



Total quality management and performance achievement in higher education

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Abstract

As world moves forward, much has been explored about Total Quality Management (TQM) in the manufacturing, banking, and other service industries. Admittedly, the use of these quality techniques in university education has been given less focus. This literature investigation will look at higher education institutions from across the world in order to identify current quality management techniques. The review, which will begin with early TQM publications in higher education and proceed with contemporary research findings, will show that degree of TQM growth in education has not maintained the same rate of progress of TQM in manufacturing, banking, and service industries. Additionally, the research examines the central concepts and principles that are crucial for enhancing the quality of universities, thereby distinguishing them from other institutions, with a focus on performance achievement.

Keywords: Total Quality Management (TQM), Higher education institutions, Quality management techniques, Literature investigation, Contemporary research findings.

1. Introduction

Higher education institutions around the world are often characterized as dynamic and unpredictable. There have been many changes in both international and national institutions. As a result, the topic of quality management has become a prominent concern for national

governments, institutions, and individual academic programs. Even though there has been progression in research, there is no exact agreement about the most effective way to manage quality in higher education. This is largely due to the realization that quality is a complex and multi-dimensional concept, especially in the unique setting of higher education environments [1]–[6]. Moreover, research emerged at the onset of the COVID-19 pandemic and focused primarily on higher education teachers' perspectives on technology use and on associated changes in the relationship between teachers and students amidst the transition to emergency remote teaching worldwide [7].

Researchers such as [8]–[11] agreed that the implementation of Total Quality Management (TQM) at institutions has been successful and has improved the quality of education. However, despite their research focusing on sharing knowledge and learning in higher education, it is ironic that educational institutions have been slower to adopt and implement TQM compared to other organizations as noted by [8]. This has resulted in increased difficulties and challenges for educational centers operating in a quality-driven environment. In Uzbekistan, Uralov [12] notes that paying close attention to the development of educational programs and improving the quality of educational services that are appealing to international students is crucial. For instance, the country has prioritized the enhancement of its higher education system to meet global standards. Improving the quality of education positively affects increasing the number of international students. Taking part in the global higher education movement is one of the critical factors for achieving success.

1.1. The aim and objectives of the study

In the 21st century, academic institutions are encountering significant challenges due to globalization, the communications revolution, and the internet. As noted by [13], [14], these issues include cultural diversity and technological advancements, making it difficult for

universities to provide high-quality educational services and continuous improvement. Moreover, the quality of service delivery in Higher Education Institutions (HEIs) has been impacted by COVID-19. The pandemic has caused significant disruptions to the education of millions of students in various contexts, leading to the adoption of virtual education technologies and real-time engagement of teachers with students through video conferencing software. This sudden and unprecedented closure of institutions has resulted in numerous challenging issues and implications for the successful transition from traditional and blended learning approaches to fully virtual and remote course delivery as highlighted in this article. HEI leaders have been urged by COVID-19 to embrace virtual technologies for the delivery of student-centered education, dissemination of high-impact research, and stakeholder engagement and outreach [15]. Traditional forms of administration are equipped to handle these challenges and the objectives of this research are focused on Total Quality Management and include:

- a) Clarifying the core concept of TQM principles and achieving theoretical excellence.
- b) Defining the level of senior management commitment to applying TQM.
- c) Identifying the university's provision of necessary services to students, employees, and educators, as well as demonstrating potential errors that may arise when implementing TQM in education.
- d) Determining the TQM requirements for the learning process to access academic excellence.

2. Literature review

The Literature Review section provides a comprehensive overview of various contributions in the literature related to Total Quality Management (TQM) in higher education. This includes a detailed analysis of the concept of quality, the application of TQM in higher

education, customer expectations in higher education, and the principles for applying TQM in universities. Moreover, this section detects the core principles and concepts of TQM that will be utilized in the research applying a Classification presented in Table 1 that was extracted from earlier researches. The aim of this section is to provide a scientific and thorough understanding of TQM in higher education, enabling the reader to grasp the key elements and principles of this topic.

2.1. Quality concept

The term "quality" originated from the Latin word "quails" which means "what kind of." It has a variety of meanings and can imply different things to different people. In the context of customer requirements, quality is simply the act of meeting those requirements. This has been expressed by various authors in different ways such as "fitness for purpose or use" by Oakland [16] and the need for service and product characteristics to meet the needs and expectations of customers [17]. One of the earliest researchers to write about total quality in relation to conformance to requirements was Juran [18]. Another important aspect of quality is the degree to which inherent characteristics fulfill requirements as outlined by ISO (EN) 9000:2000 Quality Management Systems essentials and expressions indicators and Crosby's work on the subject in the 1980s [19], [20]. Ultimately, the benefit of quality management is to satisfy and meet customers' desires while also adhering to the standards they require. Oakland [16] notes that quality is often used to describe the excellence of a product or service. Wither's analysis suggests that each word in the acronym TQM has a specific function: "Total" refers to the involvement of every person in the company, including the customer and supplier; "Quality" signifies that customer requirements are met with precision, and "Management" indicates that senior executives are fully committed to the implementation of TQM [21].

2.1.1. Quality in University Education

Samuel and Fung [22] note that as any business, higher education requires quality to be effective. Sahney et al. [23] defined quality in education as a process of learning and teaching that results in enlightened students who leave the institution. Kumar, Shastri, and Ali [24] asserted that quality in education considers the external environment in which institutions operate as well as the internal environment of learning and the home environment of learners. Kanji and Tambi [25] stated that the quality of education opportunities depends on the achievement of program objectives, including teaching and learning aspects, student support and direction, learning resources, and quality management and enrichment. In the contemporary world, Gill et al. [26] propound that transformative quality in higher education is key for addressing current and post-pandemic issues and a framework consisting of distinct components such as emotional resilience, analytical thinking, self-assurance, adeptness in problem-solving, introspection, prejudice reduction, and development of skills, knowledge, and abilities can be utilized by policymakers, institutional leaders, and educators to enable and reshape students, resulting in the advancement of transformative quality in higher education.

2.1.2. TQM implementation in higher education

According to Sabet et al. [27], quality is just as important for higher education as it is for any other business. Sahney et al. [23] define the quality of education as a process that involves teaching and learning activities with the output being students who have gained knowledge and skills from the organization. Kumar, Shastri, and Ali [24] state that the quality of education also considers the external environment in which institutions operate as well as the internal environment in which education and learning take place and the home environment of students. As Kanji and Tambi [25] suggest, the quality of education prospects can be

assessed by considering various aspects of teaching and learning, student support and guidance, learning resources, and quality management and enrichment. In the context of higher education, TQM (Total Quality Management) involves managing all academic, administrative, and financial processes within an institution to meet the needs of both the labor market and students. This includes constantly improving and developing the quality of services provided to students to ensure that they graduate as highly qualified individuals [28].

2.2. Principles of TQM

Redmond et al. [29] and Najafabadi et al. [10] conducted research that delved into Edward Deming's extensive contribution to organizational management, particularly in the field of quality. Their findings suggested that Deming's contribution transcends basic principles and encompasses a vast range of knowledge. The researchers identified six TQM principles that are deemed significant, with a specific focus on leadership as a key factor that affects the quality of an educational institution. They noted that effective leadership can support teamwork and decrease delays and weaknesses in task completion. Additionally, several quality leaders have proposed models that incorporate TQM principles such as top management, employee participation, training, customer focus, and continuous improvement. Taking an example, the Malcolm Baldrige Award criteria in Europe recognized that the role of TQM principles in achieving actual quality plays a significant beneficial contribution [8]. Moreover, Ravindran and Karpaga Kamaravel [21] emphasize that TQM leadership deviates from traditional leadership concepts. It highlights the distribution of leadership across all levels of an educational institution from the highest to the lowest levels of the organizational hierarchy. To achieve this, leaders must ensure that any program is attractive and necessary to all employees.

2.3. Customers of higher education

The quality council of a university has identified various groups as potential customers, including parents, alumni, employers, society, faculty, local community, academic disciplines, and staff. Sahney et al. [23] considered the students as end customers, and Harvard University defines its customers as those who receive their services or information, including students and employers. Therefore, customers can be both internal (other instructors and service department staff) and external (students, employers, taxpayers, and the community at large, and educators from other institutions). Students in particular play multiple roles as customers, including being the product in process, internal customers for campus facilities, employees of awareness processes, and internal customers for the delivery of course material needs as determined by the education mix [8]. Higher education institutions have a range of complementary and contradictory customers which are served through teaching, research, and extension activities [23]. Recognizing students as customers does not imply that education is being devalued nor does it mean that students should receive high grades to be content. A common argument against viewing students as customers is the notion that satisfying their every desire is necessary. However, this is based on the outdated principle that "the customer is always right," which was originally proposed by Harry Gordon Selrige in 1909. Even in industries outside of education, this model is no longer universally accepted [30].

2.4. Performance of higher education

The global COVID-19 pandemic has significantly impacted higher education's three key missions, posing unprecedented challenges. However, it has also highlighted the critical role that higher education plays in society, particularly in collaborative research-driven innovation. Various stakeholders, such as students, staff, leaders, and policymakers, have had

to swiftly and innovatively adjust to the pandemic's changing conditions [31]. Furthermore, Guzman and Torres [32] and Gagnier et al. [33] emphasized that universities are institutions that offer excellent education encompassing teaching, learning, and extension activities where admission is based solely on the individual's intellectual merit and potential to actively contribute to the curriculum and activities that promote social equity. The importance of updating and continuously improving one's knowledge who view education as a transformative process that involves inputs from students, teachers, administrative staff, physical facilities, and procedures. The processes within this system include learning, teaching, and administration, with the outputs being examination results, services, earnings, and agreements [23], [34].

2.5. TQM in institutions of higher education

Kumar, Shastri, and Ali [24] noted that Total Quality Management (TQM) is both a management approach and a set of techniques that enable an organization to establish a definition of quality and a method for achieving it. Quality in this context is a continuous process of improvement that is measured by the satisfaction of customers with the services they receive. Although TQM can be applied to higher education, it needs to be adapted to account for the unique characteristics of the education industry, which is a service-oriented field with no physical tangible products. In the contemporary world, especially during the COVID-19 outbreak, physical access to university spaces for educators and students was restricted. To address this challenge and build on ongoing efforts by researchers and educational technologists to enhance the quality of education, a cost-effective and inclusive approach to teaching robotics in blended learning environments is proposed [35].

Kumar, Shastri, and Ali [24] described the functions of TQM which are essential. Table 1 demonstrates various principles or factors that will be elaborated on in other sections of the

research paper. These factors include top management commitment, support from quality councils, and development activities. Sahney et al. [23] suggest that all employees in educational institutions should focus on developing their human, technical, and theoretical skills, with a particular emphasis on administrative staff. They also stress the importance of continuous development and practical application of newly acquired skills on manageable projects. Additionally, Guzman and Torres [32] and Guilbault [30] argue that educational institutions should view their students as customers and prioritize their needs for a comfortable and satisfactory experience.

TQM presents various challenges in higher education. Sirvanci [8] identified critical issues related to TQM in higher education, including customer focus, leadership identification, educational transformation, and organizational transformation. Moreover, Camilleri [15] points out that university leaders have various responsibilities, including keeping records of the age and distribution of their faculty members, as well as promoting diversity among their students and staff in terms of gender, ethnicity, and race, among other factors. Additionally, faculties could analyze discipline-specific rankings and assess expenditures per academic staff member among other duties. Unlike businesses, chancellors and heads of higher education institutions do not have complete control over personnel and resource allocation, which makes it difficult to implement their values and goals throughout the institution. Furthermore, long-standing traditions, a rigid departmental model, interdepartmental competition for resources, and the need for market focus create organizational and cultural obstacles to TQM implementation. In addition, difficulties in identifying customers can also impede the achievement of TQM.

Table.1. Classification of TQM principles

Primary Dimension	Sub Dimension/ Explanation of definition	References
TQM	Management commitment	Effective leadership requires Quality Council support for improvement, and a shared governance system where faculty participates in university administration with the leader. [7], [22], [21], [29], [36], [13], [34].
	People management	Utilize human resources optimally, promote teamwork, offer training, and engage employees in quality-related decision-making (McGregor's X and Y Theory) [7], [22], [14], [29], [36], [34].
	Continuous Improvement	Consistently assessing and enhancing administrative and academic procedures. Utilizing skills through small, achievable tasks by seeking customer feedback and making improvements. Deming's PDCA supported leadership and teamwork as important factors effect on quality of education. [12], [8], [22], [29], [36], [38], [34].
	Student focus	Determining students' needs and expectations, and then meeting them. Managerial and educational service deliveries are the core conceptual approach. [7], [39], [22], [29], [36], [34].

3. Conceptual model

The researcher proposes that the TQM conceptual model is derived from an analysis of various TQM models found in the literature. This model highlights the key processes of TQM and explains how its core concepts can be successfully applied to attain performance

achievement in higher education. The model also provides a detailed explanation of each principle and sub-factor, and categorizes them according to the classification shown in figure (1).

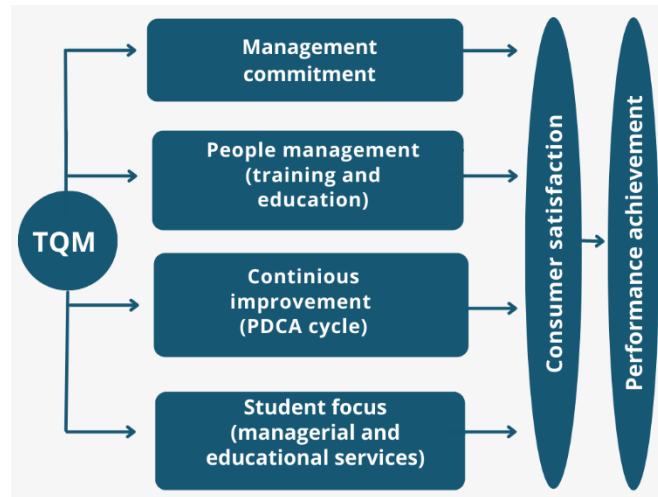


Figure.1. Model of TQM for performance achievement

3.1. Management commitment with TQM

According to Sirvanci [8], effective leadership by top management is a critical component of TQM in any country where it has been implemented. Guzman and Torres [32] suggest that strong leadership involves transformational management that creates opportunities for faculty and staff to take on leadership roles in performing instructional and organizational tasks and being responsible and accountable for outcomes. Management commitment to the organization is essential to eventually bring about a shift in the acceptance of practices and communication that encourage empowering workers and involving them in decision-making [34].

Sahney et al. [23] and Nogueiro and Saraiva [34] summarized that a happy customer can effectively contribute to providing quality service. It is assumed that the approval of external customers is contingent upon the satisfaction of internal customers. They also suggested that

leadership practices which support staff empowerment and employ a dynamic form of leadership behavior can be implemented in higher education institutions provided that the leadership role is performed by a person possessing the necessary job qualifications, the staff responsible for education and research quality are well-qualified for their job, and the structure, policies, and strategies in place facilitate quality empowerment activities. In addition, information, data, intelligence, and knowledge derived from the institution's micro, macro, and internal environment must be taken into consideration. Table 1 explains the classification for core concepts and principles related to Total Quality Management (TQM) in previous researches.

Al-Omouh et al. [11] pointed out that the combination of leadership with total quality management results in the organization doing things correctly on the first attempt. Effective leadership begins with the vision of the chief executive and his top team, which capitalizes on market or service opportunities and leads to competitive advantages or other benefits. This is followed by the development of a strategy that will enable the organization to achieve success in its business or service. The beliefs and values of everyone in the organization, as well as the actions taken and plans made, are all aligned and focused towards effective value-adding action. Overall, effective leadership and total quality management work together to ensure that the organization is doing the right things.

3.2 People management People management in Total Quality Management (TQM) refers to the process of empowering employees to participate in decision-making and improvement activities that are appropriate to their levels in the organization. The concept of participative management style was first introduced to managers through McGregor's Theory Y and since then, employee involvement has taken various forms such as job design approaches and special activities like Quality of Work Life (QWL) programs. He identified two contrasting

sets of beliefs that managers hold about their employees. In Theory X, managers believe that regular workers lack determination, have a distaste for work, avoid accountability, and are untrustworthy. On the other hand, Theory Y suggests that individuals possess self-motivation and can independently achieve goals they have committed to. As a result, managers establish objectives for their employees and apply performance management methods to maintain their motivation and engagement in the workplace [40], [37], [34].

Employee involvement refers to the notion that every employee is viewed as a distinct individual rather than just a machine and is actively engaged in assisting the organization in achieving its objectives. Both employees and management acknowledge that each employee has a role in managing the company. The objective is to identify the most efficient employee involvement methods that are linked to particular organizational objectives. To introduce employee involvement and empowerment into a business, the following essential measures need to be taken: delegating responsibility to employees, providing them with training, communicating and providing feedback, and motivating them with rewards [37], [41].

Abbas et al. [42] revealed that motivation and rewards have a substantial positive influence on employee performance. Moreover, it was demonstrated that while financial incentives play a crucial role in motivating employees, intrinsic motivation also has a noteworthy impact on their productivity. Moreover, Sreedhar and Sujatha [43] emphasized the importance of employee engagement in the face of the COVID-19 pandemic. The success of companies during these challenging times largely depends on maintaining employee motivation and satisfaction through employee involvement strategies, including virtual team meetings, online training, and webinars. Technology is also vital for measuring employee engagement and enhancing organizational development. Therefore, the recommendations for universities include integrating online courses as a permanent feature, providing staff and

students with flexible working and studying arrangements. The provision of both on-campus and off-campus programs has the potential to reach a broader student population. However, this will necessitate investment in training and IT support services to ensure that online programs are delivered efficiently [44].

Sahney et al. [23] emphasize the importance of ongoing training and development for administrative staff in educational institutions to improve their human, technical, and theoretical skills and abilities. All educational associations should prioritize this. To achieve this, continuous training programs for faculty members, allied staff, and administration should be established within the institutions with the aim of encouraging commitment and improvement towards the institution's vision and mission.

3.3 Continuous improvement Sahney et al. [23] emphasized the importance of achieving lasting progress which results in increased customer satisfaction. This can be accomplished by enhancing both technology and human resources and involves all departments working together to optimize the entire system. This process of continual improvement involves improving people, equipment, supplies, materials, and procedures. Mclean [45] states that implementing and maintaining continuous improvement of quality in education within higher learning organizations is both attractive and challenging. To achieve this, the primary focus should be on improving the students' learning experience with educational theory guiding the process which is required on Sustainable Development Goal 4 as noted by Nogueiro and Saraiva [34]. Furthermore, the COVID-19 pandemic has caused major disruptions which cover various areas such as digital teaching and learning, collaboration and partnership, embracing uncertainty and building resilience, transformation and innovation, and developing an entrepreneurial mindset. While blended and distance education have become more widely accepted, there is a need to ensure that online teaching and learning are

stimulating, interactive, and worthwhile. In the future, research could examine the continuance intention of these education models and compare it between pandemic and non-pandemic periods [46].

Najafabadi et al. [10] suggest that employing the PDCA method can lead to continuous improvement within an institution. The PDCA cycle typically involves planning, doing, checking, and acting, and is a crucial principle of continuous improvement. Another important aspect is the implementation of a self-assessment methodology that regularly evaluates inputs, processes, and outcomes against a predetermined framework and methodology. This approach can serve as the foundation for strategic and ongoing performance improvement. According to Bicheno and Holweg [20], continuous improvement is crucial for any organization that wants to maintain its competitiveness. To achieve this, Deming's PDCA (Plan-Do-Check-Act) cycle provides a disciplined and structured framework for continuous improvement. This approach is a fundamental component of the Toyota Production System and is similar to control loops in industrial control systems where information is continuously gathered to control processes toward specific objectives [38].

Several researchers [13], [10], [23], [37], [38], and [34] have all highlighted the significance of continuous improvement which is accomplished through the PDCA cycle. This cycle involves a set of steps that are repeated to achieve continuous improvement. The original four major steps of the cycle include: P (plan) which involves data gathering to identify and define issues/problems that need improvement and to determine ways to achieve them; D (do) which involves implementing the plan through a trial run or a test group; C (check) which involves analyzing the results to determine if they align with the original goals and making adjustments if necessary; and A (act) which involves taking full-scale action based on the results from the check step or conducting further work. This cycle underscores the

importance of continuous improvement in every action and helps identify any steps that may have gone wrong [10].

It should be noted that Temponi [13] and Mclean [45] incorporated a case study of a higher education institution's self-assessment process which focused on the faculty component. The study assumed that all stakeholders provided input to the faculty component and identified several issues during the analysis. Firstly, the faculty is highly committed to teaching students. However, secondly, they lack sufficient knowledge about current technology. Thirdly, student evaluations of faculty are only partially used. Fourthly, the curriculum in some business subjects is not keeping up with what potential employers require. Fifthly, faculty members are not given the resources to attend conferences and workshops. Finally, there is little interaction between faculty and businesses in the area where the institution is located.

To meet regulatory requirements, the curriculum must adhere to the stipulations set by the governing body. Additionally, the laboratory and computing facilities required for the program must be sufficient for both students and faculty. To ensure that students complete the program within the designated timeframe, they should receive appropriate support. Undertaking self-assessment enables businesses to pursue excellence by consistently and systematically reviewing their processes and outcomes. This approach highlights both strengths and areas for improvement, facilitating continuous progress [16], [13], [45]. Furthermore, Adams et al. [47] examined the readiness of students for e-learning during the COVID-19 pandemic and investigated whether demographic factors such as gender, age, ethnicity, level of education, and field of study impact their readiness. The study found that the majority of students are prepared for e-learning but there are differences in readiness based on their demographics. So educators should reflect on their teaching practices, modify

their approaches as necessary, and create e-learning methods that are suitable for the diverse needs of their students.

3.4 Student focus Psomas and Antony [37] explain that customers of higher education are considered students and customer focus requires an institute to understand precisely what its customers need and strive to meet those needs by delivering appropriate products and services. This applies to both internal and external customers and it is crucial to ensure that they are satisfied with the organization. Additionally, it is essential not only to recognize the many and diverse customers of the educational system but also to determine their specific requirements to fulfill them. Sahney et al. [23] define customer requirements as the expectations that customers have from the educational system. Asbullah et al. [48] recommended that authorities take action to enhance the situation and support independent learning among students. Additionally, to increase student engagement learning, the study suggested incorporating more interactive activities such as online quizzes, games, debates, and similar activities.

Mugizi [49] highlights that infrastructure and other facilities can play a significant role in attracting end-users to an institution. When positioning themselves, many institutions focus on improving their infrastructure to meet the needs of their users. A well-equipped classroom can facilitate a better teaching-learning process while modern laboratory facilities can facilitate better skill acquisition. To meet the diverse needs of students, teachers, and administrators, institutions may provide better accommodation, offices, cafeteria, clinics, gymnasiums, and a good overall environment. Samuel and Fung [22] note that essential equipment such as computing facilities, laboratory equipment, and demonstration units in higher education require regular maintenance to function correctly and provide services when needed. The condition of this equipment can directly impact the quality and productivity of

teaching and instruction sessions. Many researchers have classified the criteria for evaluating the quality of managerial service facilities, infrastructure, catering services, free accommodation, sports facilities, medical facilities, availability of infrastructure to host social and cultural events (theatrical plays, cinema), location, accessibility of campus, frequency of transport service, and cost of transportation. These criteria are related to students' preferences for a more flexible service [39], [49].

From the perspective of providing education, teaching is the fundamental service that any educational system offers. The aim of teaching is to transfer knowledge from the teacher to the students. In addition to traditional classroom lectures, various innovative methods like discussions, case study analysis, presentations, field projects, role-play, and simulation methods can be used to impart education. Educational services also include facilities such as laboratories, scholarships, internet access, and libraries. The quality of library services is determined by factors such as availability of textbooks and journals, ease of borrowing, friendliness of staff, working hours, and access to e-library resources. Tan et al. [50] indicated that teaching online requires a similar, if not greater, amount of effort from instructors in terms of planning and execution compared to traditional face-to-face classes. This has important implications for teaching both during and after the pandemic. The study also found that when combined with active learning methods, hybrid and online platforms can create a strong sense of community in the classroom on par with or even exceeding that of traditional face-to-face settings. One key contribution of this study is the comprehensive exploration of two dimensions of personal self-efficacy and outcome expectancy, which were measured using the TSI (NSES-PS and NSES-OE). These dimensions could serve as a valuable diagnostic tool for assessing the strengths and weaknesses of teaching inquiry science. With this tool, science teachers could better meet the training requirements set forth by education officials with regard to inquiry-based science teaching, which would in turn

boost their confidence in the subject. The academic staff's qualifications, professional experience, communication skills, friendliness, approachability, research activity, and industry links also contribute to the quality of educational services [39], [23], [37], [34].

4. Conclusions

After reviewing the literature and considering the findings of researchers, it can be concluded that higher education is a crucial institution in any country. Its impact on the economy and development reflects how much a country values education and knowledge as a tool to compete with other countries. Therefore, when implementing TQM in the educational sector, it means that the quality of graduates will reflect the effectiveness of the educational process in the university.

The following key points were identified in relation to the topic of TQM in higher education with a focus on principles and core concepts:

- Attaining performance achievement in education requires a focus on students, faculty, and employees working together to achieve high-quality outcomes for graduates.
- The research methodology for this study involved a survey and review of findings to identify important principles for achieving TQM in higher education which were then discussed.
- TQM is a strategy that can be applied to various institutions with leadership playing a critical role in creating an educational environment that promotes TQM.

Quality awards and principles for systems are practices that are commonly accepted but with some reservations regarding their operational procedures. Standards are used to incentivize staff but the inflexibility of the system's standards has resulted in opposing views being presented.

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