Strategy adaptation for sustainable quality management in universities: a systematic literature review

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Abstract
Despite its roots in environmental discussions, sustainability has become a critical term influencing every aspect of organisations. As human-oriented institutions, universities have also embraced the ‘sustainable development’ concept on the quality of their internal and external services. Two overarching questions are most important for university managers to strategically guide sustainable quality development in their institutions: Which strategies do university managers adapt to construct a “sustainable quality management” structure in their universities? and how are these adapted strategies related to different aspects/components of universities? In response, we employed a Systematic Literature Review (SLR) protocol to analyse the existing studies in the related literature. During the systematic review, we followed five steps sequentially: i) defining the research question(s), ii) setting inclusion–exclusion criteria, iii) recording eligible studies, iv) quality overview of selected studies, and v) discussing prominent results. To integrate the results, we benefitted from five enablers in the European Foundation for Quality Management (EFQM) model and the sub-sections given in the European University Association’s (EUA) institutional evaluation reports. The results revealed that the initial steps for university leadership to establish a ‘Sustainable Quality Management’ system are integrating a sustainable quality approach to the main strategy document, and then motivating their staff to participate in and enrich the reform-level cultural changes in their universities. This study also discusses the strategies adapted to sustain quality development in universities’ teaching, research, societal services, and internationalisation practices.

Keywords  Sustainability in higher education · Quality management in universities · Sustainable quality development · Sustainable quality strategies · Sustainable quality management
Introduction

To retain a place in their sector, each organisation has to keep up the quality of their products or services. In universities, considering the variety of their activities internally and externally, quality management in particular becomes a complex operational field for the entire institution (Leiber, 2018). With the changing expectations of their stakeholders, even more so during the Covid pandemic period, the complex social structure in universities has further compelled managers to focus on sustainable strategies for quality development in their operations.

While quality is basically “how good or bad something is” (Cambridge Dictionary, n.d.), the International Organization for Standardization (ISO) has defined quality as “the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs” (as cited in OECD, 2006). Outlining the definition of ISO, discussions on quality started largely in terms of meeting customers’ expectations for commercial products. In universities, the development of the “quality” understanding, as expected, followed similar approaches to the business world. As Alper (2021) reported, accessing through the SCOPUS database more than two thousand studies on quality in higher education, the earlier focus was on student satisfaction (i.e., Athiyaman, 1997) and programme accreditation (i.e., Lim, 1999) in universities. Since then, with the growing number of studies each year (from 57 between 1996–2000 to 1,042 between 2016–2020) (Alper, 2021, p. 46), quality management has maintained its place as one of the prominent topics in the field of higher education.

Despite starting with a relatively narrow perspective of student satisfaction and accreditation practices, quality management has evolved into a comprehensive structure including leadership and decision-making, strategy adaptation/development, human resource planning, changing organisational culture, infra-/supra-structural investments, financial efficiency, etc. (Manatos et al., 2017). In the course of time, different management models have naturally influenced the quality of management in universities. As one of the well-known models, the Total Quality Management (TQM) approach brought various managerial practices and tools into university management (e.g., vision-mission statements, strategy establishment, action plans, staff involvement, and self-/external-evaluation) (Flores-Molina, 2011). Although some scholars have criticised the business roots of TQM for not fully fitting the human origin of higher education institutions (Baldwin, 2002; Holmes & McElwee, 1995), at least the “PDCA (Plan-Do-Check-Act)” logic within TQM becomes the main approach for university managers to organise their development plans. This PDCA cycle also brought “sustainability” into the quality management structure by continuously re-checking the improvements in planning and practices of an institution (Flores-Molina, 2011; Medne et al., 2020).

In particular, after the announcement of Sustainable Development Goals (SDGs)\(^1\) by the United Nations (UN) in 2015, “sustainability” has nowadays become a hot word in management of any kind of organisation. Although the definition of sustainability can be different according to various disciplinary and cultural discourses, the common point in sustainability definitions is whether systems can continue to have sufficient resources to meet the needs in the future (Thompson, 2016). The most common definition dates back to the late 1980s. The report of the World Commission on Environment and Development (also known as the Brundtland Report) in 1987 defines the terms of sustainability

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\(^1\) 17 SDGs: https://sdgs.un.org/goals.
and sustainable development as ‘the development which meets the needs of the present without compromising the ability of future generations to meet their own needs’ (Brundtland, 1987). Since the concept of sustainability is directly related to the future of human organisations, it is based on three interconnected pillars: society, environment, and economy (Purvis et al., 2019).

For institutions, sustainability includes economic, social, environmental, and organisational dimensions. Considering these dimensions together, sustainable quality management indicates managing all units and people efficiently, and the processes/activities in terms of economic, social, environmental, and/or organisational value creation in the related institution (Medne et al., 2020; Salvioni et al., 2017; Vykydal et al., 2020). Yet there is a difference when comparing the main approach of sustainable quality among business firms, industrial organisations, and universities. Whereas companies mostly evaluate quality output through their sales, or industrial organisations check certain metrics to maintain the quality standards for their products, as human-intensive institutions, universities have to follow the perceptions of very different stakeholder groups in order to assess the upward/downward quality trends in their activities and services (Baldwin, 2002; Flores-Molina, 2011). Therefore, managers should count internal groups (i.e., students, academic staff, administrative personnel) and external actors (i.e., governmental units, commercial partners, international collaborators) together in order to design a sustainable quality management system in higher education institutions.

Not surprisingly, therefore, “sustainable quality management” has emerged as one of the recent concepts in the literature of higher education (Alper, 2021; Ertem & Aypay, 2021). While some researchers focused only on sustainable development in the quality of teaching programmes (i.e., Gora et al., 2019; Holm et al., 2015) or of online teaching systems (i.e., Harkness, 2015; Yahya & Rostam, 2015), others have discussed sustainability in different aspects of quality in universities, such as the quality of campus life (Pedro et al., 2020), stakeholders’ satisfaction regarding sustainability practices in universities (Olmos-Gómez et al., 2020a; 2020b), sustainability and the institutional image of universities (Salvioni et al., 2017), and sustainability practices and university quality (Hernandez-Diaz et al., 2020). On the other hand, recent studies call for more comprehensive frameworks towards the adaptation of sustainability in higher education institutions (Bauer et al., 2020). Successful integration of sustainability in higher education organisations requires a total institutional commitment to research, teaching, knowledge production and transfer, and operations (Bauer et al., 2021).

Giovannoni and Fabietti (2013) argued that a multi-dimensional approach to sustainability was needed. They recommended a three-level adaption of sustainability in organisations: (a) integrated governance, (b) strategy and business models, and (c) management, measurement, and reporting systems. These three levels are comprised of environmental, social, and financial aspects of sustainability. Integrated governance includes risks (risks, strategic decision-making, and accountability), knowledge (development of skills, competencies, cultural and ethical foundations), and compliance (national, international rules and regulations). Strategy and business models focus on creating value by combining social-environmental and financial dimensions. Management, measurement, and reporting systems follow the plan, do, check, and communicate cycles to keep the organisation on track and to prevent mission drift.

Further, Medne and colleagues (2020) stated the necessity for integration of sustainability in a university’s strategy and present examples based on their case of a Latvian university, as follows: developing strategic objectives focused on ‘internationalisation’, ‘interdisciplinary projects’, ‘an integrated quality system’, ‘financial management’, ‘infrastructure development’, and ‘digitalisation in study, research, and valorisation processes’ (p. 39). Considering strategy development in universities, while many researchers have argued
how strategies deeply influence the management system and daily practices in universities (Aarrevaara et al., 2019; Shah & Sid-Nair, 2014), Uslu (2018) exclusively picturised flexible strategies regarding changes in national/local demographics, local industry/business sectors, national higher education regulations, international higher education formats, and global/national economic conditions (p. 224).

It is a well-known fact that university leaders decide strategic priorities and develop various strategies targeting quality enhancement in their institutional activities and services (Aarrevaara et al., 2019). Parallel to directives by the leadership, assigned experts or unit managers will establish various institutional policies and practices as part of the quality management system (Medne et al., 2020). Despite such an important link between institutional strategies and sustainable quality development, none of the studies above directly engaged in adapted strategies for sustainable quality management in universities. On this point, a couple of overarching questions gain importance for university managers to strategically guide the sustainable quality development in their institutions, namely, what are the adapted strategies by university managers to construct a “sustainable quality management” structure in their universities, and how are these adapted strategies related to the different aspects/components of universities? The answers to these questions can assist policymakers to outline general strategies for sustainable quality in higher education and guide university managers to evaluate ongoing practices for sustainable quality development in their institutions.

Therefore, the present research aims to explore the strategy changes necessary for sustainable quality management in universities and the influence of these strategies on quality development in universities. To achieve this, we systematically reviewed the related literature to analyse sustainable quality strategies that have been implemented in universities so far by means of a specified theoretical framework.

**Theoretical framework**

Various management models have historically influenced the quality management approaches in higher education. Some of these quality (or excellence) models still influence the quality development practices in universities. As summarised by Medne and colleagues (2020, p. 32), by keeping the environmental, economic, and societal development goals in the core of quality management, university managers have largely benefited from the holistic approach of TQM to develop, employ, and assess the quality practices in their institutions.

When we look at the roots of TQM chronically, this model embraces Deming’s 14 points of management. Some sources even name these 14 points directly for TQM, including “1. Create constancy of purpose for improving products and services”, “5. Improve constantly and forever every process for planning, production and service”, and “14. Put everybody in the company to work accomplishing the transformation” (ASQ, n.d.). Here, Raanan (1998) claimed that “the academic world is the perfect example of an institution—guided by such values as truth and freedom—where TQM can most readily be implemented, with glowing results” (p. 1). Further, as a well-known management tool, Deming’s PDCA cycle has been widely used within TQM practices in universities; for example, as a standard tool for quality evaluation practices, PDCA and SWOT (Strengths-Weaknesses-Opportunities-Threats) analysis are suggested by the European University Association (EUA) for self-evaluation in universities (https://www.iep-qaa.org/). Another excellence model frequently used in the higher education sector
is SERVQUAL (Cuthbert, 1996a, 1996b). This quality management approach focuses mainly on stakeholders’ (largely students’) satisfaction, and questions whether the university’s services meet their expectations and/or needs, or not (Vauterin et al., 2011).

Although they are not so common in universities, there are also other quality management models used in the higher education sector. For example, the Malcolm Baldridge National Quality Award (MBNQA) is another longstanding excellence model to acknowledge successful quality management systems in institutions, including the education sector. This management model is mostly preferred to determine progress in quality development by evaluating university activities through seven dimensions: Leadership, Strategic planning, Customer focus, Measurement, analysis and knowledge management, Workforce focus, Process management, and Results (Winn, 1996). Rather than focusing on the process and quality progress, there are several management models focusing on standards, as in the “Integrated Management System (IMS)”, in which managers can integrate different standards into the management system of universities to be able to work with “a single unit” logic around unified objectives for the institution. For universities, IMS generally benefits from other standardised frameworks, such as ISO 9001 (Palma et al., 2018).

ISO 9001 presents a set of standard requirements that specify the quality requirements. Whereas ISO 9001 standards have been criticised by scholars because of the industrial-style logic within its seven principles (similar to the MBNQA; Customer focus, Leadership, Engagement of people, Process approach, Improvement, Evidence-based decision making, and Relationship management) (e.g., Abbadi et al., 2013), others evaluate this standardised framework as a useful tool to promote quality culture in higher education, especially regarding resource management and the product realisation stages (e.g., Jingura et al., 2019). Another management model to measure quality is the Balanced Scorecard (BSC). Since its first introduction by Kaplan and Norton (1992), BSC has been mainly used to analyse the performance of universities focusing on results/outcomes/outputs related to pre-defined dimensions around the Financial, Customer, Learning and Growth, and Internal Process perspectives (see the different dimensional categorisation for universities proposed by Fijałkowska & Oliveria, 2018).

Rather than the standards in ISO 9001 and BSC management models, most universities in Europe nowadays follow the ESG Standards and Guidelines for Quality Assurance in the European Higher Education Area (https://www.enqa.eu/wp-content/uploads/2015/11/ESG_2015.pdf). Initially developed in 2005, ESG updated their standards in 2015 because of the paradigm shift towards student-centred learning and teaching (http://www.ehea.info/page-standards-and-guidelines-for-quality-assurance). While universities largely use the ESG 2015 Part 1 to ensure their internal quality assurance through 10 standards (1. Policy for quality assurance (QA), 2. Design and approval of programmes, 3. Student-centred learning, teaching and assessment, 4. Student admission, progression, recognition and certification, 5. Teaching staff, 6. Learning resources and student support, 7. Information management, 8. Public management, 9. On-going monitoring and periodic review of programmes, and 10. Cyclical external quality assurance), ESG 2015 Part 2 offers seven standards for external QA evaluations. In Part 3, ESG 2015 also underlines seven standards for the evaluation of QA agencies, as in the case of our home country: The evaluation of Turkish Higher Education Quality Council (YOKAK) by the European Association for Quality Assurance in Higher Education (ENQA) (https://www.enqa.eu/review-database/focused-review-of-theqc-2022/).

Although all the quality models above have been employed for some time in higher education management, when we focus on the core topic of this research, sustainable quality management, it is found that the European Foundation for Quality Management
(EFQM) model has only recently emerged vis-a-vis universities. In their research on Czech universities, Vykydal and colleagues (2020) underlined that “The EFQM Excellence Model gives a special emphasis to sustainability principles” (p. 18). The latest version of the EFQM model, introduced in 2020, includes three main dimensions (Direction, Execution, and Results), and particularly focuses on ‘Creating sustainable value’ in the Execution dimension (Turisova et al., 2021). Yet sustainable quality strategies constitute a very different topic from sustainable value creation, and it is hard to distinguish the influence of strategies among other dimensions in the rounded format of EFQM 2020 (see: https://shop.efqm.org/about-efqm/). Beyond this, in the reviewed literature, there is no example of the implementation of EFQM 2020 version in higher education institutions. On the other hand, the previous version of EFQM included ‘Strategy’ as one of the major dimensions, and was already employed to evaluate quality management in universities (see: Calvo-Mora et al., 2005, p. 743). Because the EFQM 2013 model is composed of nine categories, five enablers and four types of results, Medne and colleagues (2020) exemplified how EFQM’s enabler criteria form a framework regarding sustainability elements in university management (see Table 1). Accordingly, we preferred to benefit from the EFQM 2013 as the theoretical model in this systematic literature review.

For each of the five EFQM enablers, Medne and colleagues (2020) thus explained these sustainability elements (pp. 34–35):

Leadership… [basically indicates the] integration of sustainability elements in the core values and objectives of the university… Leaders are employees who have a main role in different change projects throughout the university… [Yet] there should be a complete understanding of what processes affect which stakeholder groups… The foundation of sustainable strategy development is to understand the university’s core processes and the needs of main stakeholder groups… If the university is developing a long-term strategy, then existing and potential stakeholders play an important role in ensuring sustainability. From a quality system perspective, the university’s strategy and activity plan should be viewed together with the system, process and human risk management… Analysing and developing processes related to personnel ensures the right conditions for employee satisfaction and employee growth. As a result of creating a sustainable organisational culture, the university succeeds in motivating employees to engage in decision-making and to undertake more responsibility… Developing sustainable and long-lasting partnerships is [also] essential for any university… Processes related to collaboration, for example, are student and employee mobility and internships with other universities or other employers… Besides that, the university should measure the impact of processes on quality, safety and environmental factors. To do that, … analysis of stakeholder groups and sufficient data collection is the key to systematic identification of needs. The identification of stakeholder needs contributes to understanding of what the university must offer [to different stakeholder groups] to assure future sustainability.

Nevertheless, Medne and colleagues (2020) used a specific categorisation for university components to evaluate the sustainable quality system in their case institution (see p. 39). Here, considering the coverage of different case institutions from different countries in this study, there is a need for a more common categorisation to define the major activity fields in higher education institutions. While examining strategic actions in universities from different countries, for example, Uslu (2018) followed the sub-categories of the university
environment in the report format of the Institutional Evaluation Programme operated by the European University Association (EUA). Since 1994, EUA has carried out over 400 evaluations of universities, not only from Europe but also in Latin America, Asia, and the Middle East (https://www.iep-qaa.org/reports-publications.html). Hence, the sub-categorisation of the EUA’s report format presents a well-established dimensional approach to universities’ operational fields, as follows: Governance and institutional decision-making; Quality culture; Teaching and learning; Research; Service to society; and Internationalisation. Accordingly, to interpret “sustainable quality strategies” in universities from a common and comprehensive perspective, we decided to follow the EFQM Enablers framework for each of EUA’s sub-categories in university evaluation reports (see Tables 2, 3, 4, 5, 6 and 7).

**Table 1** Sustainability elements within EFQM’s Enablers for universities

| EFQM Enablers                  | Sustainability Elements                                      |
|--------------------------------|-------------------------------------------------------------|
| Leadership                     | - Understanding sustainability                               |
|                                | - Sustainable objectives and values                          |
|                                | - Focus on stakeholders                                     |
|                                | - Life cycle                                                |
|                                | - Pilot projects for change                                 |
| Strategy                        | - Integrated quality system                                 |
|                                | - Process integration                                       |
|                                | - Future stakeholder needs                                  |
|                                | - Consideration of environment                              |
| People                          | - Personnel policy                                          |
|                                | - Engagement and responsibility                             |
|                                | - Individual development plan                               |
|                                | - Safety and risk management                                |
|                                | - Organisational culture best practices                     |
| Partnerships and resources      | - Sustainable partners                                      |
|                                | - Improve partners                                          |
|                                | - Requirements for suppliers                                |
|                                | - Risk prevention                                           |
|                                | - Use of technologies                                       |
| Processes, products and services| - Process approach                                         |
|                                | - Process requirements                                      |
|                                | - Measurements                                              |
|                                | - System of needs                                           |
|                                | - Feedback                                                  |

Source: Medne et al., (2020, p. 34)

**Methodology**

To seek evidence-based clues about strategy adaptation for sustainable quality management in universities, we employed the Systematic Literature Review (SLR) approach to the selected empirical studies. Systematic reviews integrate the results from existing studies to be able to reply to the research questions through more comprehensive evidence (Bearman et al., 2012). Parallel with this, in order to explore the adapted strategies based on the
EFQM model, we systematically reviewed the literature on sustainable quality management in universities following the five steps suggested by Petticrew and Roberts (2006). These steps are (as summarised in Uslu, 2020, p. 929): 1. Formulating the research question(s), 2. Defining inclusion/exclusion criteria, 3. Recording eligible studies systematically, 4. Assessing the quality of the selected studies, 5. Integrating prominent findings.

Research questions

As explained in the Introduction, the research questions are:

1) What are the strategies adapted by university managers to construct a “sustainable quality management” structure in their universities?
2) How do the sustainable quality strategies influence the stakeholders and services in universities?

Inclusion–exclusion criteria

To select the related studies of sustainable quality management in universities, we defined the selection criteria before employing the systematic search protocol. These criteria are:

| Inclusion                                                                 | Exclusion                                                                 |
|--------------------------------------------------------------------------|---------------------------------------------------------------------------|
| + listed in the Web of Science (WoS) database\(^2\)                      | - country-specific indexes of WoS (e.g., Korean Journal Database, Russian Science Citation Index, etc.) |
| + relevance to sustainable quality in universities                       | - no relevance to sustainable quality in universities                      |
| + written in English                                                     | - not written in English                                                  |
| + peer-reviewed articles                                                 | - not peer-reviewed articles                                              |
| + empirical research                                                     | - not empirical research                                                  |

Systematic search protocol

In the initial phase, through online discussions, we identified the keywords for the systematic search together. These keywords are:

- “sustainable quality” AND higher education / tertiary education / university / college / faculty / school

In the next phase, we entered these keywords to the https://apps.webofknowledge.com/ interface to access related studies. However, when searching for SUSTAINABLE QUALITY within the ALL FIELDS option, our search generated more than 80,000 hits. Therefore, we had to limit the search using the exact phrase “sustainable quality” within the TOPIC option (covering the title, abstract, author keywords, and Keywords Plus). In this way, we encountered a reasonable number of studies. Then, some of these studies were eliminated following the pre-defined inclusion–exclusion criteria. At the end of this exclusion, we arrived at a total of 15 articles in this SLR on ‘sustainable quality in universities’ (see Fig. 1).

\(^2\) We selected the WoS database for two reasons: i) WoS is the database including the lowest number of potentially fake journals in the Beall list (see: Demir, 2020); ii) It is easier to eliminate articles focusing on environmental/green sustainability in the options of SCI, SSCI, and AHCI categorisation.
Quality appraisal

In order to identify the different types of systematic reviews, control of the selected studies is a crucial step in meta-analysis (of experimental/quasi-experimental studies responding to the heterogeneity of sample, intervention dosage, publication bias, reporting mean effect size, and similar criteria (see Bowman, 2012)) and meta-synthesis (of qualitative studies responding to participant diversity, trustworthiness, usefulness of data, and similar criteria (see Hoon, 2013)) to decide which studies should be included in the analysis. On the other hand, such a strict quality check is not a prerequisite in the SLR procedure because of it having no pre-determined methodological (and even theoretical) approach for the study’s selection (see Xiao & Watson, 2019, p. 106). However, in this review, all selected studies are articles published in peer-reviewed journals which are indexed in prestigious academic databases (WoS). Further, all selected articles consist of empirical research; thus, we carefully observed the coherency of all methodological and analytical components during our full-text examination. At the end of this process, we can say that the 15 selected articles display a certain level of academic quality in terms of their written structure.

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**Fig. 1 PRISMA Flowchart of systematic search on “sustainable quality in universities”**

|Step| Description| Included| Excluded| Reasons |
|---|---|---|---|---|
|Identification| Records identified through database searching (n = 241 for “sustainable quality”)| | | |
| | Narrowing search adding “university” or similar terms (n = 34)| | | |
| | Records after duplicates removed (n = 31)| | | |
|Screening| Records screened by title, abstract, and keywords (n = 31)| | Articles excluded (n = 15) → non-relevance to higher education level, or non-empirical |
| | | | Full-text articles excluded (n = 1) → no evidence of data analysis |
|Eligibility| Full-text articles assessed for eligibility (n = 16)| | | |
|Included| Full-text articles included in the analysis/synthesis (n = 15)| | | |
Integration of analysis results

Following the primary logic of SLR in integrating the results of selected studies as a whole, we first examined each selected article individually. Including empirical items in the analysis rather than their theoretical introduction, we focused extensively on the “methodology”, “findings/results”, and “discussion/conclusion” sections of the selected articles. Following the theoretical framework previously outlined, we benefitted from the established themes (EFQM Enablers) in our analysis for each activity area defined in the EUA’s institutional evaluation report format.

During the analysis, we read all the articles and marked the related parts by labelling them as “sustainable quality strategies (sqS)” and/or “the influence of sqS” within the established themes by EFQM Enablers and EUA’s report sections. Then all marked sections were noted on Excel, separately for each article. After completing the coding process, we compared the coded parts and discussed any differences in the coded sections in online meetings until they reached a consensus on the coded/marked sections. In the final stage, we unified the prominent findings of our thematic descriptive analysis by summarising them in table form (see Tables 2, 3, 4, 5, 6 and 7) and presented some exemplified quotations from the selected articles in the next section.

Results

Looking over the reviewed articles, holistic analysis allowed us to interpret various strategies for sustainable quality in different sections of university life. All of these inferences about sustainable quality strategies and their influence on different institutional components are discussed below, one-by-one, for each sub-section of the EUA’s institutional evaluation format through the Enablers of the EFQM model (see Tables 2, 3, 4, 5, 6 and 7). Considering the first research question, the Strategy section in these tables presents common “sustainable quality strategies” in the related activity areas of universities. While reflecting the influence of such strategies on different institutional practices, the other sections answer the second research question. In explaining these results, we benefited greatly from the reviewed articles with direct quotations.

No doubt, given the sequence of categories within the EFQM model, top leadership sets institutional strategies and then uses these strategies to determine the procedures and activities to be carried out in universities. As in Table 2, when discussing sustainable quality, the first and foremost expectation is the integration of the sustainability approach into a main strategy document and the establishment of management organs dedicated to sustainability activities in the university. An exemplifying statement may be given here, “As a world leader in sustainability, Cornell University is a committed steward of the Earth and its people… Sustainability: Today and Tomorrow is a guiding document to support Cornell University’s efforts in environmentally, socially, and economically sustainable leadership” (as cited in Salvioni et al., 2017, p. 13). Not only having such a strategy document but it also being accessible to all stakeholders is important to ensure transparency in the management of sustainable quality practices. As part of the governance strategies, financial efficiency and resource planning seem to be another aspect of sustainable quality management. In particular, university managers tend to accept eco-campus initiatives among their efficiency strategies, as follows: “Concerning [eco-]campus, managers recognise that the sustainability management program... goes
| “Sustainable Quality” Strategies | EFQM1 Leadership | EFQM3 People | EFQM4 Partnership and resources | EFQM5 Processes, products, and services |
|---------------------------------|------------------|--------------|---------------------------------|--------------------------------------|
| 1) “Sustainability” in university’s main strategy (document) | 1) Key strengths and opportunities for quality reforms | 1) Promotion of sustainable future ideas in people’s thinking | 2) Allocation of money and resources | 1) Sustainability practices in campus environment |
| 2) Financial and resource efficiency | 2) Strategic planning and budgeting | 3) Accessible documents of sustainable quality development | 2–3) Resource saving by online systems | 3–4) Internal assessment for solutions to weak areas |
| 3) Accessible quality management system and documents | 3) Transparency of quality management system | 5) Direct / indirect feedback from internal stakeholders | 3) Smart digitalisation of quality management system | |
| 4) Self-assessment / benchmarking for quality review | 4–5) Continuous review for sustainable quality development | | 6) Inter-institutional networking for sustainability associations | |
| 5) Diversified data for quality management | 6) Guidance of nationwide sustainable development reforms | | | |
| 6) External networking for HE reforms | | | | |

* Numbers in table show which “Strategy” influences the related practice(s) with same number in other sections
Table 3  Sustainable quality strategies on “Quality Culture” in universities*

| “Sustainable Quality” Strategies | EFQM2 Strategy | EFQM1 Leadership | EFQM3 People | EFQM4 Partnership and resources | EFQM5 Processes, products, and services |
|----------------------------------|----------------|------------------|--------------|--------------------------------|----------------------------------------|
| Quality culture                  | 1) Excellence approach to quality assurance | 1) Leadership for excellence in quality development | 1) Trained teams for quality assessment | 4) Stakeholder interaction by online system | 1) Quality development rather than control |
| 2) Shared vision of sustainable development | 2) Common vision of sustainable quality development | 2) Promotion of quality improvement culture | 2) Attention to sustainability culture for quality |
| 3) Institutional evaluation and accreditation | 3) Set of sustainable assessment criteria | 4) Stakeholders’ feedback on quality evaluation | 4) Reporting and feedback by online system |
| 4) Monitoring system for continuing quality assessment | 4) Monitoring system for continuing quality assessment |

* Numbers in table show which “Strategy” influences the related practice(s) with same number in other sections
| “Sustainable Quality” Strategies | Influence of “Sustainable Quality” Strategies on: |
|----------------------------------|-----------------------------------------------|
| EFQM2 Strategy                   | EFQM1 Leadership | EFQM3 People | EFQM4 Partnership and resources | EFQM5 Processes, products, and services |
| 1) Organisational efficiency on teaching environment | 2) Integration of sustainability into curriculum | 3) Roles / responsibilities for teaching staff | 1) Organisational efficiency for teaching resources | 1) Inclusive education by electronic accessibility |
| 2) Sustainability protocols for teaching facilities / materials | 5) Staff’s performance following online system | 3–4) Integration of education with social services | 1–2) Quality improvement of educational infrastructure | 1–2) Sustainable improvement of teaching environment |
| 3) Organisational planning of teaching staff | 4) Practical competencies for graduate employment | 2) Sustainable usage of teaching facilities | 2) Sustainability protocols for classrooms / teaching areas |
| 4) Market follow-up for graduate employment | 5–6) Professional development by teachers’ self-evaluation | 3) Educational planning for teaching workforce | 3) Development of interdisciplinary curriculum |
| 5) Empirical instruments for sustainable teaching quality | 6) Teacher training for staff development | 6) Linking teachers through online system | 4) Learning outcomes targeting job expectations |
| 6) Staff training for quality teaching | | | 5) Diversified data for staff evaluation |

* Numbers in table show which “Strategy” influences the related practice(s) with same number in other sections
| “Sustainable Quality” Strategies | EFQM2 Strategy | EFQM1 Leadership | EFQM3 People | EFQM4 Partnership and resources | EFQM5 Processes, products, and services |
|----------------------------------|----------------|------------------|--------------|----------------------------------|----------------------------------------|
| Research                         | 1) Development of research infrastructure | 2–3) Student research experience for employability | 1) Investment in research facilities | 1–2) Sustainable improvement in campus environment |
|                                  | 2) Efficient usage of research facilities | 2) Interdisciplinary partnership for research facilities | 2) Services for interdisciplinary research practices |
|                                  | 3) Research effects in market conditions | 1–3) Infrastructural support for research activities | 1–3) Research project for sustainability |
|                                  |                                             |                                           | 3) Commercial and social values of research |

* Numbers in table show which “Strategy” influences the related practice(s) with same number in other sections
Table 6  Sustainable quality strategies on “Service to Society” by universities*

| “Sustainable Quality” Strategies | Influence of “Sustainable Quality” Strategies on: |
|----------------------------------|--------------------------------------------------|
|                                  | EFQM1 Leadership | EFQM3 People | EFQM4 Partnership and resources | EFQM5 Processes, products, and services |
| Service to society               | EFQM2 Strategy   |
| 1) Facility improvement for societal engagement | 2) Participation with community for sustainability |
| 2) Social partnership for sustainable development | 3) Graduate skills for sustainability measurement |
| 3) Satisfaction of sustainability partners externally | 1) Facilities for student participation in sustainability |
|                                  | 1) Social responsibility in quality management |
|                                  | 2) Units for external sustainability partnership |
|                                  | 1–2) Student awareness of social services |
|                                  | 2) Social engagement with sustainability challenges |

* Numbers in table show which “Strategy” influences the related practice(s) with same number in other sections.
Table 7 Sustainable quality strategies on “Internationalisation” in universities*

| “Sustainable Quality” Strategies | Influence of “Sustainable Quality” Strategies on: |
|----------------------------------|-----------------------------------------------|
| EFQM2 Strategy                   | EFQM1 Leadership EFQM3 People EFQM4 Partnership and resources EFQM5 Processes, products, and services |

Internationalisation

1) Global participation in sustainability associations
2) Position in international rankings of sustainability
3) International cooperation by multi-lingual initiatives
4) ICT structure for global connections

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1) Participation in associations related to sustainability
2) International visibility by metrics / rankings
3) Multi-lingual community structure in university
4) ICT equipment / internet access to the globalised world

* Numbers in table show which “Strategy” influences the related practice(s) with same number in other sections
beyond the environmental aspect. It will decrease the operational cost and increasing economic benefits [as in the case of the eco-garden initiative]” (Hernandez-Diaz et al., 2020, p. 1537).

Further, self-assessment and benchmarking become necessary elements to review the efficiency and quality development in university activities. Naturally, the main data for quality review came mostly from the feedback of internal groups such as students’ evaluations of the quality management system, staff satisfaction with university initiatives, as well as “[the rates or] chances of employment [for graduates] in the labor market” (Gora et al., 2019, p. 1). While universities mostly establish online “database management systems” to collect such institutional data (Yahya & Rostam, 2015, p. 4), managers commonly prefer to benchmark their institutional outcomes with other universities in national and international indexes of sustainability (e.g., STARS system (Salvioni et al., 2017), Green-Metric rankings (Hernandez-Diaz et al., 2020), or the Sustainability Index of the Latvian Corporate Sustainability and Responsibility Institute (Medne et al., 2020)). In the end, all these institutional experiences gain more value with which to expand networking initiatives for the guidance of national sustainability policies, as “the University of Cambridge states: Progress on sustainability requires the combined creativity and determination of business, finance and government leaders. No one can do this alone and [we] call on our… diverse network of leaders to collaborate with us” (as cited in Salvioni et al., 2017, p. 17).

Table 3 shows that university managers should adapt the ‘excellence’ approach focusing on “Quality innovation [which] is in contrast to quality control, problem prevention, error reduction, and maintenance of the status quo, [but rather] emphasiz[e] the discovery of strengths, the improvement of learning ability, and the expansion of value” (Fahim et al., 2021, p. 15). On this point, it is important to train staff for “[quality] culture change, changes in processes and the development of a quality management system at the university” (Medne et al., 2020, p. 35). As expected, such personnel training about the quality system can assist in developing a shared vision among staff. While feedback from both internal and external stakeholders is seen as an indispensable component of the sustainable quality approach, managers should set “The right policies [to] trigger… universities to become responsible for their institution[al] evaluation and accreditation to improve their [quality outcomes]” (Herlambang et al., 2021, p. 12). Rather than just observing quality assessment criteria which were previously decided upon (or selected, such as ISO9001 standards (Vykydal et al., 2020)), “Rapidly advancing computer-based technologies offer many possibilities for innovation in educational and administrative assessment tasks which allow for a reliable real time reporting and feedback process” (Yahya & Rostam, 2015, p. 1).

As seen in Table 4, quality development (or in another words, quality assurance) in the teaching environment is one of the major components in the organisational efficiency concept. While the ratio of graduate employment is accepted as important for indicating teaching quality, following the market in order to continuously update course content seems a more dominant strategy to increase “the chances of employment [for universities’ graduates] in the labor market” (Gora et al., 2019, p. 14). Nonetheless, “develop[ing] new policies, practices, and processes to support online education; develop[ing] and implement[ing] an approach to [marketise] teaching certification [and online degree programmes]” (Harkness, 2015, p. 198) are some of the emerging financial strategies for universities; an approach that is becoming more and more popularised, especially after the worldwide Covid-19 pandemic.

In addition to integration of the sustainability approach in the curriculum, “meeting sustainability protocols [in teaching mediums such as classrooms, laboratories, conference
halls, and sports halls can assist in implementing sustainability practices in the campus environment while to ensure “the protection of sustainability material and resources, [and] classroom and equipment” (Olmos-Gómez et al., 2020a, p. 8). In terms of human resources, two important strategies in Table 4 are evidently “teacher and staff planning” (Olmos-Gómez et al., 2020a, p. 11), by observing their job definitions/roles/responsibilities, and then supporting their professional development by means of “school [in other words, in-service] staff training” (Fahim et al., 2021, p. 15). Although “student evaluation of teaching, [and] student feedback [related to the course]” (Yahya & Rostam, 2015, p. 1) are still the main data-source to assess teachers’ competencies, considering the influence of internal motivation, it seems that “self-evaluations of [teaching] practice [have become an important strategy for] teachers to achieve continuous improvement in their profession” (Olmos-Gómez et al., 2020b, p. 12).

Focusing on sustainable quality in research, the selected articles did not present an extensive number of strategies, as shown in Table 5. A well-known and basic strategy is developing research infrastructure; yet the efficient use of research facilities appears to be as important as new investments. On this point, “Collaboration with a wide range of [research] partners lets the university focus on interdisciplinary projects” (Medne et al., 2020, p. 40), and interdisciplinary cooperation can help to gain a maximum return from research facilities in terms of sustainable improvement of the campus environment. Research activities are part of the practical education in which students participate, and “in this connection, … students’ research activities have a positive direct effect on [their] knowledge, skills, and competencies, as well as on [their] employability” (Gora et al., 2019, p. 14). Beyond their influence on students, no doubt, each research outcome carries potential value in the business market and/or industry. Nevertheless, it seems a better strategy to assess not only “the economic value produced by activities of research… [but also] evaluating market conditions and indirect effects [of university research on the society]” (Romolini et al., 2015, p. 204).

As Table 6 shows, the increased attention to societal engagement is among the visible approaches in universities. While managers aim to develop university facilities for the social mission of their institutions, most of them prioritise establishing various institutional mechanisms to support societal services in their university, such as a vice-rectorate/presidency (or deputy vice-chancellorship) of external relations, a management unit of community engagement, or an advisory council for the top leadership (e.g., the President’s Advisory Council in the University of Arizona (as cited in Salvioni et al., 2017, p. 13)) concerning social practices. Further, university managers have accepted that “forming partnerships with government, non-government agencies, emphasising sustainability through support services is the first step in instilling university-community partnerships” (Chaudhary & Dey, 2021, p. 37). Although university managers give importance to tracking the collaborative satisfaction of business or social partners, the enhancement of students’ social awareness through their participation in social activities, and also the “recognition of] graduates/alumni as the linkage between the community, industries and the public sector with the university” (Hernandez-Diaz et al., 2020, p. 1537), are still pioneering strategies to assess the outcomes of their education for sustainable society development.

According to Table 7, to enrich partnership for the societal services, the participation of universities in global associations has become one of the important internationalisation strategies, explained as follows: “Declarations of membership in associations… correlated to the scientific and academic world are very frequent, although not always aimed at the construction of a sustainability network… [Yet many] universities declare partnerships with associations or organizations [for sustainability concerns]” (Salvioni et al., 2017, p.
Another internationalisation strategy is the enhancement of the university’s position in sustainability-focused international rankings, such as GreenMetric or the Times Higher Education (THE) Impact rankings (as given in Medne et al., 2020, p. 37). Doubtlessly, occupying a place, especially in top positions in these rankings, serves the international visibility of the related university. Through the case of Morocco, Fahim and colleagues (2021) underline the advantages of having a multi-lingual structure in universities “To increase opportunities [for connections with] … more international universities” (p. 15).

As the last issue of internationalisation according to Table 7, “[universities] operate in an increasingly globalized world… [and] the widespread use of information and communication technology… makes internet connections an essential element for the promotion of both quality and development sustainability in higher education” (Olmos-Gómez et al., 2020b, p. 12).

Conclusion

This research focused on university strategies for sustainable quality management by systematically reviewing the related literature. In this regard, 15 empirical articles accessed from the WoS database were included in the analysis. Although the holistic analysis of the selected articles does not offer any exceptional results, the analysis presents some important clues about adapting strategies for sustainable quality in universities through the dimensions of the EFQM model and each of EUA’s institutional report sub-categories.

For example, in our results, the integration of the sustainable quality approach into the main strategy document is the initial step for university managers. Parallel to such a main strategy, managers generally establish further strategies to be able to enhance the organisational efficiency of activities and services in their universities. As Hernandez-Diaz and colleagues (2020) stated, financial efficiency has become one of the priorities for university managers. However, Vykydal and colleagues (2020) expanded the efficiency areas for resource management by adding Human Resources Management and Infrastructure Management. While well-planning teaching workforce is the main part of human resource management strategies, eco-sustainability activities are also counted among the infrastructure efficiency initiatives, as shown in the Green Building, Biodiversity and EcoCampus initiatives in Salvioni and colleagues’ (2017) research. All these eco-environmental activities in universities also create opportunities for students to participate in sustainability practices. On this point, all such initiatives may generate a favourable atmosphere to develop interdisciplinary research activities, which also help to sustain the effective use of research infrastructure (Medne et al., 2020). These include central laboratories – i.e., COBILTUM laboratories for general analysis, Archeometry analysis, Meteorite analysis, Soil analysis, and Environmental analysis in Canakkale Onsekiz Mart University, Turkey; multidisciplinary research centres – i.e., CoMPLEX: Centre for Computation, Mathematics and Physics and CMII: Centre for Multidisciplinary and Intercultural Inquiry in University College London, UK; techno-parks/cities – i.e., Arenberg and Haasrode Science parks in KU Leuven, Belgium.

As Salvioni and colleagues (Salvioni et al. 2017) outlined, the sustainability approach to social issues also gains importance for universities. Therefore, many universities strategically aim to increase the social awareness of their students through community engagement activities. To increase the impact of their social engagement, university managers seek ways to establish collaborations with external partners such as business firms, industrial
organisations, governmental institutions, (non-profit) social associations, and even international agencies and universities. Naturally, all these collaboration efforts enrich the possibilities for students to gain more field-based experience. Olmos-Gómez and colleagues (Olmos-Gómez et al., 2020a) clearly evinced that practical education through sustainability activities positively (and significantly) influences students’ satisfaction from their university education while their field-based experience within sustainability activities (even in their classrooms) can increase their potential for employment after graduation from university. In addition to students’ satisfaction feedback, the self-evaluation of staff is another important strategy regarding teaching quality in universities (Olmos-Gómez et al., 2020b). This self-evaluation approach is also an important mechanism to expand the culture of sustainable quality development among university staff.

However, it is not easy to build an organisational culture associated with sustainable quality development in universities. Pedro and colleagues (2020) reported that it is likely to encounter “potential resistance [from staff] to change involving the adoption of a whole-institution sustainability vision and the implementation of S(ustainable) D(evelopment) practices at the institutional level” (p. 22). In this regard, although each university may have different institutional priorities shaping their approach to the sustainable quality management (Medne et al., 2020), Vykydal and colleagues (2020) suggested that sustainable quality development should be accepted as a long-term institutional project by the university, and the top leadership must assign a specific project leader with expertise about quality management practices.

As exemplified by Medne and colleagues (2020), the initial step for sustainable quality management should be exploration of the existing characteristics of the organisational culture in order to be able to assess the readiness of staff “for cultur[al] change, changes in processes and the development of a [new] quality management system at the university” (p. 35). Through such an institution-wide expansion of systemic changes, the establishment of an online management system can expedite various processes, such as informative and practical training activities for staff and students about sustainable quality culture, data collection from students, academic staff, and managerial units for continuous quality assessment, and to timely discover and quickly acknowledge (by appreciation certificates, institutional awards and/or prizes) the quality achievements of personnel and students (Yahya & Rostam, 2015). Doubtlessly, all these sorts of quality achievements can enhance the visibility of a university in sustainability-focused rankings, both nationally and internationally. Here, as in the examples from Czechia (Vykydal et al., 2020) and Latvia (Medne et al., 2020), national higher education authorities can establish award systems to motivate their universities for further participation in sustainable development in their country; perhaps in more than one category, as recently started by the Council of Higher Education in Turkey in 2017 to acknowledge universities with Overachievement Awards in i) Societal Service, ii) International Cooperation, iii) University-Industry Collaboration, and iv) Regional Development categories (https://odul.yok.gov.tr/).

All in all, this study was constructed on the existing literature of sustainable quality in higher education. Whereas the selected articles provide some information about the strategies adopted for sustainable quality management, it is clear that there is a need for further research to assess the influence of strategy changes on the sustainable quality development in universities. With the increasing research in recent years (see articles in the references marked with *), this study plainly shows that university managers should give more space to sustainable quality development in their institutional strategies in the near future. This view has now been evinced by the participation of 467 universities in 2019 to 1,410 universities in 2022 in the THE Impact Rankings, which focuses on the 17 SDGs of UN. On
this point, the potential weaknesses of sustainable quality strategies regarding university services might be explored through in-depth qualitative inquiries on the opinions of both internal and external actors. According to our analysis, the possibility of various quality strategies related to internationalisation initiatives also seems to be a topic that needs opening up beyond international rankings and sustainability partnerships.

Declarations

Conflicts of interest No conflicts of interest to declare that are relevant to the content of this article.

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