

Engineering University Training According to Quality and Efficiency Standards to Achieve Sustainable Development in Algeria

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Abstract:

In recent years, Algeria has undertaken a series of reforms across various social systems to achieve sustainable development, placing high priority on higher education by focusing on total quality management and ensuring the efficiency of educational outcomes. This has been achieved through the restructuring of training programs and the development of a strategic approach for modern educational models aligned with labor market needs. Consequently, the importance of building a new strategic framework emerges, aiming to employ the latest educational models for investing in human resources and developing skills compatible with the labor market and societal needs, ultimately contributing to societal development.

Keywords: Engineering Training, University Training, Quality Standards, Efficiency Standards, Sustainable Development.

INTRODUCTION:

The topic of development, in its various aspects, holds significant importance on an international scale. In recent years, there has been an increasing global focus on the need for sustainable development to secure a sustainable future. Sustainable development serves as a logical approach to fostering coexistence among current and future generations, requiring each generation to act in proportion to population growth, emphasizing equitable distribution and quality of life improvements. This approach aligns with economic growth and development processes aimed at benefiting society while considering the needs and rights of future generations, granting it a lasting nature. In developed countries, higher education has played a pivotal role in tackling and finding solutions to various challenges by aligning education and research with comprehensive societal development. This alignment involves connecting university training with labor market needs and providing qualified human resources.

In recent years, Algeria has also adopted policies to achieve sustainable development through various reforms in the higher education sector aimed at improving and enhancing the Algerian university system. This has been achieved by utilizing necessary material and human resources, adopting successful educational models from developed countries, and applying these to Algeria's higher education context. A key aspect of higher education development is rooted in modern total quality management (TQM) principles.

Total quality management is a modern concept that emerged due to global competition among major production institutions, which, through product quality, have captured global markets. The successful application of TQM in economic, technological, and commercial institutions has led to an increased interest in applying it within educational institutions. For example, in the United States, higher education institutions adopting TQM increased from 78 in 1980 to 2,196 in 1991, with numbers multiplying further by the early 2000s. The method has since been applied extensively in both developed and some developing countries, including in educational institutions.

In recent years, Algeria has adopted this approach within its educational system, aligning its educational programs with total quality management standards and attempting to adhere to TQM requirements in higher education by restructuring university training programs in accordance with global educational models. Total quality management is seen as a continuous and enduring methodology rather than one that concludes with a specific program or time period. Therefore, it demands ongoing training to solve problems and foster innovative thinking, aiming to satisfy internal stakeholders within educational institutions—students, teachers, and administrative staff—while also

meeting the expectations of the broader community by enhancing educational quality and societal benefit. Thus, one of the key criteria for educational institutions' success is the quality of their educational outputs, which contribute to sustainable development, leading to intense competition among institutions to improve their programs and enhance research and societal development.

Achieving educational quality necessitates a clear and defined TQM policy, efficient administrative organization, and high-level training systems for academic and administrative staff. This positively impacts the achievement of developmental goals in society and the enhancement of social structures and systems.

1. Study Problem:

Developing university education has become a necessity in an era of technology and globalization that has transformed the world into a "small village," leaving no room for those unable to adapt to rapid changes. University institutions must confront the challenges posed by the digital age. Therefore, pursuing quality in university education, institutions, and programs has become an essential goal for development. This focus is evident in the numerous conferences, seminars, and studies addressing the improvement of university education quality to meet the demands of sustainable societal development. Moreover, many university institutions have sought program accreditation to reinforce their credibility and build community trust among individuals and organizations.

In recent years, total quality management (TQM) has gained significant attention among researchers and academics, with diverse perspectives on its potential adoption within higher education institutions as a strategic option aligned with current technological, social, economic, and industrial transformations. The successful implementation of TQM in many international and Arab educational institutions highlights its positive impact on educational outcomes.

As a result of this success, Algerian higher education institutions have begun adopting this philosophy to improve and enhance education in response to political, economic, and social changes brought on by the scientific and technological explosion, expanding knowledge, and societal pressures on universities, as well as the increasing demand and interest in university programs. Algerian higher education institutions have taken this approach as they have undergone significant changes over the past two decades, affecting both the professional and institutional levels and the overall system, facing growing pressures and major challenges. The number of university students increases every year at a rate exceeding the available pedagogical seats in universities and institutes, leading to inconsistent management growth, weak structural control, and a lack of qualified staff.

In 2011, the success rate for the baccalaureate exam was 58.84%, with 230,989 successful students. In 2012, the rate was approximately 62.45% with 220,518 successful students. In 2014, it decreased to 45.01%, but rose again in 2015 to 51.35% and increased further in 2018 to 55.88%, with approximately 1,730,000 students being taught by nearly 60,000 professors across the nation's universities.¹

Therefore, it is necessary for Algerian universities to establish a strategic framework that aligns with the number of university students and works toward activating total quality management (TQM) to produce an industrial output capable of competing in global markets, as well as a suitable educational output—graduates who can contribute effectively to society's development in all areas.

From this standpoint, the study problem can be summarized by addressing the main question:

- Does the application of total quality management standards in Algerian universities activate sustainable development in society?

This main question leads to the following sub-questions:

1. What are the requirements for restructuring higher education according to the competency-based approach in Algerian universities?
2. What role do universities play in societal development through total quality management?
3. What foundational elements are proposed for developing university education to activate sustainable development using total quality management?

2. Importance of the Research:

The significance of this research lies in the following points:

1. This study focuses on total quality management in higher education institutions, a relatively modern topic. Its importance also stems from its attempt to shed light on a subject that has attracted the interest of researchers and experts, encouraging more studies and research to enhance the performance of Algerian universities and activate sustainable societal development.

2. The need to adopt the philosophy of total quality management in educational institutions to create a comprehensive system that is expected to bring about positive changes, meet the needs of students and society, and deliver high-quality educational, advisory, and research services.

3. The research highlights the importance of adopting a competency-based approach as a method for restructuring and developing the university education system.

4. It contributes to strengthening the relationship between the university and the local community through increased cooperation to serve the community.

5. This research helps improve educational inputs and utilizes them in a way that aligns with the objectives and outcomes required from universities to achieve sustainable development.

3. Research Objectives:

1. To understand the concepts of higher education restructuring, competency-based approach, and sustainable development.

2. To explore the importance of adopting a competency-based approach in higher education institutions and its expected benefits.

3. To identify the requirements for applying a competency-based management approach in higher education institutions.

4. To outline the key areas of total quality management in higher education institutions.

4. Theoretical Concepts and Their Knowledge Implications:

1. Concept of Higher Education Restructuring:

Higher education restructuring is defined as "the rapid and radical redesign of value-driven administrative and strategic processes, as well as supporting systems, policies, and organizational structures, aimed at maximizing work flows and significantly increasing productivity."²

Restructuring does not merely involve reorganization, nor is it a "new wine in old bottles." Instead, it seeks a radical and rapid redesign of strategically valuable processes to achieve transformative and strategically added value, even creating strong leaps forward.³

The concept of restructuring has caused a shift in many administrative concepts, particularly those related to organizational change. Its responsiveness to the accelerating change needs of organizations has made it a popular concept among writers and consultants to meet investors' needs for quick results that help adapt their organizations and partners to renewed tasks or adopt new competitive strategies.⁴

In this context, restructuring is a method that promotes creative and fundamental thinking about university processes and activities, aiming for substantial and continuous improvement in pedagogical performance, education quality, and high educational output efficiency to achieve sustainable societal development and contribute to labor market improvements.

2. Concept of University Training:

A modern system involving a sequential series of methodological steps aimed at enhancing training productivity within the institution to elevate human resources to a high level of competence and to achieve direct goals. It is also known as a newly emerging system that requires adherence to a series of systematic steps to increase the productivity of training in the institution. This effort aims to increase returns and raise human resource levels to the highest efficiency, transforming them into a real asset prepared to face globalization and continuous changes in technology, production methods, and modern practices.

Thus, urgent needs are identified, priorities are set based on financial allocations granted for training, and a training plan is prepared for one year or several years. This plan outlines training courses, their schedules, costs, participants, and whether they are conducted within or outside the institution.

1. Concept of Quality and Efficiency Standards:

This term was originally used in the economic field related to manufacturing and refers to a standard of excellence or a state of freedom from defects, deficiencies, and significant variances through strict adherence to measurable and verifiable standards to achieve uniformity and consistency in output that meets specific customer or user requirements. ISO Standard 8402-1986 defines quality as "the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs."

Quality standards are defined as a set of characteristics, attributes, and specifications that must be available within the institution's complete system to achieve total quality. These attributes and

characteristics include creating an environment and climate conducive to work, identifying the requirements of clients or beneficiaries of the institution's work, planning for quality goals, and ensuring the quality of management, plans, and program content within the institution, the extent of the quality of the institution's cadre and the suitability of the institution to labour requirements⁵. They also determine the quality of institutional staff and the extent to which the facilities meet operational needs.

Quality and efficiency standards for employees are based on their ability to achieve required goals within the designated time frame, adhering to quality standards through training sessions and qualifications that enable optimal performance in their professional field.

2. Sustainable Development:

Sustainable development is defined as "a process in which resource exploitation, investment directions, technological development, and institutional change are harmonized to enhance both current and future potentials to fulfill human needs and aspirations."⁶

According to the World Commission on Environment and Development in its 1987 report "Our Common Future," sustainable development is "meeting the needs of the present without compromising the ability of future generations to meet their own needs."

Thus, sustainable development is the balance between meeting present economic needs and ensuring future generations can fulfill their requirements.⁷

The various concepts and perspectives around sustainable development reveal that:⁸

Desired development aims for long-term human advancement across the globe, not merely in select regions for a limited period.

Living standards beyond the basic minimum requirements can only be sustained when consumption levels worldwide consider long-term sustainability needs.

Needs are shaped socially and culturally, necessitating value systems that encourage environmentally sustainable consumption.

Achieving sustainable development requires a production system committed to maintaining the environmental balance necessary for its continued growth.⁹

From this, it becomes clear that sustainable development has essential standards and criteria that shape its success indicators, including:¹⁰

Reflecting fundamental and critical elements for the long-term economic, social, or environmental health of society.

Being clear, understandable, and achievable, making it easier for communities to comprehend and embrace.

Being measurable and predictable.

Possessing available limiting values.

Indicating whether variables can be controlled or reversed.

The private institution aims to maximize profits in a competitive market within legal, systemic, and traditional constraints.

It is evident that sustainable development yields qualitative benefits that impact both society and the individual, fostering a community based on successful values, principles, and standards, building a balanced exchange between social welfare, economic opportunity, and environmental quality. In a sustainable society, long-term goals must be factored into decision-making processes, which should be transparent, inclusive, and participatory, ensuring social equity across different segments and generations while anticipating and preventing problems before they arise. A sustainable society is characterized by:

Environmental Health: Decision-making prioritizes minimizing population growth and development risks on natural resources and the environment.

Economic Productivity: Community members invest locally to support local human and natural resources and generate sufficient financial returns.

Social Fairness and Equity: Ensuring the fair distribution of food and benefits, with equitable access to resources and decision-making processes.

5-The Importance of Higher Education Training Design in Achieving Quality and Educational Efficiency:

Educational strategies are crucial components that, when mastered by educators, allow them to craft suitable strategies to effectively engage students and clarify concepts. These strategies involve

methods of using educational tools, classroom management, and various forms of instruction. There is also a need to keep pace with modern media, technology, values, and intellectual and communicative developments.

Training design follows new methods distinct from the classical system, which focused on the centrality of work while disregarding individual creativity and competence. Training design involves interconnected processes derived from identifying institutional training needs based on strategic directions, evaluating competency cards and job centers, and addressing real deficiencies to achieve targeted objectives while considering financial constraints.

6-The Development and Evolution of Total Quality Management (TQM):

TQM, in its modern form, first emerged in the United States and evolved in Japan as an administrative system. Its roots trace back to early 20th-century studies on time and motion, pioneered by Taylor in 1911. Japanese adoption of statistical quality control in the early 1950s marked the start of a focus on rebuilding industrial infrastructure through quality management.

The application of quality standards had the greatest impact on the success of Japanese companies in the late 1970s, which helped to spread the use of quality beyond Japan. The concept later transferred to European and American companies, which began adopting Deming's ideas on quality, productivity, and competitive positioning by the late 1980s. By the mid-1990s, these practices were being studied and applied in American institutes and universities.¹¹

1. Reasons for Adopting Total Quality Management (TQM) in Higher Education:

- Continuous and increasing enrollment in higher education.
- The need to achieve high performance in the educational process.
- The extension of the need for lifelong learning, which requires teaching students how to be self-reliant in acquiring knowledge.
- The information and communications technology revolution and its impact on the educational process.
- Intense competition among educational institutions with the need for rationalizing expenditures and prioritizing spending.
- Lack of global competitiveness among national university graduates.
- Decline in productivity across numerous fields for national university graduates.¹²

2. Requirements for Applying TQM in University Education:

A. Developing a TQM Policy at the University:

- Identifying the party responsible for establishing and managing TQM.
- Specifying how the system will be monitored and reviewed by the administration.
- Defining the tasks required and detailed procedures for each task.
- Determining how these procedures will be monitored.
- Outlining corrective measures for failures in procedure execution.

B. Procedures: Tasks include registration, advising, curriculum planning, evaluation processes, teaching materials, staff selection and appointment, and staff development.

C. Work Instructions: Work instructions must be clear, understandable, and applicable.

D. Review: This is a means for the institution to ensure that procedures are carried out as intended.

E. Corrective Action: Addressing what was overlooked or executed incorrectly.

F. Procedural Steps: Setting standards for applying TQM, such as the ISO9002 system in the educational field.

3. Outcomes Achieved by Applying TQM in Higher Education:

Applying TQM in education can yield the following benefits:

1. Controlling and improving the administrative system of any educational institution due to clearly defined roles and responsibilities.
2. Enhancing students' holistic development: physical, mental, social, psychological, and spiritual.
3. Increasing the competencies and performance levels of administrators, teachers, and other educational staff.
4. Boosting trust and cooperation between educational institutions and society.
5. Fostering an atmosphere of understanding, collaboration, and healthy human relations among all staff members, regardless of the institution's size or type.

6. Increasing awareness and loyalty towards the institution among students and the local community.
7. Building team spirit among all administrators and staff for more cohesive and collaborative work.
8. Achieving increased local respect and international recognition by applying TQM principles.
9. Clearly identifying community development areas in a practical manner.

4. Obstacles to Applying TQM in Higher Education:

Despite its advantages, applying TQM in the educational field faces several obstacles:

1. Centralization in educational decision-making, while TQM requires a decentralized system that permits greater freedom and innovation, free from administrative routine and complexities that hinder performance.
2. Reliance on traditional methods in educational information systems.
3. A lack of trained and qualified staff in TQM in education who can handle responsibilities and foster innovation.
4. Implementing TQM requires substantial budgets.
5. Resistance among administrators and staff to adopt new and improved methods, as these demand skills and competencies they may lack, which can challenge their authority.
6. Cultural and social legacies resistant to new and evolving concepts.
7. Weak leadership patterns among decision-making administrators in the educational field.
8. Weak relations between educational institutions and the local community, and limited participation in decision-making processes.

5. Potential Horizons for Applying TQM in Higher Education:

In addition to the requirements mentioned above, the following foundational principles are necessary for TQM implementation:¹³

- Supporting decentralization to increase task effectiveness and motivate individuals to work harder to achieve goals.
- Scientific time management, emphasizing time planning, organizing, monitoring, and rationalizing time usage in university institutions for the effective execution of TQM processes.
- Adopting participatory management as an approach to achieving quality, involving all educational stakeholders, both within and outside the institution.
- Continuous training to master the steps necessary for the smooth implementation of this new approach. Joseph proposed an applied approach to TQM through a series of stages, enabling participants to acquire fundamental skills for effective work. These stages include:¹⁴

1. Zero Phase: Managers decide whether comprehensive improvements can be gained from implementing TQM. This is the decision-making stage for TQM adoption.

2. First Phase: Planning and Formulation: This stage involves formulating the university system's vision, objectives, strategies, and proposed policies, promoting the dissemination of TQM concepts at all levels within the system, and selecting members to participate in development activities.

3. Second Phase: Assessment and Evaluation: This stage includes self-evaluation of individual performance and organizational evaluation of the system, along with a comprehensive survey to satisfy primary beneficiaries (students, the university, and the local environment).

4. Third Phase: Implementation: Implementing the TQM philosophy across all levels of the system, supported by targeted training initiatives and senior management endorsement to improve areas or processes of quality. Key steps include:

- Selecting internal trainers from all management levels, with emphasis on credibility and commitment to TQM's importance.
- Intensive two-week training for trainers on TQM principles and tools by experts.
- Establishing a specialized TQM library.
- Forming a task force that combines staff, middle management, and senior management.

5. Fourth Phase: Sharing and Disseminating Experience: This phase emphasizes sharing successful experiences in TQM implementation.

Experts estimate that the timeline required to apply a comprehensive TQM program ranges from 9 to 15 months. Organizations successfully implementing TQM receive international recognition, and

such success is often benchmarked through statistical quality control measures, with awards granted for program excellence. Among these awards:¹⁵

1- The Deming Award:

This award is granted to companies that successfully implement quality control. It emphasizes statistical quality control as a means to enhance quality. Established by the Union of Japanese Scientists and Engineers in 1951, it honors Dr. W. Edwards Deming for his significant impact on the Japanese economy. The Deming Award is one of the earliest awards to focus on quality.

2- The Malcolm Baldrige National Quality Award:

The Malcolm Baldrige Award or Baldrige Criteria is similar to the Deming Award and is granted in the United States. Introduced in 1988, more than half of the U.S. institutions have adopted this quality standard. It has also been applied in other countries like Argentina, Australia, Brazil, Canada, and India.

3- ISO 9000:

ISO 9000 is a series of international standard specifications described by the International Organization for Standardization (ISO) to help companies meet global specifications and benchmarks. It was introduced in 1987 due to the growing global interest in quality. The standards cover the overall quality of an institution rather than just its products or services. They assess management quality and the extent to which employees' needs are met, ensuring the continuity of high-quality performance.

There are other key standards used to measure quality, including:

- Adapting or modifying requirements through a precise and clear definition.
- Viewing quality assurance as a preventive measure to avoid mistakes by setting standards for good and poor performance.
- Setting performance levels for individuals to prevent errors and ensure correct execution from the first attempt, rejecting mistakes or defects.
- Quality assessment: Once quality is achieved, it is evaluated based on established standards, and the cost of any errors is calculated.¹⁶

8-Role of Universities in Algerian Community Development in Light of Total Quality Management (TQM)

Community service and development are among the primary roles of the university. To achieve this mission, universities must utilize their material and human resources to benefit society. The relationship between universities and society is a reciprocal one, meaning that any societal issues, diseases, or signs of corruption affect the university and vice versa¹⁷. Changes in society must also reflect upon university programs. The rapid developments in scientific knowledge and technology in advanced nations have redefined the concept of development, compelling Arab universities and higher education institutions to adapt accordingly. This adaptation is essential to absorb and benefit from new advancements while preserving cultural uniqueness and avoiding mere imitation. Thus, our educational development plans must reflect distinctive cultural and societal needs.¹⁸

Universities must fulfill several requirements to contribute to community development, including:¹⁹

1. Conducting precise surveys to identify the needs of individuals, society, and institutions regarding graduates and their qualifications.
2. Preparing specialized experts across various fields of knowledge and sectors.
3. Contributing to local community development as a source of enlightenment, leadership, and advancement.
4. Transferring, developing, and producing knowledge and technology to benefit society.
5. Preparing students for the job market, equipping them with desirable social and scientific values, and aiding their social integration and adaptation.
6. Emphasizing professional and technical work while encouraging practical application to counterbalance theoretical dominance.

9-Standards for Applying Total Quality Management in Algerian Universities for Achieving Comprehensive Development Goals

Total Quality Management (TQM) in higher education relies on standards that can be used to evaluate university educational processes. These include:

A. Re-engineering Student Formation:

The student is a crucial component of the university's educational process. Achieving high-quality higher education requires nurturing students who possess the educational competencies necessary to serve society. Therefore, comprehensive quality in universities demands a strategic approach focused on selecting and admitting students into fields that align with their intellectual and cognitive abilities. Positive, constructive interaction between faculty, administration, and cultural activities is also essential, along with appropriate assessments and examinations.

Maintaining reasonable student-teacher ratios is necessary for educational efficacy, and adequate healthcare, transportation, housing, and dining services enhance the educational quality by boosting students' morale and readiness to learn. This helps students acquire knowledge, succeed, and reach higher educational levels.

Moreover, aligning academic specialties with market needs regarding timing, numbers, and skills is a key indicator of a university's quality.

B. Re-engineering Faculty Models:

University professors are pivotal to the educational process and play a significant role in cultivating human capital. Quality faculty members should possess mastery over their subjects, teaching methods, evaluation, and classroom management to foster interactive student engagement and knowledge creation. University administrations must ensure an adequate number of competent faculty members to cover all academic subjects.

Faculty members should actively participate in scientific and intellectual activities, such as seminars, symposia, and research projects, while guiding students at various levels of study.

Respecting students, understanding their knowledge and psychological needs, and assisting them in achieving their educational goals and resolving behavioral issues are also positive indicators of high-quality higher education institutions.²⁰

C. Curriculum Standards

The quality of educational curricula is linked to their ability to achieve educational competencies for students, their comprehension, ability to solve research problems, and capacity to develop intellectual and professional skills. High-quality university education requires scientific curricula and educational models that achieve educational, cultural, and economic goals. The better curricula fulfill the objectives of students, institutions, and society, the more the institution's programs can be described as having comprehensive quality.

D - Standards Related to University Administration

The quality of administration, the competence of its staff, their relationship with students and faculty, and the commitment of senior management to implementing quality standards through strategic planning, monitoring university activities, and fostering good relationships among students, faculty, and administration are vital factors. These factors act as active variables and confirmed indicators of the institution's performance quality.

E - Standards Related to Material Resources

Material resources include university buildings, libraries, laboratories, and funding for all institutional activities. Buildings should be flexible and capable of accommodating students, and their geographical location in the surrounding environment is a positive indicator of meeting quality requirements. A well-designed building with a focus on health and distance from industrial zones and other unfavorable locations further supports achieving educational quality standards.²¹

1 - University Functions and Sustainable Development

The university plays a significant role in shaping the pathways for future generations to address the complexities of sustainable development. It prepares highly qualified graduates and responsible citizens who can meet the needs of all human activities. Universities provide opportunities for higher education and lifelong learning (sustainability), contribute to advancing, enriching, and disseminating knowledge through research, and provide communities with the expertise necessary for cultural, social, and economic development.

2 - Integrating Sustainable Development Principles Across University Disciplines

Updating university curricula across various disciplines is key to addressing sustainable development, such as teaching climate adaptation, sustainable planning, and building sustainable institutions²². Examples include a study program at Georgia Tech in Atlanta on "Urban Sustainable Development," which offers projects on sustainable buildings, recycling, composting, transportation

risk reduction, pollution prevention, education, and awareness. This program allows students to design and implement projects, providing support to overcome challenges. In Algeria, higher institutes specializing in urban technology projects include environmental studies at both undergraduate and advanced specialized study levels.²³

3 - The Role of Scientific Research in Achieving Sustainable Development

The university serves as a major supplier of qualified human capital capable of conducting scientific work for research institutions. However, it cannot fulfill the needs of these institutions unless it maintains a strong connection with them. This necessitates a scientific policy that keeps the university aware of the needs of the production and service sectors while ensuring that these sectors understand the university's capabilities in serving them. Algeria's University of Continuing Education exemplifies this close relationship. Scientific research supports sustainable development through:²⁴

1. Conducting research aimed at preserving and enhancing natural resource bases, creating more alternative energy sources, and utilizing scientific research to develop strategies for better exploitation of available resources.

2. Performing urgent international and local research related to sustainable development.

3. Offering master's and doctoral programs focused on topics of sustainable and environmental development.

4. Carrying out research on climate adaptation strategies and analyzing the impact of human and economic risks on the environment.

5. Conducting studies in areas such as electricity generation, energy, building materials, sustainable construction, water management, transportation, pollution prevention, and climate change.

6. Producing research that provides solutions to the risks associated with climate change.

7. Establishing research centers dedicated to sustainable development.

8. Exploring new materials to replace existing ones, developing new technologies to increase product efficiency and reduce material usage, and reducing the demand for non-renewable resources while creating new energy storage solutions for future generations.

4-Proposals for Developing University Education in Algeria in Light of Total Quality Management (TQM)

Improving education involves setting objectives and working toward achieving them by providing comprehensive material and human resources. Higher education in Algeria must aim to achieve the following:

- Connecting scientific research with the community's problems and finding solutions to them.

- Strengthening the relationship between higher education institutions and the job market, which requires reevaluating study specializations to align with labor market needs.

- Increasing the commitment of senior educational leadership, whether in the Ministry of Higher Education or universities, to continuously improve and develop educational processes in line with modern changes and developments.

- Anticipating future factors and forces that may impact education to enable quick adaptation and serve society without disrupting educational quality or societal culture.

- Ensuring educational institutions have flexibility and the ability to renew their programs, goals, organizational structures, and administrative processes to accommodate any new changes affecting education and societal development.

- Modifying the organizational structure of universities to clearly define the roles and responsibilities of total quality management (TQM) units, as well as training methods and approaches that focus on innovation and renewal.

- Emphasizing quality over quantity when it comes to students and ensuring competition among educational institutions is not solely based on attracting large numbers of students.

- Relying on active leadership in administrative work, using modern communication methods and building human relationships that encourage collaboration and increase everyone's motivation toward societal development.

- Striving to meet the local community's needs effectively and gain its satisfaction with the performance of educational institutions.

- Increasing funding for educational institutions and their quality-based programs that provide tangible community services and advancing scientific publishing in journals.

- Applying TQM in continuous evaluation, curriculum improvement, senior educational management, academic supervisors, administrative processes, teaching tools, inputs, student growth and development, evaluation tools and methods, organizational structures, educational buildings, and other educational matters.

- Promoting the concept of TQM across all community institutions—whether economic, social, or scientific—to spread TQM concepts throughout society, encouraging acceptance and utilization.

- Expanding activities in academic and career guidance to help students plan their educational paths and foresee their future roles in the labor market, thereby reducing unemployment and the prevalence of unnecessary specializations.

- Adopting modern teaching and assessment methods and providing necessary training for faculty to implement these techniques.

CONCLUSION

The development of any educational system today must adapt to modern educational models and utilize all available material and human resources to ensure its implementation and sustainability. Emphasizing the reengineering of higher education and adopting a TQM system has become necessary, as it serves as an effective tool for gaining a competitive edge amid new challenges. TQM operates as a modern systematic management philosophy based on several principles, foundations, and requirements aimed at fulfilling the needs and desires of beneficiaries. This necessitates the coordination and direction of all functions, processes, and capabilities of the institution to achieve significant gains and a successful investment in human capital, thereby contributing to societal development.

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