Pegem Journal of Education and Instruction, Vol. 15, No. 4, 2025 (pp. 1284-1300)

RESEARCH ARTICLE WWW.PEGEGOG.NET

The Flowchart Method and Its Role in Applying Total Quality Principles to the Development of University Education in Light of Selected Models (Circular Model, Deming, European Excellence)

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Received : 11/01/2025 ; Accepted : 17/06/2025 ; Published : 11/07/2025

ABSTRACT:

The present research aimed to identify the role of the flowchart method in applying total quality management (TQM) principles to the development of university education, as well as to explore the obstacles to its application and propose possible solutions, with a presentation of the most important models of its implementation in higher education institutions. The study concluded that the flowchart method holds significant importance, yet various obstacles hinder the application of its principles. Bureaucracy, centralization, weak training, and lack of incentives were identified as major barriers to implementing TQM in university education. It was recommended that strong political will is necessary to adopt TQM principles, ensuring that these principles align with Arab-Islamic values. Moreover, the use of flowchart methods should precede the application of TQM principles, with the establishment of standards for measuring functional and teaching performance. A specialized TQM body should be created at the level of institutes, faculties, and universities to ensure the application, execution, and evaluation of administrative and teaching processes. Furthermore, universities should provide rewards to institutes and faculties that demonstrate commitment to TQM standards.

Keywords: Flowchart Method, Total Quality Management (TQM), University Education, Models (Circular Model, Deming, European Excellence).

1. INTRODUCTION:

Today's society is living in an era marked by numerous variables, such as international mobility, the abundance of information, the multiplicity of knowledge sources, technological breakthroughs, the communications and information revolution, free-market economies and privatization, professional mobility, and globalization. These are all factors that cannot be ignored when examining the relationship between quality assurance and its impact on higher education **(Rumman, 2014, p. 10).**

University education is not exempt from these dynamics. It faces major challenges such as technological revolutions and their implications, media, cultural, and civilizational openness, as well as the consequences of globalization in all its dimensions, including economic blocs and international agreements. This necessitates that education in general, and university education in particular, keep pace with such rapid changes. For education to be qualitatively aligned with these transformations, global attention has increasingly turned toward educational quality, with calls to reconsider traditional approaches within the educational system—objectives, policies, and administration. It is in this context that the idea arose to conduct a study on the flowchart method and its role in applying Total Quality Management (TQM) to the development of university education.

Thus, achieving a form of distinctive education, equipping learners with advanced life competencies and skills that respond to the needs of the era within the framework of TQM, has become essential to align with the nature of the knowledge society. Realizing this requires effective management equipped with the skills and competencies to participate actively in achieving and ensuring quality **(Rumman, 2014, p. 22)**.

There is also a close link between the economic and cultural dimensions of globalization. This critical connection means that those who control the costs of expenditure elements can easily impose their culture on others, who may even find themselves unable to shield against the impact of such cultural dominance **(Rumman, 2014, p. 56).**

Confronting the cultural and media invasion of globalization forces does not lie in self-isolation, but rather in cultural renewal from within the Arab civilizational identity and actively engaging in the age of science and technology as contributors, not merely as passive consumers **(Rumman, 2014, p. 58).**

Accordingly, most global institutions striving for growth, progress, and sustainability have realized that TQM is one of the most modern administrative approaches, bringing remarkable developments. It is a strategy based on integrating all activities to reach a distinguished level of quality in the offered product.

The quality of the educational process is an objective pursued by Algerian universities. Therefore, ensuring the quality of outputs has become one of the main goals set by university administrations. However, many studies have noted insufficient attention to this system in Algerian universities. This has been confirmed by several doctoral theses, such as that of Mohamed Karr at the University of Algiers 03 (2014), Saidi Mostafa at the University of Algiers 03 (2015), and Khedr Maddah at the University of Algiers 03 (2015), as well as other studies that emphasized the lack of sufficient interest in TQM principles.

The world today is in need of a new revolution, known as the third wave, which is a combination of astonishing technological progress and an unprecedented information revolution. It revolves around three technologies: computing, electronics, and communications. In the age of informatics, demand will rise for specialists and scientists, while the demand for low-skilled labor will decline. Consequently, the concept of knowledge and illiteracy will change, and the dimensions of human performance will evolve, shifting upward toward the intellectual (the human mind) after being oriented downward toward physical labor—hands, feet, and muscles. Sources of traditional knowledge, such as printed materials, teachers, trainers, and attendance at scientific conferences, will lose their exclusivity, as the world now enters a phase of reverse transition where objects, people, and

information reach us, and the globe is run through remote management **(Rumman, 2014, pp. 60–61).**

Therefore, it is imperative to keep pace with this major cultural transformation that has influenced technological production in order to achieve cultural and scientific resilience. Such resilience must be built on quality education capable of producing technology. Algerian universities must also be part of this transformation, as they represent fertile ground and a means for its realization through fair and accurate evaluation across all domains.

Implementing TQM will help institutions identify and eliminate waste in time, mental, and material resources. At the same time, it serves as a motivational system, granting employees authority, encouraging them to succeed, and emphasizing that implementing quality programs is the responsibility of all employees at every level. Training them on quality concepts and principles is essential **(Rumman, 2014, p. 101).**

2. Research Problem:

It has now become undeniably clear that **the dangerous gap** separating the North from the South, and industrialized nations from developing countries, is no longer merely an economic gap; rather, it is fundamentally an educational gap. **This gap is at risk of widening**, as we have indeed entered the age of knowledge-intensive production **(Rumman, 2014, p. 8).** The knowledge capital of any society has become the driving force of its present and the guarantee of its future **(Rumman, 2014, p. 7).** No society can achieve comprehensive developmental goals or meet future requirements without knowledge, culture, and expertise, and the pathway to these is science and education **(Rumman, 2014, p. 8).**

Today, technology has become a universal language. Mastery of this prevailing language is essential for effective communication, the balancing of interests, and mutual benefits. Without it, organizations lose the foundations of effective interaction with the world around them. It is also impossible to join or partner with international economic blocs on equal footing without the technological capacities that facilitate such participation and reinforce equality **(Rumman, 2014, p. 62).**

The technological revolution will not remain the privilege of large, populous societies, resource-rich nations, or those with powerful conventional armies. Rather, it is a revolution that all nations can embrace if they prepare their citizens educationally and pedagogically. Technology must become one of the central pillars of educational strategies aimed at addressing numerous present and future educational challenges. It contributes to managing the information explosion by developing methods and tools for assessing knowledge, enabling us to process and manage information before losing control over it. This requires equipping schools with advanced laboratories, internet networks, modern libraries, and state-of-the-art teaching aids, while also enhancing faculties of education to train teachers who, upon graduation, will be able to support development efforts and foster technological creation within their societies **(Rumman, 2014, p. 63).**

The world is currently witnessing astonishing advancements in science, technology, and industry, which compel higher education institutions to update their educational content to meet society's growing needs under the expanding concept of globalization. Higher education institutions have recognized this, and some experts have studied TQM as an educational framework capable of serving as a comprehensive university system. In itself, TQM is a system of evaluation and a mechanism for responding to the challenges that lie ahead.

In Algeria, the higher education environment operates within a rapidly changing and complex dynamic, ranging from the need to keep pace with massive technological progress to avoid stagnation and decline, to adapting to contemporary needs and labor market demands, as well as navigating restrictive governmental policies and cultural, civilizational, and religious transformations that must also be understood, selectively embraced, or cautiously rejected.

Experiences in many developed nations especially Japan and the United States have demonstrated the success of applying TQM principles to all their products and services. This success has enabled them to dominate the world economically, technologically, scientifically, and even politically. The idea, therefore, emerged to transfer the administrative culture of TQM from industrial production to intellectual and scientific production, and this transfer proved successful as well. Consequently, their universities became leaders in global rankings due to the quality of their research outputs.

Disseminating a culture of TQM in Algerian universities contributes to elevating prevailing values and behaviors. Such changes in administrative and organizational patterns would have a significant impact on achieving set goals with minimal effort. Thus, the idea of this study was born: to explore the role of quality circles in applying TQM to the development of university education, seeking to answer a set of questions. **What is the flowchart method, and what is its importance? What is its relationship with TQM? How is it organized? What are the main obstacles hindering the application of TQM principles and quality circles in higher education? What are the most important global models for applying quality in university education?**

This paper aims to decode these questions, along with related inquiries. Accordingly, the research sought to shed light on the nature and importance of the flowchart method and its feasibility in universities, with a focus on highlighting some global models in the field of TQM, identifying key obstacles to its application, and proposing practical solutions to ensure quality.

3. Definition of Concepts and Terms

3.1. University Education

University education refers to educational stages beyond secondary school in general, including higher schools, universities, or what is known as postgraduate studies **(Abd al-Rahman, 2000, p. 21).** Within the framework of overall educational policy, university education is one of the most important pillars of development, as it plays a leading role in fostering talents, capacities, and human potential within society. It also serves as a tool for shaping individuals and communities.

The success of university education depends on its effective response to many forces and variables, foremost among them globalization, the digital divide (the gap between those who possess information and those who lack it), the knowledge gap (the gap between what we know and what we ought to know), and the organizational gap (the gap between current organizational performance and expected performance) **(Rumman, 2014, pp. 19–20).**

3.2. Quality

Many attempts have been made to define the concept of quality (Quality). Despite the differences among these attempts, certain definitions have imposed themselves on administrative thought due to their objectivity and precision in expression **(Jawda, 2004, p. 19).**

The concept of quality originates from the Latin word Qualitas, meaning the nature of a person or thing. In the past, it referred to accuracy and perfection **(Al-Daradkeh, 2006, p. 15).**

With the development of management science, the emergence of large institutions, and the intensification of competition, the concept of quality acquired new dimensions. J.C. Taroneau defined it as "conformity to planned specifications and standards set by the institution. A product is of quality if it conforms to this set of technical rules and standards" **(J.C. Taroneau, 1998, p. 236).**

3.3. Total Quality

Total Quality is the process of applying a set of educational standards and specifications to raise the quality level of the educational product through the contribution of every staff member in the school. The goal of TQM in education is to foster a distinctive culture among workers, ensuring tasks are performed correctly from the start to achieve better quality and greater efficiency of the output **(Al-Samarrai, 2007, p. 89).**

3.4. Administration

Administration is a set of continuous human and social activities aimed at maximizing the use of available resources to achieve organizational objectives with efficiency and effectiveness **(Rumman, 2014, p. 29).**

3.5. Total Quality Management (TQM)

TQM is one of the modern administrative concepts that emerged from the intense global competition between Japanese production institutions on the one hand, and American and European institutions on the other. It originated with Edward Deming's call for its application. Due to the success of this concept in economic, industrial, commercial, and technological organizations in developed countries, educational institutions also became interested in applying TQM as an approach in education to achieve better quality outputs that actively serve society.

This is achieved by improving all inputs, processes, and outputs that TQM focuses on **(Rumman, 2014, p. 79).** Rhodes defined TQM as "a management process based on several values and information through which employees' capacities in different fields are utilized to achieve continuous improvement of the organization's objectives" **(Rumman, 2014, p. 85)**.

According to Hussein (2008), as cited by Tarkawi, TQM represents a cooperative form of task performance that mobilizes the talents and capacities of both staff and management to continuously improve productivity and quality. It relies on work teams comprising the three success factors of any system: participatory management, continuous improvement, and teamwork **(Tarkawi, 2017, p. 78)**.

In general, there are two main approaches in quality assurance:

- The first focuses on the core values, principles, and fundamental ideas of higher education, namely the pursuit of truth and the acquisition of knowledge. This is known as academic quality, which emphasizes knowledge production and student education.
- The second approach is external quality, which reflects the ability of higher education institutions to meet society's changing needs **(Al-Bilawi et al., 2006, pp. 37–38)**.

3.6. Flowchart Method

A flowchart refers to a diagram that uses graphic symbols to identify the different processes within an organization, showing their interconnections and interdependencies, as well as the inputs and outputs of the system. It is one of the simplest methods to describe a process or activity, as it illustrates all components of the process, its various stages, and the workflow from start to finish.

It also assists in the detailed analysis of every step of the work process, such as identifying who performs each step, how it is performed, and when it is executed. Below, Figure (01) illustrates the flowchart method.

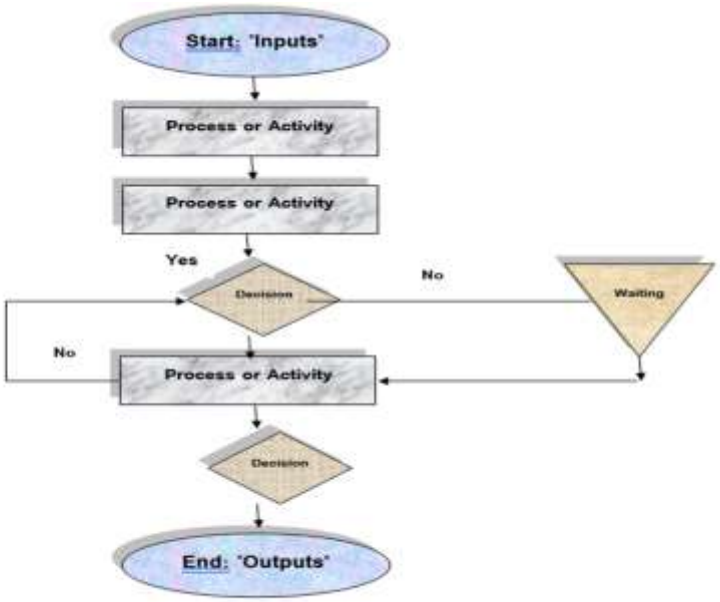

Figure (01): Example of a Flowchart Model. (Rumman, 2014, pp. 111–112)

Rumman argues that the issue of developing education has become more urgent due to the decline in the quality of educational output and the weak connection between educational institutions and society. Thus, educational quality has become a fundamental goal. The major challenge facing educational systems today is not only to provide education for all, but also to ensure its quality and effectiveness, and to explore how to transfer Total Quality Management (TQM) into the field of education and establish schools of quality based on teamwork and continuous improvement processes **(Rumman, 2014, pp. 80–81).**

William Tadros (2001), as cited by Wafika Salem (2001), affirms that quality education is no longer merely one of the individual's basic needs, but rather the effective means of achieving other essential needs. For education to acquire the attribute of excellence, the competencies of its graduates must conform to the quality standards of outstanding production aligned with the needs of its beneficiaries. This also requires monitoring and controlling the educational process in a manner similar to what contemporary production and service institutions refer to as Total Quality requirements **(Salem, 2001, p. 3).**

Quality standards are a tool for evaluating the quality of curricula, courses, and academic programs, as well as for improving and developing teaching strategies and methods. They also serve as a motivational factor for students, driving them to exert greater effort in order to meet standards and achieve mastery, excellence, and efficiency in performance **(Al-Khatib, 2015, p. 12).**

Work in Total Quality Management is a continuous process of evaluation and the search for opportunities for improvement. This is emphasized by one of the pioneers of TQM through Deming's Quality Circle, which consists of four activities carried out cyclically and continuously, in the form of a circle without interruption: Plan, Do, Check, Act (PDCA).

Figure (02): Deming's Circle for Continuous Improvement.

Total Quality in the educational and pedagogical field refers to a set of standards and procedures designed to ensure continuous improvement in the educational product, as well as in the processes and activities through which such standards are achieved. TQM provides integrated tools and methods that help educational organizations achieve satisfactory results **(Tarkawi, 2017, pp. 102–104).**

The successes achieved by TQM during the last two decades of the 20th century in the industrial and commercial sectors strongly attracted the attention of educators, university leaders, and researchers to the importance of adopting this modern approach. From there began the idea of transferring this model from its industrial roots and applying it in the field of education, particularly in higher education.

To enable universities to keep pace with rapid developments, the TQM system should be applied in higher education to ensure outputs capable of leading sustainable community development, given the close relationship between universities and development in all sectors of society. Thus, adopting TQM at the university level fosters a sense of belonging to the work environment and increases awareness of TQM across all departments and divisions of the university **(Tarkawi, 2017, pp. 157–159).**

The TQM system in higher education institutions includes several principles that must be adhered to for successful implementation. These principles can be represented hierarchically, as mentioned by Trabelsia, with management commitment forming the base. Each point of the pyramid represents one of the principles: Focus on students and staff. Emphasis on continuous improvement. Active participation. Reliance on facts.

The following figure illustrates the principles of TQM in the field of higher education.

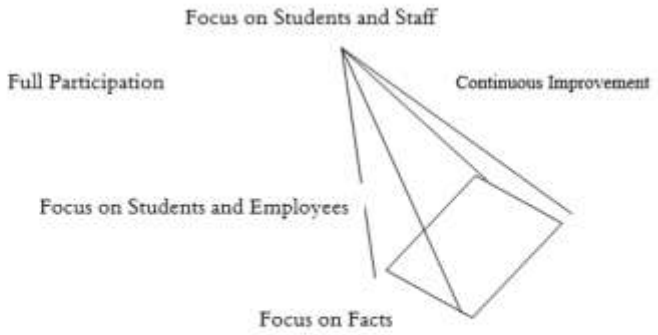

Figure (03): Principles of Total Quality Management in Higher Education according to Trabelsia (2003), cited in Tarkawi (2017).

According to Tarkawi (2017, p. 160), it has been noted that there is no effective mechanism for evaluating university education. In this regard, Al-Bouhi et al. argue that the evaluation of higher education worldwide has become an integral part of the educational process and a fundamental requirement imposed by all global academic accreditation bodies. The domains of TQM in educational institutions extend to cover all inputs, processes, and outputs of the educational system. The main areas addressed by quality control in education include the quality of educational administration, academic programs, regulations and legislation, school buildings and their equipment, students' achievement levels, teaching methods and textbooks, adequacy of financial resources, competence of teaching and administrative staff, and the quality of performance evaluation **(Al-Bouhi et al., 2018, pp. 16–17).**

TQM also requires universities to treat students as clients, engaging them in self-learning processes and continuously seeking their feedback to achieve customer satisfaction. It also changes relationships among faculty, students, and administrators. Professors need to view education through the eyes of students, while students must work as a team with administrators. Furthermore, administrators must delegate part of their responsibilities and authority to faculty members **(Rumman, 2014, p. 121).**

Many higher education institutions around the world have adopted quality as a guiding principle and work methodology. Several reasons have led them in this direction, including the diversification of higher education objectives, increased demand for it, the emergence of new learning models and multiple learning environments, the variety of degrees and academic qualifications offered, and the development of new educational media. These transformations in higher education introduced unfamiliar patterns, pushing institutions to seek ways to attract "clients." They found in the concept of quality the solution, especially with the globalization of higher education and the expansion of its use and application **(Al-Bilawi et al., 2006, p. 33).**

Al-Samarrai points out that the difference between the industrial and educational sectors makes the concept of quality in education distinct in its characteristics from that in industry or commerce, despite agreement on basic principles. Certain differences are required in practice, including:

- Students are not products, except to the extent of what they have learned.
- The output of education is the teaching of students, not the students themselves.
- Diversity of beneficiaries in the educational process.

- The necessity of involving students in educating themselves.
- No opportunity exists to "recall" the product.
- The educational output has a unique nature in its formation and characteristics **(Al-Samarrai, 2007, p. 246).**

John Jay Bonstingl explained that when establishing quality schools, several points must be emphasized. TQM is a long-term commitment, requiring different ways of perceiving, thinking, and practicing. It should be considered a way of life whether at work, at home, or in society. Without such transformation, TQM becomes just another project likely to fail. Individual effort alone cannot build a TQM institution; top leadership must have the necessary human and material resources, and more importantly, a developed mindset. The path to TQM philosophy is neither easy nor straightforward in any educational organization, as there is no "magic plan" that guarantees success. External experts may assist by providing useful models and tools, but the transition must come from within the school itself. Personal trust, collaboration among colleagues, and mutual support in continuous improvement and error prevention are essential **(Rumman, 2014, p. 122).**

Moreover, many contemporary global approaches to higher education development emphasize that faculty members in higher education institutions perform multiple roles that cannot remain fixed but change according to beneficiaries' needs and the educational context, as well as the rapid transformations in both internal and external environments. Therefore, higher education institutions must give special attention to faculty members, starting with careful selection, followed by training, and ensuring continuous support to develop their scientific and professional skills even after earning their doctoral degree **(Al-Salatin, 2014, p. 243).**

4. Obstacles to the Application of Total Quality Management (TQM) Principles and Quality Circles in Education

Richard Furman argues that applying quality principles to the educational process is often difficult. He views education as quality reflected in what the learner experiences (learning) and what has been learned (outcomes). While the results can be monitored, it is far more difficult to monitor the process itself.

Lloyd Dobbins and Keller Masson warn that one of the most significant obstacles to TQM is the replication of the program. They state: "The TQM program can indeed be introduced in schools across the country, but a successful quality system cannot be copied twice, nor can its materials be imitated. Our culture, tastes, and inputs differ from theirs, and those who advocate simulation models and impose them on their own systems are bound to fail" **(Dobbins & Masson, 1997, pp. 162–163).**

Some scholars argue that the very concept of quality lacks consensus among experts, and the standards for judging quality are neither definitive nor absolute. Most criteria focus on quantitative indicators, whereas education involves interactions and elements that are difficult to quantify, measure, or standardize **(Rumman, 2014, p. 151).**

A key requirement for the success of TQM is the support of top management, as the decision to implement TQM is a strategic one that implies a comprehensive transformation in management style and organizational culture. This requires attention to both horizontal and vertical management, lateral communication between departments, and vertical communication throughout the institution **(Rumman, 2014, p. 88).**

Markland and others identified several obstacles, including:

- Failure of top management to clarify its commitments regarding what this approach requires.
- The misconception that this approach will be a cure-all for the organization's problems.

Mustafa (2005), cited in Tarkawi (2017), added further obstacles:

- The absence of an effective organizational culture that incorporates the philosophy of TQM.
- Managers' limited understanding of the TQM system and thus their failure to recognize the benefits of its implementation.
- Lack of team spirit, especially since continuous improvement can only be achieved through motivated teamwork.
- The dominance of person-centered culture instead of system-centered culture.
- Insufficient training of individuals in the use of TQM tools.

Dale (1997), also cited in Tarkawi (2017), pointed to additional causes for the failure to adopt TQM, such as:

- Fear of change.
- Leadership that is not committed to directives.

Al-Saeed and Al-Ridha, cited in Tarkawi (2017), also highlighted five major obstacles to TQM implementation in the educational sector:

- Lack of trained and qualified staff in TQM within the educational sector.
- The absence of an advanced information system compatible with modern technologies.
- The persistence of traditional cultural and social legacies resistant to change and development.
- Centralization in educational decision-making.
- Weak financial support **(Tarkawi, 2017, pp. 146–147).**

Additionally, Schouerman and Peachy (1994) and Chaffee and Sherr (1992) described some obstacles facing the implementation of TQM in the classroom, including:

- Threats to academic freedom.
- Disparities in rewards between the traditional education system and the TQM system **(Rumman, 2014, p. 151).**

5. Some Models of Quality Application in Higher Education

Several educators in the United States and the United Kingdom attempted to apply Deming's principles in education to improve the management of educational institutions and student performance standards, after adapting them to the culture of the educational system. This approach was called the Fundamentals of Quality in Education and included the following elements:

- Adopting the philosophy of Total Quality Management, since education exists in a globally competitive environment, and educational systems must face challenges in order to compete in the global economy.

- Working to improve student performance and the quality of educational services.
- Innovating new methods to reduce the cost of education.
- Sharing responsibility among faculty, administrators, students, parents, and others, encouraging them to speak freely and work without fear to improve performance levels.
- Providing faculty and administrators with the necessary tools and methods.
- Developing a culture of quality within educational institutions and a willingness to innovate both quantitatively and qualitatively at all administrative levels.
- Removing barriers that deprive students, faculty, and administrators of their rights, which in turn hinders them from performing their work effectively.

Several TQM models have been applied in education, the most important of which are **(Rumman, 2014, pp. 171–172):**

5.1. The Wheel Model

This model consists of:

- Daily management practices.
- Strategic planning.
- Integrated management of project functions.

The following figure illustrates the administrative model:

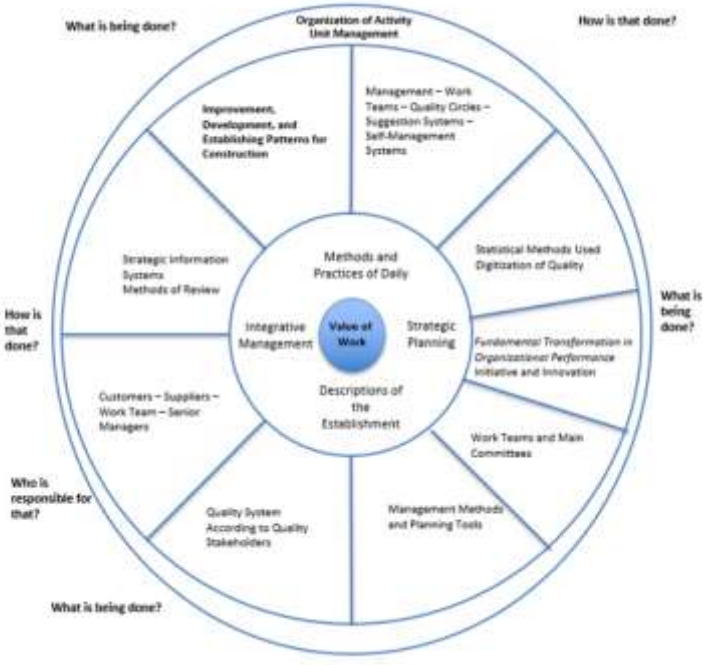

Figure (04): The Wheel Model of Quality (Rumman, 2014, pp. 152–153)

2.5. Deming's Model

Deming was an American consultant with a Ph.D. in mathematics and physics. The Japanese acknowledged his contribution to quality, prompting the Japanese government to establish an

award in his name in recognition of his role in this field. In his model, Deming emphasized several important aspects of management, summarized in fourteen principles, which serve as a general framework for top management to achieve quality. Organizations can use these principles to design their own quality model. His central motto was: "The human element in work is the foundation and focus of attention." Deming developed an organizational system that fosters cooperation and facilitates the application of practices across all management processes. This system led to continuous improvement in all organizational processes and activities. Deming stressed the responsibilities of top management in driving change, whether in operations or in the system itself **(Tarkawi, 2017, p. 116).**

Deming believed that traditional management could not achieve the best results from any system because it treated each process competitively and pushed every part to perform individually at its best. Modern approaches, however, require that each process be managed to ensure the system as a whole performs optimally. He argued that it is not true that if every part performs better, the whole system will necessarily perform better. He illustrated this with the analogy of an orchestra, where if every musician tries only to outshine others individually, the orchestra as a whole would fail to perform harmoniously. For Deming, the issue is not how each process works separately, but how all processes work together. What is required is a change in thinking **(Al-Qaisi, 2011, p. 61).**

Deming proposed a comprehensive program made up of fourteen principles to be relied upon in improving quality:

1. Create constancy of purpose toward improving products and services, with top management assuming responsibility.
2. Adopt a new philosophy and communicate it across the institution.
3. Reduce reliance on inspection by using comprehensive control systems as the foundation for improving quality.
4. Stop using evaluation policies based on quantity alone; instead, emphasize evaluation based on achieved quality.
5. Ensure continuous improvement in the production of goods and services, particularly through operational performance and statistical methods.
6. Integrate modern methods by relying on up-to-date training and education in the workplace, while adopting alternative leadership styles.
7. Align supervision and management by enabling supervisors to work directly with employees to improve performance.
8. Eliminate fear among employees, ensuring their activities focus on identifying performance problems and reporting them consistently without hesitation.
9. Break down barriers between departments by fostering teamwork and interactive collaboration to achieve high quality.
10. Reduce slogans and avoid ineffective statements that fail to achieve core improvement goals.
11. Minimize individual performance requirements, promoting teamwork through collaborative workgroups instead.

12. Remove communication barriers, including those between top management and employees, and avoid annual appraisal systems.
13. Establish developmental programs that emphasize continuous training and skills development for individuals.
14. Encourage employees to continually improve performance by adopting new developmental policies to replace outdated ones **(Tarkawi, 2017, pp. 116–117).**

Years later, Deming presented another list, known as the "Seven Deadly Diseases", which organizations must always beware of:

1. Lack of constancy in setting improvement goals, and vague objectives.
2. Emphasis on short-term profits.
3. Focus on numerical performance appraisals.
4. Frequent changes in administrative leadership.
5. Management based solely on figures.
6. Failure to build quality into processes from the very first step.
7. Excessive warranty costs.

Thus, Deming's principles and model became suitable for application in the education sector, and they have been adapted in many American universities. While the implementation of this model and others in educational institutions is still in its early stages, it has begun to attract the attention of most institutions, particularly those in the field of education **(Tarkawi, 2017, p. 118).**

Based on Deming's proposals, the main pillars of education can be linked to the Deming Cycle, which can be applied to all processes. The model (Plan, Do, Check, Act — PDCA) can be summarized as follows:

1. **Plan**: Set objectives and establish the processes necessary to achieve results in accordance with customer needs and organizational policy.
2. **Do**: Implement the processes.
3. **Check**: Monitor and measure processes and products against policies, objectives, and requirements; document the results in the form of a report.
4. **Act**: Take actions to ensure continuous improvement of process performance.

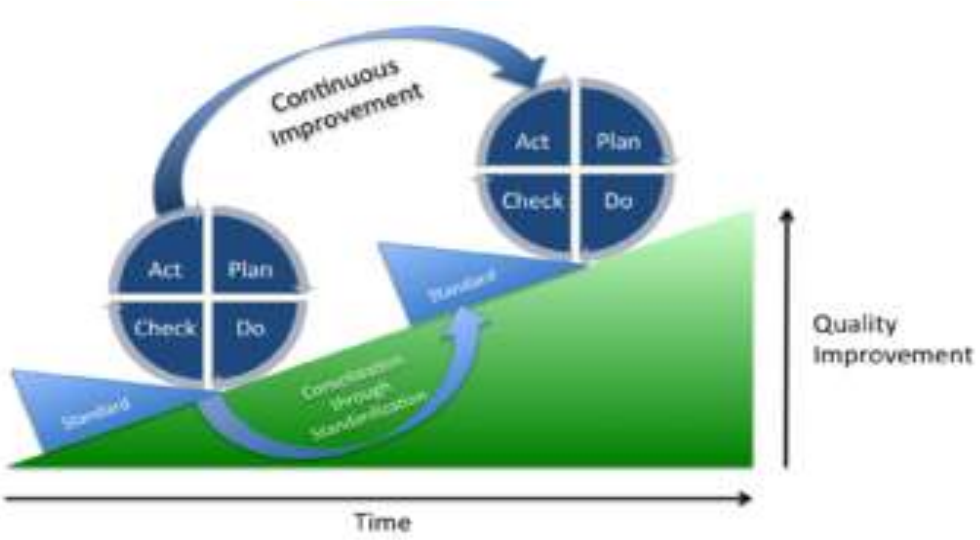

Figure (05): Deming Cycle (Hafedh & Abbas, 2015, pp. 79–80)

3.5. The European Excellence Model for Quality Management

In this model, the following criteria for Total Quality were established:

1. **Student Satisfaction Criteria**: measuring students' satisfaction with the educational service compared to what was announced and agreed upon.
2. **Employee Satisfaction Criteria**: assessing staff satisfaction and understanding their perceptions of services, top management, and available resources.
3. **Impact Criteria**: evaluating the effect of higher education on society and the surrounding environment.
4. **Effectiveness Criteria**: measuring the relationship between results and the proposed plans **(Rumman, 2014, p. 177).**

Rumman emphasizes that one of the most essential requirements for the success of TQM is the support, endorsement, and commitment of top management. The decision to implement TQM is a strategic one taken by senior leadership, representing a comprehensive transformation in management style and organizational culture. It requires attention to both horizontal and vertical management, as well as to lateral communication between departments and vertical communication across the institution as a whole **(Rumman, 2014, p. 88).**

The importance of applying TQM necessitates a solid foundation within all organizational, administrative, and social structures inside and outside the institution, in order to provide an environment conducive to its application. How could an administrative concept succeed if management ignores its importance? Therefore, top management must be fully convinced of the significance of this concept and place quality at the forefront of its strategies. This also requires leaders capable of directing individuals toward achieving their shared visions. The application of TQM thus demands five essential stages:

- The stage of institutional conviction and adoption of the TQM philosophy.
- The planning stage.
- The evaluation stage.

- The implementation stage.
- The stage of exchanging and disseminating experiences **(Al-Musahli et al., 2015, p. 114).**

6. Conclusions

The study reached the following results:

- ✓ There is a significant importance to applying the flowchart method in universities.
- ✓ Numerous obstacles hinder the application of TQM, the most important of which are bureaucracy, centralization, weak training, and the lack of incentives in higher education.
- ✓ There exist distinguished international models from which it would be beneficial to inspire an Algerian model of Total Quality.

7. Recommendations

We believe that expanding communication channels between administration, faculty, and students to create a suitable learning environment, along with adopting adequate incentive systems, are among the most crucial proposals for raising the quality of performance in higher education institutions.

Additionally:

- Apply the flowchart method prior to implementing TQM principles.
- Adopt TQM specifications and standards in universities.
- Establish standards for measuring both functional and teaching performance.
- Ensure political will for adopting TQM principles, aligned with Arab-Islamic values.
- Establish specialized TQM units at institutes, faculties, and universities capable of applying, executing, and evaluating administrative and teaching processes.
- Provide annual rewards from university administrations to institutes and faculties that demonstrate compliance with TQM standards.
- Engage in continuous training for members implementing the flowchart method, ensuring constant integration of modern improvement techniques.
- Promote a culture of the flowchart method in higher education across all administrative and academic levels.
- Require higher education institutions to prepare periodic reports on quality improvement and developments within these institutions.
- Offer training courses for both lecturers and administrators to familiarize them with the application of the flowchart method in higher education, in accordance with international standards.
- Ensure exposure to and utilization of global experiences in higher education institutions applying TQM, and benefit from their expertise.
- Provide all necessary financial and material resources adequately to achieve quality objectives.

- Open channels for experts and qualified individuals to express their opinions, participate in decision-making, and contribute to adopting and spreading the culture of Total Quality Management.

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