

The new management system ISO 21001:2018: What and why educational organizations should adopt it

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Abstract. The International Organization for Standardization (ISO) recently published a new management system standard ISO 21001:2018. This standard outlines the requirements for educational organizations and is intended for such organizations than the more commonly used ISO 9001:2015 quality management system. This paper aims to compare both standards and study their similarities and differences to evaluate whether the new standard is more suitable for educational organizations. After employing qualitative analysis to directly compare the two standards in terms of breadth, depth and terminologies, it was found that while both standards use the same high-level structure, ISO 21001:2018 is broader and deeper than ISO 9001:2015 with more lower-level clauses. The terms used in the new standard are also very specific for education such as learner, curriculum, courses, learning outcomes, assessment, grades, etc. In addition, it also acknowledges that the customers of education are actively involved in the process therefore intensive communication should be maintained. Observing these findings, we conclude that educational organizations should be better off adopting this new standard.

Keywords: ISO 21001:2018, ISO 9001:2015, management system, educational organization

1. Introduction

ISO stands for “the International Organization for Standardization.” It is an independent and non-governmental international organization comprising of 162 national standards bodies (www.iso.org). It was founded in 1947 by delegates from 25 countries with the main purpose to develop standards for products and services to ensure their safety, reliability, and quality. These standards are developed by technical committees consisting of experts around the world in their related fields. However, it was not until 1987 when ISO gained recognition after it published ISO 9001 for quality management that has been widely implemented today. Currently, ISO has produced over 22,000 international standards of which ISO 9001 for quality management, ISO/IEC 17025 for testing and calibration laboratories and ISO/IEC 27001 for information security management being the three most popular standards applied.

As a critical sector responsible for the development of human resources, education unfortunately had not been covered in ISO standardization. Educational institutions have attempted to adopt ISO 9001, from its initial version 1987 to the subsequent versions 1994, 2000, and 2008. However, it was immediately realized that the general terminologies in ISO 9001, while they are straightforward for manufacturing companies, might lead to ambiguity in educational practices. For example, the terms “customer” and “stakeholder” are often interchangeable in the context of education. One can view the students as the customer of education especially if they are on fee-paying basis, but one can also perceive that the industries are the actual customers of education since they are the ones who will

employ the “product” of education thus are the right people to measure the fitness of educational courses (curriculum, courses, etc.) to the needs of the job market (by this argument we are referring to the concept of “fitness for use” in the definition of “quality” from many sources).

To address this issue, ISO established a mechanism that allows actors from the same field beyond manufacturing to participate together in a workshop meeting. These people can come from anywhere and are different from the technical committee members that have to go through a national delegation. The aim of the workshop is to produce a document agreeing on certain issues within a particular field. This document is called International Workshop Agreement (IWA) and for education it is numbered as IWA 2. With IWA 2, agreement in educational terminologies has been reached to reduce ambiguity. For example, the customer of education is defined as “learner” so not to be confused with other stakeholders such as the industries. Other terms such as “product” or “product design” are associated with the relevant terms in education such as “courses” or “curriculum design”, respectively. An IWA has a maximum lifespan of six years, after which it has to be converted to another ISO deliverable or withdrawn. Throughout its lifespan, IWA 2 had been formulated with versions 2003 and 2007 to accompany the interpretation of ISO 9001:2000 for education. When ISO 9001:2008 was published, IWA 2:2007 was actually no longer suitable for use, although some institutions were still using it mainly as supporting document to enhance clarity in ISO implementation. IWA 2:2007 has now been withdrawn and no newer version is available.

On May 2018, ISO published ISO 21001:2018 as requirements for the management system of educational organizations. This standard is intended to help educational institutions work on their continuous improvement path by applying a robust, standardized management system. Although there has not been a statement from ISO indicating the future of IWA 2, the content of ISO 21001 that incorporates key concepts in ISO 9001 and important terms agreed in IWA 2 suggest that IWA 2 will be permanently discontinued and educational institutions can opt for certification in ISO 21001:2018 to avoid ambiguity of terminologies in ISO 9001:2015. However, being a new standard, it could take a while for ISO 21001 to get recognized and fully acknowledged by wider educational community. Needless to say one of the purposes in certification is to boost the organization profile in marketing, therefore success stories are expected to convince the management of educational institutions to adopt a less popular standard compared to ISO 9001.

ISO 9001 has evolved in a number of versions from 1987, 1994, 2000, 2008 and 2015. A general overview of ISO 9001:2015 can be read in [1], whereas transition methodologies can be learned from [2], where it outlines the stages and tools that can be used in the transition from ISO 9001:2008 to ISO 9001:2015. These are: (i) defining relevant quality management system (QMS) business processes to identify the stakeholders’ needs, (ii) using SWOT analysis to analyze internal and external factors of the organizations to be used in the formulation of relevant strategies and quality objectives, and (iii) analyzing risks associated to business processes as well as organizational strategies with tools such as FMEA.

To what extent is certification in higher education institution (HEI) useful? Naturally, this comes as a fundamental question for any HEI before making a decision to get certified. A number of studies suggest the benefits of certification beyond marketing. For example, the impacts and success factors of ISO 9001:2008 implementation in Portuguese vocational schools are identified in [3]. The authors developed a model and validated it using case studies from five schools. The authors also suggested that ISO standards can be used as a means to provide strategic focus and as a foundation for planning. A similar argument is forwarded in [4] stating that ISO 9001:2008-based QMS can set up a foundation for TQM and academic accreditation. Taking a case study in faculty of engineering of one university in the Kingdom of Saudi Arabia, the authors explained that the implementation of ISO 9001:2008 had prompted reengineering of several processes to achieve better performance, where these processes and their objectives are anchored to the stakeholders’ needs and expectations. Another example is in [5], where the authors, using regression analysis, showed that the degree of conformities in ISO 9001:2008 QMS strongly correlates with the academic staff’s quality in teaching. The research was carried out with samples from Kenyan public universities.

As far as actual impacts are concerned, two studies can be mentioned. First, a case study in one Kenyan university found significant achievements resulting from ISO 9001:2008 implementation [6], such as graduates' competitive traits in the job market, better control in records and document for future reference, and transparency in the management of research funds and projects. The authors also emphasized that a quality management approach must be adopted beyond certification and compliance to requirements in order to achieve long-term sustainable success. This means that ISO 9001:2008 certification should not be regarded merely as a marketing tool and institution should strive to realize the benefits beyond the certification stamp. Although only one university was used as the sample, the report thoroughly investigated quality-related documentation (internal audit reports, internal surveys and feedback, external audits, and rankings by external bodies) in the span of seven years. Secondly, an important challenge is emphasized in [7] in ISO 9001:2008 implementation, i.e. to address the benefits for individuals within the organization. Motivated individuals are regarded as a key success factor in the realization of benefits and also the sustainability of ISO 9001 as a tool in HEI's QMS.

Table 1. Summary of literature review

Authors	Discussion/findings	Case study
1 Sari et al. (2017) [2]	Transition methodologies from ISO 9001:2008 to ISO 9001:2015	4 organizations in East Java, Indonesia
2 Gamboa and Melão (2012) [3]	ISO 9001:2008 can be used as a means to provide strategic focus and foundation for planning	5 vocational schools in Portugal
3 El-Morsy et al. (2014) [4]	ISO 9001:2008 can be used as a foundation for TQM and academic accreditation	One faculty in a university in KSA
4 Andiva and Simatwa (2018) [5]	Degree of conformities in ISO 9001:2008 correlates with academic staff's quality in teaching	Kenyan public universities
5 Moturi and Mbithi (2015) [6]	Significant achievements from ISO 9001:2008 in graduates quality, documentation and transparency	Univ. of Nairobi, Kenya
6 Hussein et al. (2017) [7]	Benefits for individuals is a key success factor thus must be emphasized in ISO 9001:2008	Lebanese HEIs

The above review is summarized in Table 1. All studies in the table promote the benefits of ISO 9001 for HEIs. However, it can also be noted that no reference, let alone case study, has been found regarding the new standard ISO 21001:2018. Given this background, this paper aims to discuss the requirements of ISO 21001:2018 and compare them with those of ISO 9001:2015. Being a pioneer in this avenue, this paper therefore has a strong contribution in the QMS literature.

2. Method for comparison

Qualitative analysis is used in this study to compare the clauses in ISO 9001:2015 with those in ISO 9001:2008. Number of sub-clauses and the spawning branches (sub-sub-sub-sub-clauses being the lowest) are counted to see which standard has more breadth and depth. In addition to the descriptive comparison, sentences in the requirements are closely compared to identify the introduction of new phrases and also to qualitatively evaluate the scope of requirements. Note that in order to simplify the analysis, bullet points are not compared, although it is possible that their count bear different weight between the clauses.

3. Results and discussion

The results of this study are described in this section. A general overview is first discussed before clause-by-clause comparison. The general overview covers clauses 1 to 3 that set the boundaries of both standards.

3.1. General overview of ISO 9001:2015 and ISO 21001:2018

A similarity in both ISO 9001 and ISO 21001 can immediately be observed, in that both standards use what is called High-Level Structure (HLS). HLS is an attempt from ISO to standardize its own system in creating standards to ensure consistency across different disciplines. The structure comprises the same clauses from 1 to 10 and future ISO standards are oriented toward using this system so that they are comparable. The aims of HLS are not only for the standards to have the same look and feel, but also to enable greater integration between systems. By using HLS, all management system standards will use the same core text but added with contextualized text depending on what the management system is about. With the advent of HLS, gone are the confusion and difficulties at the implementation stage for an organization applying more than one ISO standards. A direct consequence of this is that IWA 2 can no longer be used as a reference as it does not follow HLS.

In spite of the above similarity, there exist differences between both standards. First, ISO 9001 is referred to as a quality management system (QMS), whereas ISO 21001 is referred to as educational organization management system (EOMS). The following terms are also defined in clause 3 of ISO 21001 that are not available in ISO 9000:2015 (the reference of ISO 9001:2015): learner, educator, curriculum, course, programme, teaching, and lifelong learning. In addition, Annex A provides additional requirements for early childhood education (ECE) that detail learning resources for ECE, facilities for play and facilities for day care, which are special only for ECE. ISO 21001:2018 further describes the relationship among its clauses as depicted in Figure 1.

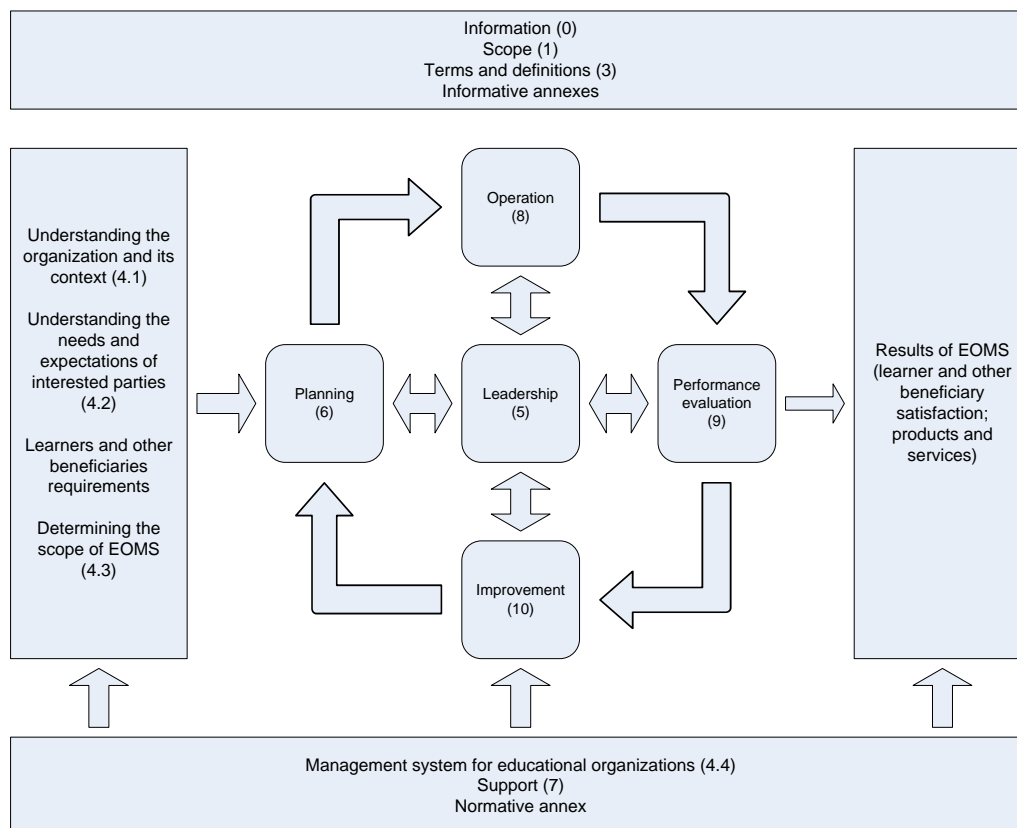


Figure 1. PDCA cycle in the EOMS framework of ISO 21001:2018.

3.2. Clause-by-clause comparison between ISO 9001:2015 and ISO 21001:2018

In this sub-section we discuss the differences between the clauses in ISO 9001:2015 and ISO 21001:2018. We directly compare clauses 4 to 10 that reflect the actual substance of the standards.

3.2.1. Clause 4. Context of the organization. The purpose of this clause is for an organization to have a full understanding of its stakeholders and their expectations. Three sub-clauses are outlined and there are no substantive differences between the two standards, except a more specific example of interested parties are given in 21001, i.e. learners, beneficiaries, and staff. An interested party can hold more than one position, e.g. a doctoral student can be considered both as a student and an employee. A more detailed description for these stakeholders is provided in Annex C as follow:

- Learners: students/pupils, apprentices
- Beneficiaries: government, labour market, parents and guardians
- Staff: employees, volunteer
- Other: educational organizations, media and society, external providers, shareholders, commercial partners, alumni

3.2.2. Clause 5. Leadership. In the general sub-clause of leadership, ISO 21001 lists more points than ISO 9001, touching issues such as strategic plan, learners requiring special needs, and social responsibility, that are not common in other non-educational organizations.

The terms “learners and other beneficiaries” are used in exchange of “customer” to address the issue of who the customers are in educational institutions. An additional sub-sub-clause is added discussing requirements for special needs education. The policy development sub-sub-clause is also more extensive in 21001 with social responsibility and intellectual property being taken into account. Similarly in organizational roles, responsibilities and authorities, these additional issues are also raised bringing more points in this sub-sub-clause.

3.2.3. Clause 6. Planning. Clause 6 is one with the least differences. Both standards address the issues of risks and opportunities, organization/quality objectives and the planning to achieve them, and planning of changes in the QMS/EOMS. Regardless, the planning clause is a critical clause since risk management usually serves as an entrance to the whole management system.

3.2.4. Clause 7. Support. Clause 7 on support is more elaborated in ISO 21001 than the same clause in ISO 9001. An addition of nine sub-sub-sub clauses are found in the sub-sub-clause resources in 21001, addressing particulars such as learning engagement and satisfaction as well as staff engagement and satisfaction. The sub-sub-clause on facilities is also more detailed in 21001. More than specifying what type of infrastructure that an organization should provide, appropriate facilities for teaching and learning are stated as requirements. Further notes are mentioned to associate facilities beyond indoor and outdoor, but also digital spaces to accommodate activities such as online learning.

As to monitoring and measuring resources, both standards agree on the requirements. However, especially in 21001, the requirements are still too general and do not address difficulties on this issue in education. Examples on what aspects to monitor and measure, and what type of resources that can be used are expected in the standard to assist the interpretation of the requirements.

The organization knowledge sub-sub-clause is expanded to two sub-sub-sub-clauses in 21001. Although 7.1.6.1 in 21001 is a bulleted version of the general terms in 9001’s 7.1.6, a more significant addition is observed in the issue of learning resources that should be provided by the institution. Planned review, cataloguing/referencing, intellectual property requirements, and reusability of the learning resources are also expected.

Two sub-sub-clauses are added in 21001’s requirements for competence. The first one encapsulates the general requirements whereas the second addresses requirements for special needs education. An emphasis is given to the performance evaluation of staff and its continual improvement.

The communication sub-clause (7.4) in 21001 is more specified in three sub-sub-clauses: general, communication purposes, and communication arrangements, with two sub-sub-sub-clauses are further added in the latter. The fact that there is much elaboration in communication requirements comes back to the issue on the characteristics of customers in education where, unlike customers in general, the

customers of educational institutions are actively involved in the process of service delivery and therefore intensive communication is required between the learners and the institution.

In the last sub-clause of documented information (7.5), both standards possess the same structure. However, notes are supplied in 21001 for examples of documented information, which are naturally different from those in regular companies, such as academic calendar, curriculum, course catalogue, grades, scoring and evaluation, and code of conduct/ethics. Additional requirements in terms of information protection and security, confidentiality, and prevention of unintended use of obsolete documents, are also stated.

3.2.5. Clause 8. Operation. Clauses 7 and 8 are the two most elaborated clauses in ISO 21001 than their counterparts in ISO 9001. Sub-sub-sub-sub-clauses are observed in this clause. In the operational planning and control sub-clause, the general requirements from 9001 are grouped into one sub-sub-sub-clause in 21001 (8.1.1). Two more sub-sub-sub-clauses are added: (1) additional requirements for special needs education; (2) specific operational planning and control in the design, development and expected outcomes for learning outcomes, teaching methods and learning environments, assessment criteria, learning assessment, improvement methods, and support services.

In the requirements for (the educational) products and services, ISO 21001 describes in more detail on what and how the requirements of products and services are to be communicated. However, contrary to the other sub-clauses, 9001's 8.2 sub-clause has two extra sub-sub-sub-clauses discussing review of products and services requirements.

Planning phase in the design and development of educational products and services must consider the extent to which learners require individualized learning pathways and the provision of learning tools. In the design and development controls, curriculum is a key product being emphasized, encompassing elements such as learning outcomes, activities, resources and opportunities. In addition, summative assessment shall also be controlled to ensure: (i) the connection between the assessment design and the learning outcomes intended to be assessed, (ii) the principles of transparency, accessibility and fairness, and (iii) proper definition and validation of the grading system.

Given its scope that is linked to the main process, the delivery of (the educational) products and services sub-clause can be considered the most important part in the QMS/EOMS. Here, the general requirements in 9001's 8.5.1 are put into 21001's 8.5.1.1. In addition, however, there are five more sub-sub-sub-clauses (8.5.1.2 to 8.5.1.6) with two sub-sub-sub-sub-clauses in 8.5.1.2. All these sub-sub-sub-clauses are distinct requirements in ISO 21001 that are not available in ISO 9001. The general process in educational institutions starts with admission (8.5.1.2), then followed by teaching and learning process (8.5.1.3), summative assessment (8.5.1.4), and closed out by some forms of learning recognition, e.g. announcement of exams result, issuance of grades report, etc. (8.5.1.5). The sub-sub-sub-clause 8.5.1.6 discusses additional requirements for special needs education detailed in three sub-sub-sub-sub-clauses. The next five sub-sub-sub-clauses (8.5.2 to 8.5.6) are almost equivalent, but with a substantial difference in 8.5.5 where in 21001, requirements for protection and transparency of learners' data are specified. This section addresses the need for the institution to establish a method by which learners' data are collected, stored, accessed, protected, and shared under consent.

Release of (the educational) products and services are similar in both standards, although products and services in educational context are more varied (books, grades, diplomas, etc.) therefore their release can take place in different phases. Finally, the last sub-clause in control of non-conforming products has little difference where ISO 21001 requires that the organization shall retain documented information that describes the delivery of the programmes.

3.2.6. Clause 9. Performance evaluation. In addition to the general requirements, ISO 21001 requires the organization to determine the acceptance criteria. The satisfaction of learners, other beneficiaries and staff (or customer satisfaction in 9001) sub-sub-clause is more elaborated addressing requirement for the handling of complaints and appeals, and how this are maintained as documented information and made known to the interested parties.

Two extra sub-sub-clauses are added in 21001 to accommodate other monitoring and measuring needs as well as requirements for methods for monitoring, measurement, analysis and evaluation, linked to Annex E. For the analysis and evaluation, ISO 21001 requires the inclusion of satisfaction of beneficiaries and staff.

The internal audit sub-clause is different only in the part where, in ISO 21001, opportunities for improvement shall be identified. Similarly, the management review sub-clause is not much different, only that, in ISO 21001, formative and summative assessment outcomes and staff feedback should be considered as part of management review inputs.

3.2.7. Clause 10. Improvement. Both standards have identical requirements in this clause, except for the order of sub-clauses that has been rearranged, i.e. 10.1, 10.2 and 10.3 in ISO 9001 become 10.3, 10.1 and 10.2 in ISO 21001, respectively. The idea is presumably to enhance the logical importance of improvement initiatives, whereby correction needs to be acted immediately should non-conformities occur, followed by continual improvement and further identification of improvement opportunities.

Table 2. Comparison between ISO 9001:2015 and ISO 21001:2018

Clause	Number of sub-clauses; sub-sub-clauses; sub-sub-sub-clauses; sub-sub-sub-sub-clauses; change and introduction of new terminologies in the standards	
	ISO 9001:2015	ISO 21001:2018
4. Context of the organization	4; 2 (4.4)	4; 2 (4.4)
5. Leadership	3; 2 (5.1), 2 (5.2) Customer	3; 3 (5.1) , 2 (5.2) Learners and other beneficiaries First introduction of the phrase “special needs education”
6. Planning	3; 2 (6.1), 2 (6.2)	3; 2 (6.1), 2 (6.2) Mention of “learning resources”
7. Support	5; 6 (7.1), 3 (7.5); 2 (7.1.5), 2 (7.5.3) People Infrastructure Social + psychological	5; 6 (7.1), 2 (7.2) , 3 (7.4) , 3 (7.5); 2 (7.1.1) , 2 (7.1.2) , 3 (7.1.3) , 2 (7.1.5), 2 (7.1.6) , 2 (7.4.3) , 2 (7.5.3) Human resources Facilities (incl. digital spaces) Psychosocial Examples of documented information such as curriculum, grades, etc.
8. Operation	7; 4 (8.2) , 6 (8.3), 3 (8.4), 6 (8.5), 2 (8.7); 2 (8.2.3) Products and services	7; 3 (8.1) , 3 (8.2), 6 (8.3), 3 (8.4), 6 (8.5), 3 (8.7) ; 4 (8.3.4) , 6 (8.5.1) ; 2 (8.3.4.1) , 2 (8.5.1.2) , 4 (8.5.1.6) Educational products and services (learning outcomes, assessment, etc.) Requirement for protection and transparency of learners’ data
9. Performance evaluation	3; 3 (9.1), 2 (9.2), 3 (9.3)	3; 5 (9.1) , 2 (9.2), 3 (9.3); 2 (9.1.2) , 2 (9.1.4) Handling of complaints and appeals Assessment and staff feedback as part of management review
10. Improvement	3; 2 (10.2)	3; 2 (10.1)

Table 2 summarizes the results of this study. Key parameters included in the table are the number of sub-clauses and their branches. Different levels are separated by a semi-colon whereas different requirements in the same level are separated by a comma. Labels in parentheses indicate the level of the expanding clauses. For example, “3; 2 (6.1), 2 (6.2)” means there are 3 sub-clauses with 2 sub-sub-clauses in 6.1 (6.1.1 and 6.1.2) and 2 sub-sub-clauses in 6.2 (6.2.1 and 6.2.2). Bold typeface is used to show the clauses with more requirements than their counterpart. Furthermore, change and introduction of new terminologies are also indicated in the table.

4. Conclusion and remarks for future research

This paper discusses the recently published educational organization management system from ISO named ISO 21001:2018. The discussion revolves around the comparison between this EOMS and the more popular QMS ISO 9001:2015. The rationale for the need of a specific standard for educational organizations are also discussed and founded in the literature review.

Using qualitative analysis by directly comparing both standards, the following conclusion is obtained. First, both standards use the same structure called High-Level Structure comprising the same clauses from 1 to 10. This enables direct comparison between the two. Secondly, being distinctively tailored for education, a number of terms used in ISO 21001 are very specific, most notably is the adoption of the words “learner” (including “other beneficiaries”) for “customer” and “curriculum” and “courses” and their associated attributes such as learning outcomes, assessment, grades, etc. for “products.” The standard also acknowledges that the customers of education, unlike those in regular companies, are actively involved in the process, thus demanding more intensive communication be established between the institution as the service provider and its learners. Thirdly, the scope of ISO 21001 is broader and deeper than that of ISO 9001 as can be seen from the additional sub-sub-clauses or sub-sub-sub-clauses. This somewhat indicates that the management of an educational institution is more complex than the management of most organizations. Lastly, special needs education is given emphasis as it is mentioned frequently throughout the standard.

From the above conclusion we argue that educational organizations should be better off adopting ISO 21001 for its management system than ISO 9001. The question remains on whether the new standard will be preferred to the more widely accepted ISO 9001 in view of the marketing benefit. As of now, no case study has been encountered on the implementation of ISO 21001, which to some extent also limits this study. With the advent of such case studies in the future and after the new standard has reached its maturity stage, this could be a viable research path to pursue.

5. References

- [1] Cochran C 2015 *ISO 9001:2015 in Plain English* (Chico: Paton Professional)
- [2] Sari Y, Wibisono E, Wahyudi R D and Lio Y 2017 From ISO 9001:2008 to ISO 9001:2015: Significant changes and their impacts to aspiring organizations *IOP Conf. Ser.: Mater. Sci. Eng.* **273** 012021 <https://doi.org/10.1088/1757-899X/273/1/012021>
- [3] Gamboa A J and Melão N F 2012 The impacts and success factors of ISO 9001 in education: Experiences from Portuguese vocational schools *Int. J. Qual. Reliab. Manage.* **29** 384–401
- [4] El-Morsy A, Shafeek H, Alshehri A and Gutub S A 2014 Implementation of quality management system by utilizing ISO 9001:2008 model in the emerging faculties *Life Sci. J.* **11** 119–125
- [5] Andiva Z K and Simatwa E M W 2018 Influence of ISO 9001:2008 quality management systems on academic staff’s service delivery in teaching in public universities: An analytical study *Int. J. Curr. Res.* **10** 69654–65
- [6] Moturi C and Mbithi P M F 2015 ISO 9001:2008 implementation and impact on the University of Nairobi: A case study *TQM J.* **27** 752–760
- [7] Hussein B, Abou-Nassif S, Aridi M, Chamas M and Khachfe H 2017 Challenges and prospects of implementing ISO 9001:2015 in Lebanese higher education institutions *J. Resour. Dev. Manage.* **33** 41–51