to the institution

Once the process is carried out, in which the favorability, or not, by the CNA for institutional accreditation is defined, it is granted or proceeds with the generation of recommendations so that the institution can carry out its improvement process.

According to information from the National Higher Education Information System (SNIES), from October 2021, in Colombia there are three hundred and seventeen

higher education institutions and 61 sections that are part of some of these main headquarters. With high quality accreditation, there are forty-three main offices and seventeen sectional offices. In this way, there are 13.5% of the main institutions accredited by the CNA and 27.9% of the sectional institutions of the total higher education institutions in the country. It is also found that 30% have an accreditation for four years, 11.67% for 5 years, 31.67% for six years, 18.33% for 8 years and 8.33% for 10 years.

In Ecuador, quality assurance in Higher Education also includes authorization processes and quality accreditation. HEIs must continually improve the quality of their processes and results, complying with the Organic Law Reformatory to the Organic Law of Higher Education - LOR LOES - (National Assembly of Ecuador, 2018), and other regulations linked to it, such as that established by the Council of Higher Education (CES), the National Secretariat of Science, Technology and Innovation (SENESCYT).

The Higher Education Quality Assurance System is established in Ecuador as the “framework in which various processes are articulated so that the institutions that are part of the Higher Education System work jointly for the continuous improvement of the quality of education. superior” (CACES, 2018, p. 11). In the Organic Law of Higher Education of 2000, the National Education Evaluation and Accreditation System was established, under the mandate of the National Evaluation and Accreditation Council (CONEA). At this stage, the accreditation process was voluntary, so a very small percentage of universities, polytechnic schools and higher technological institutes had undergone this process by 2008 (Orozco et al., 2020). Given this situation, in July 2008 the National Constituent Assembly ordered CONEA to prepare a report on the level of the country's HEIs,

classifying them into five levels from “A”, as the highest quality, to “E”, as a quality level. not acceptable. As a result, 11 HEIs were classified in category A, nine in B, 13 in C, nine in D and 26 in E, of the latter 14 were closed in 2012.

With the creation of the Council for Evaluation, Accreditation and Quality Assurance of Higher Education (CEAACES), a new mandatory evaluation process was carried out for the 54 existing universities and polytechnic schools in 2013, in which they were categorized into four levels. : 9% in category A, 31% in B, 44% in C and 15% in D. The fact that 59% of Ecuadorian universities and polytechnic schools were in the two lower quality categories indicated that continuity should be given to the evaluation processes of these institutions, so in September 2015 the CEAACES published a new “Proposal for adapting the Institutional Evaluation Model of Universities and Polytechnic Schools 2013 to the process of re-categorization of Universities and Polytechnic Schools 2015” (CEAACES, 2015a). Between 2015 and 2017, a new mandatory evaluation was carried out of the eight universities and polytechnic schools located in category D and the voluntary recategorization of 12, evaluated in categories B and C. As a result, by 2018 there were 55 universities and schools accredited polytechnics, eight of them in Category A, 28 in B and 19 in C. At that time, a new evaluation process was launched by the newly created Interinstitutional Quality Assurance System, which has as its main actors to the Council of Higher Education (CES), the Council for Quality Assurance of Higher Education (CACES) and the higher education institutions themselves. It is then recognized that universities and polytechnic schools are responsible for managing educational quality, based on permanent self-assessment of compliance with their strategic institutional development plans

(PEDI), annual operational plans (POA) and accreditation standards. established in the external evaluation model (CACES, 2019).

The last external evaluation process of the universities and polytechnic schools of Ecuador took place in the last quarter of 2019. Unlike previous models, in this evaluation the objective was the accreditation of the HEIs, not their categorization. In this process, 55 universities and polytechnic schools, 22 university campuses and extensions were evaluated. The External Evaluation Committees were made up of at least two national peers, one international peer, and a CACES technician accompanied each evaluation committee.

The External Evaluation Model for universities and polytechnic schools in Ecuador includes 20 standards divided into four axes:

- Substantive function Teaching (Teachers and students) - seven standards.
- Substantive function Research - four standards.
- Substantive function Linkage with Society - three standards.
- Institutional conditions - six standards.

For the three substantive functions, the standards cover three dimensions: Planning, Execution and Results.

As a result of this process, 52 higher education institutions were accredited, since they met the compliance parameters established in the evaluation model. The three institutions that did not achieve accreditation presented an improvement plan, which will be supported by CACES for a period of up to two years.

Efforts to raise the quality of higher education in Ecuador also influenced the Higher Technological Institutes (IST), which were evaluated in 2014 (CEAACES, 2015b). The evaluation results indicated that the 2019 ISTs on average only

achieved 40% of the maximum score established in the evaluation parameters. A new evaluation was carried out in 2020, based on a specific model according to the characteristics of these institutions (CACES, 2020), which went through a process of unification and strengthening their management, to become technological universities.

According to the International Organization for Standardization, quality assurance is the part of quality management aimed at providing confidence that quality requirements will be met (ISO, 2015a). Therefore, sectoral models of quality evaluation and accreditation in Higher Education fit this definition, by providing information to society about the quality of the institutions under evaluation, promoting a culture of university quality and the focus on continuous improvement (MES, 2018); promote “the search for qualitative change in higher education institutions, based on permanent self-reflection of all educational communities, aimed at the continuous improvement of their three substantive functions...” (CACES, 2018, p. 32); and guarantee society that accredited academic programs and higher education institutions offer the public education service with high levels of quality (MEN, 2020).

To guarantee quality, it is required that accreditation goes beyond the fulfillment of indicators, objectives and goals, and that it be an instrument that allows “obtaining reliable information that leads to decision-making that leads to improving the educational quality of HEIs.” ” (Martínez et al., 2017, p. 85).

3. Certification of management systems in HEIs

Certification is one of the conformity assessment activities established by ISO. As a more general concept, conformity assessment is a demonstration that specified requirements, defined as needs or expectations set out in regulatory documents, are

met. It includes activities such as: inspection, validation, verification, certification and accreditation. These last two activities are the most interesting for this work.

As defined by ISO (2020), certification is the issuance of a third-party declaration (attestation), relating to an object of conformity assessment, based on a decision that compliance with specified requirements has been demonstrated. in a normative document. The analysis carried out in this work is limited to the certification of a quality management system, according to the ISO 9001:2015 standard, or a management system for educational organizations, according to ISO 21001:2018.

Accreditation, for its part, is the third-party attestation of a conformity assessment body, which manifests the formal demonstration of its competence, its impartiality and its consistent operation in carrying out specific conformity assessment activities (ISO, 2020). As can be seen, the concept of accreditation in the sectoral models used in Higher Education differs substantially from that established in the ISO scheme. Management system certifications are granted by authorized entities and preferably accredited by the corresponding national organizations.

In Cuba, the National Standardization Office is the entity officially designated in the country as the National Certification Body (Sosa and Llerandi, 2019). Through its Certification Directorate, it carries out this activity with respect to standardized management systems with national and multi-sector scope, for which it assumes the practices and meets the internationally approved requirements for organizations that carry out audits and certification of management systems, according to the ISO/IEC 17021-1:2015 standard (ISO, 2015c).

The National Certification Body of Cuba is accredited by the National Institute of Standardization of Chile and applies a set of principles, common to certification

bodies, that inspire confidence, guide and facilitate decision-making in unforeseen situations. These principles are related to:

- Impartiality and the practices for its compliance.
- The competence of the people who participate in the certification schemes.
- The responsibilities, duties and authority of management, certification staff and the Committees involved.
- Transparency.
- The confidentiality of decisions.
- Receptivity and timely response to complaints.
- The approach based on the risks associated with conformity assessment services in order to ensure that they are carried out competently, and in a way that ensures consistency and impartiality.

In Colombia, the highest accredited certification entity in the country is the Colombian Institute of Technical Standards and Certification - ICONTEC. However, ISO certifications can be granted by other entities that have been approved by the Superintendence of Industry and Commerce (Gestión Colombia, 2014), among these entities are: SGS Colombia SA, BVQI Colombia Ltda., International Certification and Training SA (IC & T), Cotecna Certification Services Ltda., the Technological Research and Development Center Corporation and QLCT, a management systems certification body based at the Technological University of Pereira, accredited by the National Accreditation Body of Colombia (ONAC).

ICONTEC is a member of IQNet, the World Network of the main Certification Bodies, so the institution that receives an ICONTEC certification also receives the

IQNet certificate, thus acquiring a global character, being supported by the members of this network. ICONTEC is accredited by ONAC for the certification of ISO 9001 Quality management systems, but not for certification by the ISO 21001 standard, which began recently (ICONTEC, 2021a).

Another type of certification that is granted in the Colombian educational sector is related to the National Training System for Work and Human Development. This type of educational offer can play an important role in the country's productive transformation process (MEN, 2017). The quality certification of training for work is the act through which a third-party organization verifies and endorses compliance with technical quality standards by institutions and programs. Education Institutions for Work and Human Development can be certified with the Colombian Technical Standard NTC 5555 and their programs with the standards NTC 5580, NTC 5581, NTC 5663, NTC 5664, NTC 5665, NTC 5666, as applicable (MEN, 2021).

In Ecuador, the certification bodies for Quality Management Systems, accredited by the Ecuadorian Accreditation Service (SAE), are: Bureau Veritas Ecuador SA; AENOR Ecuador; SGS Ecuador SA; Icontec International SA; International Quality of CIC Certifications; COTECNA Certifying Services Limited; CERGESTCAL América Certification Group SA (SAE, 2021). The accreditation granted by SAE grants confidence in the certifications by the ISO 9001 standard, by endorsing the technical competence of these certification bodies to audit and certify the quality systems of the interested parties.

The certification of management systems is a purely voluntary act. To do this, the IES makes the request to a certification body, which proceeds to an external audit and the issuance of a third-party certification, if compliance with the requirements

of the standard in question is evident. During the implementation, maintenance and improvement of the Quality Management System (QMS), the institution must have carried out several internal audits, in which information is generated about whether the QMS:

- a) it complies with the organization's own requirements and those of the reference standard;
- b) is implemented and maintained effectively.

In addition, it is required to have carried out at least one review by management to ensure the continued suitability, adequacy, effectiveness and alignment of the QMS with the strategic direction of the institution (ISO, 2015b).

For its part, the ISO 21001 standard, Educational organizations — Management systems for educational organizations — Requirements with guidance for their use (ISO, 2018), is aimed at the educational sector at any of its levels and modalities, and can be applied to any organization that uses a curriculum program to support the development of competence through teaching, learning and research. Likewise, the standard can be implemented in organizations belonging to other larger organizations whose main business is not education. This is the first international standard specific to the education sector, which provides a common management tool for organizations that provide educational products and services capable of meeting the requirements of students and other beneficiaries.

The ISO 21001 standard itself mentions the potential benefits of the implementation of management systems for educational organizations (SGOE), among them (ISO, 2018):

- a) better alignment of objectives and activities with the policy, mission and vision);

- b) greater social responsibility by providing inclusive and equitable quality education for all;
- c) more personalized learning and an effective response for all students and, in particular, for students with special education needs, distance learners and continuing education opportunities;
- d) consistent evaluation processes and tools to demonstrate and increase effectiveness and efficiency;
- e) greater credibility of the organization;
- f) a means that allows educational organizations to demonstrate their commitment to effective educational management practices;
- g) a culture for organizational improvement;
- h) harmonization of regional, national, open, particular and other types of standards within an international reference framework;
- i) greater participation of interested parties;
- j) stimulation of excellence and innovation.

ISO 21001:2018 complies with the high-level structure established by ISO Directives for all its management system standards. This makes it easier for educational organizations that already have an ISO 9001:2015 QMS implemented to easily transition to the SGOE. In fact, there are already some publications with experiences of this type (Anh et al., 2021; Guerra et al., 2020; Nhon, 2020; Quimi, 2019; Rivera and Tupac-Yupanqui, 2019).

4. Relationships between accreditation and quality certification processes in higher education

As has been shown, sectoral accreditation processes in higher education and certification by ISO schemes for evaluating conformity with management systems standards have different characteristics and requirements. It is recognized that external accreditation, although it involves the staff of the institutions in a prior self-assessment, cannot by itself improve quality in HEIs, since this can only be done from within the institutions themselves, applying the recognized principles and contemporary quality management paradigms (Guerra and Meizoso, 2019; Jaya and Guerra, 2017).

Furthermore, accreditation is a process that is carried out over an interval of 6 to 10 years, so systemic and systematic internal management is necessary to guarantee the sustainability of the quality achieved and this is provided by standardized management systems. “The systemic approach proposed by the quality management model... emphasizes the interdependence of factors and interactions between processes as a crucial aspect for management, as well as constant monitoring to seek continuous improvement” (Pedraza, 2010, p . 28).

Based on recognizing the need to relate academic requirements and generic quality management requirements, ICONTEC has an Evaluation service through a Management Model for the Education Sector with which it aims to facilitate the implementation of institutional self-assessment, since that the instrument had as input elements the aspects addressed by the Ministry of National Education (ICONTEC, 2021c). In addition, it provides a way to improve the missional, directive and support processes that participate in compliance with the guidelines of educational quality. From the review of the information published by Colombian HEIs, it was determined that more than 60% of those that are

accredited for high quality also have ISO 9001:2015 certification. However, as of October 2021, none of the accredited HEIs are certified by ISO 21001:2018.

To optimize quality processes, the existing coordination between the ISO 9001 QMS, the ISO 21001 SGOE and the sectoral quality accreditation models has been identified. This allows avoiding duplication of efforts and information, all based on a focus on processes, continuous improvement and strategic alignment of the different models, to satisfy the needs and expectations of all interested parties (Castro et al., 2014 ; García and Gómez; Guerra et al., 2020; López, 2019; Nhon, 2020; Pedraza, 2010; Quimi, 2019; Quintero, 2012; Rivera and Tupac-Yupanqui, 2019; Trujillo-Suárez and Pedraza-Nájjar, 2019) .

To support the analysis carried out, a summary table of the elements included in the accreditation models of Cuba, Colombia and Ecuador and how these can be related to the requirements of the ISO 9001 and ISO 21001 standards is presented (Table 1).The numbering referred to in the columns is related to the numerals of each accreditation model document established by each country. The accreditation model in Cuba is established by six variables, that of Ecuador by twenty standards and that of Colombia by 12 Factors. These are compared with the numerals established in the ISO 21001 standard. In this way, it is recognized that there is coherence and complementarity between the systemic approach of the standards and institutional accreditation in higher education, which strengthens educational quality and makes it sustainable. , through institutional self-regulation and the systemic contribution of the process approach (Bahamón, 2008; Pedraza, 2010).

Table 1. Relationship between the elements for accreditation and the requirements of management standards

JAN standard, Cuba	quality Evaluation Model, CACES, Ecuador		CNA Guidelines, Colombia	ISO standards
Variable 1. Institutional context and comprehensive relevance	Standard Strategic and operational planning Standard 18: Internal quality management Additionally, the Planning dimension standards for the three substantive functions	15: Factor and Institutional Identity	Factor and Institutional Identity	1. 4. Context of the organization 4.1 Understanding the organization and its context 4.2 Understanding the needs and expectations of interested parties 4.3 Determination of the scope of the management system for educational organizations 4.4 Management system (for educational organizations)
			Factor	2. 5. Leadership

JAN standard, Cuba	quality Evaluation Model, CACES, Ecuador	CNA Guidelines, Colombia	ISO standards
		Institutional governance and transparency.	5.1 Leadership and commitment 5.2 Policy 5.3 Roles, responsibilities and authorities in the organization
		Factor Development, management and institutional sustainability	3. 6. Planning 6.1 Actions to address risks and opportunities 6.2 Objectives of the educational organization and planning to achieve them 6.3 Planning changes
			7. Support 7.4

JAN standard, Cuba	quality Evaluation Model, CACES, Ecuador		CNA Guidelines, Colombia	ISO standards
				Communication 7.5 Documented information
				8. Operation 8.1 Planning and operational control 8.2 Requirements for (educational) products and services 8.4 Control of processes, products and services supplied externally.
Variable 2. Human resources	Standard Planning Faculty Processes Standard	1: 2:	Factor Community teachers.	10. 7. Support of 7.1.2 People 7.2 Competition; 7.3 Awareness

JAN standard, Cuba	quality Evaluation Model, CACES, Ecuador	CNA Guidelines, Colombia	ISO standards
	Executing Faculty Processes Standard 3 (A and B): Faculty tenure Standard 4 (A and B): Teacher Training		
Variable 3. Undergraduate training	Standard Planning faculty processes Standard Planning student processes Standard Execution student	1: Factor of Structure academic processes. 5: of 6: of	5. 8. Operation and 8.3 Design and development of educational products and services; 8.5 Production and provision of the educational service; 8.6 Release of

JAN standard, Cuba	quality Evaluation Model, CACES, Ecuador	CNA Guidelines, Colombia	ISO standards
	processes Standard 7: Qualification of the student body (Educational model and academic management)		educational products and services; 8.7 Control of non-compliant educational outings.
	Standard 5: Planning of student processes	Factor 11. Community of students.	
	Standard 6: Execution of student processes		
	Standard 7: Qualification of the student		

JAN standard, Cuba	quality Evaluation Model, CACES, Ecuador		CNA Guidelines, Colombia	ISO standards
	body			
	Standard 19: Student Wellbeing		Factor 9: Institutional well-being.	
	Standard 20: Equal Opportunity			
Variable 4. Research and postgraduate training	Standard 8: Planning of research processes		Factor 6: Contributions of research, innovation,	
Variable 6. Social impact	Standard 9: Execution of research processes		Factor 9: technological development and creation	
	Standard 10: Academic and scientific production		Factor 10: and	
	Standard 11:		Factor 11:	

JAN standard, Cuba	quality Evaluation Model, CACES, Ecuador		CNA Guidelines, Colombia	ISO standards
	Publication of articles indexed journals			
Variable 1. Institutional context and comprehensive relevance	Standard 12: Planning and engagement processes with society	12: Factor 7. Social impact.	Factor 12. Community of graduates.	
Variable 6 . Social impact	Standard 13: Execution of linkage processes with society	13: Factor 8. National and international visibility.		
Variable	Standard 14: Results of the processes of engagement with society	14:		
Variable	Standard 15:	15: Factor 3.	7. Support	

JAN standard, Cuba	quality Evaluation Model, CACES, Ecuador		CNA Guidelines, Colombia	ISO standards
5. Infrastructure	Strategic and operational planning Standard 16: Infrastructure and IT equipment Standard 17: Libraries		Development, management and sustainability	7.1 Resources 7.1.3 Infrastructure 7.1.4 Environment for the operation of (educational) processes
Variable 1 Institutional context comprehensive relevance	Standard 18: Internal quality and management		Factor Continuous improvement and self- regulation.	4. 9. Performance evaluation 10. Improvement

Source: self made

Certification by the ISO 9001 and ISO 21001 standards, although it is a voluntary activity, can be part of national policies to strengthen the Quality Infrastructure. In the case of Colombia, the National Council of Economic and Social Policy (CONPES), in charge of establishing the Guidelines for a National Quality Policy, recognizes the National Accreditation Council (CNA) of Higher Education, as one

of the entities that carry out accreditation activities in the country, although this activity is not governed by the ISO accreditation schemes. This is not the case in the case of Cuba, where accreditation in Higher Education is not related to the elements of the National Quality Infrastructure. In Ecuador, a strong relationship is not observed between the quality seen with the sectoral approach of CACES and the certification of standardized management systems, although some HEIs have chosen to implement them.

In the current conditions of confronting the COVID-19 pandemic, whose negative impacts on higher education are evident (Canaza-Choque, 2020), the standardized management systems implemented in HEIs have provided the necessary organizational framework for the management of the risks to quality, environmental and occupational health and safety generated by the current situation. Likewise, they have contributed to organizational decision-making to maintain the continuity of the educational service, comprehensively managing the risks that affect its development and that will maintain their adverse effects for some time (Guerra et al., 2021b). On the other hand, external accreditation processes have had to adapt to the existing situation, guaranteeing their development under conditions of physical distancing, supported by the use of information and communications tools (Noda et al., 2021).

Regarding the contribution of the analyzed processes to the achievement of the SDGs, it is necessary to recognize, first of all, that the United Nations Educational, Scientific and Cultural Organization (UNESCO) and other regional organizations, such as the International Institute of UNESCO for Higher Education in Latin America and the Caribbean (UNESCO-IELSAC) have developed programmatic documents for the realization of Sustainable Development Goal No. 4 Ensure

inclusive and equitable quality education and promote lifelong learning opportunities for all. These pronouncements must be supported by governments and HEIs. In this way, both the external evaluation and accreditation processes, as well as the SGOE, contribute to these purposes.

Specifically, SDG No. 4 sets the following goals:

- Target 4.3: By 2030, ensure equal access for all men and women to quality technical, vocational and higher education, including university education
- Target 4.4: By 2030, substantially increase the number of young people and adults who have the necessary skills, particularly technical and professional, to access employment, decent work and entrepreneurship.

Although all the SDGs and goals are related to each other, Goals 4.3 and 4.4 stand out, due to the fundamental role that HEIs play in their fulfillment, which must be guaranteed, in the first instance, from their management. For these purposes, the implementation of the SGOE is oriented to principles that stimulate the fulfillment of these Goals and SDG 4 as a whole, including:

- Focus on students and other beneficiaries, actively involving students in their own learning, taking into account the needs of the community and the strategic purposes of the IES.
- Visionary leadership, as a premise to improve the capacity of the HEI and its people to achieve the expected results and impacts on students, the community and society as a whole.
- Commitment of people, based on recognition, empowerment and competence.

- Social responsibility, based on the IES being responsible for the impacts of its decisions and activities on society, the economy and the environment, all based on transparency and ethical behavior.
- Accessibility and equity, which is based on HEIs guaranteeing that “the widest possible group of people has access to their educational products and services, subject to their limitations and resources. They also need to ensure that all students can use and benefit from those products and services equitably” (ISO, 2018, p. 55).
- Ethical conduct in education, which creates a professional environment, where everyone is treated equitably, avoiding conflicts of interest and contributing value to society.

As a corollary, the management of HEIs, based on the aforementioned principles, with an approach oriented to quality in the performance of people and the organization, is the basis for contributing to the fulfillment of the SDGs from higher education. Likewise, the external evaluation and accreditation processes that ensure educational quality oriented towards academic excellence, social relevance and equity contribute to the fulfillment of these objectives.

5. Conclusions

Management systems in higher education can involve academic factors, given in institutional accreditation models, and generic quality management requirements, embodied in the ISO 9001 standard. This must be done in a comprehensive manner to achieve the objectives. institutional objectives and stakeholder satisfaction. Furthermore, currently, by having the ISO 21001 standard, both approaches are aligned in the Management System for Educational Organizations, providing complementarity and synergies to achieve certification by the ISO

conformity assessment schemes and the established accreditation. as part of the educational quality assurance models.

Certification by the ISO 21001 standard can serve as support for organizations in charge of guaranteeing educational quality. In the case of higher education, this certification must create synergies with institutional accreditation models, to guarantee and demonstrate the achievement of higher levels of educational quality. On the other hand, certification by an accredited body is a guarantee of the impartiality of the process as it is not carried out by an organization directly interested in the quality of the HEIs. In Colombia there are certification schemes for the ISO 21001 standard, although they are not yet accredited. These schemes should be developed in Cuba and Ecuador to promote third-party certification that provides greater impartiality to sectoral schemes for accreditation of educational quality.

In the current situation of confronting COVID-19, standardized management systems contribute to organizations being better prepared to face risk situations, and can maintain the continuity of educational processes with quality and safety. Finally, it is evident how HEIs through their management and participation in external evaluation and accreditation processes can contribute to the achievement of the Sustainable Development Goals as a whole and, in particular, to SDG No. 4.

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