

**GABRIELA-LIVIA CURPĂNARU**  
**(COORDONATOR)**

*Management, Leadership și Calitate.*  
*Modele de evaluare și asigurarea a calității în educație*  
*- perspective contemporane*

*(Management, Leadership and Quality.*  
*Models of evaluation and quality assurance in*  
*education - contemporary perspectives)*



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*„Fiicei mele Teodora-Valeria,  
care m-a învățat că a crea înseamnă a iubi,  
iar a iubi înseamnă a fi.”*

## INTRODUCERE

Managementul calității în educație reprezintă una dintre temele centrale ale dezvoltării sistemelor educaționale contemporane, constituind totodată un domeniu de cercetare aflat într-o continuă expansiune și redefinire conceptuală. Prezenta lucrare colectivă, își propune să ofere o perspectivă integrată asupra unor modele de evaluare și asigurare a calității în educație, valorificând atât fundamentele teoretice consacrate ale domeniului, cât și abordările inovatoare impuse de transformările recente ale mediului educațional.

Contextul în care apare această carte este marcat de provocări fără precedent pentru sistemele de învățământ la nivel global. Digitalizarea accelerată a proceselor educaționale, trecerea la modalități hibride și online de predare-învățare-evaluare, precum și necesitatea adaptării continue la cerințele unei societăți bazate pe cunoaștere au redefinit parametrii prin care înțelegem și măsurăm calitatea în educație. În acest peisaj dinamic, managementul calității nu mai poate fi conceput ca un simplu set de proceduri administrative sau ca o conformare formală la standarde prestabilite, ci devine un proces strategic, integrator și orientat spre excelență organizațională.

Fundamentul teoretic al lucrării se construiește pe pilonii conceptuali ai managementului calității totale (TQM), ai modelelor de excelență organizațională precum EFQM și Baldrige, precum și ai instrumentelor moderne de management al performanței, în special Balanced Scorecard. Aceste cadre teoretice, dezvoltate inițial în sectorul industrial și de afaceri, și-au demonstrat aplicabilitatea și relevanța în domeniul educațional, fiind adaptate pentru a răspunde specificului instituțiilor de învățământ preuniversitar și universitar.

Contribuțiile reunite în acest volum abordează managementul calității din multiple perspective complementare. O primă direcție de analiză vizează fundamentele conceptuale ale calității în educație, explorând evoluția istorică a conceptului de la simple inspecții și control al calității, prin asigurarea calității, până la paradigma contemporană a managementului calității totale.

Această evoluție reflectă o schimbare profundă de filosofie: de la o abordare reactivă, centrată pe detectarea și corectarea deficiențelor, la una proactivă, orientată spre îmbunătățirea continuă și satisfacerea nevoilor tuturor părților interesate.

O a doua direcție tematică se concentrează pe modelele și instrumentele de evaluare și asigurare a calității. Lucrarea analizează în profunzime modelul EFQM, cu logica sa RADAR (Results, Approach, Deployment, Assessment and Review), metodologia Six Sigma cu procesele DMAIC și DMADV, precum și Balanced Scorecard ca instrument de management strategic al performanței. Fiecare dintre aceste modele este examinat atât din perspectiva cadrului teoretic general, cât și a modalităților concrete de implementare în instituțiile educaționale.

A treia direcție de cercetare abordează dimensiunea leadership-ului în contextul managementului calității. Literatura de specialitate a evidențiat în mod constant rolul crucial al competențelor de leadership ale managerilor școlari în implementarea cu succes a sistemelor de management al calității. Lucrarea explorează relația dintre management și leadership, argumentând că eficiența organizațională depinde de capacitatea liderilor de a articula o viziune clară, de a mobiliza resursele și de a crea o cultură organizațională orientată spre calitate și îmbunătățire continuă.

O contribuție distinctivă a volumului o constituie abordarea managementului calității în contextul educației online și al învățării hibride. Pandemia COVID-19 a accelerat dramatic trecerea la modalități digitale de educație, generând provocări specifice pentru asigurarea și evaluarea calității. Autorii propun un model integrat care ia în considerare atât factorii interni ai sistemului educational, relația student-profesor-curriculum, cât și influențele externe exercitate de societate, familie și cerințele pieței muncii, toate mediate de tehnologiile digitale.

Din punct de vedere metodologic, lucrarea îmbină analiza teoretică cu cercetarea empirică. Studiile prezentate utilizează o varietate de metode de cercetare, de la analiza sistematică a literaturii de specialitate la anchete pe bază de chestionar, interviuri semi-structurate și studii de caz. O contribuție notabilă în acest sens o reprezintă elaborarea și validarea unui instrument de măsurare a atitudinii cadrelor didactice față de managementul calității în educație, instrument care integrează și dimensiunea educației online.

Relevanța practică a volumului este evidențiată prin studiile de caz care ilustrează implementarea concretă a modelelor teoretice în instituții educaționale românești. Aplicarea metodologiei Balanced Scorecard într-un liceu economic demonstrează potențialul acestui instrument de a conecta planificarea strategică cu operațiunile curente, de a alinia activitățile cu obiectivele organizaționale și de a facilita monitorizarea continuă a performanței.

Lucrarea se adresează unui public divers: cercetători în domeniul științelor educației și al managementului, cadre didactice și manageri școlari, decidenți în politicile educaționale, studenți și doctoranzi interesați de problematica calității în educație. Abordarea accesibilă, dar riguros fundamentată științific, face ca volumul să fie util atât pentru înțelegerea teoretică a domeniului, cât și pentru aplicarea practică a instrumentelor de management al calității.

Structura lucrării reflectă logica internă a demersului științific. După clarificările conceptuale introductive, sunt prezentate principalele modele de management al calității cu relevanță pentru educație. Urmează analiza dimensiunii leadership-ului și a factorilor care influențează eficiența managementului calității. Secțiunile dedicate educației online și instrumentelor de măsurare aduc contribuții originale, adaptate provocărilor actuale. Studiile de caz și aplicațiile practice încheie volumul, oferind exemple concrete de implementare.

În concluzie, prezenta lucrare reprezintă o contribuție valoroasă la literatura de specialitate din România, oferind o sinteză actualizată și comprehensivă a managementului calității în educație. Într-un moment în care sistemele educaționale se confruntă cu nevoia imperativă de a-și demonstra eficiența și de a răspunde unor așteptări din ce în ce mai diverse și mai exigente, înțelegerea profundă a mecanismelor de asigurare și îmbunătățire a calității devine o competență esențială pentru toți actorii implicați în procesul educațional. Sperăm că această carte va contribui la dezvoltarea unei culturi a calității în instituțiile de învățământ românești și va stimula noi cercetări în acest domeniu vital pentru viitorul societății noastre.

# EFQM Excellence Model – European Foundation for Quality Management

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## ABSTRACT

The EFQM Excellence model allows an integrative approach to quality management, which includes all key aspects, such as: results obtained, customer orientation, information management, employee satisfaction. The major benefit, as presented by the most successful European managers, is the same model of Excellence EFQM allows them to gain advantages by quickly introducing innovations in practice, which is actually a competitive advantage.

**Keywords:** *Quality, Performance, Excellence, Self-Assessment process, EFQM Excellence Model.*

## 1. INTRODUCTION

The EFQM model is a tool to perform a complete, systematic and permanent examination of the activities and results obtained, by comparing it with a performance model called the self-assessment model.

The EFQM model is based on the principle that customer satisfaction, staff satisfaction and integration into the life of the community are achieved through leadership, policy and strategy, staff management, resources and processes. All this ultimately leads to excellent operational results.

The model includes several related elements. Thus, the results obtained must be considered: (1) customer satisfaction (what the organization achieves in terms of external customer satisfaction), (2) satisfaction of people (staff), (3) impact on society (meeting the needs and expectations of the local community, national and international in general).

A decisive role in obtaining these results is played by the management, the executive team and the other leaders, who drive the company's policy and strategy, human resources management and the way in which the company manages resources efficiently.

## 2. EFQM EXCELLENCE MODEL - EUROPEAN FOUNDATION FOR QUALITY MANAGEMENT)

### 2.1. EFQM, Model of Excellence

Organizational Excellence is measured by the organization's ability to achieve and maintain exceptional results simultaneously for all stakeholders. Recognizing these constraints, the EFQM Model was created in 1991 to promote an approach that would lead to the emergence and maintenance of exceptional performance by organizations. The enhanced version of the EFQM Model of Excellence was launched in Geneva on April 21, 1999.

The revised model is based on the initial approach, which ensures continuity, but has increased added value by incorporating new concepts.

The EFQM Excellence Model offers not only the advantages of a proven strategy in practice for quality management, directly relevant to the European economic context.

In addition, the Model is pragmatic and results-oriented. Also, the flexibility of the Model allows it to be applied with equal success by both large and small and medium organizations. The EFQM Excellence Model is recognized as one of the least expensive methods of improving performance, since the model is applied and monitored through the Self-Assessment process, which minimizes external costs. In the new version, the EFQM Model of Excellence incorporates criteria that were

imposed in the general attention at the turn of the 21st century.

The revised model requires an increased focus on key concepts, such as partnership and information management. It also places greater emphasis on customer and employee satisfaction. More than ever, the EFQM Excellence Model provides a useful operational tool for achieving Excellence in performance and results.

The new version has been designed so that the Model of Excellence is:

- simple (easy to understand and use);
- holistic (includes all the activities and results of an organization, without being exaggerated by the norm);
- dynamic (an active managerial tool useful for improvement, oriented towards future development);
- flexible (quickly applicable to different types of organizations and their units);
- innovative.

## ***2.2. The New EFQM Model of Excellence***

The analysis of the Model is an important point in its development, involving the broad participation of managers who have used their experience and interest in Excellence in order to evolve and test the fundamental ideas of the Model. The New EFQM Model of Excellence is based on the same Fundamental Concepts as the current Model.

The EFQM Excellence model contains 9 criteria and 32 sub-criteria. The five criteria on the left are called "Determinants" and refer to how the organization conducts its various activities. The four criteria on the right take into account the results obtained by the organization, corresponding to the different stakeholders.

The improved version focuses mainly on:

- more attention paid to the client, as well as to other stakeholders, whose importance has steadily increased since the 1990s, becoming the organization's partners;
- increased visibility of the value chain, including the growing role of partnerships within this chain;
- emphasis on the importance of information management within organizations, the organizational culture of learning and innovation, as factors for increasing competitiveness;
- concern for aligning all activities with the expected results and, consequently, adapting the organization's policy and strategy accordingly.

## ***2.3. The Model that will Lead to Excellence in the New Millennium***

Fundamental Principles:

1. Cost effectiveness;
2. Results orientation;
3. Customer orientation;
4. Partnerships;
5. Information Management;
6. Performances;
7. Learning.

Determinants influence the results obtained, and can be improved based on the feedback suggested by the results. The model starts from the premise that the key performance results of the company, the results of human resources, the results at the level of customers, respectively at the level of society, are obtained through the leadership capacity that guides the organization's strategy. and partnerships, and processes, products and services.

The EFQM model of excellence can be used as a management model to define the points towards which an organization's capabilities and performance aspire, but it can also be used as an evaluation tool, providing an image of the company's performance compared to other similar companies. The EQFM model presented includes nine criteria. Five of these are Determinants, which illustrate what and how the organization does, and the other four criteria refer to Results and describe the performance obtained.

## **3. RADAR AND THE EFQM MODEL OF EXCELLENCE**

The EFQM Excellence Model was launched in 1991 and is currently the most successful European model for quality in business. A review of the model has recently taken place, involving consultations with hundreds of organizations across Europe. The results of this analysis were officially announced on 21 April 1999 at the EFQM Forum in Geneva.

### ***3.1. RADAR - a Tool for Exceptional Performance***

At the beginning of the new Millennium, EFQM introduces a new key concept for improving the Model of Excellence: RADAR. RADAR is the essence of the Model, measuring the success of efforts to improve performance. The fundamental criteria of this concept are: Results, Approach, Deployment, Assessment and Review.

RADAR considers that an organization must:

- Establish the Results you want to achieve in the process of developing your own policy and strategies. The results refer to the performance of the organization, both financial and operational, and the perception of all stakeholders;

- Plan and develop an integrated set of robust Approaches to make it possible to achieve predetermined results;

- Deploy approaches in a systematic way at all levels of the organization;

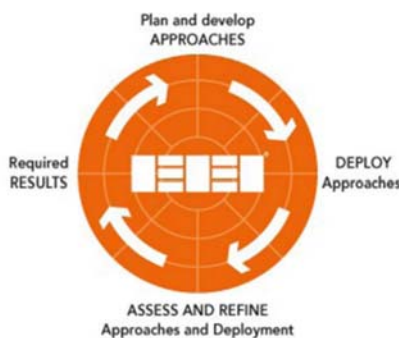
- Assess and Review the approaches implemented by monitoring and analyzing the results obtained, as a result of the continuous learning process of the activities carried out. Based on evaluations, organizations need to identify, prioritize, plan and implement improvements deemed necessary. Improving the EFQM Model of Excellence has included these basic concepts.

**3.2. The Role of SELF-EVALUATION**

Successful implementation of the EFQM Model of Excellence requires a significant degree of commitment from and acceptance of TQM principles. The RADAR concept involves a process of self-assessment in well-defined areas of organizational and operational management. For each area, companies are encouraged to allocate appropriate weights to their own priorities.

**3.3. The RADAR Instrument**

RADAR means much more than a theoretical management model. RADAR tool for identifying and monitoring the performance score. The RADAR tool is the basis for evaluation and provides internal reference data that allow top management to develop a successful strategy.



**Figure 1** The RADAR Logic

**4. CONCLUSION**

Using the Model of the European Foundation for Quality Management (EFQM) focusing on "customer results", the positive aspects and continuous quality improvement were identified and analyzed through the RADAR logic. In fact, quality management models are used based on the formulation of strategies for obtaining

customer satisfaction by reporting quality to performance indicators.

**AUTHORS' CONTRIBUTIONS**

The self-assessment process can also be applied in educational institutions, offering them the opportunity to discover their strengths and areas for improvement in order to access excellence.

Through the dynamic nature of the model, which shows that learning, creativity and innovation contribute to improving the determinants of performance, which will lead to higher performance results, implicitly in educational institutions.

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# Systematic Literature Review in the Field of Education Quality Management

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## -----ABSTRACT-----

*The objective of this study is to systematically review the literature in the field of quality management in education. By systematically analysing the specialized literature, the studies from the period between 2013-2021, based on the investigation of the characteristic aspects of the education quality management, have been identified. The results of this systematic analysis have led to the highlighting of two conclusions. The studies are based on the total quality management model. Depending on the research method used, it has been found that the predominant studies are quantitative, questionnaire-based. All the research results presented lead to conclusions in favour of a quality-focused organizational culture.*

**KEYWORDS:** Literature Review, Education, Quality Management, Total Quality Management, Model

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## I. INTRODUCTION

### 1.1. Studies in the field of education quality management

Some studies were conducted nationwide (Iancu, 2013; Ivana, 2015; Popovici, 2019; Poruțiu, 2015), but most of them were carried out internationally (Asif, Awan, Khan, Ahmad, 2013; Avila, 2018; Crissien-Borrero, Velásquez-Rodríguez, Neira-Rodado, Turizo-Martínez, 2019; Díez, Iraurgi, Villa, 2018; Díez, Villa, López, Iraurgi, 2020; Ejjonueme & Oyoyo, 2015; Elahi & Ilyas, 2019; Hasan, Islam, Shams, Gupta, 2018; Karageorgos, Patsiaouras, Kokaridas, Kriemadis, Travlos, 2017; Karahan & Mete, 2014; Kigozi, 2019; Kistiani & Permana, 2020; Martin & Parikh, 2017; Mashagba, 2014; Menezes, Martins, Oliveira, 2018; Nasim, Sikander, Tian, 2019; Olmos-Gómez, Luque Suárez, Ferrara, Olmedo-Moreno, 2020; Seyfried & Pohlenz, 2018; Shahmohammadi, 2018; Sohel-Uz-Zaman & Anjalin, 2016; Taahyadin & Daud, 2018; Tight, 2020; Vykydal, Folta, Nenadál, 2020).

The study proposed by Asif, Awan, Khan, Ahmad (2013) helped identifying the success factors of total quality management in Pakistani universities. The researchers developed a questionnaire, which was applied to higher education teaching staff. The research data helped determining the success factors of total quality management in academia: leadership, vision, measurement and analysis, process control and evaluation, programme design, as well as resource allocation and the interested parties' concentration.

Iancu (2013) conducted a research focused on Romanian primary and secondary education. The research aimed at understanding, examining, explaining and optimizing the phenomenon in school management as well as improving intervention techniques, increasing quality and performance in the management process. The research methodology was mixed, by combining qualitative exploratory methods and quantitative methods. A questionnaire was applied to teachers and school managers in selected schools in the eight development regions of Romania. The research results highlighted some suggestions for improving quality in school management, with an emphasis on discovering ways to achieve quality in education and performance in management.

The general objective of the study proposed by Karahan and Mete (2014) aimed at determining and evaluating quality management of higher education institutions based on student feedback. The authors developed a questionnaire based on the specialized literature review. The questionnaire was applied to 243 students from a university in Turkey. The research results indicated that some aspects related to quality management were positively assessed by students (content of education and training, quality of technological resources), while other aspects were negatively assessed (canteen services, cultural and social activities).

Many studies are focused on investigating the effectiveness of the total quality management model. Mashagba (2014) aimed to identify the impact of total quality management on academic performance in universities. The level of performance was measured by the level of knowledge about the application of the total quality management principles in the University of Jordan. A questionnaire was applied to 120 members of the

university. The research results showed that the decisions taken by the board of directors had an effect on the academic performance at the University of Jordan.

Ejionueme and Oyoyo (2015) conducted a study to investigate how the total quality management was applied by the schoolboard of the Umuahia middle/lower secondary school. 358 respondents took part in the study: 53 principals, 53 deputy principals and 252 teachers. The research method used to investigate the application of total quality management in the administration of the middle school was the questionnaire. The research results showed that the middle school management applied the principles of total quality management related to total commitment and teamwork.

The research conducted by Ivana (2015) is based on the model of the European Foundation for Quality Management (EFQM), focusing on "customer results". By means of the RADAR logic, the research identified and analysed the positive and quality improvement aspects within the study programme under analysis. The research data illustrated differences between the perception of the graduated study programme quality and the specific and transversal skills development. The graduates' perception of the education quality is conditioned by how the higher education institution meets their expectations regarding its ability to provide educational and social services. The quality management model developed could help universities to establish a customer-oriented strategy, which is necessary given the existing competition among universities, the academic service internationalization and the increasing customer requirements.

The study proposed by Poruțiu (2015) aimed to identify the main characteristic aspects of higher education quality by highlighting specific performance indicators. Questionnaires were given to candidates enrolled at the faculties of the University of Agricultural Sciences and Veterinary Medicine in Cluj-Napoca. The research results indicated areas where the quality management needed improvements.

An example of a study based on the use of the qualitative methodology is the one initiated by Sohel-Uz-Zaman and Ankalin (2016). The main objective of the research consisted in assessing the compatibility between the total quality management and education. Another objective addressed the identification of the benefits brought by adopting this model in education, as well as the difficulties which may impeach its implementation. Interviews with education experts were carried out. The results determined the emphasis put on the benefits of adopting the total quality management: the uninterrupted improvement of the management system, the integration of people, functions and resources, the systematic and structured approach, the quality assessment of every organization in every step of its implementation, the development of individual and organizational capacity, the efficient use of resources, the customer's satisfaction, the creation of a quality culture.

The research carried out by Karageorgos, Patsiaouras, Kokaridas, Kriemadis, Travlos (2017) had the purpose of elaborating and validating a questionnaire which analysed the total quality management applied in the Greek primary education. One hundred twelve primary school teachers participated in the study, out of which 55 were male and 57 female. The factor analysis determined the grouping of the 43 items according to five domains: teacher satisfaction, school management and functioning, motivation, effectiveness of public-school management and financial management. The results of the research highlighted the fact that the primary school teachers' satisfaction in relation with their work environment depends directly on the motivation offered by the school management to develop their abilities, as well as on their perception on the effectiveness of the management and functioning on every level. The questionnaire can be used in future studies, on larger samples, so as to explore the application of total quality management in educational milieus. Moreover, this instrument can be useful in identifying the factors which determine the quality of education.

The UNESCO International Institute for Educational Planning (Martin and Parikh, 2017) launched an international comparative research project in 2014, dealing with the internal quality assurance in higher education. The research objectives aimed at identifying the determinant factors and obstacles interfering with the implementation of quality management, as well as illustrating the innovative practices and principles, with the purpose of highlighting the internal and external factors which condition the efficient functioning of the quality management in the academic environment. Case studies were carried out in eight universities with the purpose of providing information, by the decision makers and quality managers, related to the ways of improving the development and implementation of quality management in higher education institutions.

In the study initiated by Avila (2018), the evaluation approached the total quality management practices of the school administrators related to the curriculum and teaching, human resources, physical facilities, budget management and research. Another objective of the study consisted in determining the relation between the evaluation of the total quality management practices of the school administrators and the school performance. The study was implemented in certain education institutions from the province of Quezon, in relation with the first semester school performance. One hundred thirty-two teachers and 37 school administrators from both private and public colleges participated in the study. The evaluation criteria addressed school results, rates of enrollment, rates of school drop-out, of stagnation and of graduation, as well as the prizes won. The study was based on Deming's theory on total quality management, as a consequence of certain

customer-based job-oriented quality methodologies. The author started from the idea that the research oriented towards the investigation of total quality management practices can bring improvements in the quality of education of the participating schools. Furthermore, such studies give information about the way the quality management could be carried out by the school administrators. With the help of their abilities, the students can be guided efficiently, a fact which facilitates the academic performance of the school institutions. The study applied descriptive research in order to describe the practices used in total quality management by the school administrators in relation with the students' academic performance. Based on the investigation of the relation between the evaluation of quality management practices and school success, an action plan can be developed so as to improve the school quality system and performance.

Díez, Iraurgi, Villa (2018) proposed an innovative study to contribute to the amelioration of the quality management systems. In this purpose, two quality models were analysed, namely the EFQM excellence model and the model of the integrated quality project. The research was carried out in 14 schools, which were analysed through a sample of 315 subjects (42 managers and 273 teachers). The schools implemented one of the two quality models. The results show that the existence of a quality model in their school determines the teachers and the managers to be more aware of the existence and importance of quality management systems and models. The awareness of the existence of quality models at the level of the school organization makes them seek a superior quality of education. The results provided by this study illustrate the fact that the perception of quality education systems is associated with the effective implementation of quality management models. The research data indicate that both the EFQM excellence model and the model of the integrated quality project have recorded high scores concerning the perception of quality among school teachers and managers. Quality is always a process of continuous improvement and, thus, of implementing models meant to assure certification for a certain time interval, and therefore requires adjustment once the period specified by the system expires. This research leads to the conclusion that the most important aspect in a quality system is that of improving school performance rather than gaining social recognition.

The study carried out by Hasan, Islam, Shams, Gupta (2018) started from the acknowledgment of the school drop-out among the primary school children in Bangladesh. The main objective of the research sought the improvement of the school environment quality so as to motivate the children to go to school and, thus, to reduce the drop-out. A quality research methodology based on focus-group and interview was designed. The participants in the study were parents, teachers, students and administrators from 12 schools from the district of Khulna. The results of the research emphasized the appropriate solutions to eliminate the obstacles interfering in the implementation of the total quality management. The following directions for solution analysis were proposed: the amelioration of teaching quality through the application of total quality management, the reduction of school drop-out in primary education, the improvement of the classroom quality management.

Menezes, Martins, Oliveira (2018) analysed the dimensions of the education management efficacy in Brazilian higher education institutions. Both university teachers and managers, as well as administrative staff participated in the study. The questionnaire was chosen as a research method. The results were obtained through modeling the structural equation in relation with the Baldrige excellence criteria. The data indicated that strategic planning and operational enterprise directly influence the efficiency of management.

The purpose of the study conducted by Seyfried and Pohlenz (2018) consisted in investigating the determinant factors of efficacy for quality assurance in higher education institutions. There was a mixed research methodology, as a consequence of combining qualitative and quantitative data. A questionnaire was offered to the managers from several German universities. The questionnaire items made reference to the following subjects: the general features of the quality management department, the purpose and tasks involved in quality management, their efficacy, the procedures and activities, the resistance against quality management, the capacities and professionalism, the quality of teaching and study programmes, biographical data and institutional background. The results demonstrated that the support from the superior management of the higher education institutions, as well as the cooperation with other organizations, represent preliminary conditions for determining the efficacy of quality assurance.

Shahmohammadi (2018) initiated a specific study with the purpose of exploring the role of total quality management at the level of educational programmes for the First Grade. Three hundred twenty-four primary school teachers participated in the research. The author produced and validated a questionnaire for the investigation of the teachers' perception. The questionnaire items targeted aspects characteristic of the total quality management dimensions, as follows: support and leadership, strategic planning, student-centered learning, identification of teacher training needs, teamwork, quality measurement, quality assurance, results of quality management improvement enterprise. The research data showed that the dimensions of the total quality management influence the efficacy of the First Grade educational programmes in the city of Karaj.

Another study, conducted by Taahyadin and Daud (2018), had the objectives of identifying the quality level from the School of Kedah and determining the relation between the quality management indicators (i.e., values and duties, system, team, resources, student and staff needs). Three hundred seventy-five teachers from

the Kedah Secondary School participated in the research. The instrument consisted in a questionnaire targeting the investigation of aspects related to the total quality management. The results indicated that there is a correlation between all of the quality indicators at the level of the school organization. Together with the results, a series of pertinent solutions was obtained, aiming at improving the quality management system in secondary schools. The authors mentioned that improvements are necessary in order to create a positive school culture environment and to generate excellence. A very important role in fulfilling quality standards is played not only by the school manager, but also by the teachers. The school manager will proactively participate in every school activity. Moreover, in order to have a quality school, it is important for the teachers to understand all of the resources available in school and successfully fulfil the mission established by the school management, despite the fact that those resources are limited.

Recent studies aim at systematic analyses on research carried out in the last twenty years. Crissien-Borrero, Velásquez-Rodríguez, Neira-Rodado, Turizo-Martínez (2019) attempted to analyse education quality models from a managerial perspective. The articles were analysed according to the education level at which the methods had been implemented, and in relation with the quality factors included in each model of measurement. Following the analysis of 20 studies in the field, it was shown that 3 studies implemented forms of measurement in preschools, 2 in secondary schools, 2 in technical schools, 11 in vocational schools and 2 in other educational contexts. These data show that the investigation of the education quality measurement models is predominant in vocational education. Therefore, the studies on quality management are still in incipient phases in the case of the other types of schools.

Elahi and Ilyas (2019) explored the relation between the process approach, the customer-oriented approach and the school quality, with the purpose of improving the way of certifying the school principal's professional competence so as to develop the quality management practices in private school institutions. A questionnaire-based quantitative research was, thus, designed. The questionnaire targeted a sample of 401 private school principals. The results showed the fact that the process approach impacts significantly on the functional quality and the academic quality of the school institutions. The customer-oriented approach assures the relation between the process approach and the functional quality. Together with these results, it was found that there is a moderated relation between the level of the principal's professional certification and the process approach, functional quality and academic quality.

Kigozi (2019) investigated the challenges of successfully implementing the total quality management in the public and private primary schools from Uganda. The author carried out semi-structured interviews with 100 tutors recruited from public and private schools. The challenges identified on the basis of the analysis of the research data were the following: the lack of engagement in the management activity, the low level of management, the lack of resources, the lack of an integrated model of total quality management, the lack of cooperation between teachers, the resistance to change manifested by the teachers, the lack of an appropriate teacher training in relation with the total quality management, the ambiguity of the implementation of the model, the misconception regarding the model implementation. Another result of the research showed that there are no significant statistical differences between the private and public schools regarding the challenges that influence the implementation of the total quality management.

Nasim, Sikander, Tian (2019) used the systematic review of the education quality management literature in order to explore the achievements and limits of research concerning the implementation of total quality management in higher education and to offer future research paths. The results of the systematic review led to the authoring of several conclusions. In the first place, the studies are focused on aspects regarding teaching and learning, neglecting, however, the influence of external factors. In the next place, it was found that most of the research tackles quality management aspects which are specific to developed countries. Consequently, these aspects are insufficiently approached in the case of the higher education level in developing countries. The authors believe that it is important for future research to also tackle these limits. Moreover, it is important to adopt a more holistic approach to quality management in higher education.

The study carried out by Popovici (Pintilie) Laura-Mirela (2019) had the objective of producing a strategy model or a combination of managerial strategies through which to assure the competitive advantage and gaining of organizational performance in Romanian schools. The survey method was used to carry out this study, on the basis of a structured questionnaire. The instrument targeted 2697 teachers from 44 secondary and vocational schools from the county of Suceava. The SERVQUAL method was used to accomplish the data processing with the purpose of analysing the service quality. The research results showed that the quality levels of the SERVQUAL dimensions marked only negative scores. These data point out that, in the secondary and vocational schools from the county of Suceava, there is a low quality of the services done by the school managers, in comparison with the level of quality expected by the teachers.

Other studies (Díez, Villa, López, Iraurgi, 2020) had the objective of assessing the impact of quality management systems on the performance of education centres. An analysis was undertaken so as to evaluate 14 schools in which one of the two different quality systems had been implemented: EFQM (European Foundation

Quality Management) and the integrated quality project. Seven main factors were analysed: institutional approach, organizational structures, relationships and living together, counselling and guidance, curriculum, family and community, and the management and service component. A quantitative methodology set the foundation of the study. The results showed that two factors targeting the education policy dimensions are better assessed, namely education planning and communication. As a consequence, school managers and managing teams can focus on planning and communicating with the teaching staff, the students and their families, in order to facilitate the best possible understanding of the strategies and objectives.

The objectives of the study carried out by Kistiani and Permana (2020) consisted in identifying the means of total quality management implementation in higher education, as well as the benefits and obstacles that could interfere. The data collection techniques used in this study were observation, interview and documentation. The results indicated the existence of significant differences between groups. For instance, the students' parents and teachers were more satisfied with the aspects related to handling the higher education quality and teaching resources, as well as with the aspects referring to teaching management.

Tight (2020) concluded a systematic analysis on the research in the field of quality assurance and quality management in higher education. In the first part of the study, the evolution and significance of the terms designating quality assurance and quality management are described. The results highlight the problems that could interfere with the process of assuring and managing quality.

A complex study was done by Vykydal, Folta, Nenadál (2020) with the purpose of assessing quality in higher education in the context of sustainable development. Three special conferences were organized with representatives of over 40 higher education institutions, both public and private, from the Czech Republic. A number of 240 representatives of the higher education institutions management, such as rectors, vice-rectors, chancellors and members of the superior management participated. Semi-structured interviews with the representatives of these institutions were done, so as to investigate the opinions on the necessity of quality management implementation or related to the proposals concerning the way in which such a management system should be implemented. After this step, a field research was initiated, based on making observations in the Czech universities so as to discover the status quo of quality assurance and evaluation. The results show that there is a tight link between quality and sustainability. If the higher education institution struggles to be sustainable, it will have to remain open to all of the impulses and tendencies from the field of advanced quality management.

The objective of this research consisted in analysing the studies carried out in the field of education quality management in the last 10 years. Two research hypotheses set the fundamentals of the research.

*General hypothesis 1*

The total quality management model is frequently analysed in education studies.

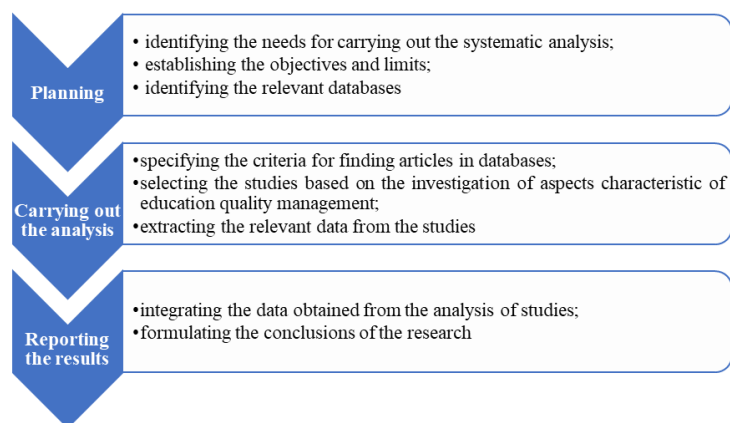
*General hypothesis 2*

In accordance with the research methodology, quantitative studies prevail in the field of education quality management.

## II. Research methodology

### 2.1. Research methods

The systematic review of the specialized literature was used. The systematic review of literature in the field of education quality management was based on three advised steps (Tranfield, Denyer, Smart, 2003): planning the analysis, carrying it out, reporting and disseminating the results. Each step required making certain specific operations (Figure 1).



**Figure 1.** The steps of carrying out the systematic review of literature in the field of education quality management

## 2.2 Research procedure

With the aid of the systematic specialized literature review, the studies based on the investigation of characteristic aspects of education quality management, from the period between 2013 and 2021, have been identified. The analysis included articles published in English and Romanian, so as to obtain relevant, up-to-date information. In order to select the best articles in the field, the following databases were reviewed: Scopus, ScienceDirect, ProQuest and Web of Science. The key words used for searching varied: “quality in education”, “education quality management”, “measuring quality in education”, “quality indicators in education”. These terms have been selected because they refer to all of the topics related to education quality management.

## III. RESULT

In Table 1., there is an analysis of the studies carried out between 2013 and 2021 in the field of quality management. The analysis criteria were: objectives, research methods, participants and results.

**Table 1.** Studies carried out in the field of education quality management in the period between 2013 and 2021

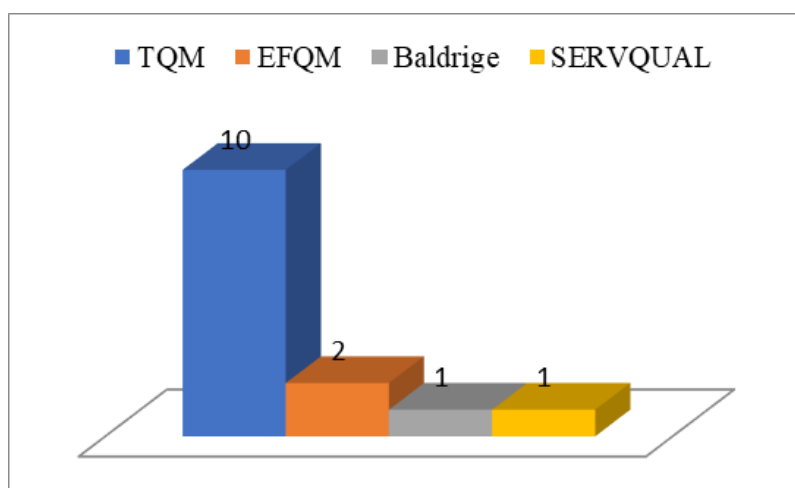
No.	Author(s)	Objectives	Research methods	Participants	Results
1.	Asif, Awan, Khan, Ahmad (2013)	To identify the success factors of the total quality management in Pakistani universities	questionnaire	Teaching staff	The success factors of total quality management are: leadership, vision, measurement and analysis, process control and evaluation, programme design, resource granting
2.	Iancu (2013)	To understand, analyse, explain and optimize the phenomenon in school management	Mixed	School teachers, school managers	Means though which quality in education and performance in management can be reached were proposed.
3.	Karahan and Mete (2014)	To determine and evaluate the quality management in a higher education institution according to the students' feedback	Questionnaire	243 students	The aspects related to the content of education and training and the quality of technological resources were positively assessed by the students
4.	Mashagba (2014)	To identify the impact of total quality management on the academic performance of universities	Questionnaire	120 members	The decisions of the board of administration impact on the academic performance in the University of Jordan
5.	Ejionueme and Oyoyo (2015)	To identify the way of implementing total quality management in the head staff of the Umuahia region middle / lower secondary schools	questionnaire	358 respondents, (53 principals, 53 vice-principals, 252 teachers)	There is a significant difference between the average evaluations of the principals, vice-principals and teachers in accordance with the degree of total quality management implementation in the head staff of the Umuahia region lower secondary school.
6.	Ivana (2015)	To analyse the positive aspects and quality improvement in the university study programmes	Questionnaire	Graduates	There are differences of perception between the quality of the graduated study programme and the development of specific and transversal competences
7.	Poruțiu (2015)	To identify the performance indicators specific to quality in higher education	Questionnaire	Candidates	The zones in which quality management improvement is necessary were identified
8.	Sohel-Uz-Zaman and Anjalin (2016)	To evaluate the compatibility between total quality management and education	interview	Experts in education	Both the benefits of adopting total quality management and the potential difficulties were identified
9.	Karageorgos, Patsiaouras, Kokaridas, Kriemadis, Travlos (2017)	To build up and validate a questionnaire seeking to analyse the total quality management in Greek primary education	questionnaire	112 primary school teachers (55 male, 57 female)	The result of the research consisted in the drawing up of a valid questionnaire seeking to analyse the aspects characteristic to total quality management
10.	Martin and Parikh (2017)	To comparatively analyse the internal quality assurance in international higher education	Case study	Decision makes and managers in the field of quality	Information concerning means of improving the development and implementation of quality management in universities was given

*Systematic Literature Review in the Field of Education Quality Management*

11.	Avila (2018)	To evaluate the total quality management practices of school administrators	Descriptive research	132 teachers, 37 school administrators	There is a correlation between the practices used in total quality management by school administrators and the students' academic performance
12.	Díez, Iraurgi, Villa (2018)	To analyse the EFQM excellence model and the integrated quality project in school organizations	Questionnaire	42 managers, 273 teachers	Both the EFQM excellence model and the integrated quality project model got high scores when it came to the teachers' and managers' perception about quality
13.	Hasan, Islam, Shams, Gupta (2018)	To improve the quality of the school environment so as to motivate primary school children to go to school	Focus group, interview	Parents, teachers, students and administrators from 12 schools from the Khulna district	The solutions found were divided into three categories: amelioration of teaching quality by applying total quality management, reduction of school drop-out, improvement of classroom quality management
14.	Menezes, Martins, Oliveira (2018)	To analyse the dimensions of the education management efficacy in higher education	Questionnaire	Teaching staff, managers, administrative staff	Strategic planning and operational enterprise directly influence the efficiency of quality management
15.	Seyfried and Pohlenz (2018)	To investigate the determining factors of efficacy to assure quality	Mixed	Higher education institution managers	The cooperation with other organizations is one of the conditions for the efficacy of quality assurance
16.	Shahmohammadi (2018)	To explore the role of total quality management in educational programmes for the First Grade	Questionnaire	324 teachers	The dimensions of total quality management influence the efficacy of the educational programmes for the First Grade
17.	Taahyadin and Daud (2018)	To determine the relation between the quality management indicators	Questionnaire	375 secondary school teachers	There is a high correlation between all of the quality indicators within the school
18.	Crissien-Borrero, Velásquez-Rodríguez, Neira-Rodado, Turizo-Martínez (2019)	To analyse the education quality models from a managerial perspective	Systematic review of specialized literature	Studies from the last 20 years	The investigation of the education quality measurement models prevails in vocational education
19.	Elahi and Ilyas (2019)	To explore the relation between the process approach, customer-oriented approach and school quality	Questionnaire	401 principals	The process approach has a significant impact on the functional quality and academic quality of the private school institutions
20.	Kigozi (2019)	To identify the challenges setting the grounds for the successful implementation of total quality management	Semi-structured interview	100 tutors	There are no significant differences between the private and public schools concerning the challenges that influence the implementation of total quality management
21.	Nasim, Sikander, Tian (2019)	To analyse the achievements and limits of research concerning the application of total quality management in higher education	Systematic review of specialized literature	Studies from the last 20 years	The studies focus on aspects targeting teaching and learning, while neglecting the influence of other external factors. Moreover, most of the research refers to quality management aspects from the advanced countries' higher education.
22.	Popovici (2019)	To draw up a managerial model in order to facilitate performance at the organizational level	Structured questionnaire	2697 teachers	The quality levels for the SERVQUAL dimensions recorded negative scores only.
23.	Díez, Villa, López, Iraurgi (2020)	To evaluate the impact of quality management systems on the performance of education institutions	Questionnaire	Principals of 15 schools	Education planning and communication were positively evaluated by the respondents
24.	Kistiani and Permana (2020)	To identify the way of implementing total quality management in higher education	Observation, interview, documentation	Experts in the field of education quality	The higher education institution can achieve the established perspective only by long-term planning and by developing and implementing annual quality plans

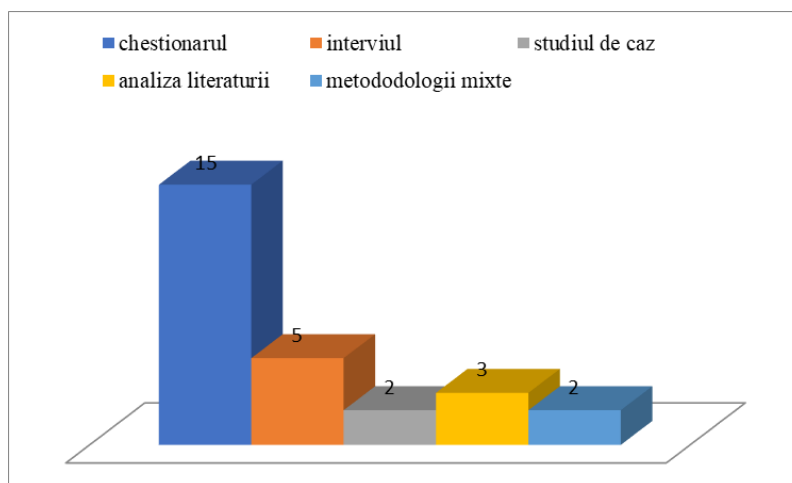
25.	Olmos-Gómez, Luque Suárez, Ferrara, Olmedo-Moreno (2020)	To measure the individual differences in the learners' satisfaction concerning the education quality with reference to sustainability	Questionnaire	1091 Italians (510 students, 121 teachers, 469 parents)	The students' parents and teachers were satisfied with the aspects regarding the quality management in higher education and didactic resources, as well as with the aspects referring to teaching management
26.	Tight (2020)	To explore research in quality management in higher education	Systematic review of specialized literature	Studies	The problems which can interfere with the process of quality assurance and management were identified
27.	Vykydal, Folta, Nenadál (2020)	To evaluate quality in higher education in the context of sustainable development	Semi-structured interview	240 representatives of higher education institution management	The results show that there is a tight link between quality and sustainable development

General hypothesis 1 is confirmed, as the total quality management model is frequently analysed in education studies. The results of the systematic review of the relevant studies have led to the finding that the model appears in 10 studies (Asif et al., 2013; Avila, 2018; Ejionueme and Oyoyo, 2015; Karageorgos et al., 2017; Kigozi, 2019; Kistiani & Permana, 2020; Mashagba, 2014; Nasim et al., 2019; Shahmohammadi, 2018; Sohel-Uz-Zaman & Anjalin, 2016). There are also studies in which other quality models are analysed: the EFQM excellence model (Ivana, 2015; Díez et al., 2018), the Baldrige excellence model (Menezes et al., 2018), the integrated quality project (Díez et al., 2018), the SERVQUAL model (Popovici, 2019). A graphic representation of the recurrence found for each model of education quality in shown in histogram 1.



**Histogram 1.** Graphic representation of the recurrence found concerning the education quality models

General hypothesis 2 is confirmed, because the quantitative studies in education quality management prevail in accordance with the applied research methodology. Most of the studies are based on questionnaires as a research method (Asif et al., 2013; Díez et al., 2018; Díez et al., 2020; Ejionueme and Oyoyo, 2015; Elahi & Ilyas, 2019; Ivana, 2015; Karageorgos et al., 2017; Karahan & Mete, 2014; Mashagba, 2014; Menezes et al., 2018; Olmos-Gómez et al., 2020; Shahmohammadi, 2018; Popovici, 2019; Poruțiu, 2015; Taahyadin & Daud, 2018). Qualitative research has also been carried out to a certain extent, based on the use of interviews (Hasan et al., 2018; Kigozi, 2019; Kistiani & Permana, 2020; Sohel-Uz-Zaman & Anjalin, 2016; Vykydal et al., 2020), case studies (Avila, 2018; Martin & Parikh, 2017). It can be observed that there are some studies focused on specialized literature review (Crissien-Borrero et al., 2019; Nasim et al., 2019; Tight, 2020). Very few studies are based on mixed research methodologies (Iancu, 2013; Seyfried & Pohlenz, 2018). Histogram 2 shows us the recurrence noticed in the research methods used in education quality management studies.



\* questionnaire; \* interview; \* case study; \* literature review; \* mixed methodologies  
**Histogram 2.** Graphic representation of the recurrence noticed in the research methods used in education quality management studies.

#### IV. CONCLUSION

The systematic review of specialized literature allows the identification of the representative topics of education quality management, of the models investigated in the last eight years, as well as the research methods used. Based on this analysis, the necessity of validating new education quality management models emerges in the case of primary and secondary education. All the results presented lead to conclusions in favour of a quality-focused organizational culture.

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## Total Quality Management – An Instrument for Improving Organizational Efficiency

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**ABSTRACT :** The purpose of this paper is to analyze the characteristic elements of total quality management (TQM). TQM represents an integrated effort meant to improve the quality of each level of the organization. The historical evolution of the total quality management comprises four steps: quality inspections, quality control, quality assurance and, finally, the TQM process itself. Quality is obvious in human actions. During the Second World War, system production became a complex process and, thus, quality came to be analyzed by the means of inspections; the act was carried out much more efficiently when the workers' analysis was applied. The statistical control through inspections, the post-production effort of separating the functional and non-functional products, have led to a particular order of these steps. The selection should be carried out before beginning the development of the product. The development of control charts and the acceptance of survey methods in the period between 1924-1931 (Stewhart and Dodge-Roming) obviously helped, during the time, the inspection related prosperity of the field. In the third step, that of quality assurance, there is a strategy analysis with the precise purpose of offering enough trust that a particular product or service satisfies the needs of the customers. The next step brought quality workbooks in which quality is achieved with average costs, and the development of the control process has the purpose of passing from the quality assurance era to that of total quality management.

**KEYWORDS:** total quality management, quality inspections, quality control, quality assurance, organizational efficiency

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### I. INTRODUCTION

The development of Total Quality Management (TQM) began in 1950 and is validated by the works of several experts such as Ed. Deming, Joseph Juran, Philip Crosby, who have significantly contributed to the continuous development of the subject matter. The TQM approach originates in Japan. It became popular in the West during the 1980s. TQM was initially applied in 1985 by the Naval Air Systems. The various specific models of applying the TQM philosophy can also be found in the works of Feigenbaum (1961, 1991), Juran & Qryna (1970), Crosby (1979), Ishikawa (1985), Deming (1986). TQM, by the means of multifunctional teams trained to use basic statistical instruments so as to collect and analyze data, professional staff and workers from every department, has highlighted the potential efficiency in solving the problems approached. There are different approaches concerning TQM, but most of them lead to some common points. They guide organizations to concentrate on satisfying the needs of the customers, to develop and put to use the whole potential of all of the employees, to engage all of the efforts in order to find better ways of managing business using reliable data and information targeting financial outcomes.

A. V. Faigenbaum is acknowledged in the U.S.A. for the increase of quality awareness. The ‘total quality management’ phrase stems from his book, ‘Total Quality Control’ (1961, cited in Basu, 2004). According to Faigenbaum, the impact of the total quality control on the organization involves the application of technical activities meant to implement a customer-oriented quality as a primary responsibility of general management and of the main marketing operations, engineering, production, industrial relations, finance and services, as well as of the quality control function itself. Thus, quality becomes a strategic instrument in business. Armand Feigenbaum (1961) defines total quality management as “an organization system which allows the coordination of the efforts of quality development, maintenance and improvement made by different groups from the company, so as to assure that the customer-oriented studies, commerce, production and service

are the least expensive, allowing, at the same time, the achievement of total customer satisfaction”. The total quality approach is purely structural and economic and enables the factors required for its application.

Considering all this, it is necessary to define the concept of total quality management, as quality itself is a part of the domain. According to Christian Potié (2001), total quality management comprises “the ensemble of priorities and characteristics of internal and external quality, seeking all of the competitive advantages”. The total quality management is seen as an additional competitive advantage for the enterprise by seeking customer satisfaction. This is even more appropriate as almost all companies apply, or at least pretend to apply total quality management. Thus, the customer satisfaction is not a discriminant factor, as long as it offers a competitive advantage. The quality assurance of a product is undertaken gradually, in well-established steps, in accordance with the advancements achieved in the process of its production. The quality of a system is created starting with the period of production and manifests during the period of usage. In software engineering, there is a reliance between the quality of the software development process, the project quality and the product.

Joseph M. Juran, PhD, significantly contributed, in the 1920s, to the development of the methods of statistical quality control. He was mostly an engineer in the corporate industry, but was particularly concerned with the topic of quality, thus publishing the “Quality Control Handbook” (cited in Condrea, 2006). The author was the first to highlight the achievement of quality through communication (Basu, 2004). Through his approach, he offered an annual plan of quality improvement and cost reduction, as well as a form of continuous education in quality achievement. During the 1950s, Japanese companies started to notice the benefits of organization quality acknowledgment and, thus, resorted to W. Edwards Deming; he gave the Japanese companies a vigorous start in the quality movement. The researcher’s methods included a process of statistical control and a step of technical problem solving, all concentrated within 14 input points necessary to obtain the stimulus needed to change the mentality of the organizations in need when offering high quality products and services.

Deeming’s opinion on quality is strictly related to the field of management. In accordance with his theory, buyers are responsible with the understanding and assessment of the quality of all products and services, since they are the ones who should completely understand the quality requirements, while being also capable of communicating these requirements to the provider. Unlike Deming, Juran does not ask for major cultural changes in the organization; instead, he suggests to the American managers to improve quality within their familiar system. The evolution of the development of TQM on a time axis is shown in Figure 1.

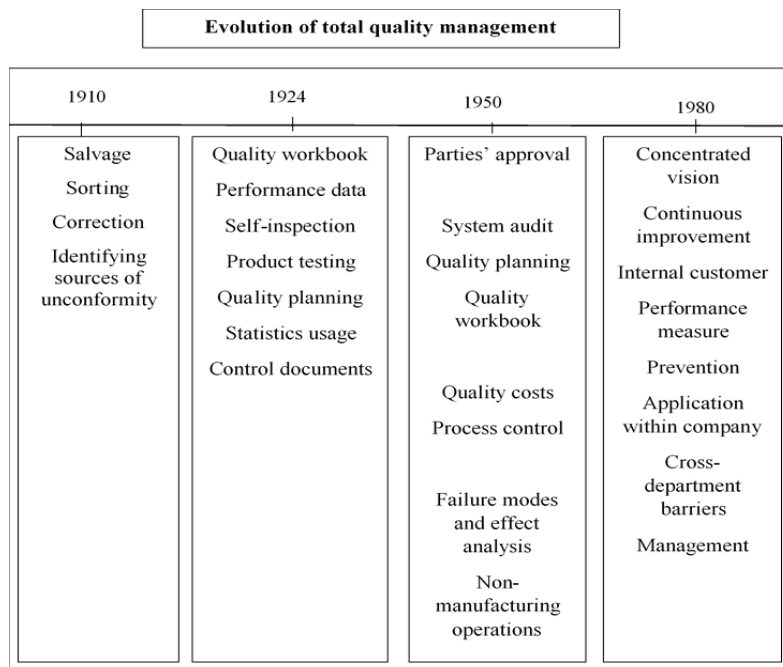


Figure 1. The characteristics of different steps in total quality management (according to Casas, 2011)

The programme presented by Deming (cited in Pop, 2009) comprises the following 14 aspects determining the framework of quality improvement:

- Assure the continuous improvement of product and service quality, on a planned basis, in order for the business to resist.
- Adopt a new philosophy, while giving up the “acceptable quality level”.

- Drop the whole control of products and processes, by introducing statistical control methods meant to establish the accordance with the specified requirements.
- Ask the provider for proof concerning the statistical quality evidence.
- Discover the problems. The management has to deal with the continuous improvement of all of the processes from every step of every process of the product trajectory, from the design to the assurance of service usage.
- Provide, for all of the employees, the instruments necessary for the appropriate performance of activities.
- Eliminate fear, encourage communication, so that every employee can openly express his/her viewpoint.
- Eliminate the barriers between the departments of the enterprise. Form groups containing persons from different departments so as to identify problems and prevent them in future processes.
- Eliminate posters and slogans connoting forced labor. Before seeking a productivity increase, make sure the measures do not go against quality, which has to be continuously improved.
- Review the standard working hours, so as to prevent them from becoming an obstacle in the way of productivity or quality.
- Eliminate all of the obstacles impeaching people to be proud of their work.
- Establish a rigorous staff training programme in accordance with the development of procedures, methods and techniques used in all of the company departments.

The importance granted to quality is highlighted by the global existence of several quality awards, such as the Malcolm Baldrige National Quality Award (MBNQA) in the USA (1988), the European Quality Award (EQA) in Europe (1984), the Deming Prize in Japan (1996) and the Canadian Award for Excellence. Peleska and Zahlten (2008) emphasized the TQM traps: quality costs, threats concerning other management models, inaccurate quality indicator measurement, as well as the incompatibility between the TQM measures and the cultural background.

## II. TOTAL QUALITY MANAGEMENT

TQM is a management concept which has initially evolved from the Japanese management processes and stems from the industrial experience. TQM is a management philosophy and practice meant to valorize the human and material resources, basic resources of every organization, which lead, when most efficiently used, to the achievement of the organizational objectives. According to Ojo (2006), this is a quality-centered management style: customer-oriented, fact-based, team-directed; all of these factors target the achievement of organizational objectives.

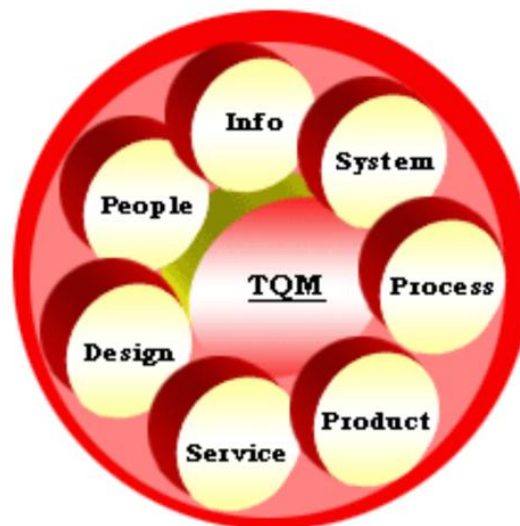
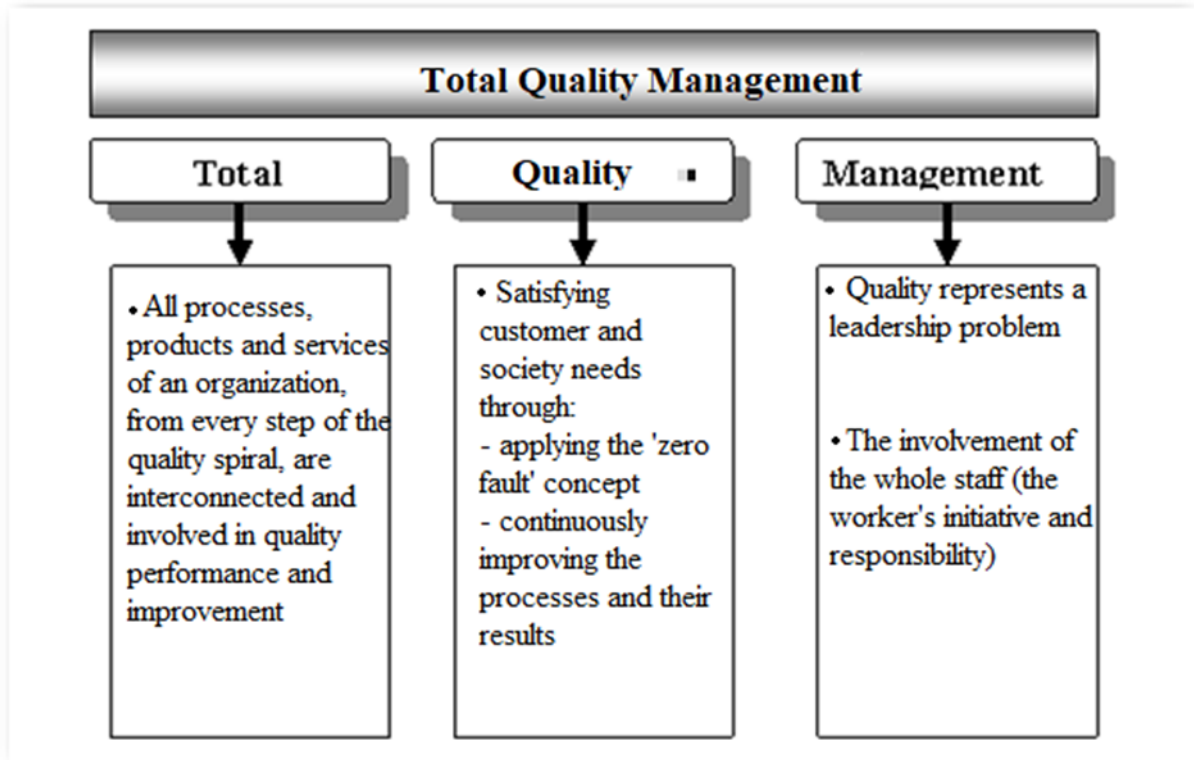


Figure 2. Total quality management (TQM)

TQM is a permanently evolving concept, which changes with new concepts and new models of development. According to Strickland and Wither, TQM is both a philosophy and a set of governing principles which provide the fundament of continuous organization improvement. The meaning of each of the TQM words is:

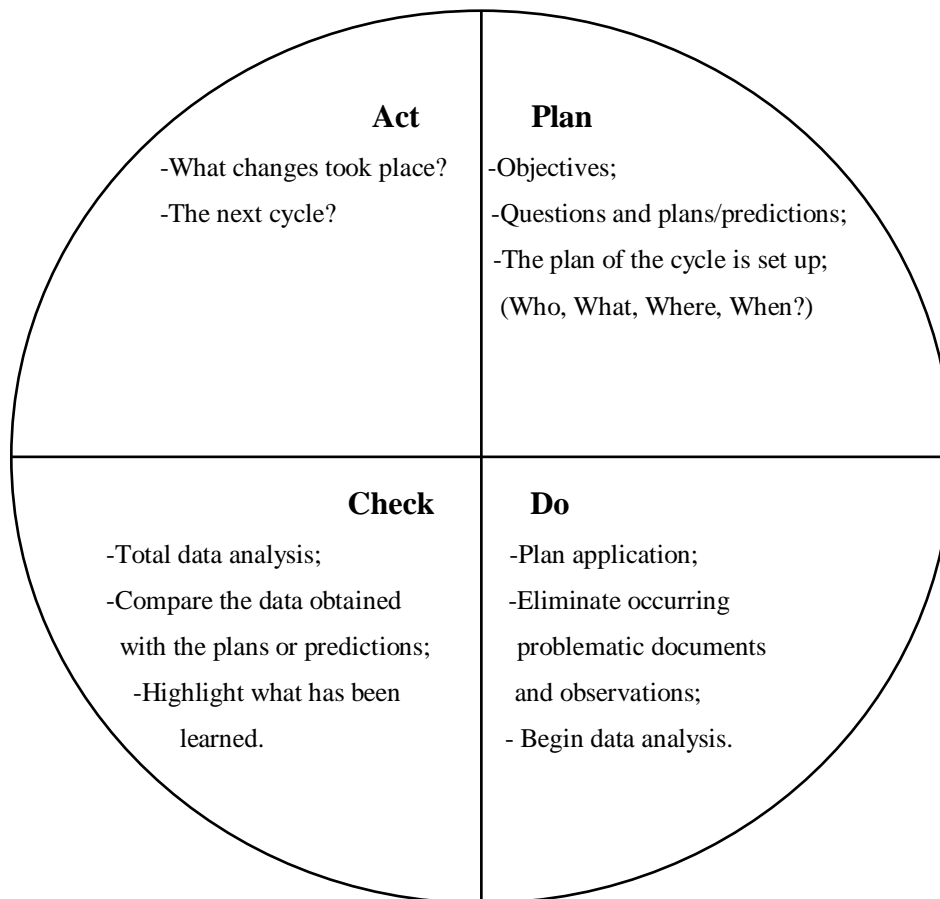
- Total – Every person from the organization is involved (including the customer and the provider);
- Quality – The customers' requirements are faithfully addressed;
- Management - The managers are fully committed.



**Figure 3.** Total Quality Management

The model shows a set of practices which allows an organization to deliver quality products and services. The term total from the total quality management phrase highlights the fact that everybody from the organization should be involved in the efforts of continuous improvement in all of the departments. The term quality is used, in its usual meaning, while the term management refers to the system of leadership which involves planning, organizing, leading and quality assurance.

The basic instrument of total quality management is the PDCA (plan-do-check-act, see Figure 4) cycle, (a.k.a. the Deming Wheel), a method of organizing management activities oriented towards the continuous improvement of quality management. This quality improvement method was devised by W. E. Deming (1993).



**Figure 4.** *The PDCA Cycle* (after Chină, 2015)

Plan signifies the planning of the objectives and processes required to obtain the results according to the customer needs and organization policies. Do refers to process execution and implementation. Check deals with the actions of control, monitoring and measurement of processes, according to the policies, objectives, requirements, as well as result announcing. Act involves action seeking procedures meant to improve process performance. The PDCA method involves a methodical approach to problem solving and solution implementing. Each step requires specific operations. Step 1, plan, involves the exact identification of the problem and its correlation with the information necessary to find solutions. This step requires the collection of useful data for the current situation assessment and for the development of the improvement plan. An analysis is needed to find out what can be improved, so as to determine the areas of change opportunities. Step 2, do, consists in the following key activities: generate possible solutions, choose the best solutions and implement the pilot project. Change needs to be planned and implemented afterwards. When possible, it is preferred to implement change on a lower scale first, in order to prevent and correct certain difficulties. Step 3, check, requires the assessment of the pilot project efficiency and the collection of information necessary for its improvement. The success of the generated solution and of the pilot project implementation determines the way of applying the whole initiative, although it may be necessary to repeat the steps related to development and checking and incorporate the needed modifications. Step 4, act, targets the total implementation of the solution. The PDCA cycle does not stop here, as the steps can be repeated, since the initiatives of improvement must be an unceasing process.

The Deming cycle can be successfully implemented when three basic elements are taken into account: the leadership agreement and the consideration of the Deming cycle implementation as a compulsory policy of change; the consideration of the concept as a circular plan, and the implementation of the concept in every department of the organization.

### III. CONCLUSION

Total Quality Management (TQM) constitutes a way of leading an organization centered on quality through the participation of all of its members. Through this model, constant improvement is sought, along with the gradual introduction of the new processes, so as to obtain a higher degree of excellence in organizations.

Continuous improvement has been one of the important factors of organization development, as total quality management supports the development of good actions and results within organizations.

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## **The Integrated Quality Assurance Model in the Context of Online Education**

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### **Abstract**

*The purpose of this paper is to elaborate an integrated model of education quality management in accordance with the present requirements of online education. From a conceptual viewpoint, we have noticed lately a re-dimensioning of the notions related to education quality, in a direct relation with the social preoccupations, regulations and norms. The models of quality assurance within the school organization constitute an essential factor for the successful performing of education. In accordance with the most recent requirements of online education, an integrated model for education quality assurance is framed. A quality culture ranging from the student-teacher interaction to the interaction mediated by the use of the technology specific to online learning is endorsed within the education system, with the aid of the integrated model.*

**Key words:** Integrated approach; model; quality assurance; management; online education

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## **1. Introduction**

According to Garbutt (1996), teachers nowadays have a multitude of opportunities to “borrow” the model of quality management implementing from other fields, such as those of industry or economy. Woods (1993) also suggests that schools can learn from the industry aspects concerning strategic planning, training, delivery and ethical standards. They can, thus, adopt the philosophy of quality management and use their resources efficiently, they can maximize opportunities for students, develop their staff and respond to the needs of the local community. Schools must be reformed and transformed from hierarchical organizations into organizations based on teamwork and problem solving, self-directed towards the endorsement of staff development, decision making, staff empowerment and authorization, appreciation acknowledgment and quality leadership on all levels. Moreover, school managers should act so as to eliminate fear, destruct barriers and make individuals believe that things can improve over and over.

Garbutt (1996) examined the way in which quality management can be transferred from industry to education. She concluded that the attitudes and priorities concerning quality seem to be similar. Quality requires commitment from the school principal in order to involve the staff in its application. Moreover, the staff should feel qualified to perform a quality educational act. In the school milieu, quality should be perceived as:

- an idea of making things better;
- a positive, optimistic attitude seeking progress;
- seeking excellence in every part of the system;
- a motivation system rewarding the achievements and positive policies concerning the curriculum and other school areas, including behavior;
- a generator of pride;
- continuous appreciation of the staff which offers useful feedback;
- staff encouragement to develop abilities and methodologies meant to improve the quality of teaching.

Freeman (1994) suggests another approach to quality in secondary schools, indicating four main principles. Firstly, the focus on students and learning, and secondly, quality which must reflect the needs of the parties involved, while insisting on the idea that the parties must be essential in the quality process. The interested parties are classified according to statutory responsibilities, responsible parties (such as governors), parties involved (teachers), employees and others (such as parents or students). The actors, according to Ribbins and Burrige (1992), can be classified as external (e.g., governors and parents) and internal (students and teachers). Thirdly, quality must be demonstrated. This means that it should be a process of public liberation, especially in public institutions. Fourthly, quality is related to feedback, in the sense that the final objective of quality is the creation of a learning organization. Consequently, quality itself is a server of all of the interested parties.

## **2. The conceptual framework of quality in education**

One of the most cited definitions is that of David Gravin (1984), from the Harvard Business School. According to him, quality represents the ensemble of eight dimensions (cited in Basu, 2004, p. 5):

- *performance*, which refers to efficiency, for example the productiveness of the investments through which the product fulfils the expected purpose.
- *features* are basic attributes leading to performance achievement.
- *reliability* refers to the capacity of the product to function constantly during its life cycle.

- *conformity* refers to fulfilling the product specifications, usually defined through numerical values.
- *durability* shows the resistance of a product.
- *serviceability* indicates the easiness of repairs.
- *aesthetics* shows sensible features, such as aspect, sound, taste and smell.
- *perceived quality* is based on the customer's opinion.

Juran (in Condrea, 2006) defines quality as the performance of the product resulting from the customer satisfaction, the elimination of the product defects so as to prevent the customer's dissatisfaction. This definition integrates four main categories: design quality, conformity quality, service availability and domain. According to Juran, quality is approached through the inspection of three main components which he calls "the trilogy of quality". The first component refers to quality planning, a step which consists in identifying customers and their needs. Moreover, it is the point where the goods and services are designed in order to establish, at the same time, the level of quality and the cost of the objectives. The establishment and measurement of quality elements follows the establishment of quality standards. In the last step, the most important role is played by the increase of quality through the improvement of the process steps which lead to this outcome.

As a follow-up of Juran's trilogy, E. Ahmed (cited in Basu, 2004) describes the quality components in a universal approach of quality administration:

- *quality planning*, comprising several steps: establishing the quality objectives, identifying the customers, determining their needs, developing the product features which address the customers' needs, developing the processes which address the customers' needs, establishing a control process, transferring the plans into operating forces;
- *quality control*, which includes the following steps: assessing the current performance, comparing the current performance with the quality objectives, acting where there are differences. Juran used the term *quality control*, without referring to the post-production control, which is often ignored in organizations.
- *quality improvement*, which involves demonstrating the necessity of quality increase, establishing the infrastructure, identifying the improvement projects, forming the project team, providing the resources to the team, training and motivating the team through diagnosing the causes and encouraging remedies, establishing control in the achievement of objectives.

According to the social and historical context, there are different meanings of the concept of quality in education (Figure 1). Quality in education is, thus, measured through the students' level of value formation (Dogaru, 2011).



**Figure 1.** *The evolution of the concept of quality (after Dogaru, 2011)*

Ph. B. Crosby (1979) considers that quality integrates two representative steps: *absolute quality management* and *basic improvement elements*. Absolute quality management is discerned

by several features: quality solicits conformity with requirements rather than elegance; there are no quality-related problems; a job which is well done from the beginning is always cheaper; the only way of measuring performance is quality cost – the cost of unconformity; the only performance standard is “zero fault”. According the C. Potié (2001), quality is defined as the “totality of product or service features which offers it the capability of satisfying the stated or explicit needs”. The author believes that this definition is complete, as it is easily understandable, given our status of customers-consumers, making it easy to accept that it is all about needs satisfaction. Another approach in defining quality is given by O. Pruteanu et. al. (1998), according to which quality is the aptitude of the rightful usage of the money spent, along with the recognition of their value, all of this with the permanent consideration of the “customer satisfaction”. It results, thus, that the *quality* term has a broader meaning: it comprises a technical or intrinsic feature strictly related to the characteristics of the product or service, a degree of utility which refers to the extent to which it satisfies the customers’ needs; there is also, obviously, an economic component determined by the costs involved and the acquisition and use of the product (Ciobanu, 1999). The essence of quality consists in the providers’ fulfilment of the customers’ needs at an average cost. The ability of satisfying the customers’ needs is vital not only for the organization, but also for the whole information system. Time and again, it has been demonstrated that the profitability of a service is directly proportional with its quality. Therefore, the performance of a company depends on the quality of its services.

In accordance with the ISO 8402 standard, quality represents “the totality of characteristics of an entity that bear upon its ability to satisfy stated and implied needs”. In the context of this definition, an entity can be, for example, either a product or a service, a process, organization, system or whatever combination between these. Quality plays a fundamental role in the performance of the modern company by the means of two basic mechanisms, which lead to value creation: the first consists in obtaining a favorable position on the level of expenses (the best ratio between perceived quality and relative price), and the second involves offering products, the perceived quality of which is valued by the consumer through a higher relative price than what he/she is willing to pay. The ISO 9000: 2000 standard brings a new perspective on the quality-specific concepts. Quality is defined as the extent to which the totality of the implied characteristics satisfies the requirements. By requirement, we understand the need or expectation which is stated, implied or compulsory, while the characteristic is a distinctive physical, sense, behavioral, temporal or functional feature.

According to E. Condrea (2006, p. 11), the definitions of the term *quality* involve two aspects (Figure 2): a formal one, according to which quality consists in satisfying the user’s needs, the fulfilment of the specified or complete requirements, and an informal one, according to which quality is something we seek, but which can never be fully implemented.

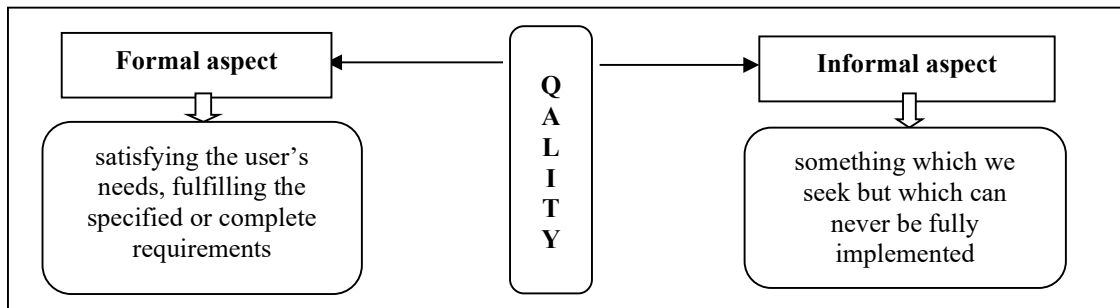


Figure 2. Main aspects of the quality concept definitions

Together with the basic concept of the paper, namely the term *quality*, complex concepts are defined, such as quality assurance in education, improvement of quality in education, evaluating quality in education, quality control in education. Although the existing links between quality and the variables that influence quality are difficult to interpret, they help to obtain a more complete understanding of the concept of quality.

*Quality in education* refers to an “ensemble of characteristics of a study programme and its provider, through which the expectation of the recipients is satisfied, together with the quality standards” (apud Iosifescu, 2011). In order to understand the notion of quality in education, several key concepts are analyzed: quality assurance in education, evaluation of quality in education, quality control in education, improvement of quality in education.

*Quality assurance in education* is a part of the school organization management, together with planning, control and improvement. It represents the “capacity of a providing organization to offer education programmes in accordance with the announced standards; it is carried out through an ensemble of actions which develop the institutional capacity of devising, planning and implementing study programmes” (apud Răduț-Taciu, Bocoș, Chiș, 2015, p. 530). Moreover, quality assurance in education is carried out through an ensemble of actions which develop the institutional capacity of devising, planning and implementing study programmes which encourage the recipients’ trust that the education providing organization fulfils the standards of education. Crețu and Nicu (2009, p. 23) also mention that quality assurance in education is “carried out through an ensemble of actions which develop the institutional capacity of devising, planning and implementing study programmes”. Quality assurance is a combination of several essential processes which are representative in the field of quality: a controlled turning to generate progress, a standardization of each new step on the basis of this cycle; and the fulfilment of the requirements concerning the quality of the educational products. The first step of quality assurance in education performed by a school is to identify the expectations of the students’ parents. Usually, they desire a high quality of didactic activities with low costs and a curriculum adapted to the students’ needs and interests. Teachers and educators need to recognize the primary role of families as initial educators, to encourage and stimulate the affection between parents and students. The second step in quality assurance in education seeks to address the expectations of the staff (Dușe, 2006, p. 120): “financial motivation, a promotion system which motivates performance and performance standards, together with evaluation criteria clearly defined for all sorts of activities”. The final purpose of all quality assurance procedures is to improve quality. “The foundation and functioning of a quality assurance system constitutes a way of improving the practice of developing a quality culture and an endorsement of the staff” (Garbutt, 1996).

*Quality improvement in education* involves “assessment, analysis and continuous remedial action from the education providing organization, based on selecting and adopting the most appropriate procedures, as well as choosing and applying the most relevant standards of reference” (according to a Romanian Government Emergency Ordinance from 2005; also cited in Crețu and Nicu, 2009, p. 23). The process of quality improvement in education is complex, as it involves the “continuous evaluation, analysis and remedial action, carried out by the education providing institution, based on the selection and adaptation of the most adequate procedures, and on the selection and application of standards of reference” (apud Potolea, Neacșu, Iucu, 2008, p.53). The quality improvement of the educational products and services offered to the recipients requires that their features conform to the recipients’ requests. A frequently used instrument in quality improvement is the PDCA / PDSA (plan, do, check, act / plan, do, study, act) cycle, or the “circle of continuous improvement”. Quality can be continuously improved, during time, with the help of the continuously repeated PDCA cycle of periodic consolidation of the results obtained through the standardization of the way of acquiring improved quality.

*The evaluation of quality in education* “consists in examining, on several criteria, the extent to which the education providing organization and its programme fulfil the standards of reference” (after Crețu and Nicu, 2009, p. 23). When the evaluation of quality is carried out by the organization itself, it becomes internal evaluation. When it is done by a specialized national or international agency, then it becomes external (according to the Romanian Government Emergency Ordinance from 2005).

*Quality control in education* “involves operational activities and techniques, systematically applied by an inspection authority designated to verify the accordance with the pre-established standards (Romanian Government Emergency Ordinance from 2005, also in Crețu and Nicu, 2009, p. 23). Quality control includes operational activities carried out in order to fulfil the quality requirements through performance regulation. Thus, it is a process of standard maintenance rather than creation. The primordial objective of quality management is to assist the organization in all of its creative development enterprises, which are necessary for financial viability in the increasingly dynamic competition framework of world economy (Avasilcăi, Huțu, Van der Wiele, 2001). The quality of the education process in a school is determined by the quality of the processes and products, by the organizational system of the institution and by the quality of services offered to the students (Guțu, 2013)

Quality is often defined as the satisfaction of the customer’s needs, but it often tends to become cautious in addressing the customer’s needs, and from this point develops the competition between high quality offering organizations. We lately notice a reshaping of the notions referring to the quality of products and services, in a direct relation with social preoccupations, regulations and norms. As I. Ioniță (2002) also points out, quality is no longer an organizational matter, but an individual matter as well, an element of education and culture which offers a better understanding of its necessity and knowledge of what is best in the world.

The analysis of the definitions of quality given by different authors leads to the finding of the fact that the term is defined differently, according to the approach: quality as satisfaction of customer needs; quality as aptitude of being conform for use – when approached from the product or final result perspective; and finally, quality as a way in which the customer is willing to pay for the result obtained and capitalized.

### **3. Quality management in the context of online education: a new integrated model**

The models of quality assurance in education constitute an essential factor for the successful fulfilment of education. We notice that there is a raised attention for identifying quality models in education and in general. These models represent efficient instruments for the school management, as long as they are rightfully implemented. A successful model of quality in school management focuses on the relationship between students, teachers and curriculum and the external influences gravitating around them, exerted by society, family, labor market requirements and needs of competence and lifelong learning. Cheng and Tam (1997) developed a multidimensional model of quality in education, which motivates leaders and educators to choose certain models in tight connection with the specific situation. In order to explain quality implementation, the authors introduced seven models of quality in education. From this perspective, quality in education is a multidimensional concept and cannot be easily assessed by the means of a single indicator. Generally speaking, quality in education can be perceived differently by different people using different strategies of doing it. The models offered by Cheng and Tam (1997) are presented in table 1.

**Table 1.** Models of assuring quality in education (Cheng and Tam, 1997)

Specification model	- Achieving stated institutional objectives in accordance with the given specifications
Resource entry model	- Obtaining resources necessary for the institution
Process model	- Easy and useful learning experience
Satisfaction model	- Satisfying all of the difficult situations
Legitimacy model	- Obtaining a legitimate position and situation for the institution
Problem absence model	- Absence of problems in the institution
Organizational learning model	- Adaptation to changes in environment and internal barriers standing against continuous improvement

The authors have also suggested that all of the seven models of quality in education should be important in long term planning in order to achieve total quality in education. Cheng (2003) offers a new classification of quality assurance in education, dividing it into three: internal quality, interface quality and future quality. The first reform wave concentrates on internal efficiency, so as to improve internal performance, with a focus on the teaching and learning methods and processes in schools. The second reform wave addresses the importance of structures, organizations and practices in different levels of education when responding to the interested parties' needs and expectations. The third reform wave highlights the future efficacy concerning the relevance of the new approach in education to contextualized multiple intelligences and individualization. The author believes that the schools which assure internal quality, interface quality and future quality can obtain total quality in education. The efforts towards quality in education should include all of the three types of quality in order to obtain total quality in education. Despite the different constraints and problems which obstruct the simultaneous development of all of the three types of quality, schools should struggle, on a long term, to learn and become efficient in providing services and in a high internal quality.

The integrated model for quality assurance in the context of online education is based on valorizing all of the composing elements of the education process in strict relation with the integration of educational technologies. A student-centered pedagogy is promoted, as the curriculum will be adapted according to the requirements and needs of the main recipients; it will also be linked to the external environment. The purpose of the integrated model is to promote a quality culture within the education system, from the traditional student-teacher interaction, to the technology-mediated interaction which is specific to online education. There is an implicit relation between the student and the teacher, as the former progresses under the guidance of the teacher, while the latter gains experience and evolves along with the student. The student also interacts with all of the components of the curriculum. The student-teacher-curriculum triad becomes an indivisible whole, as we encounter a reciprocal determination relation and continuous exchange between the parties. There is a focus on separating four distinctive directions:

- general and specific quality assurance, in relation with problems concerning technology;
- determining the impact on behavior;
- highlighting the influence of cultural factors;
- evaluating experience in order to establish the future actions concerning online education;

The integrated model includes a holistic view of both internal factors of the education system, i.e., the school environment, and external factors. This model of quality assurance approaches the internal and external factors of education equally; there is a reciprocal determination established between the two. Education management, as an engine of the functioning of the whole mechanism, will direct the education process towards the labor market requirements. The labor market is the one which determines, in its turn, the orientation and study

programmes of the primary, secondary and higher education, thus generating the competences required by society. Family is the main component of society, and the quality of living depends directly on the development level of the society. The integrated model offers both advantages and a series of disadvantages. A major benefit consists in the general vision of all of the categories of factors involved in education quality management. A disadvantage of this model stems from the lack of particularization of the instruments through which the connection between the internal and external factors can be established, a connection on which the function of the model itself depends.

#### **4. Conclusions**

The grounding of a quality management model in the context of online education is an essential condition for improving the quality control system in schools, so it becomes essential in offering a new vision of global education. There is a reciprocal determination relation between education quality and quality of living. Education management plays the role of regulating the education process in order to better respond to the current and future requirements of the external environment.

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## Performance management in organizations

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**Abstract.** Performance management should be understood as a continuous process, reflecting normal management practices, not "special techniques" imposed on managers. Its conceptual framework includes terms such as: "performance management", "performance", "performing organization". Performance management was also approached as a "regulation loop," linking organizational strategies and objectives, performance measurement, performance training, performance guidance and leadership, and performance reward. The performance of an organization is determined by: its level of coherence and stability; its ability to procure and use resources; of his reputation and image; the synergy of multiplying determinants such as employee relations, communication, mission, philosophy and leadership style, recognition, quality of organizational processes. Performance is defined by behaviors, but especially by results. A mixed performance management model is concerned with both inputs and outputs. The selection of the best model to improve performance is based on a self-assessment process. The complexity of managing an organization today requires that managers be able to measure performance and analyze the impact of different dimensions of performance on organizational excellence. Many experts in the field have started talking about the importance of measurement as a means of communication. The institution's performance is analyzed on the basis of key internal and external performance indicators, established targets and existing trends, judged constructively, with the establishment of improvement targets. Any performance measurement indicator is also used as a tool to control it, effectively for the implementation of continuous performance improvement actions.

**Keywords:** Performance Management; performance; performing organization; result; effectiveness.

### Introduction

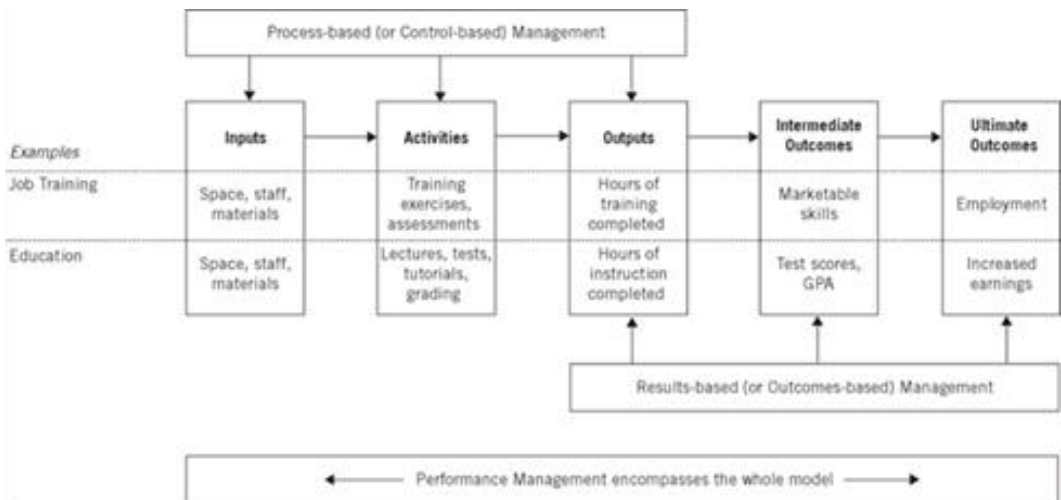
Performance management is a system that includes:

- Methodology for setting objectives,
- A performance measurement process,
- A differentiated payment system,
- Career management.

Performance management is a strategic and integrated approach to ensuring lasting success in the work of organizations, by improving the performance of the organization, teams and individuals. Performance management should be understood as a continuous process, reflecting normal management practices, not "special techniques" imposed on managers. Its conceptual framework includes terms such as: "performance management", "performance", "performing organization". The major contribution of performance management is the focus on achieving results, for example

products and services for customers inside and outside the organization. The focus is shifted from effort and time to results and effectiveness.

Performance management encompasses the processes of measuring results and evaluating staff. Modern approaches to performance management combine all the aspects mentioned in an integrated framework, unlike past approaches, which limited performance management to the stage of personnel management or to the collection and reporting of organizational performance indicators. The first performance measurement tool was developed by Kaplan and Northon in the 1990's as the Balanced Scorecard, highlighting the relationship between professional performance and the organization's strategy, each evaluation criterion is correlated with each element of the strategy.



**Figure 1.** Types of performance management as applied to the elements a logic model. ([https://ebrary.net/128691/sociology/conceptualizing\\_performance\\_management\\_logic\\_model\\_theory\\_action\\_production\\_function](https://ebrary.net/128691/sociology/conceptualizing_performance_management_logic_model_theory_action_production_function))

Performance management was also approached as a “regulation loop,” linking organizational strategies and objectives, performance measurement, performance training, performance guidance and leadership, and performance reward.

The performance of an organization is determined by:

- its level of continuity and stability;
- its ability to procure and use resources;
- its reputation and image;
- the synergy of multiplying some determinants such as employee relations, communication, mission, philosophy and leadership style, recognition, quality of organizational processes.

Performance management highlights two fundamental aspects:

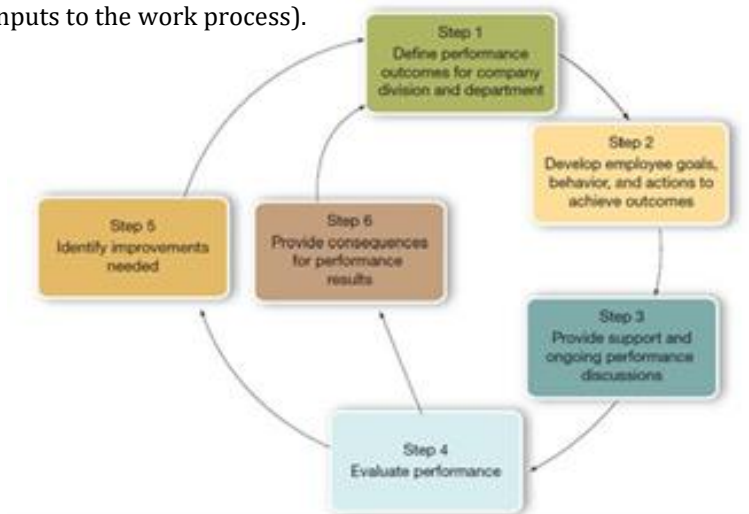
- How do we measure and evaluate the real level of performance?
- How do we make the level of performance have a weight and how do we ensure the increase of performance?

According to some authors, organizational performance refers to:

- Technical performance, which involves the efficient use of all resources in the organization;
- Economic performance, which involves obtaining a superior quality with low costs;
- Social performance, which involves ensuring an optimal climate, favorable to the development of activities in the organization; adaptability and flexibility to customer needs;
- Managerial performance, which requires adaptability and flexibility to the needs of the organization, the needs of the community, the specifics of the organization's activity.

## 2. The characteristics of the performing organization

Performance is defined by behaviors, but especially by results. Kane (1996) shows that performance is "something that a person leaves behind". Bernadin et al. (1995) emphasize that "performance must be defined as the sum of the effects of labor". According to Kaplan, "without tools, no improvement can be made", it is essential to measure the right things at the right time, so that the action can be decided in a timely manner. Performance measurement tools and indicators do not just measure performance, they are often integrated with policy, strategy and many other behavioral issues. Campbell (1990) considers that "performance is a behavior and should be distinguished from results or effects". In his view, the results may be affected by contextual factors and, for this reason, do not correctly reflect individual or team performance. "Performance means both behavior and results. Behavior emanates from the performer and transforms performance from the abstract notion into concrete action. Not only are they tools for achieving results, behaviors are, in and of themselves, results - the product of the physical and cerebral effort made to perform tasks - and can be judged separately from the results." Thus, we can evaluate and measure performance both with reference to results (exits from the task performance process) and to behaviors (inputs to the work process).



**Figure 2.** Steps in the Performance Management Process  
(Noe et al., 2016)

The purpose of measuring organizational performance is to:

- identify the results, respectively the success or failure;
- identify if the client's needs are met;
- help the organization to understand its processes and confirm what is known, or to reveal what is not known;
- identify where there are problems, blockages, losses, etc. and where improvements are needed; ensure that decisions are based on facts, not assumptions, emotion, faith or intuition;
- show whether the planned improvements actually took place.

The characteristics of the performing organization, there are also various concepts and approaches:

- The performance of the organization is expressed by its effectiveness and, in this sense, an effective enterprise is a successful one;
- The performance of the organization is determined by four key organizational features, called the "capabilities" of the company:
  - Adaptive capacity: the ability of the organization to constantly monitor the external environment, responding to its requirements and pressures (for example, by meeting customer requirements) and, at the same time, to constantly change internally in order to respond to these pressures;
  - Leadership capacity: the ability to set directions for action in the future, to provide the necessary resources and to guide people's actions in those directions;
  - Managerial capacity: the ability to use efficiently and effectively the company's resources;
  - Technical capacity: the ability to design and produce goods and services that enhance the services provided to customers and consumers.

To these basic capabilities can be added another, regarding the ability to positively change the external environment through actions of information, education, persuasion of the company's partners.

The company's performance is ensured by improvements in several key areas:

- Organizational stability, reflected in ensuring the continuity of delivery of products and services;
- Financial stability, given by the solvency of the company, which is able to pay its short-term financial obligations;
- The quality of managerial programs;
- Organizational growth, based on attracting resources and providing more goods and services.

## Conclusions

Performance management involves a systematic approach, at the level of the entire organization, of human resources management and, implicitly, of performance evaluation, based on the objectives and internal needs of the organization, aiming to motivate employees and encourage creative potential.

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BULETINUL INSTITUTULUI POLITEHNIC DIN IAȘI  
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**THE ROLE OF SCHOOL MANAGERS IN  
IMPLEMENTING THE QUALITY OF EDUCATION**  
BY

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**Abstract.** Quality is a concept that is used in all areas of economic and social life, but which is subjective and has particular meanings for specific areas, sectors, functions or objects. Quality has a different meaning for each person, because it is accepted and known depending on the perspective from which this concept is viewed. Thus, the quality can be analyzed and appreciated by each person. The culture of quality becomes an important component in the society in which we live, which justifies the choice of this subject for the doctoral thesis. Quality management is a component part of management science, but also of the operational management of companies and organizations. Quality is an essential aspect in the treatment of products and services. Quality tends to become one of the key points of economic success in the world we live in.

**Keywords:** Quality, Culture of quality, Quality management, Quality assurance, Education.

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## 1. Introduction

Quality assurance in pre-university education is part of quality management, ie a whole set of measures aimed at enabling schools to plan for quality, determine its parameters, measure it and prove the result. Therefore, in order to create a quality assurance system, a quality management system must first be introduced.

It is a complex task that involves changing the mentality and perception that teachers in pre-university and university education have on the one hand, and the broad masses, the direct beneficiaries of the reform system, on the other. The competencies of school leaders and managers significantly influence the quality of teaching and learning processes in each education system.

## 2. The roles of school leaders and managers

Ensuring the quality of education can be achieved with the help of teachers and managers who are involved in research and learning, who value teamwork and have a common goal (according to Molan et al., 2006).

Mintzberg has identified ten roles of the manager in which his activities can be framed. The ten roles are grouped into three broad categories, in the idea that regardless of the concrete content of a manager's work, his actions can be placed in one of the following categories: decision making, information processing and engagement in interpersonal relationships (Table 1.).

**Table 1**  
*Manager roles (after Mintzberg)*

<b>Informational roles</b>	<b>Interpersonal roles</b>	<b>Decision roles</b>
<ul style="list-style-type: none"> <li>• person who receives information that may influence the performance of the organization;</li> <li>• information evaluator;</li> <li>• person who selects the information.</li> </ul>	<ul style="list-style-type: none"> <li>• person representing the organization in official circumstances;</li> <li>• lider;</li> <li>• liaison with subordinates and superiors.</li> </ul>	<ul style="list-style-type: none"> <li>• initiator of planned changes in the life of the organization;</li> <li>• person who solves disturbances that may cause unwanted changes in the organization (strikes, cancellation of contracts with certain suppliers, etc.);</li> <li>• person who allocates resources;</li> <li>• negotiator</li> </ul>

The results of a study by Bitterová et al. (2014) showed that school leaders considered that the most significant competencies regarding the profile of a school manager are the following: creating motivational strategies based on the common values of the school; developing an effective learning environment for students; clearly defining, distributing and delegating responsibilities and tasks; leadership and control of colleagues.

Pagon and. a. (2008) developed a model of managerial skills (Figure 1.) which is based on the existence of preconditions.

At the heart of the model are three main categories of skills (cognitive, functional, personal / social). Applying these skills ensures efficient change management.

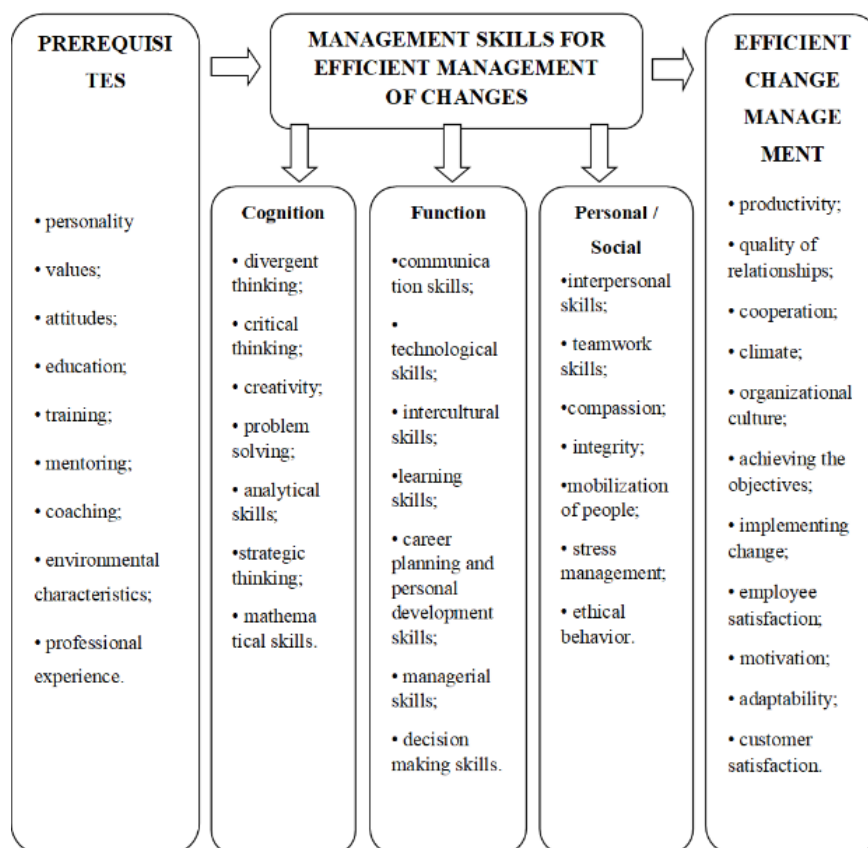
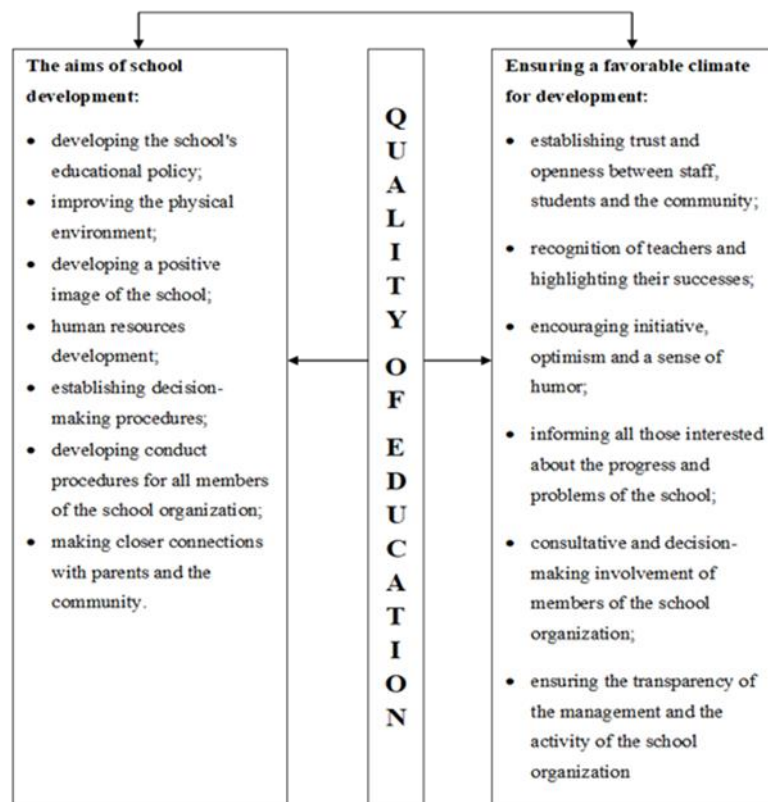


Figure 1. Model of managerial skills

The model of managerial competencies developed by Pagon et al. (2008) provide a systematized view of the categories of competencies involved in managing the quality assurance of education by school managers. Unlike traditional organizations that are distinguished by controlling people's behavior at the level of managerial systems, learning-based organizations emphasize "the ability to reflect, teamwork, the ability to develop common visions and common understandings of complex educational problems" (according to Molan et al., 2006).

In order to ensure the quality of education, it is necessary to make changes in the content, the teaching-learning-assessment process. Molan et al. (2006) propose a correlation between goals (why?), Targeted components (what?) And development strategies (how?) To create a logical approach to quality in contemporary education. The quality of education is influenced by the development of the school organization, from the perspective of its aims and psychosocial climate. The relationship between the quality of education and the development of the school organization is highlighted in Figure 2.



**Figure 2.** *The relationship between the quality of education and the development of the school organization (after Molan et al., 2006)*

## Evaluation and quality assurance procedures:

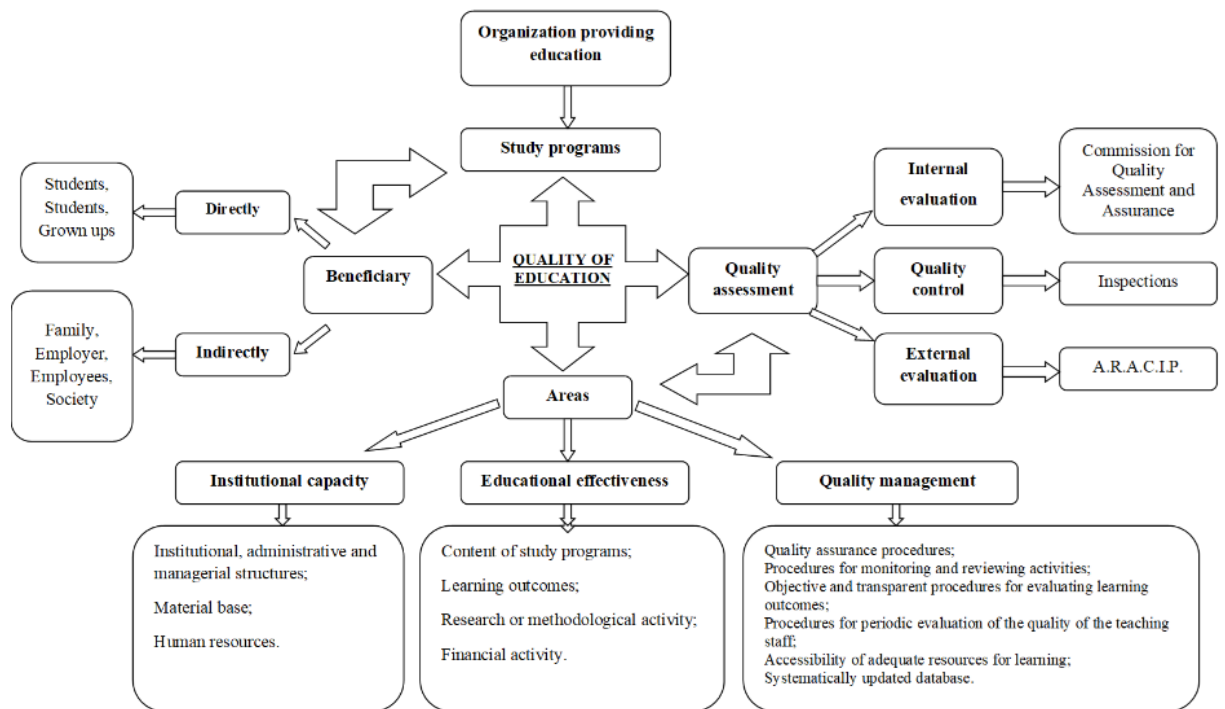


Figure 3. Evaluation and quality assurance procedures

### 3. Conclusions

Quality management in education determines the achievement of objectives through planning, monitoring and quality assurance. The unitary involvement of all members of the school organization generates the improvement of the quality management of education. At the level of the school organization, the quality of the educational process is determined by the quality of the processes and products, by the quality of the organizational system of the institution and by the quality of the services offered to the students. Quality assurance in education offers benefits to students, teachers and society alike, which ensures the orientation of the educational process and its alignment with standards, encouraging its continuous improvement, taking responsibility, a solid foundation for pre-university and higher education. Along with the advantages, there are also a number of obstacles that affect the implementation of education quality management. To remove these barriers, it is important for the school to

become an organization that is oriented towards innovation and change. Learning-based institutions emphasize the capacity for reflection, teamwork, the ability to develop common visions and common understandings of complex educational problems, as opposed to traditional organizations that are distinguished by controlling people's behavior in management systems.

**Acknowledgements.** The article is published at *the 4th International Conference of the Doctoral School, May 19 - 21, 2021, Iași, Romania.*

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### ROLUL MANAGERILOR ȘCOLARI ÎN IMPLEMENTAREA CALITĂȚII EDUCAȚIEI (Rezumat)

Calitatea este un concept care este utilizat în toate domeniile vieții economice și sociale, dar care este subiectiv și are semnificații particulare pentru domenii, sectoare, funcții sau obiecte specifice. Calitatea are o semnificație diferită pentru fiecare persoană, deoarece este acceptată și cunoscută în funcție de perspectiva din care este privit acest concept. Astfel, calitatea poate fi analizată și apreciată de fiecare persoană. Cultura calității devine o componentă importantă în societatea în care trăim, ceea ce justifică alegerea acestui subiect pentru teza de doctorat. Managementul calității este o parte componentă a științei managementului, dar și a managementului operațional al companiilor și organizațiilor. Calitatea este un aspect esențial în tratarea produselor și serviciilor. Calitatea tinde să devină unul dintre punctele cheie ale succesului economic în lumea în care trăim.

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## APPLICATION OF TOTAL QUALITY MANAGEMENT (TQM) IN EDUCATION

BY

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**Abstract.**TQM is a management philosophy and practice that aims to capitalize on human and material resources, basic resources of any organization, which used in the most efficient way lead to the achievement of organizational objectives. The TQM approach in education involves not only obtaining high quality results but also influences all segments of the educational process, such as organization, management, interpersonal relationships, material and human resources. The aim has been to improve the quality of education in various ways, and one of the strategies to improve it is known as Total Quality Management (TQM). The philosophy of continuous improvement of quality in education is used as a practical tool by educational institutions in meeting the needs, desires and expectations of current and future customers, the main goal being customer satisfaction. There are several models with which to implement TQM.

**Keywords:** Quality, Quality management, Total Quality Management, Performance, Education.

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## 1. Introduction

According to the definition given by *ASQ - American Society for Quality*, TQM describes a management approach to long-term success through customer satisfaction. All members of the organization must participate in the continuous improvement of processes, products and services, in an integrated organizational culture. The TQM concept is related to the implementation of a quality culture in order for management to be able to satisfy all educational clients, teachers / employees, and the staff involved to be able to satisfy both internal and external clients. The educational institutions that implement TQM bring continuous improvements respecting the following principles: focus on the client, continuous quality improvement and involvement of all elements in the educational sphere.

## 2. Models with which to implement TQM in Education

According to Ojo (2006), this is a management style that is focused on quality: customer-oriented, fact-based, team-led, all of which are designed to provide satisfaction in achieving organizational goals. According to Strickland and Wither, TQM is both a philosophy and a set of guiding principles that are the foundation for continuous improvement of the organization.

Every word in TQM represents :

- Total - Every person in the organization is involved (including the customer and the supplier);
- Quality - Customer requirements are met exactly;
- Management - Directors are fully involved.

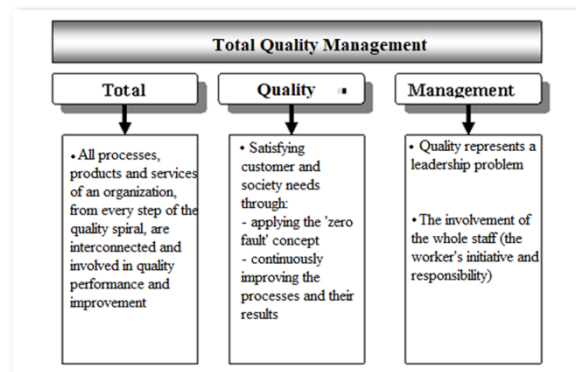


Figure 1. Total Quality Management

Taque (2011) mentions that the common elements of TQM models are the practice of leadership by top management, employee involvement and empowerment, customer-defined quality and focus on customer satisfaction, work seen as a process of continuous improvement.

Feigenbaum defines TQM as "An efficient system that aims to achieve total quality through the combined effort of all factors within the organization to produce a product / service that meets the needs and expectations of customers at minimal cost."

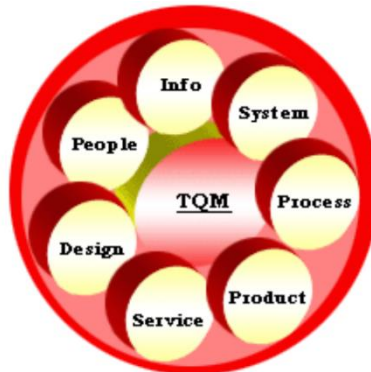


Figure 2. Total quality management (TQM)

In the USA the American Model of Excellence is used, known as the Baldrige Model, in Europe it is the European Model of Excellence administered by EFQM - European Foundation for Quality Management.

The structure of the Baldrige Prize. The Baldrige Prize is awarded in six key areas: 1. Manufacturing; 2. Services; 3. Small business; 4. Education; 5. Health; 6. NGOs;

Institutions must demonstrate outstanding performance in the following management areas: 1. Leadership; 2. Strategic planning; 3. Customer orientation; 4. Measurement; 5. Information Analysis and Management; 6. Focus on Human Resources; 7. Process focus (process management)



Figure 3. Model Malcolm Baldrige Malcom Baldrige Award for Education

The criteria and methodology for awarding the Malcom Baldrige American Quality Award to educational institutions were developed in 1999 and constitute the most comprehensive documentation on quality assessment in such institutions. The quality assessment system of a higher education institution is based on 1000 points which are distributed at the level of seven categories. The quality assessment system of a higher education institution:

<b>1. Leadership .....</b>	<b>110 p</b>
Leadership system .....	80 p
Public and community responsibility .....	30 p
<b>2. Strategic planning .....</b>	<b>80 p</b>
The process of strategic development .....	40 p
School strategy .....	40 p
<b>3. Orientation towards students and investors .....</b>	<b>80 p</b>
Knowing the needs and expectations of students .....	40 p
Satisfaction of students and investors.....	30 p
Improving relationships .....	40 p
<b>4. Information and analysis .....</b>	<b>80 p</b>
Selection and use of data and information .....	25 p
Selection and use of data and information comparative .....	15 p
Analysis and review of organizational performance .....	40 p
<b>5. Teaching staff and staff .....</b>	<b>100 p</b>
Working systems .....	40 p
Staff development, education and development	
teacher and staff .....	30 p
Satisfaction and well - being of teachers and	
of the staff .....	30 p
<b>6. Educational and process support management .....</b>	<b>100 p</b>
Design and provision of education .....	60 p
The processes of educational support .....	40 p
<b>7. University performance results .....</b>	<b>450 p</b>
Student performance results .....	150 p
Results on student satisfaction and a	
Investors .....	100 p
The results of the teaching staff and staff .....	100 p
School specific results .....	100 p

Any organization that wants to improve its performance chooses one of the models listed below and customizes it:

1. *Deming Application Prize;*
2. *Malcolm Baldrige Criteria for Performance Excellence*
3. *European Foundation for Quality Management*
4. *ISO quality management standards*

The success of the TQM conceptual model depends on its eight components: ethics, integrity, trust, education, teamwork, leadership, recognition and communication.

The principles of TQM:

1. Orientation of the organization towards customers;
2. Ensuring leadership;
3. Involvement of staff in decision making;
4. Process-based approach;
5. Approaching management as a system;
6. Continuous improvement.

Each of these principles is found in the content of various models or mega tools (Taue, N.R., Quality Instruments, ASQ, 2011)

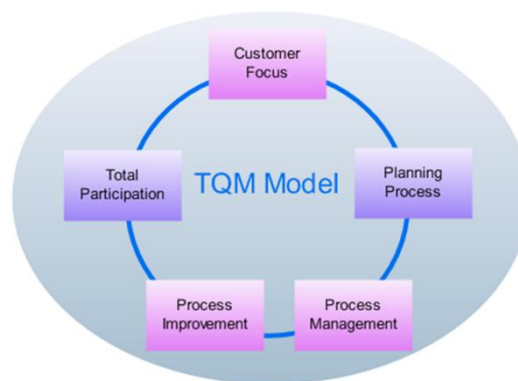


Figura 5. Modelul TQM – reprezentare simplificată

### 3. Conclusions

Practices inspired by total quality management open special perspectives to educational institutions, much more beneficial than the simple implementation of quality assurance systems according to ISO 9000 standards. A total quality management system applied effectively within a school organization can facilitate the realization of the vision and mission in the education of the young generation (Ravindran, Karpaga Kamaravel, 2016). The implementation of total quality management ensures long-term success at the individual level, as a result of customer satisfaction, as well as socially, because it offers benefits for all members of the organization. The principles of continuously improving the quality of education can be used as practical tools by educational institutions to meet the needs, desires and expectations of current and future customers (Murtadlo, 2019). Todoruț (2013) highlighted how this approach can be used to improve quality management at the level of higher education institutions.

School organizations that implement this type of management will continuously adopt improvements to meet the demands of global competition.

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#### APLICAREA TOTAL QUALITY MANAGEMENT (TQM) ÎN ÎNVĂȚĂMÂNT

(Rezumat)

TQM este o filozofie și practică de management care își propune să valorifice resursele umane și materiale, resursele de bază ale oricărei organizații, care utilizate în modul cel mai eficient conduc la realizarea obiectivelor organizaționale. Abordarea TQM în educație implică nu numai obținerea de rezultate de înaltă calitate, ci influențează și toate segmentele procesului educațional, cum ar fi organizarea, managementul, relațiile interumane, resursele materiale și umane. Scopul a fost îmbunătățirea calității educației în diferite domenii, moduri și una dintre strategiile de îmbunătățire a acesteia este cunoscută sub numele de Managementul Calității Totale (TQM). Filosofia îmbunătățirii continue a calității în educație este utilizată ca un instrument practic de către instituțiile de învățământ în satisfacerea nevoilor, dorințelor și așteptărilor clienților actuali și viitori, obiectivul principal fiind satisfacția clienților. Există mai multe modele cu care implementăm TQM în educație.

# Models for measuring the performance of an organization

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**Abstract.** The complexity of managing an organization today requires that managers be able to measure performance and analyze the impact of different dimensions of performance on organizational excellence. Many experts in the field have started talking about the importance of measurement as a means of communication. The customer can provide information about the physical quality - the appearance of the product, about the functionality and performance of the product, characteristics that are also related to quality. If the product is used in the performance of a service, then the quality of this service is directly proportional to the quality of the product. A mixed performance management model is concerned with both inputs and outputs. The selection of the best model to improve performance is based on a self-assessment process. Organizational excellence is measured by the organization's ability to achieve and maintain exceptional results simultaneously for all stakeholders.

## 1. Introduction

Performance management should be understood as a continuous process, reflecting normal management practices, not "special techniques" imposed on managers. Its conceptual framework includes terms such as: "performance management", "performance", "performing organization". Performance management has also been approached as an "adjustment loop", linking organizational strategies and objectives, performance measurement, performance training, performance guidance and leadership, and rewarding performance. The performance of an organization is determined by: its level of coherence and stability; its ability to procure and use resources; of his reputation and image; the synergy of multiplying determinants such as employee relations, communication, mission, philosophy and leadership style, recognition, quality of organizational processes. Organizations use a wide range of qualitative and quantitative tools that have been accumulated over time to meet specific operational requirements [1]. Increasing interest in performance management has led to an update of accounting systems and an extension of non-cost performance. [2] define the performance management system as a set of indicators used to quantify both the efficiency and effectiveness of actions. [3] argue that the performance measurement system allows for the development of a closed-loop organizational strategy, which provides a structured framework for the flow of information relevant to feedback at close points, which facilitates decision-making and control processes. These emerging performance management systems can be grouped into two distinct categories [4]. The first are those that focus on self-evaluation, for example, the Deming Award in Japan and Asia (Deming 2004), the Baldrige Award in the United States (NIST 2004), and the European Foundation for Quality Award using EFQM Model of Excellence in Europe (EFQM 2004). The second category is those designed to help managers measure and improve business processes, for example, the Performance Pyramid [5] [6], the Balanced Scorecard [7] [8], The Cambridge Performance Measurement Process [9] [10] and the performance prism [11] [12]. The customer can provide information about the physical quality - the appearance of the product, about the functionality and performance of the product, characteristics that are also related to quality. If the product is used in the performance of a service, then the quality of this service is directly proportional to the quality of the product. A mixed performance management model is concerned with both inputs

and outputs. The selection of the best model to improve performance is based on a self-assessment process.

**Table 1.** Evolution of performance measurement systems [13] [14]

Traditional performance measurement systems	Emerging performance measurement systems
Based on the traditional accounting system	Based on company strategy
Based on cost / efficiency	Based on values
Compromise between performance	Performance compatibility
Profit-oriented	Consumer-oriented
Short-term guidance	Long-term orientation
Prevalence of individual instruments	Prevalence of team tools
Prevalence of functional tools	Prevalence of transversal instruments
Comparison with standard	Improvement monitoring
Evaluation as a goal	Evaluation and involvement as a goal
Prevents continuous improvement	Emphasizes continuous improvement

The complexity of managing an organization today requires that managers be able to measure performance and analyze the impact of different dimensions of performance on organizational excellence. Many experts in the field have started talking about the importance of measurement as a means of communication.

Table 2 summarizes the large amount in the literature of performance measurement systems [15] [16], which can be considered to be the main changes and development trends that have been affected by how these systems are viewed.

**Table 2.** Performance measurement systems

Performance measurement systems and approaches	Performance measurement systems and approaches
Strategic measurement analysis and reporting technique (SMART)	Lynch and Cross 1991; McNair et al. 1990
Performance Measurement Questionnaire (PMQ)	Dixon et al. 1990
Results and determinant matrix (R&DM)	Fitzgerald et al. 1991; Fitzgerald and Moon 1996
The Balanced Scorecard (BSC)	Kaplan and Norton 1992, 1996, 2000
Business Scorecard Comparison (CBS)	Kanji 1998; Kanji and Moura e Sá 2002
Cambridge Performance Measurement Process (CPMP)	Neely et al. 1996, 2000; Bourne et al. 1998, 2000
Consistent performance measurement systems (CPMS)	Flapper and others 1996

Integrated Performance Measurement Systems (IPMS)	Bititci et al. 1997, 1998 a, b
Dynamic Performance Measurement Systems (DPMS)	Bititci and others 2000
Integrated Performance Measurement Framework (IPMF)	Medori 1998a, b; Medori and Steeple 2000

## 2. The Balanced Scorecard (BSC) Model

Balanced Scorecard is a strategic performance management framework that has been designed to help an organization monitor its performance and manage the execution of its strategy. In a recent global study of the management tools used, the Balanced Scorecard proved to be the sixth most widely used management tool in the world, which also had one of the highest ratings. satisfaction. The concept, having two components BS personal (BSP) and BS organizational (BSO), was introduced in 1992 [17].

The BSO identifies several dimensions of the organization, representing areas where organizations need to achieve results, at the level of departments, teams or individuals. Depending on the type of enterprise, the essential dimensions can be: financial aspect, customers, internal processes, knowledge and learning, quality of service, market share, etc. [17] they stop at four fundamental dimensions, which give four perspectives from which to examine the business of the organization. At the same time, it involves the obligation of managers to find answers to some key questions:

- Financial aspect: its financial health. How do shareholders see the company? What does the company mean to shareholders?
- Customers (external): customer satisfaction. How do customers see the company? What does it mean for our customers?
- Internal processes: process control. How can we control the primary business processes to create value for customers? What processes do we need to excel in to continually satisfy our customers?
- Knowledge and learning: the skills and attitudes of employees and the organization's ability to learn. How can the company remain successful in the future? How should we learn and communicate in order to improve ourselves and thereby achieve our vision?

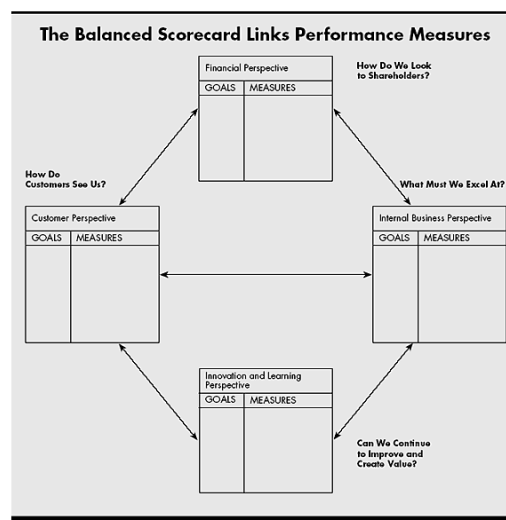


Figure 1. “The Balanced Scorecard Links Performance Measures.” [18]

Definition for the four Balanced Scorecard perspectives:

- The financial perspective covers the financial objectives of an organization and allows managers to track the financial success and value of shareholders.
- The customer perspective refers to customer-related objectives, such as customer satisfaction, market share objectives, and product and service characteristics.
- The internal process perspective covers the internal operational objectives and presents the key processes necessary to achieve the objectives related to the client's perspective.
- The Learning and Development perspective covers intangible carriers of success in the future, such as human capital, organizational capital and information capital, including skills, training, organizational culture, leadership, systems and databases.

Research has shown that organizations that use a Balanced Scorecard approach tend to outperform organizations without a formal approach to performance management at the strategic level. The main advantages of using a BSC include:

- Better strategic planning - Balanced Scorecard provides a powerful framework for building and communicating strategy. The business model is visualized in a strategy map that forces managers to think about cause-effect relationships. The process of creating a strategy map ensures that a consensus is reached based on a set of interdependent strategic objectives. This means that performance results, such as key elements or future performance factors (such as intangibles) are identified to create a complete picture of the strategy.
- Improving communication and execution strategy - The fact that the strategy with all interdependent objectives is mapped on a piece of paper allows companies to easily communicate the strategy internally and externally. We've known for a long time that a picture is worth a thousand words. This “one-page plan” facilitates understanding of the strategy and helps engage staff and shareholders in delivering and reviewing the strategy. Finally, it is impossible to execute a strategy that is not understood by everyone.
- Better information management - The Balanced Scorecard approach forces organizations to design key performance indicators for their various strategic objectives. This ensures that companies measure what really matters. Research shows that companies with a BSC approach tend to report high quality management information and gain increasing benefits through the way this information is used to guide management and decision making.
- Improving performance reporting - companies that use a Balanced Scorecard approach tend to produce better performance reports than organizations without such a structured performance management approach. Increasing transparency needs and requirements can be met if companies create meaningful management reports and dashboards to communicate performance both internally and externally.
- Better strategic alignment - organizations with a Balanced Scorecard are able to better align their organization with strategic goals. In order to execute a plan well, organizations need to ensure that all business and support units work toward the same goals. Dividing the Balanced Scorecard into these units will help achieve them and at the same time link the operations strategy.
- Better organizational alignment - A well-implemented Balanced Scorecard also helps align organizational processes such as budgeting, risk management and analysis with strategic priorities. This will help to create a truly strategy focused organization.
- The Balanced Scorecard idea is simple, but extremely powerful if implemented well. As long as we use the basic ideas of the BSC to (a) create a unique and visual strategy on a “cause-and-effect” map, (b) align the organization and its processes with the objectives identified in the strategic map, (c) designing significant key performance indicators; and (d) using them to facilitate learning and improve decision-making; thus the organization has a powerful tool, which should lead to better performance.

To put the balanced scorecard to work, companies should articulate goals for time, quality, and performance and service and then translate these goals into specific measures. Senior managers at ECI,

for example, established general goals for customer performance: get standard products to market sooner, improve customers’ time to market, become customers’ supplier of choice through partnerships with them, and develop innovative products tailored to customer needs. The managers translated these general goals into four specific goals and identified an appropriate measure for each. [18]

ECI's Balanced Business Scorecard			
<b>Financial Perspective</b>		<b>Customer Perspective</b>	
GOALS	MEASURES	GOALS	MEASURES
Survive	Cash flow	New products	Percent of sales from new products
Succeed	Quarterly sales growth and operating income by division		Percent of sales from proprietary products
Prosper	Increased market share and ROE	Responsive supply	On-time delivery (defined by customer)
		Preferred supplier	Share of key accounts' purchases
		Customer partnership	Ranking by key accounts
			Number of cooperative engineering efforts
<b>Internal Business Perspective</b>		<b>Innovation and Learning Perspective</b>	
GOALS	MEASURES	GOALS	MEASURES
Technology capability	Manufacturing geometry vs. competition	Technology leadership	Time to develop next generation
Manufacturing excellence	Cycle time Unit cost Yield	Manufacturing learning	Process time to maturity
Design productivity	Silicon efficiency Engineering efficiency	Product focus	Percent of products that equal 80% sales
New product introduction	Actual introduction schedule vs. plan	Time to market	New product introduction vs. competition

**Figure 2.** “ECI’s Balanced Business Scorecard” [18]

But educational practice does not operate the ideal module with theoretical operational dichotomies, but updates contextually: evaluation involves both normative elements and criterion elements. In addition, both normative and criteria instruments must be designed on the basis of evaluation objectives. Also, the performance can be judged according to the previous results, following the evolution over time. Finally, the interpretation of the results, obtained following the application of an evaluation tool designed according to the specifications of a predominantly normative or criterion type, will be performed accordingly. A normative assessment will distribute the subjects along the entire correction / grading scale, while a criterion assessment will provide a measure of the level of mastery achieved by the group in relation to a clearly specified criterion.

Therefore, suitability for purpose involves choosing the most appropriate way, a set of decisions that are made according to the following criteria: the major purpose of the evaluation / assessment / measurement; logistical constraints and determinations (including the human and material costs involved); the nature and dimensions of the target group investigated; the purposes, nature and characteristics of the curriculum or program underlying the evaluation process; the importance, for all those involved, of the stakes of the expected results; the form of presentation, depending on the audience or the beneficiaries of the final report. Only after making decisions on these issues can we proceed to select the evaluation techniques to be used.

The concept of educational efficiency makes the connection between process evaluation and system evaluation, making visible and explicit the relations between the two. When the one who designs an educational evaluation decides to carry out one of the types of evaluation, a series of questions appear:

- What do we evaluate? The system as a whole or only one of its components, educational performance or efficiency, training / educational process, school results, performance levels, competencies, aptitudes, abilities, attitudes.

- For what purpose do we evaluate? Formative / summative, placement, guidance / counselling.
- Who do we evaluate? Human resources involved.
- How do we evaluate? By establishing a clear and transparent path: goals - objectives - evaluation tools - results - interpretation - communication.
- When do we evaluate? At the beginning of a process, during it, at its end, after a certain time from completion.
- What do we evaluate with? With evaluation tools; Through direct, (semi) structured observation, during the process; Through individual or institutional portfolios; Through self-assessment, peer and group assessment procedures, in order to increase metacognitive reflection and institutional socialization.
- Who benefits from the evaluation results? Human resources involved, decision makers. Once the specific answers to these questions have been established, the situation can be designed and built.

### **3. Use of Balanced Scorecard - in order to develop the main processes within the school “Alexandru Ioan Cuza” Economic High School Piatra Neamt – Case study**

Professors Robert Kaplan and David Norton first introduced the concept of a balanced score card in an article published in Harvard Business Review 1/1992 [18]. The basic model of BSC evaluates the organization from 4 different perspectives and aims to integrate operational control into a long-term strategy.

Performance is assessed from 4-5 different perspectives, which integrate short-term operational control into long-term strategy.

BSC perspectives. According to the study of professors Kaplan and Norton, the 4 perspectives of the basic model are: the financial perspective, the client perspective, the process perspective and the learning and development perspective.

Financial perspective: How should we present ourselves to stakeholders in order to be financially successful?; Stakeholder expectations are also reflected in their profitability and development requirements; Effective use of resources.

Customer perspective: How should we present ourselves to customers in order to achieve the objectives?; How should we thank our customers?; Internal processes and development activities must take this perspective into account as the basis of the whole evaluation system.

Process Perspective: What are the processes by which we can create the quality requested by customers and through which we can meet the expectations of stakeholders? This perspective must provide the answer; What are the business processes in which we need to excel to please customers and stakeholders? What areas should we specialize in?

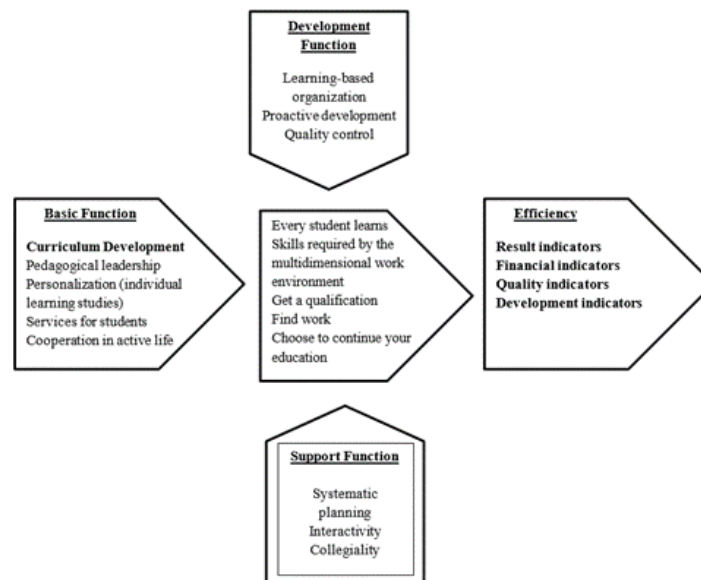
Development and learning perspective: How will we strengthen our capacity to make changes and improvements in order to achieve the objectives?; What can we do to strengthen and develop our ability to meet the needs of our customers, to ensure the efficiency and productivity of processes that provide quality for customers?; What are the main areas of expertise that we should develop and focus on?

BSC model applied within the “Alexandru Ioan Cuza” Economic High School in Piatra Neamt. BSC is applied in the Economic High School "Alexandru Ioan Cuza" Piatra Neamt, and the main processes are divided into 4 perspectives that describe the function of an educational organization. The fundamental function is related to the implementation and development of the teaching act. The auxiliary function considers the organization, structures and management of internal services. The development function describes the development of skills and anticipation of students' educational needs. The results of these 3 perspectives are evaluated through results indicators, financial and quality indicators which constitute the fourth perspective, namely, the development perspective.

The strategy, the annual planning and the management system of the quality and of the operations in the chariot of the Economic High School “Alexandru Ioan Cuza” Piatra Neamt were created based on this model. The BSC model is the framework for the whole evaluation of planning and quality. Through this we were able to achieve a practice-oriented model, a model suitable for an educational institution.

An important aspect is that neither the model nor its elements are direct copies, but individual applications. Using this model of quality development, the institution learned and adopted the fundamental idea of the model, its practices and justification:

- Basic function: making a curriculum; pedagogical leadership skills; personalization (individual study plans); student services; correlation with real life.
- Development function: educational institution; active development; quality control. Each student learns the necessary skills in multidimensional work environments, obtains a qualification, finds a job or continues his studies.
- Auxiliary function: systematic planning; inter collegiality.
- Efficiency: result indicators; financial indicators; quality indicators; development indicators.



**Figure 3.** Balanced Scorecard development perspective [19]

Using the BSC Model applied within the “Alexandru Ioan Cuza” Economic High School in Piatra Neamt. Estimated results from the application of the BSC model. The systematic use of BSC over the years has resulted in continuous development and a number of improvements at all levels of activity in the institution. First, it was possible for the institution as a whole to focus development on certain selected sections, to the detriment of unsystematized, individual actions. The model was developed as a basis for the structure and function of work teams. In addition to sector-specific teams, there are also teams that combine leadership competence and pedagogical skills to serve all ancillary and educational functions within the institution. Viable connections with the field of work. The link between the technical sector advisory committees, the sector-specific organizations and the representatives of real life creates an active forum for development depending on the field. The commitment of teams at all levels results in concrete progress at the pedagogical level in favor of students.

Recommendations for implementing the practice. There are 3 key recommendations for success:

- the relevance and systematic activity of the management staff regarding the use of the model;
- continuous feedback on concrete progress;
- achievement → motivation → staff commitment.

The application of BSC in the “Alexandru Ioan Cuza” Economic High School in Piatra Neamt is an adequate tool to be used in quality management and assurance, as well as for strategic planning within a pre-university education institution.

#### 4. Conclusion

In order to create a quality assurance system, a quality management system must first be introduced. It is a complex task, which involves first of all changing the mentality and perception of teachers in pre-university and university education and on the other hand the broad masses, the direct beneficiaries of the reform system. The performance of the educational institution is analyzed on the basis of key internal and external performance indicators, established targets and existing trends, judged constructively, with the establishment of improvement targets. Any performance measurement indicator is also used as a tool to control it, effectively for the implementation of continuous performance improvement actions.

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# Performance management – a strategic and integrated approach to ensuring the success of organizations

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**Abstract.** The performance of an organization is determined by: its level of coherence and stability; its ability to procure and use resources; of his reputation and image; the synergy of multiplying determinants such as employee relations, communication, mission, philosophy and leadership style, recognition, quality of organizational processes. Performance is defined by behaviors, but especially by results. A mixed performance management model is concerned with both inputs and outputs. The selection of the best model to improve performance is based on a self-assessment process. The complexity of managing an organization today requires that managers be able to measure performance and analyze the impact of different dimensions of performance on organizational excellence. Many experts in the field have started talking about the importance of measurement as a means of communication. The institution's performance is analyzed on the basis of key internal and external performance indicators, established targets and existing trends, judged constructively, with the establishment of improvement targets. Any performance measurement indicator is also used as a tool to control it, effectively for the implementation of continuous performance improvement actions.

## 1. Introduction

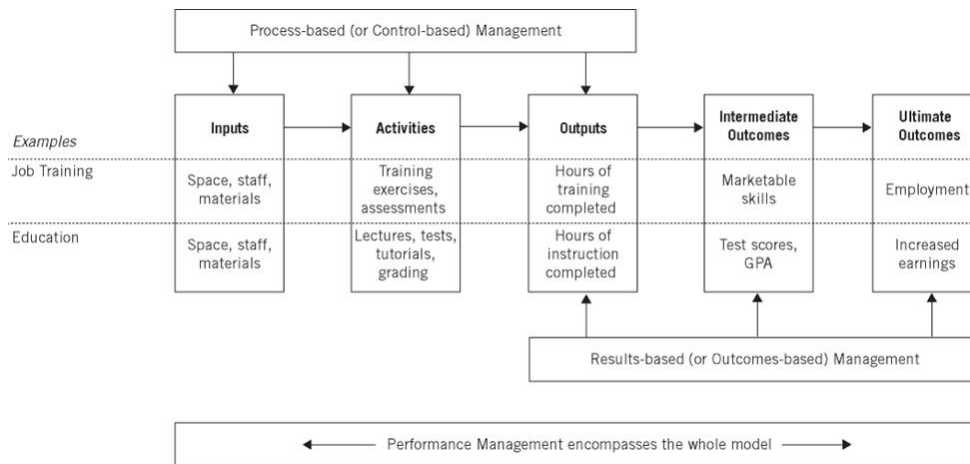
Performance management [1] is a system that includes:

- Methodology for setting objectives,
- A performance measurement process,
- A differentiated payment system,
- Career management.

Performance management is a strategic and integrated approach to ensuring lasting success in the work of organizations, by improving the performance of the organization, teams and individuals [2] [3]. Performance management should be understood as a continuous process, reflecting normal management practices, not "special techniques" imposed on managers. Its conceptual framework includes terms such as: "performance management", "performance", "performing organization". The major contribution of performance management is the focus on achieving results, for example products and services for customers inside and outside the organization. The focus is shifted from effort and time to results and effectiveness.

Performance management encompasses the processes of measuring results and evaluating staff [4]. Modern approaches to performance management combine all the aspects mentioned in an integrated framework, unlike past approaches, which limited performance management to the stage of personnel management or to the collection and reporting of organizational performance indicators [5].

The first performance measurement tool was developed by Kaplan and Northon [6] in the 1990's as the Balanced Scorecard, highlighting the relationship between professional performance and the organization's strategy, each evaluation criterion is correlated with each element of the strategy.



**Figure 1.** Types of performance management as applied to the elements a logic model. [18]

Performance management was also approached as a “regulation loop,” linking organizational strategies and objectives, performance measurement, performance training, performance guidance and leadership, and performance reward. The performance of an organization is determined by:

- its level of continuity and stability;
- its ability to procure and use resources;
- its reputation and image;
- the synergy of multiplying some determinants such as employee relations, communication, mission, philosophy and leadership style, recognition, quality of organizational processes.

Performance management highlights two fundamental aspects [7]:

- *How do we measure and evaluate the real level of performance?*
- *How do we make the level of performance have a weight and how do we ensure the increase of performance?*

According to some authors [8] [9], organizational performance refers to:

- Technical performance, which involves the efficient use of all resources in the organization;
- Economic performance, which involves obtaining a superior quality with low costs;
- Social performance, which involves ensuring an optimal climate, favorable to the development of activities in the organization; adaptability and flexibility to customer needs;
- Managerial performance, which requires adaptability and flexibility to the needs of the organization, the needs of the community, the specifics of the organization's activity.

## 2. The characteristics of the performing organization

Performance is defined by behaviors, but especially by results.

Kane (1996) [10] shows that performance is "something that a person leaves behind".

Bernadin et al. (1995) [11] emphasize that "performance must be defined as the sum of the effects of labor".

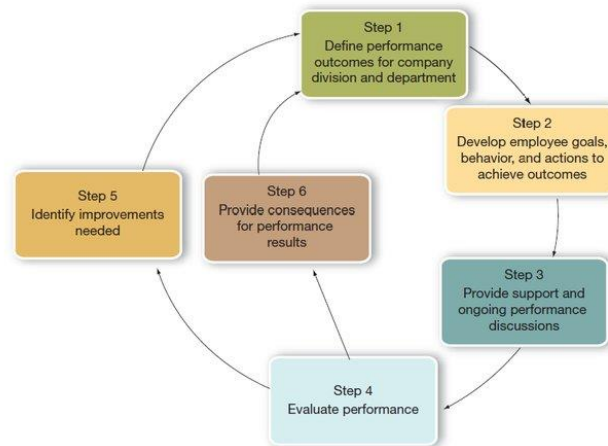
According to Kaplan, "without tools, no improvement can be made", it is essential to measure the right things at the right time, so that the action can be decided in a timely manner [12].

Performance measurement tools and indicators do not just measure performance, they are often integrated with policy, strategy and many other behavioral issues.

Campbell (1990) [13] considers that "performance is a behavior and should be distinguished from results or effects". In his view, the results may be affected by contextual factors and, for this reason, do not correctly reflect individual or team performance.

"Performance means both behavior and results. Behavior emanates from the performer and transforms performance from the abstract notion into concrete action. Not only are they tools for achieving results, behaviors are, in and of themselves, results - the product of the physical and cerebral effort made to perform tasks - and can be judged separately from the results. "[14]

Thus, we can evaluate and measure performance both with reference to results (exits from the task performance process) and to behaviors (inputs to the work process).



**Figure 2.** Steps in the Performance Management Process (Noe et al., 2016) [15]

The purpose of measuring organizational performance is to:

- identify the results, respectively the success or failure;
- identify if the client's needs are met;
- help the organization to understand its processes and confirm what is known, or to reveal what is not known;
- identify where there are problems, blockages, losses, etc. and where improvements are needed; ensure that decisions are based on facts, not assumptions, emotion, faith or intuition;
- show whether the planned improvements actually took place [16].

The characteristics of the performing organization, there are also various concepts and approaches:

- *The performance of the organization is expressed by its effectiveness and, in this sense, an effective enterprise is a successful one;*
- *The performance of the organization is determined by four key organizational features, called the "capabilities" of the company:*
  - Adaptive capacity: the ability of the organization to constantly monitor the external environment, responding to its requirements and pressures (for example, by meeting customer requirements) and, at the same time, to constantly change internally in order to respond to these pressures;
  - Leadership capacity: the ability to set directions for action in the future, to provide the necessary resources and to guide people's actions in those directions;
  - Managerial capacity: the ability to use efficiently and effectively the company's resources;
  - Technical capacity: the ability to design and produce goods and services that enhance the services provided to customers and consumers.

To these basic capabilities can be added another, regarding the ability to positively change the external environment through actions of information, education, persuasion of the company's partners.

The company's performance is ensured by improvements in several key areas [17]:

- Organizational stability, reflected in ensuring the continuity of delivery of products and services;
- Financial stability, given by the solvency of the company, which is able to pay its short-term financial obligations;
- The quality of managerial programs;
- Organizational growth, based on attracting resources and providing more goods and services.

### 3. Conclusion

Performance management involves a systematic approach, at the level of the entire organization, of human resources management and, implicitly, of performance evaluation, based on the objectives and internal needs of the organization, aiming to motivate employees and encourage creative potential.

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# Quality Management and Leadership in Education

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**Abstract:** *Increasingly, the notion of manager is confronted with that of leader. The literature written on this subject is considerable (John P. Kotter and Abraham Zaleznik being only two of the sound names that can be mentioned in this endeavor). Zaleznik proposed that managers were results driven and leaders were creative artists. Kotter proposed that leaders navigated change and managers navigated complexity. John P. Kotter says that today's managers need to know how to lead, be managers and leaders. The differences are: 1. Management is more formal and scientific than leadership. Management is an explicit set of tools and techniques, based on reason and testing, that can be used in a variety of situations; 2. Leadership involves having a vision of where the organization should go; 3. Leadership demands cooperation, teamwork. Researcher Warren Bennis said, "Managers are people who do things right, and leaders are people who do right things." Organizations need both. So what does leader mean, what does manager mean? Why are these concepts being put so often face to face? A management specialist, P. Drucker (1954) draws a first distinction: management means doing the right thing, and leadership means doing the right thing. Such an opinion is continued by S. R. Covey (1990): "management is efficient in ascending on the scale of success, and management determines whether the ladder is placed on the right wall". In other words, the manager manages, organizes, the leader has a vision. Such a direction of analysis is illustratively supported by the metaphor of the road through the jungle: in organizing and conducting this expedition - often similar to the activity of organizations to achieve the proposed objectives - the manager prepares the tools, distributes them to the participants, writes and debates procedural manuals, in time what the driver looks for the direction, the path, has a certain sense for finding the best way. Thus, while the manager generates orders, organization, the leader creates and causes change, draws directions not only objectives, sets directions not only agendas, seeks new resources does not rationally allocate only existing ones. Assuring quality management inevitably brings multiple changes of substance and size in terms of philosophy and management practice at the level of the Romanian school. The concept of quality management necessarily includes the notion of leadership. The multiple researches carried out over time on quality management in education have consistently nominated among the factors that generate and feed this efficiency, the idea of leadership. Thus, the quality of leader of the manager is considered fundamental for ensuring quality management in the school, and the school is considered effective.*

**Keywords:** *management, leader, leadership, quality management, education*

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## 1. Introduction

The main goal of management and leadership is to provide direction, facilitate change and achieve results through the efficient, creative and responsible use of resources.

Quality management and leadership in education play a vital role in achieving quality objectives through planning, monitoring, quality assurance and improvement, by involving all staff at the system level.

Quality management can be defined as the science and art of mobilizing available resources to ensure the set of expressed or implicit properties and characteristics of products or services.

Leadership is one of the most important attributes of an effective manager, but it is also the most common flaw among managers.

Normally institutions promote the most talented in managerial positions, but effective leadership is a skill that is developed through training, instruction and experience.

One of the most important factors in building the organizational culture is due to the particularities of the interactions between the employees, the leadership and the quality of the organizational communication.

Quality management and leadership in education ensure the quality of learning programs and promote continuous improvement, the two coordinates of a culture of excellence.

Management develops the institution's mission, vision, values, policies and strategies and is responsible for ongoing monitoring of systems and processes.

Quality management and leadership are concepts more than ever today, being ultimately performance, both as excellent and purpose in itself, and as a responsibility to some basic rules, but especially of some needs and expectations.

Quality management and leadership have as main purpose the performance orientation of the institution on all dimensions of its activity.

Educational leadership is highlighted in the literature as the most democratic and effective form of leadership of an organization. A history of the evolution of the concept, made by management theorists (Early, 2011) showed the close, stimulating link between employees and leaders of

organizations, this fact leading some to become leaders, while leaders are held accountable by assigning moral principles to complement their leadership status.

The managers of the school organizations stand out as factors of change, in the hypostasis of those transformational leaders, able to mobilize the entire team to ensure the quality of educational services.

Below are presented studies based on the investigation of the perception of the quality of education, conducted in the period 2015-2020. The mentioned works are relevant for investigating the perception on the quality of education, their authors being from different parts of the world, on different educational levels: primary, secondary, high school, university; research topics and approaches are original and adapted to current educational policies; research tools and methods are designed and developed in accordance with the purpose and objectives of the research; participants belong to different categories: teachers, pupils, students, parents, other people, come from different backgrounds, have different ages; and the results lead to conclusions in favour of a quality-focused organizational culture and will allow for additional multidimensional analysis for future research.

**Table 1.** Studies based on the investigation of perception on the quality of education

No.	Author	Year	Research	Instrument	Participants	Conclusions
1	L. K. Ejioueme	2015	Application of Total Quality Management (TQM) in Secondary School Administration in Umuahia Education Zone	“Questionnaire on Application of Total Quality Management in secondary School Administration (QATQMSSA)	358 principals, deputy principals, teachers	Significant difference between the average ratings of principals, deputy principals and teachers
2	N. Ravindran & R. Karpaga Kamaravel	2016	Total quality management in education: prospects, issues and challenges	Theoretical research		

3	E. Kolanowska et al.	2016	EIQAS Enhancing internal quality assurance systems ERASMUS + PROJECT 2014-2016	QUESTIONNAIRE survey on Part 1 of the european standards and guidelines for quality Assurance and internal quality assurance systems		
4	C. Karageorgos, et al.	2017	Validity and Reliability of Total Quality Management Questionnaire in Greek Primary Education Settings	55 items questionnaire	112 teachers - 55 men - 57 women	construction of a reliable questionnaire focused exclusively on TQM
5	F. Taahyadin et al.	2018	Total Quality Management in School	Cross-poll based on a Questionnaire with 15 items	375 teachers	the quality level of traditional daily schools in Kedah is average
6	K. Nasim et al.	2019	Twenty years of research on total quality management in Higher Education: A systematic literature review	search terms; study selection and data extraction.		Research topics, unit of analysis, research methodology, country of origin and disciplinary affiliation of the author.
7	K. R. Murtadlo, Khofidotur	2019	Total Quality Management: Developing Schools Qualities	Theoretical research		
8	M. del Carmen Olmos-Gómez et al.	2020	Quality of Higher Education through the Pursuit of Satisfaction with a Focus on Sustainability	Questionnaire	1091 121 teachers 510 students 469 people	The results of this study will allow additional multidimensional analysis for future research.

**Source:** Author's own contribution

## **2. Exploratory research to investigate the perception of teachers in pre-university education towards quality management and leadership in education**

The general objective of the research is to identify the perception of teachers in pre-university education towards various aspects of quality management education.

This general objective corresponds to a series of specific objectives, which are derived from it, as follows: exploring the perception of specific concepts of quality management and leadership in education, standards of education quality assurance, advantages of implementing standards, the role of teachers in management quality of education, problems encountered in quality management and leadership in education, causes of these problems and their solutions.

### ***Research hypotheses***

1. Quality management and leadership in education is frequently associated by teachers with the level of performance.

2. Most teachers appreciate that standards for ensuring the quality of education in pre-university education are needed.

3. In the perception of teachers, the advantages of implementing quality assurance procedures aim to increase the prestige of the school.

4. The main role of teachers in pre-university education regarding the quality management of education is that of leader.

5. The problems that intervene in the quality management and leadership in education in the perception of teachers in pre-university education are of a material nature.

6. In the perception of teachers, the causes of the problems involved in quality management and leadership in education are determined by the lack of resources.

7. The proposed solutions for preventing and / or eliminating the problems involved in quality management and leadership in education aim at efficient resource management.

### **3. Research method**

#### ***3.1. Participants***

In order to carry out the research, the aim was to investigate the perception of 30 teachers in pre-university education towards quality management of education. Depending on the independent variables, the sample is divided into different categories. According to the residential environment variable, 14 teachers are from urban areas (80%) and 16 teachers are from rural areas (20%).

#### ***3.2. Materials and instruments***

The main concept of quality management and leadership in education has been operationalized in several characteristic elements. These define the perception of teachers in pre-university education towards the following aspects: • words and phrases related to quality management and leadership in education; • standards for ensuring the quality of education in pre-university education; • the advantages of implementing these standards; • the role of teachers in quality management and leadership in education; • problems encountered in quality management and leadership in education; • causes of these problems; • solutions to solve problems. The dependent variables are represented by the problematic aspects encountered in the management of the quality of education. The independent variables are the following: environment of residence (urban, rural), professional experience (0-5 years, 5-10 years, 10-30 + years), courses in the field (yes, no), membership in the quality assurance commission (Yes No).

In the present exploratory study, the method of semi-structured or poorly conducted interview is used, due to the fact that it offers freedom to present the topic and objectives (Gugiuman et al., 1993). According to M. Angers (1996), the semi-structured interview (semi-directive) is a technique of scientific investigation, used either for an isolated individual or for a group of individuals, which allows a semi-directive interrogation in order to obtain some in-depth data they have.

As a variant of the semi-structured interview, the guided or free-answer interview is used (Mayer, 2000). It offers a lower degree of freedom than an unstructured interview, as its conduct is based on a series of pre-prepared topics or statements. Unlike the forms of unstructured interview

(clinical interview and in-depth interview) and those of structured interview (with open statements, with closed statements), the interest for the person tends to decrease even more in favor of the one for a specific topic.

The interview guide is an organized set of themes and / or statements that structure the activity of listening and intervention of the interviewer (Curelaru, 2007, p. 199). Rotariu and Iluț (1999) specify that interview guides know a wide variety of forms, starting from some that include only a few more general topics, to others with a long list of specific topics and statements.

Interviews are followed by their transcription, coding, analysis and interpretation of data. The coding of the data obtained through the interviews is performed in accordance with the analysis method chosen (Popa, 2009).

The main advantages that support the use of this method for establishing E.V.P. are: in-depth approach to the research topic, flexibility of the method, high control of the situation, observation of non-verbal behaviors, high response rate (Angers, 1996; Sarantakos, 1998).

The method can be adjusted for various types of investigation, various purposes and destinations. High control of the situation refers to the fact that the interview method provides the operator with the control of the sequence of statements, their adaptation to the subject, the possibility of correcting the answers, etc. Through the interview it is possible to ensure the formulation of the answers to all the statements, which allows the accumulation of all the data necessary to verify the research hypotheses. On the contrary, the non-response rate is very high in the case of the questionnaire.

### **3.3. Procedure**

The application of the questionnaires was made between April and May 2020, on teachers from pre-university education, belonging to different schools in Neamț and Bacău counties. The interview was applied online through the Google Meet Platform. Participants had a free answer to a number of 7 statements on various issues related to quality management and leadership in education. The effective application of the questionnaires consisted in completing the fields of the questionnaire. Participants were

given the necessary time to complete the questionnaires in full, as a result of the detailed analysis involved. It was also tried to eliminate the facade trend, by emphasizing that there are no wrong or correct answers, but only personal ones.

#### 4. Results

The results obtained in the exploratory research are interpreted and analyzed in accordance with the perception of teachers in pre-university education towards quality management and leadership in education, corresponding to the general hypotheses.

*H1. Quality management and leadership in education is frequently associated by teachers with the level of performance.*

For the interpretation of general hypothesis 1, the frequency for each category of answers was calculated and the percentages will be specified.

**Table 1.** The results obtained in terms of teachers' perception of the association of words and expressions related to quality management and leadership in education.

Nr.	Categories	Frequency	Percentages
1.	Professionalism	10	33%
2.	Performance	6	20%
3.	Equal opportunities	5	17%
4.	Involvement	4	13%
5.	Standards, quality descriptors	3	10%
6.	Responsibility	2	7%

According to the graphically represented data, it is observed that 33% of the teachers mentioned the word professionalism as relevant when we talk about quality management and leadership in education. For the fewest teachers in the research group, the word responsibility is associated with quality management and leadership in education.

*H2. Most teachers appreciate that standards for ensuring the quality of education in pre-university education are needed.*

In order to interpret the general hypothesis 2, the frequency for each category of answers was calculated and the percentages will be specified.

**Table 2.** The results obtained regarding the teachers' perception towards the standards of quality assurance of education at the level of pre-university education.

Nr.	Categories	Frequency	Percentages
1.	Too many standards	7	23%
2.	Rigid	5	17%
3.	Unrealistic	4	13%
4.	They are beneficial	3	10%
5.	Necessary	11	37%

According to the graphically represented data, it is observed that 23% of the teachers stated that there are too many standards, 37% of the teachers having different answers.

*H3. In the perception of teachers, the advantages of implementing quality assurance procedures aim to increase the prestige of the school.*

The interpretation of the general hypothesis 3 was made by calculating the frequency for each category of answers and the percentages are specified.

**Table 3.** The results obtained in terms of teachers' perception of the advantages of implementing standards for ensuring the quality of education in pre-university education.

Nr.	Categories	Frequency	Percentages
1.	Reducing school dropout	12	40%
2.	Qualified human resources	7	23%
3.	The prestige of the school institution	5	17%
4.	Secure school environment	3	10%
5.	Other	3	10%

Starting from the graphically represented data, it is observed that 40% of the interviewed teachers put as a first advantage the reduction of school dropout, 10% of the teachers having different answers. For the

fewest teachers in the research group, the advantage of implementing the standards of quality assurance of education are listed as the safe school environment.

*H4. The main role of teachers in pre-university education regarding the quality management of education is that of leader.*

The interpretation of the general hypothesis 4 was made by calculating the frequency for each category of answers and the percentages are specified.

**Table 4.** The results obtained in terms of teachers' perception of the role they play in achieving quality management and leadership in education.

Nr.	Categories	Frequency	Percentages
1.	Central role of leader	15	50%
2.	Relationship and communication	7	23%
3.	Adjustment and orientation	3	10%
4.	Other	5	17%

According to the graphically represented data, it is observed that 50% of the interviewed teachers consider that their main role in quality management and leadership in education is a central one, leadership, 17% of teachers having different answers. For the fewest teachers in the research group, their role in quality management and leadership in education is that of regulation and guidance.

*H5. The problems that intervene in the quality management and leadership in education in the perception of teachers in pre-university education are of a material nature.*

The interpretation of the general hypothesis 5 was made by calculating the frequency for each category of answers and the percentages are specified.

**Table 5.** The results obtained in terms of teachers' perception of the problems they found in quality management and leadership in education.

Nr.	Categories	Frequency	Percentages
1.	Material order	14	47%
2.	Bureaucracy	7	23%

3.	Non-involvement of the family	6	20%
4.	Lack of qualified teachers	3	10%

According to the graphically represented data, it is observed that 47% of the interviewed teachers consider that the main problem in quality management and leadership in education is material. For the fewest teachers in the research group, a special problem in quality management and leadership in education is that there are no qualified teachers.

*H6 .In the perception of teachers, the causes of the problems involved in quality management and leadership in education are determined by the lack of resources.*

The interpretation of the general hypothesis 6 was made by calculating the frequency for each category of answers and the percentages are specified.

**Table 6.** The results obtained in terms of teachers' perception of the causes of the problems they found in the management of quality education and leadership in education.

Nr.	Categories	Frequency	Percentages
1.	Limited financial resources	14	47%
2.	Unmotivated salary	7	23%
3.	Lack of education	6	20%
4.	High cost of training courses	3	10%

*H7. The proposed solutions for preventing and / or eliminating the problems involved in quality management and leadership in education aim at efficient resource management.*

The interpretation of the general hypothesis 7, was made by calculating the frequency for each category of answers and the percentages are specified.

**Table 7.** The results obtained in terms of teachers' perception of the proposed solutions for preventing/eliminating problems in quality management and leadership in education.

Nr.	Categories	Frequency	Percentages
1.	Careful management of financial resources	13	43%
2.	Incentives for teachers	7	23%
3.	Parents' school	5	17%
4.	More free training courses	3	10%
5.	Other	2	7%

According to the graphically represented data, it is observed that 43% of the interviewed teachers consider that the main solution in preventing / eliminating problems in quality management and leadership in education is the careful management of financial resources.

For the fewest teachers in the research group, the solution to the problems in quality management and leadership in education would be the existence of free training courses.

## 5. Discussions

Quality Management and Leadership in Education means strong managers with leadership skills who: imprints the vision and mission of the school to all stakeholders at the level school and community; set goals for the school together with the school staff and articulate these goals with clarity, responsibility, conviction; encourages teamwork at all levels of the school; they consider the professionalization and continuous improvement of the staff; motivates staff and systematically cultivates forms of recognition and celebration of success; promotes the efficient use of school resources.

## 6. Conclusions

The conclusions that emerge from the applicative part are systematized by reference to the research hypotheses. The exploratory study had as general objective the identification of the perception of teachers in pre-university education towards different aspects of quality management and leadership in education:

- For most teachers, the word professionalism is closely related to quality management and leadership in education;
  - 23% of the surveyed teachers consider that there are too many quality standards;
  - Identification as the first advantage of quality management and leadership in education - reducing school dropout;
  - 50% of teachers consider that their role in quality management and leadership in education is central, leading;
  - The main problem in quality management and leadership in education is limited material resources;
  - The main cause of the above-mentioned problem is the allocation of insufficient funds;
  - The solution to the material problem would be the careful management of financial resources and the allocation of a higher percentage of financial resources.

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# The Model of Quality Assurance in Education by Implementing E-Learning and Blended Learning

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## ABSTRACT

Quality assurance models in education are an essential factor for the successful achievement of education. There is a growing global interest in identifying quality models, both in general and in education. These models are effective tools in the management of educational institutions, provided they are properly implemented. Therefore, an analysis of representative models in terms of education quality management is appropriate. The analysis of the models is based on several coordinates: identifying the characteristic elements, exploring the ways of capitalizing on the models at the level of the school institution, highlighting the advantages and disadvantages. A successful model of quality in school management focuses on the relationships between student, teacher and curriculum, around which revolve the external influences of society, family, labor market requirements, the need for competence and lifelong learning.

**Keywords:** *Quality, Quality assurance, Models, Education.*

## 1. INTRODUCTION

Educational technologies have developed rapidly in recent years, which has created new types of teaching-learning-assessment. All three activities, which are the basic components of the educational process, are delivered through a wide range of electronic technologies, from computerized form to full online model. The rapid development of educational technologies has led to the emergence of learning methods, which require reconsideration of quality assurance criteria and standards. It is necessary to adapt the school to the new requirements (Al-Hajraf and Al-Sharhan, 2012): strengthening the infrastructure, creating a single portal with a complete learning management system and collaboration tools, digitizing curricula and converting textbooks into courses, interactive, creating Smart classes, equipping teachers and students with equipment, creating digital libraries, preparing teachers for the use of new technologies. In the future, quality assessment standards in education will certainly address these issues as well. Quality control of e-learning is becoming a new challenge for any education system, due to the novelty and complexity of this concept. The e-learning and blended learning approaches, as well as the large size of the implementation process involve establishing clear, concrete and easy to implement directions of action.

## 2. CONVENTIONAL LEARNING MODEL

The conventional learning model (Kamsin, 2005) is based on the interaction between teachers, students and content. Given the introduction of technological tools, the greater the interaction between the three elements. A major role is played by students and teachers, as a result of the impact on the content. In this way, teachers will have the ability to use technology to create content and for the student to evaluate the content, thus introducing a whole new dimension in teacher-student interaction. In the traditional learning model, the interaction between the three elements of the system is achieved through interpersonal communication, which allows students and teachers to interact with the third element (content) in the classroom. Instead, the mixed e-learning model causes fundamental relationship changes in an environment where students and teachers interact with content in different ways and in different locations at different times. E-learning can create a false impression of diminishing the role of the teacher. There is a growing need for competence and involvement on the part of teachers. According to the model proposed by the authors, learning does not become a separate teaching process, but is based on a close collaboration between teacher and student. The teacher is directly involved in the learning activity, in order to organize, support and certify the student's work.

### 3. THE MODEL OF QUALITY ASSURANCE IN EDUCATION BY IMPLEMENTING E-LEARNING AND BLENDED LEARNING

Al-Hajraf and Al-Sharhan (2012) proposed a delivery model for the new e-learning environment. The model for quality assurance in the context of online education is based on the inclusion of e-learning and blended learning in a framework of total quality management. The development of quality standards determines the transformation of the primary environment from a conventional environment to an interactive one, with an infrastructure that allows e-learning and an adequate digital content. According to the new model, the main elements are the learning management system, multimedia-equipped classrooms (smart classrooms) and the network or the Internet. The activities are specific to the blended learning process, because the teacher and the students meet in smart classrooms, and the learning process is guided by the teacher by using the online content accessed by the students, through the network (Internet). A graphical representation of the components of the model developed by Al-Hajraf and Al-Sharhan (2012) is made in Figure 1.



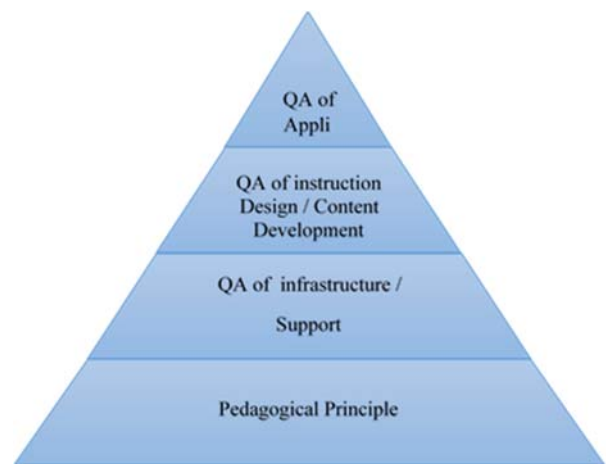
**Figure 1** Components of the quality assurance model in education through the implementation of e-learning and blended learning.

The conceptual framework of the presented model is based on 8 dimensions that describe the different fields that the educational management should consider: the competence of the teacher / staff; student / teacher behavior; conventional / digital content; infrastructure; delivery environment; technical assistance services; sustainability / reliability; measuring and evaluation instruments.

Al-Sharhan and Al-Sharhan (2012) developed a scheme with the characteristic elements of the quality

control model in e-learning and blended learning (Figure 2.). At the base of the model construction are the pedagogical principles, in order to highlight the fact that education keeps the same foundations, the changes intervening in the way of teaching, learning and evaluation.

These changes are perceived as a way to improve the quality of teaching, as an opportunity to enrich and diversify it, depending on individual needs and external requirements. The quality of the infrastructure, equipment and support needed to achieve e-learning or blended learning is an elementary condition, without which such a model would not be possible. The implementation of the model requires a considerable material effort, not only due to the investments involved in building a good infrastructure, but also due to maintenance and upgrade costs, as a result of the accelerated development of technology.



**Figure 2** Characteristic elements of the quality assurance model in education through the implementation of e-learning and blended learning.

Al-Hajraf and Al-Sharhan (2012) emphasize the importance of a balanced approach to quality assessment, as a far too simple approach will lack flexibility, while a complex one will consume a lot of time and resources. The model proposed by the authors for evaluating the quality of education includes four levels that must be followed sequentially and evolutionarily: evaluation of reaction, evaluation of learning, evaluation of behavior and evaluation of results.

### 4. CONCLUSIONS

There is a need for changes in attitudes and perceptions on the part of all those involved, be they students or teachers, as well as a reconsideration of society's position towards the school. Performance evaluation and measurement according to quality standards are the tools that will establish the directions of action and ways to expand the model.

**AUTHORS’ CONTRIBUTIONS**

A good education requires a quality design of training and tailored contents. The curriculum, the school curricula, the design of the classroom activity must be put in accordance with the requirements of an education in which the simple face-to-face communication of the teacher with the student is long overdue. The quality of applications, their accuracy, relevance, accessibility and timeliness, as well as data security, are also particularly important aspects in such a model. The advantages and disadvantages of the quality assurance model in education are summarized in Table 1.

**Table 1.** Advantages and disadvantages of the quality assurance model in education through the implementation of e-learning and blended learning

Benefits	Disadvantage
<ul style="list-style-type: none"> <li>- the integration of the educational process and the formation of a monitoring system similar to the accreditation procedures, as a result of the implementation of an adequate quality assurance system;</li> <li>- ensuring the responsibility of educational systems and institutions;</li> <li>- encouraging the constant improvement of the learning process and, therefore, of the entire educational system;</li> <li>- forming a solid foundation for effective higher education</li> </ul>	<ul style="list-style-type: none"> <li>- making major financial investments, which the authorities postpone or even refuse, determined by the implementation of elearning in schools from disadvantaged backgrounds;</li> <li>- the appearance of blockages that prevent the application of measures in some educational units, such as the reluctance and resistance to change of some teachers;</li> </ul>

**ACKNOWLEDGMENTS**

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# Six Sigma –quality management model to improve process performance

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**ABSTRACT:** Quality assurance models are an essential factor for the successful completion of a process. There is a growing global interest in identifying quality models, both in general and in education. These models represent effective tools at the level of institution management, as well as at the level of educational institutions, provided that they are correctly implemented. Therefore, an analysis of representative models in terms of education quality management is appropriate. The analysis of the models is based on several coordinates: identifying the characteristic elements, exploring the ways of capitalizing on the models at the level of the institution, highlighting the advantages and disadvantages. A successful model of quality in the management of an organization emphasizes the relationships between employees, the internal environment of the organization, around which revolve the external influences of society, family, labor market requirements, the need for competence and lifelong learning.

**KEYWORDS:** Quality management, Models, Organization, Performance, Six Sigma.

## I. INTRODUCTION

Six Sigma is a recently developed method, introduced by Bill Smith, one of Motorola's top experts, on January 15, 1987 (Tavakoli & Azizi, 2018). The term Six Sigma is derived from the field of statistics, because  $\sigma$  represents the standard deviation.

First, it referred to the possibility of manufacturing processes to produce a very high proportion according to specifications. In the field of quality management,  $\sigma$  represents the percentage of products without defects.

The level of the error-free production process in this method is determined by the number  $\sigma$ , which is the percentage of products without defects in percent at the exit of the process.

A process with a quality of  $6\sigma$  at the output characterizes 99.99966% of cases without defects or at most 3.4 defects per 1 million operations.

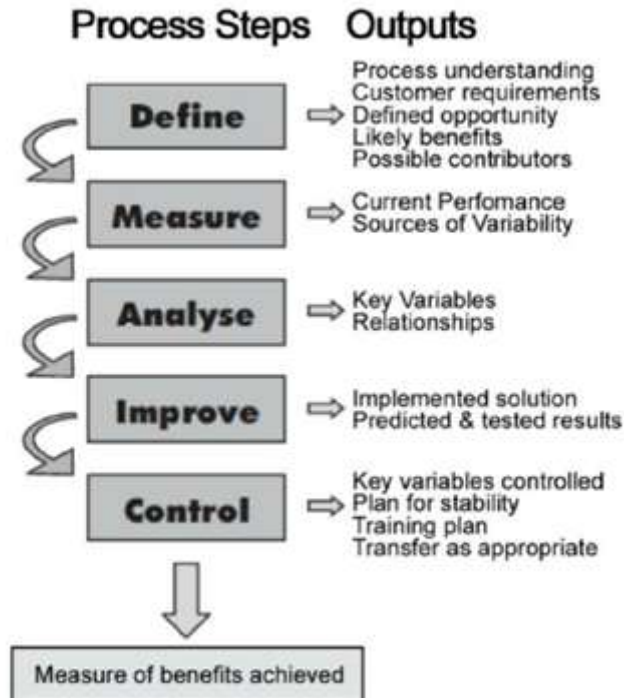
Six Sigma is a quality management program for improving process performance, by reducing variations, for continuous and innovative improvement (Dehvari, 2014).

The goal of the Six Sigma strategy is to increase an organization's profit by eliminating variability, reducing the number of defects and eliminating losses, which removes the consumer and harms the organization. This model helps organizations improve the quality of their products and services to meet customer needs.

## II. SIX SIGMA STRATEGY

The Six Sigma strategy can be perceived and understood in three different ways. Metrically, the Six Sigma level is assured when 3.4 defects are obtained per million opportunities. From a philosophical perspective, Six Sigma involves reducing the variation of the organization's processes, focusing on the consumer and making decisions based on data and facts. Methodologically, Six Sigma is based on the use of two methods, DMAIC and DMADV, which use different tools and techniques of quality management for their management.

The DMAIC process is an improvement system for processes that do not conform to the performance specifications required by the customer or managers. This process includes the following operations (**Figure 1.**): Defining the manufacturing processes in accordance with the customer's requests and establishing the strategy; measuring the main aspects of the current process and collecting the main data; data analysis and identification of causes and determination of relationships, to ensure that all factors have been taken into account; improving and optimizing the processes based on the analyzed data; control, to ensure that any deviation from the main purpose is corrected before they turn into defects.



**Figure 1.** The Six Sigma DMAIC Process and Key Outputs

The DMADV process is an improved system for creating a new process or product that can reach the six sigma quality level (99% of opportunities are not mistakes).

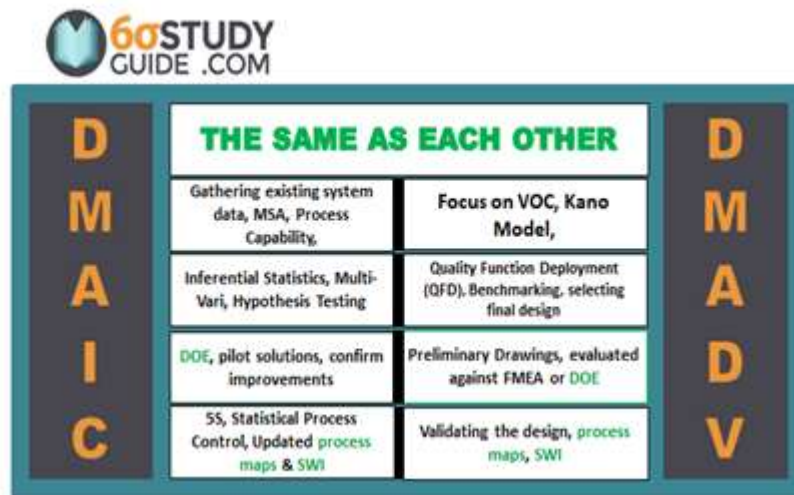
This process includes the following operations (**Figure 2.**): defining goals that are relevant to customer requirements and adopting a

strategy; measurement to identify product capacity, production process capacity and risks; analysis of the project and design alternatives, in order to determine a high level of project design and evaluation, as well as to select the best project; design and implementation of the production process and project verification.



**Figure 2.** Specific operations at the DMADV process level

**Similarities and Differences Between DMAIC & DMADV**



**Figure 3. DMAIC VS. DMADV**

There are differences between the Six Sigma model and other quality models, such as TQM, which are analyzed in **Table 1**.

**Table 1.** Comparative analysis of the characteristic elements of the Six Sigma and TQM models

The Six Sigma Model	The TQM Model
- the existence of a continuous effort to reduce the output deviations of the key processes of business success	- the organization's focus on understanding and responding to customer needs
- the commitment of the whole organization, in particular senior management, to the continuous improvement of quality	- the desire for continuous systematic improvement of all products, services and processes, as a result of the participation of all partners

The Six Sigma methodology was initially applied in production and is currently used in all business sectors, including financial services, marketing, sales, logistics, medicine, education, human resources and public services.

Educationally, the Six Sigma model has been applied in higher education to determine the root causes that lead to delays in approving the curriculum for new courses. With the help of this model, a US university established the main causes, which are the lack of standards, waste of time and complexity of the process.

The solution was established at the level of the improvement phase, which consisted in the exact definition of the purpose, the fluidization and clarification of the approval processes of the new courses, by eliminating the duplication of approvals and the introduction of visual management. Therefore, the time for defining and approving a new course has been shortened by 78%.

The Six Sigma model allows schools, universities and other educational institutions to improve the level of knowledge and skills, as well as the satisfaction of pupils and students in

improving process performance, both in the educational and administrative spheres.

One of the advantages of this model is that it examines all processes to eliminate variations that could contribute to malfunctions or defects of the final product. The model is also effective because it is applicable to all general processes and involves all employees to lead to the necessary changes.

Six Sigma is based on a strict method that constantly uses information and statistical data to measure and improve the organization's results. Quality management becomes effective with this model, as it focuses on identifying and preventing defects in the production phase, which leads to a high level of satisfaction, which exceeds the expectations of the parties involved. Six Sigma contributes to increasing the level of quality and optimizing the process, by eliminating defects and improving performance.

Six Sigma focuses on understanding, quantifying, improving and controlling those variables or causes that influence customer expectations. Six Sigma implementation is a complex, intensive process that requires resources and qualified and dedicated staff. Large organizations that have adopted Six Sigma have shown that a certain organizational infrastructure is needed, in terms of staff roles and responsibilities.

Along with the advantages, the model also has a number of disadvantages. The Six Sigma concept does not draw parallels between the quality and satisfaction of customers, on the one hand, and the duration and speed of processes, on the other hand. At the same time, the duration of the process is directly related to customer satisfaction in the provision of services and for production processes, frozen funds in the form of waiting stocks.

The Six Sigma toolkit limits the potential for problem solving. The improvement of the process within the Six Sigma methodology is achieved, mainly, by reducing the variability of the processes by statistical methods and the redesign of the processes using the DFSS method (Design for Six Sigma).

The Six Sigma methodology may eliminate opportunities to improve the process, such as reducing unproductive activities, reducing waiting times, reducing inventory and transportation costs, optimizing jobs, and so on.

The Six Sigma model has a profound impact on product quality, customer service [6].

performance and staff professional progress. This model can be used successfully in quality management at the school organization level, as a result of the methodology provided and the results already obtained in academia.

### III. CONCLUSION

Successful achievement of quality management is conditioned by compliance with clear performance criteria. These criteria are determined by different reference models in the field, such as Total Quality Management, the Six Sigma model.

The quality models were analyzed based on several criteria: identifying the characteristic elements, exploring the ways to capitalize on the models at the level of the institution, highlighting the advantages and disadvantages.

The analysis of the representative models in the field of quality led to the elaboration of a new approach for conceptualizing the quality management in close connection with the novelty aspects of the standards related to the online environment.

An employee-centered culture is promoted, as the model will be adapted to the requirements and needs of the main beneficiaries, as well as in connection with the external environment.

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## Total Quality Management vs. Six Sigma

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**Abstract:** Quality assurance models are an essential factor for the successful completion of all activities. There is a growing global interest in identifying quality models, both in general and in education. The purpose of this paper is to analyze the characteristic elements of total quality management (TQM). TQM represents an integrated effort meant to improve the quality of each level of the organization. The historical evolution of the total quality management comprises four steps: quality inspections, quality control, quality assurance and, finally, the TQM process itself. Quality is obvious in human actions. The goal of the Six Sigma strategy is to increase an organization's profit by eliminating variability, reducing the number of defects and eliminating losses, which removes the consumer and harms the organization. The term Six Sigma is derived from the field of statistics, because  $\sigma$  represents the standard deviation. This model helps organizations improve the quality of their products and services to meet customer needs.

**Background:** Quality assurance models are effective tools at the level of institution management, in general, but also at the level of educational institutions, provided they are correctly implemented. The statistical control through inspections, the post-production effort of separating the functional and non-functional products, have led to a particular order of these steps. The selection should be carried out before beginning the development of the product. The development of control charts and the acceptance of survey methods in the period between 1924-1931 (Stewhart and Dodge-Romig) obviously helped, during the time, the inspection related prosperity of the field. During the Second World War, system production became a complex process and, thus, quality came to be analyzed by the means of inspections; the act was carried out much more efficiently when the workers' analysis was applied. Six Sigma referred to the possibility of manufacturing processes to produce a very high proportion according to specifications. In the field of quality management,  $\sigma$  represents the percentage of products without defects.

**Materials and Methods:** An analysis of representative models in terms of quality management is appropriate. The analysis of the models is based on several coordinates: identifying the characteristic elements, exploring the ways of capitalizing on the models at the level of the institution, highlighting the advantages and disadvantages. In the third step, that of quality assurance, there is a strategy analysis with the precise purpose of offering enough trust that a particular product or service satisfies the needs of the customers. The next step brought quality workbooks in which quality is achieved with average costs, and the development of the control process has the purpose of passing from the quality assurance era to that of total quality management. The level of the error-free production process in this method is determined by the number  $\sigma$ , which is the percentage of products without defects in percent at the exit of the process. A process with a quality of  $6\sigma$  at the output characterizes 99.99966% of cases without defects or at most 3.4 defects per 1 million operations.

**Results:** A successful model of quality in the organization's management emphasizes the relationships between internal employees, around which revolve the external influences of society, family, labor market requirements, the need for competence and lifelong learning. The model shows a set of practices which allows an organization to deliver quality products and services. The term total from the total quality management phrase highlights the fact that everybody from the organization should be involved in the efforts of continuous improvement in all of the departments. The term quality is used, in its usual meaning, while the term management refers to the system of leadership which involves planning, organizing, leading and quality assurance. The Six Sigma model has a profound impact on product quality, customer service performance and staff professional progress. It examines all processes to eliminate variations that could contribute to malfunctions or defects of the final product. The Six Sigma model is applicable to all general processes and involves all employees to lead to the necessary changes.

**Conclusion:** Successful achievement of quality management is conditioned by compliance with clear performance criteria. These criteria are determined by different reference models in the field, such as Total Quality Management and Six Sigma. Total Quality Management (TQM) constitutes a way of leading an organization centered on quality through the participation of all of its members. Through this model, constant improvement is sought, along with the gradual introduction of the new processes, so as to obtain a higher degree of excellence in organizations. The analysis of the representative models in the field of quality led to the elaboration of a new approach for conceptualizing the quality management in close connection with the novelty

aspects of the standards related to the online environment. An employee - centered culture is promoted, as the model will be adapted to the requirements and needs of the main beneficiaries, as well as in connection with the external environment. Continuous improvement has been one of the important factors of organization development, as total quality management supports the development of good actions and results within organizations.

**Key Word:** Quality assurance; Quality management; Models; Management; Performance.

## I. INTRODUCTION

TQM is a management concept which has initially evolved from the Japanese management processes and stems from the industrial experience. TQM is a management philosophy and practice meant to valorize the human and material resources, basic resources of every organization, which lead, when most efficiently used, to the achievement of the organizational objectives. According to Ojo (2006), this is a quality-centered management style: customer-oriented, fact-based, team-directed; all of these factors target the achievement of organizational objectives. Six Sigma is a recently developed method, introduced by Bill Smith, one of Motorola's top experts, on January 15, 1987 (Tavakoli&Azizi, 2018). The term Six Sigma is derived from the field of statistics, because  $\sigma$  represents the standard deviation. First, it referred to the possibility of manufacturing processes to produce a very high proportion according to specifications. In the field of quality management,  $\sigma$  represents the percentage of products without defects. Six Sigma is a quality management program for improving process performance, by reducing variations, for continuous and innovative improvement (Dehvari, 2014).

## II. MATERIAL AND METHODS

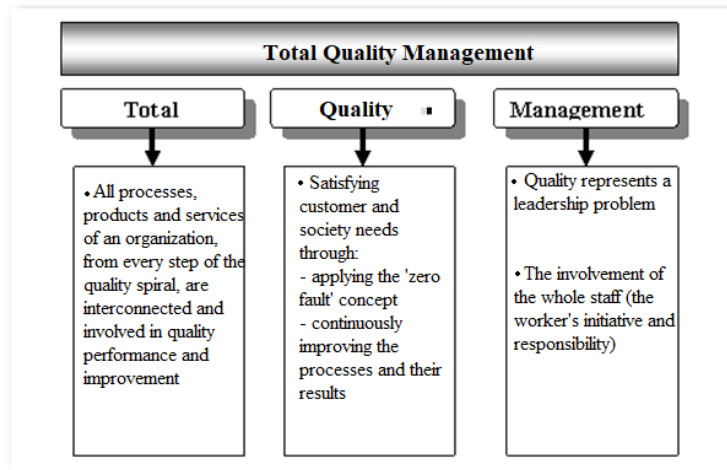
TQM, by the means of multifunctional teams trained to use basic statistical instruments so as to collect and analyze data, professional staff and workers from every department, has highlighted the potential efficiency in solving the problems approached. There are different approaches concerning TQM, but most of them lead to some common points. They guide organizations to concentrate on satisfying the needs of the customers, to develop and put to use the whole potential of all of the employees, to engage all of the efforts in order to find better ways of managing business using reliable data and information targeting financial outcomes.

The programme presented by Deming (cited in Pop, 2009) comprises the following 14 aspects determining the framework of quality improvement:

- Assure the continuous improvement of product and service quality, on a planned basis, in order for the business to resist.
- Adopt a new philosophy, while giving up the “acceptable quality level”.
- Drop the whole control of products and processes, by introducing statistical control methods meant to establish the accordance with the specified requirements.
- Ask the provider for proof concerning the statistical quality evidence.
- Discover the problems. The management has to deal with the continuous improvement of all of the processes from every step of every process of the product trajectory, from the design to the assurance of service usage.
- Provide, for all of the employees, the instruments necessary for the appropriate performance of activities.
- Eliminate fear, encourage communication, so that every employee can openly express his/her viewpoint.
- Eliminate the barriers between the departments of the enterprise. Form groups containing persons from different departments so as to identify problems and prevent them in future processes.
- Eliminate posters and slogans connoting forced labor. Before seeking a productivity increase, make sure the measures do not go against quality, which has to be continuously improved.
- Review the standard working hours, so as to prevent them from becoming an obstacle in the way of productivity or quality.
- Eliminate all of the obstacles impeaching people to be proud of their work.
- Establish a rigorous staff training programme in accordance with the development of procedures, methods and techniques used in all of the company departments.

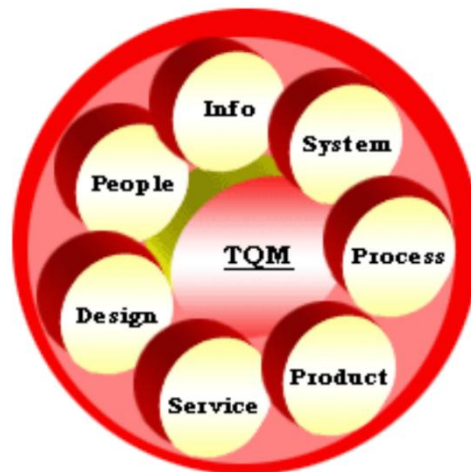
TQM is a permanently evolving concept, which changes with new concepts and new models of development. According to Strickland and Wither, TQM is both a philosophy and a set of governing principles which provide the fundament of continuous organization improvement. The meaning of each of the TQM words is:

- Total – Every person from the organization is involved (including the customer and the provider);
- Quality – The customers' requirements are faithfully addressed;
- Management - The managers are fully committed.



**Figure 1.** Total Quality Management

The model shows a set of practices which allows an organization to deliver quality products and services. The term total from the total quality management phrase highlights the fact that everybody from the organization should be involved in the efforts of continuous improvement in all of the departments. The term quality is used, in its usual meaning, while the term management refers to the system of leadership which involves planning, organizing, leading and quality assurance.



**Figure 2.** Total quality management (TQM)

The basic instrument of total quality management is the PDCA (plan-do-check-act, see Figure 3) cycle, (a.k.a. the Deming Wheel), a method of organizing management activities oriented towards the continuous improvement of quality management. This quality improvement method was devised by W. E. Deming (1993).

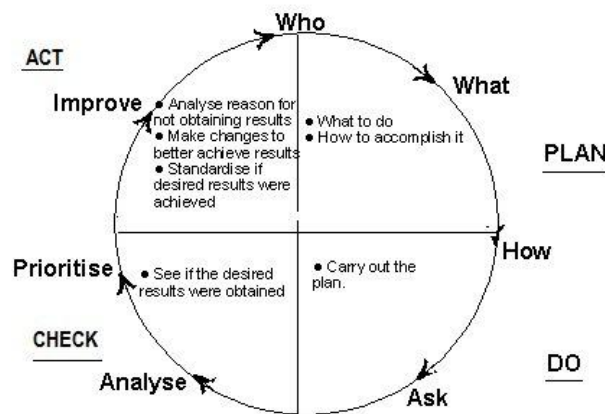


Figure 3. The Deming Wheel (PDCA Cycle) for Continuous Process Improvement

**Plan** signifies the planning of the objectives and processes required to obtain the results according to the customer needs and organization policies. **Do** refers to process execution and implementation. **Check** deals with the actions of control, monitoring and measurement of processes, according to the policies, objectives, requirements, as well as result announcing. **Act** involves action seeking procedures meant to improve process performance. The **PDCA** method involves a methodical approach to problem solving and solution implementing.

**The Six Sigma strategy** can be perceived and understood in three different ways. Metrically, the Six Sigma level is assured when 3.4 defects are obtained per million opportunities. From a philosophical perspective, Six Sigma involves reducing the variation of the organization's processes, focusing on the consumer and making decisions based on data and facts. Methodologically, Six Sigma is based on the use of two methods, **DMAIC and DMADV**, which use different tools and techniques of quality management for their management. **The DMAIC process** is an improvement system for processes that do not conform to the performance specifications required by the customer or managers. This process includes the following operations (Figure 4.): Defining the manufacturing processes in accordance with the customer's requests and establishing the strategy; measuring the main aspects of the current process and collecting the main data; data analysis and identification of causes and determination of relationships, to ensure that all factors have been taken into account; improving and optimizing the processes based on the analyzed data; control, to ensure that any deviation from the main purpose is corrected before they turn into defects.

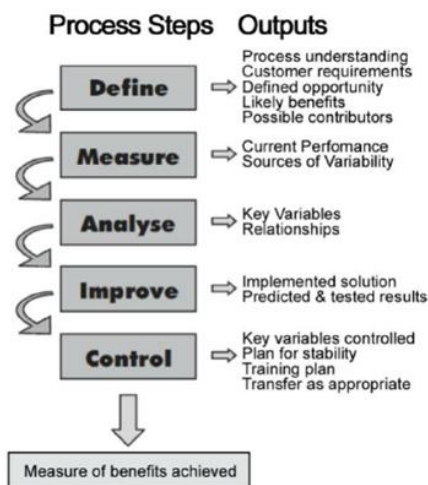
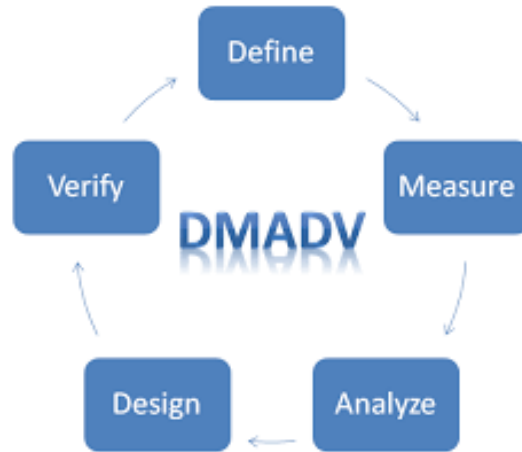


Figure 4. The Six Sigma DMAIC Process and Key Outputs

**The DMADV process** is an improved system for creating a new process or product that can reach the six sigma quality level (99% of opportunities are not mistakes). This process includes the following operations (Figure 5.): defining goals that are relevant to customer requirements and adopting a strategy; measurement to identify product capacity, production process capacity and risks; analysis of the project and design alternatives,

in order to determine a high level of project design and evaluation, as well as to select the best project; design and implementation of the production process and project verification.



**Figure 5.** Specific operations at the DMADV process level

*Similarities and Differences Between DMAIC & DMADV*

**6σSTUDY**  
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D M A I C	THE SAME AS EACH OTHER		D M A D V
	Gathering existing system data, MSA, Process Capability,	Focus on VOC, Kano Model,	
	Inferential Statistics, Multi-Vari, Hypothesis Testing	Quality Function Deployment (QFD), Benchmarking, selecting final design	
	DOE, pilot solutions, confirm improvements	Preliminary Drawings, evaluated against FMEA or DOE	
	5S, Statistical Process Control, Updated process maps & SWI	Validating the design, process maps, SWI	

**Figure 6.** DMAIC VS. DMADV

The Six Sigma methodology may eliminate opportunities to improve the process, such as reducing unproductive activities, reducing waiting times, reducing inventory and transportation costs, optimizing jobs, and so on. The Six Sigma model has a profound impact on product quality, customer service performance and staff professional progress.

**III. RESULT**

**The PDCA method** involves a methodical approach to problem solving and solution implementing. Each step requires specific operations. Step 1, plan, involves the exact identification of the problem and its correlation with the information necessary to find solutions. This step requires the collection of useful data for the current situation assessment and for the development of the improvement plan. An analysis is needed to find out what can be improved, so as to determine the areas of change opportunities. Step 2, do, consists in the following key activities: generate possible solutions, choose the best solutions and implement the pilot project. Change needs to be planned and implemented afterwards. When possible, it is preferred to implement change on a lower scale first, in order to prevent and correct certain difficulties. Step 3, check, requires the assessment of the pilot project efficiency and the collection of information necessary for its improvement. The success of the generated solution and of the pilot project implementation determines the way of applying the whole initiative, although it may be necessary to repeat the steps related to development and checking and incorporate the needed modifications. Step 4, act, targets the total implementation of the solution. The PDCA cycle does not stop here, as the steps can be repeated, since the initiatives of improvement must be an unceasing process. The Deming

cycle can be successfully implemented when three basic elements are taken into account: the leadership agreement and the consideration of the Deming cycle implementation as a compulsory policy of change; the consideration of the concept as a circular plan, and the implementation of the concept in every department of the organization.

The Six Sigma methodology was initially applied in production and is currently used in all business sectors, including financial services, marketing, sales, logistics, medicine, education, human resources and public services. Educationally, the Six Sigma model has been applied in higher education to determine the root causes that lead to delays in approving the curriculum for new courses. With the help of this model, a US university established the main causes, which are the lack of standards, waste of time and complexity of the process. The solution was established at the level of the improvement phase, which consisted in the exact definition of the purpose, the fluidization and clarification of the approval processes of the new courses, by eliminating the duplication of approvals and the introduction of visual management. Therefore, the time for defining and approving a new course has been shortened by 78%. The Six Sigma model allows schools, universities and other educational institutions to improve the level of knowledge and skills, as well as the satisfaction of pupils and students in improving process performance, both in the educational and administrative spheres.

#### **IV. DISCUSSION**

The importance granted to quality is highlighted by the global existence of several quality awards, such as the Malcolm Baldrige National Quality Award (MBNQA) in the USA (1988), the European Quality Award (EQA) in Europe (1984), the Deming Prize in Japan (1996) and the Canadian Award for Excellence. Peleska and Zahlten (2008) emphasized the TQM traps: quality costs, threats concerning other management models, inaccurate quality indicator measurement, as well as the incompatibility between the TQM measures and the cultural background. TQM, by the means of multifunctional teams trained to use basic statistical instruments so as to collect and analyze data, professional staff and workers from every department, has highlighted the potential efficiency in solving the problems approached. There are different approaches concerning TQM, but most of them lead to some common points. They guide organizations to concentrate on satisfying the needs of the customers, to develop and put to use the whole potential of all of the employees, to engage all of the efforts in order to find better ways of managing business using reliable data and information targeting financial outcomes. A. V. Faigenbaum is acknowledged in the U.S.A. for the increase of quality awareness. The 'total quality management' phrase stems from his book, 'Total Quality Control' (1961, cited in Basu, 2004). According to Faigenbaum, the impact of the total quality control on the organization involves the application of technical activities meant to implement a customer-oriented quality as a primary responsibility of general management and of the main marketing operations, engineering, production, industrial relations, finance and services, as well as of the quality control function itself. Thus, quality becomes a strategic instrument in business. Armand Feirenbaum (1961) defines total quality management as "an organization system which allows the coordination of the efforts of quality development, maintenance and improvement made by different groups from the company, so as to assure that the customer-oriented studies, commerce, production and service are the least expensive, allowing, at the same time, the achievement of total customer satisfaction". The total quality approach is purely structural and economic and enables the factors required for its application. Considering all this, it is necessary to define the concept of total quality management, as quality itself is a part of the domain. According to Christian Potié (2001), total quality management comprises "the ensemble of priorities and characteristics of internal and external quality, seeking all of the competitive advantages".

The total quality management is seen as an additional competitive advantage for the enterprise by seeking customer satisfaction. This is even more appropriate as almost all companies apply, or at least pretend to apply total quality management. Thus, the customer satisfaction is not a discriminant factor, as long as it offers a competitive advantage. The quality assurance of a product is undertaken gradually, in well-established steps, in accordance with the advancements achieved in the process of its production. The quality of a system is created starting with the period of production and manifests during the period of usage. In software engineering, there is a reliance between the quality of the software development process, the project quality and the product. Joseph M. Juran, PhD, significantly contributed, in the 1920s, to the development of the methods of statistical quality control. He was mostly an engineer in the corporate industry, but was particularly concerned with the topic of quality, thus publishing the "Quality Control Handbook" (cited in Condrea, 2006). The author was the first to highlight the achievement of quality through communication (Basu, 2004). Through his approach, he offered an annual plan of quality improvement and cost reduction, as well as a form of continuous education in quality achievement. During the 1950s, Japanese companies started to notice the benefits of organization quality acknowledgment and, thus, resorted to W. Edwards Deming; he gave the Japanese companies a vigorous start in the quality movement. The researcher's methods included a process of statistical control and a step of technical problem solving, all concentrated within 14 input points necessary to obtain the stimulus needed to change the

mentality of the organizations in need when offering high quality products and services. Deeming’s opinion on quality is strictly related to the field of management. In accordance with his theory, buyers are responsible with the understanding and assessment of the quality of all products and services, since they are the ones who should completely understand the quality requirements, while being also capable of communicating these requirements to the provider. Unlike Deming, Juran does not ask for major cultural changes in the organization; instead, he suggests to the American managers to improve quality within their familiar system. One of the advantages of the Six Sigma model is that it examines all processes to eliminate variations that could contribute to malfunctions or defects of the final product. The model is also effective because it is applicable to all general processes and involves all employees to lead to the necessary changes. Six Sigma is based on a strict method that constantly uses information and statistical data to measure and improve the organization's results. Quality management becomes effective with this model, as it focuses on identifying and preventing defects in the production phase, which leads to a high level of satisfaction, which exceeds the expectations of the parties involved. Six Sigma contributes to increasing the level of quality and optimizing the process, by eliminating defects and improving performance. Six Sigma focuses on understanding, quantifying, improving and controlling those variables or causes that influence customer expectations. Six Sigma implementation is a complex, intensive process that requires resources and qualified and dedicated staff. Large organizations that have adopted Six Sigma have shown that a certain organizational infrastructure is needed, in terms of staff roles and responsibilities. Along with the advantages, the model also has a number of disadvantages. The Six Sigma concept does not draw parallels between the quality and satisfaction of customers, on the one hand, and the duration and speed of processes, on the other hand. At the same time, the duration of the process is directly related to customer satisfaction in the provision of services and for production processes, frozen funds in the form of waiting stocks. The Six Sigma toolkit limits the potential for problem solving. The improvement of the process within the Six Sigma methodology is achieved, mainly, by reducing the variability of the processes by statistical methods and the redesign of the processes using the DFSS method (Design for Six Sigma).

There are differences between the Six Sigma model and other quality models, such as TQM, which are analyzed in **Table 1**.

**Table 1.** Comparative analysis of the characteristic elements of the Six Sigma and TQM models

<b>The Six Sigma Model</b>	<b>The TQM Model</b>
- the existence of a continuous effort to reduce the output deviations of the key processes of business success	- the organization's focus on understanding and responding to customer needs
- the commitment of the whole organization, in particular senior management, to the continuous improvement of quality	- the desire for continuous systematic improvement of all products, services and processes, as a result of the participation of all partners

## V. CONCLUSION

Total Quality Management (TQM) constitutes a way of leading an organization centered on quality through the participation of all of its members. Through this model, constant improvement is sought, along with the gradual introduction of the new processes, so as to obtain a higher degree of excellence in organizations. Continuous improvement has been one of the important factors of organization development, as total quality management supports the development of good actions and results within organizations. Successful achievement of quality management is conditioned by compliance with clear performance criteria. These criteria are determined by different reference models in the field, such as Total Quality Management, the Six Sigma model. The quality models were analyzed based on several criteria: identifying the characteristic elements, exploring the ways to capitalize on the models at the level of the institution, highlighting the advantages and disadvantages. The analysis of the representative models in the field of quality led to the elaboration of a new approach for conceptualizing the quality management in close connection with the novelty aspects of the standards related to the online environment. An employee - centered culture is promoted, as the model will be adapted to the requirements and needs of the main beneficiaries, as well as in connection with the external environment.

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# Exploratory Research to Investigate the Perception of Teachers in Pre-University Education towards Quality Management of Education

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## **Abstract**

*The quality of education is becoming increasingly important both for all actors who are directly or indirectly involved and for those who use the services provided. Access to education, to quality education, must take into account rights and obligations alike. Quality management in education plays a vital role in achieving quality objectives through planning, monitoring, quality assurance, and improvement, by involving all staff at the system level. It ensures the quality of learning programs and promotes continuous improvement, the two coordinates of a culture of excellence. Management develops the institution's mission, vision, values, policies, and strategies and is responsible for ongoing monitoring of systems and processes. Any pre-university education institution is called to reach the stage in which it has access to the means and information that are organized in three fields, considering the profile, the mission, and the objectives for which it has opted. The exploratory study developed for this contribution had as general objective the identification of the perception of the teachers from the pre-university didactic education towards different aspects of the quality management of the education. For most teachers, the word professionalism is closely linked to the quality management of education, as well as to reducing school dropouts. The main problem in the quality management of education is the limited material resources. The solution to the material problem would be the careful management of financial resources and the allocation of a higher percentage of financial resources. The main concept of education quality management has been operationalized in several characteristic elements. These define the perception of teachers in pre-university education towards the following aspects: words and expressions related to quality management of education, standards of quality assurance of education in pre-university education, advantages of implementing these standards, the role of teachers in quality management of education, problems encountered in quality management of education, causes of these problems, and solutions to problems.*

## **Keywords**

*Quality management; education; quality assurance in education.*

## **Introduction**

### ***The objective and hypotheses of the research***

The general objective of the research is to identify the perception of teachers in pre-university education towards various aspects of quality management education. This general objective corresponds to a series of specific objectives, which are derived from it, as follows: exploring the perception of specific concepts of education quality management, education quality assurance standards, advantages of implementing standards, the role of teachers in education quality management, problems

encountered in the quality management of education, causes of these problems and their solutions.

### *Research hypotheses*

General hypothesis 1. Education quality management is frequently associated by teachers with performance levels.

General hypothesis 2. Most teachers appreciate that standards of quality assurance in pre-university education are needed.

General hypothesis 3. In the perception of teachers, the advantages of implementing procedures to ensure the quality of education aim to increase the prestige of the school.

General hypothesis 4. The main role of teachers in pre-university education regarding the quality management of education is that of a leader.

General hypothesis 5. The problems that intervene in the management of the quality of education in the perception of teachers in pre-university education are of material nature.

General hypothesis 6. In the perception of teachers, the causes of the problems that intervene in the management of the quality of education are determined by the lack of resources.

General hypothesis 7. The proposed solutions for preventing and/or eliminating the problems that intervene in the quality management of education aim at the efficient management of resources.

### ***Methodology***

The in-depth approach to the research topic results from the study of more complex issues through the use of detailed interview guides, of great subtlety. The answers to the interview are more personal, deeper, and more useful in research aimed at personality, motivation, etc. The flexibility of the method indicates the multitude of forms that the interview presents. The method can be adjusted for various types of investigation, various purposes, and destinations. The high control of the situation refers to the fact that the interview method provides the operator with the control of the sequence of questions. The main advantages that support the use of this method for establishing E.V.P. are an in-depth approach to the research topic, flexibility of the method, high control of the situation, observation of non-verbal behaviors, high response rate (Sarantakos, 1998; Angers, 1996). The in-depth approach to the research topic results from the study of more complex issues through the use of detailed interview guides, of great subtlety. The answers to the interview are more personal, deeper, and more useful in research aimed at personality, motivation, etc. The flexibility of the method indicates the multitude of forms that the interview presents. The method can be adjusted for various types of investigation, various purposes, and destinations. The high control of the situation refers to the fact that the interview method provides the operator with the control of the sequence of statements, their adaptation to the subject, the possibility of correcting the answers, etc. Also, the interview can ensure the formulation of the answers to all the statements, which allows the accumulation of all the data necessary to verify the research hypotheses. On the contrary, the non-response rate is very high in the case of the questionnaire.

## Literature review

By systematically analyzing the specialized literature, the studies for the period between 2013 and 2021 have been identified, based on the investigation of the characteristic aspects of education quality management. The results of this systematic analysis have led to the highlighting of two conclusions. The studies are based on the total quality management model. Depending on the research method used, it has been found that the predominant studies are quantitative, questionnaire-based. All the research results presented lead to conclusions in favor of a quality-focused organizational culture.

Some studies were conducted nationwide (Iancu, 2013; Ivana, 2015; Popovici, 2019; Poruțiu, 2015), but most of them were carried out internationally (Asif, Awan, Khan, & Ahmad, 2013; Avila, 2018; Crissien-Borrero, Velásquez-Rodríguez, Neira-Rodado, & Turizo-Martínez, 2019; Díez, Iraurgi, & Villa, 2018; Díez, Villa, López, & Iraurgi, 2020; Ejionueme & Oyoyo, 2015; Elahi & Ilyas, 2019; Hasan, Islam, Shams, & Gupta, 2018; Karageorgos, Patsiaouras, Kokaridas, Kriemadis, & Travlos, 2017; Karahan & Mete, 2014; Kigozi, 2019; Kistiani & Permana, 2020; Martin & Parikh, 2017; Mashagba, 2014; Menezes, Martins, & Oliveira, 2018; Nasim, Sikander, & Tian, 2019; Olmos-Gómez, Luque Suárez, Ferrara, & Olmedo-Moreno, 2020; Seyfried & Pohlenz, 2018; Shahmohammadi, 2018; Sohel-Uz-Zaman & Anjalin, 2016; Taahyadin & Daud, 2018; Tight, 2020; Vykydal, Folta, & Nenadál, 2020).

**Table 1. Studies carried out in the field of education quality management in the period between 2013 and 2021**

Author(s)	Objectives	Research methods	Participants	Results
<b>Asif, Awan, Khan, and Ahmad (2013)</b>	To identify the success factors of the total quality management in Pakistani universities	questionnaire	Teaching staff	The success factors of total quality management are: leadership, vision, measurement and analysis, process control and evaluation, program design, resource granting
<b>Iancu (2013)</b>	To understand, analyze, explain and optimize the phenomenon in school management	Mixed	School teachers, school managers	Means through which quality in education and performance in management can be reached were proposed.
<b>Karahan and Mete (2014)</b>	To determine and evaluate the quality management in a higher education institution according to the students' feedback	Questionnaire	243 students	The aspects related to the content of education and training and the quality of technological resources were positively assessed by the students
<b>Mashagba (2014)</b>	To identify the impact of total quality management on the academic performance of universities	Questionnaire	120 members	The decisions of the board of administration impact the academic performance in the University of Jordan
<b>Ejionueme and Oyoyo (2015)</b>	To identify the way of implementing total quality management in the head staff of the Umuahia region middle / lower secondary schools	questionnaire	358 respondents, (53 principals, 53 vice-principals, 252 teachers)	There is a significant difference between the average evaluations of the principals, vice-principals, and teachers in accordance with the degree of total quality management implementation in the head staff of the Umuahia region lower secondary school.

<b>Ivana (2015)</b>	To analyze the positive aspects and quality improvement in the university study programs	Questionnaire	Graduates	There are differences of perception between the quality of the graduated study program and the development of specific and transversal competences
<b>Poruțiu (2015)</b>	To identify the performance indicators specific to quality in higher education	Questionnaire	Candidates	The zones in which quality management improvement is necessary were identified
<b>Sohel-Uz-Zaman and Anjali (2016)</b>	To evaluate the compatibility between total quality management and education	interview	Experts in education	Both the benefits of adopting total quality management and the potential difficulties were identified
<b>Karageorgos, Patsiaouras, Kokaridas, Kriemadis, and Travlos (2017)</b>	To build up and validate a questionnaire seeking to analyze the total quality management in Greek primary education	questionnaire	112 primary school teachers (55 male, 57 female)	The result of the research consisted in the drawing up of a valid questionnaire seeking to analyze the aspects characteristic to total quality management
<b>Martin and Parikh (2017)</b>	To comparatively analyze the internal quality assurance in international higher education	Case study	Decision-makers and managers in the field of quality	Information concerning means of improving the development and implementation of quality management in universities was given
<b>Avila (2018)</b>	To evaluate the total quality management practices of school administrators	Descriptive research	132 teachers, 37 school administrators	There is a correlation between the practices used in total quality management by school administrators and the student's academic performance
<b>Diez, Iraurgi, and Villa (2018)</b>	To analyze the EFQM excellence model and the integrated quality project in school organizations	Questionnaire	42 managers, 273 teachers	Both the EFQM excellence model and the integrated quality project model got high scores when it came to the teachers' and managers' perceptions about quality
<b>Hasan, Islam, Shams, and Gupta (2018)</b>	To improve the quality of the school environment to motivate primary school children to go to school	Focus group, interview	Parents, teachers, students, and administrators from 12 schools from the Khulna district	The solutions found were divided into three categories: amelioration of teaching quality by applying total quality management, reduction of school drop-out, improvement of classroom quality management
<b>Menezes, Martins, and Oliveira (2018)</b>	To analyze the dimensions of the education management efficacy in higher education	Questionnaire	Teaching staff, managers, administrative staff	Strategic planning and operational enterprise directly influence the efficiency of quality management
<b>Seyfried and Pohlenz (2018)</b>	To investigate the determining factors of efficacy to assure quality	Mixed	Higher education institution managers	Cooperation with other organizations is one of the conditions for the efficacy of quality assurance
<b>Shahmoham madi (2018)</b>	To explore the role of total quality management in educational programs for the First Grade	Questionnaire	324 teachers	The dimensions of total quality management influence the efficacy of the educational programs for the First Grade
<b>Taahyadin and Daud (2018)</b>	To determine the relationship between the quality management indicators	Questionnaire	375 secondary school teachers	There is a high correlation between all of the quality indicators within the school
<b>Crissien-Borrero, Velásquez-Rodríguez, Neira-Rodado, and Turizo-Martínez (2019)</b>	To analyze the education quality models from a managerial perspective	Systematic review of specialized literature	Studies from the last 20 years	The investigation of the education quality measurement models prevails in vocational education

<b>Elahi and Ilyas (2019)</b>	To explore the relationship between the process approach, customer-oriented approach, and school quality	Questionnaire	401 principals	The process approach has a significant impact on the functional quality and academic quality of the private school institutions
<b>Kigozi (2019)</b>	To identify the challenges, setting the grounds for the successful implementation of total quality management	Semi-structured interview	100 tutors	There are no significant differences between the private and public schools concerning the challenges that influence the implementation of total quality management
<b>Nasim, Sikander, and Tian (2019)</b>	To analyze the achievements and limits of research concerning the application of total quality management in higher education	Systematic review of specialized literature	Studies from the last 20 years	The studies focus on aspects targeting teaching and learning while neglecting the influence of other external factors. Moreover, most of the research refers to quality management aspects from the advanced countries' higher education.
<b>Popovici (2019)</b>	To draw up a managerial model to facilitate performance at the organizational level	Structured questionnaire	2697 teachers	The quality levels for the SERVQUAL dimensions recorded negative scores only.
<b>Díez, Villa, López, and Iraurgi (2020)</b>	To evaluate the impact of quality management systems on the performance of education institutions	Questionnaire	Principals of 15 schools	Education planning and communication were positively evaluated by the respondents
<b>Kistian and Permana (2020)</b>	To identify the way of implementing total quality management in higher education	Observation, interview, documentation	Experts in the field of education quality	The higher education institution can achieve the established perspective only by long-term planning and by developing and implementing annual quality plans
<b>Olmos-Gómez, Luque Suárez, Ferrara, and Olmedo-Moreno (2020)</b>	To measure the individual differences in the learners' satisfaction concerning the education quality with reference to sustainability	Questionnaire	1091 Italians (510 students, 121 teachers, 469 parents)	The student's parents and teachers were satisfied with the aspects regarding the quality management in higher education and didactic resources, as well as with the aspects referring to teaching management
<b>Tight (2020)</b>	To explore research in quality management in higher education	Systematic review of specialized literature	Studies	The problems which can interfere with the process of quality assurance and management were identified
<b>Vykydal, Folta, and Nenadál (2020)</b>	To evaluate quality in higher education in the context of sustainable development	Semi-structured interview	240 representatives of higher education institution management	The results show that there is a tight link between quality and sustainable development

The systematic review of specialized literature allows the identification of the representative topics of education quality management, of the models investigated in the last eight years, as well as the research methods used. Based on this analysis, the necessity of validating new education quality management models emerges in the case of primary and secondary education. All the results presented lead to conclusions in favor of a quality-focused organizational culture.

### Research methodology

#### ***Research group***

To carry out the research, the aim was to investigate the perception of 30 teachers in pre-university education towards quality management of education. Depending on the independent variables, the sample is divided into different categories. According to the residential environment variable, 14 teachers are from urban areas (80%), and 16 teachers are from rural areas (20%).

#### ***Operationalization of concepts and definition of variables***

The main concept of education quality management has been operationalized in several characteristic elements. These define the perception of teachers in pre-university education towards the following aspects: words and expressions related to the quality management of education; standards for ensuring the quality of education in pre-university education; the advantages of implementing these standards; the role of teachers in the quality management of education; problems encountered in the quality management of education; causes of these problems; solutions to solve problems. The dependent variables are represented by the problematic aspects encountered in the management of the quality of education. The independent variables are the following: environment of residence (urban, rural), professional experience (0-5 years, 5-10 years, 10-30 + years), courses in the field (yes, no), membership in the quality assurance commission Yes, No).

#### ***Methods and techniques of psycho-pedagogical research***

In the present exploratory study, the semi-structured or poorly conducted interview method is used, because it offers freedom to present the topic and objectives (Gugiuman et al., 1993). According to M. Angers (1996), the semi-structured interview (semi-directive) is a technique of scientific investigation, used either for an isolated individual or for a group of individuals, which allows a semi-directive interrogation to obtain some in-depth data they have. As a variant of the semi-structured interview, the guided or free-answer interview is used (Mayer et al., 2000). It offers a lower degree of freedom than an unstructured interview, as its conduct is based on a series of pre-prepared topics or statements. Unlike the forms of the unstructured interview (the clinical interview and the in-depth interview) and those of the structured interview (with open statements, with closed statements), the interest for the person tends to decrease even more in favor of the one for a certain topic. However, a relatively high degree of non-directivity is maintained.

This type of interview is based, with an indicative function, on the interview guide. The researcher uses the guide to guide the discussion poorly, draws inspiration from the guide, but formulates additional statements when he deems it appropriate. The order of the statements is of relative importance, but it is generally advisable to have a logic of their presentation so as not to confuse the subject. The interview guide is an organized set of themes and/or statements that structure the activity of listening and

intervention of the interviewer (Curelaru 2007, p. 199). The degree of formalization of the guide depends on several elements: the nature of the topic studied, the previous knowledge of the researcher about the topic, the type of survey, the type of interview expected, and the way of analyzing the data. T. Rotariu and P. Iluț (1999) specify that interview guides come in a wide variety of forms, from some that include only a few more general topics, to others with a long list of specific topics and statements. The form of the guide also depends on how familiar the problem is to the researcher and the population to be investigated. For the semi-directive form of the interview, the guide is composed of a larger number of topics and has an orienting role, oscillating between a fixed (rigid) and an evolutionary form, between a fixed number of statements and a free one.

Interviews are followed by their transcription, coding, analysis, and interpretation of data. The coding of the data obtained through interviews is performed in accordance with the analysis method chosen (Popa, 2009).

The main advantages that support the use of this method for establishing E.V.P. are an in-depth approach to the research topic, flexibility of the method, high control of the situation, observation of non-verbal behaviors, high response rate (Sarantakos, 1998; Angers, 1996). The in-depth approach to the research topic results from the study of more complex issues through the use of detailed interview guides, of great subtlety. The answers to the interview are more personal, deeper, and more useful in research aimed at personality, motivation, etc. The flexibility of the method indicates the multitude of forms that the interview presents. The method can be adjusted for various types of investigation, various purposes, and destinations. The high control of the situation refers to the fact that the interview method provides the operator with the control of the sequence of statements, their adaptation to the subject, the possibility of correcting the answers, etc. In the interview situation, the researcher has the opportunity to observe the non-verbal behaviors of the subject, so that the quantity and quality of the information obtained can be increased. The high response rate is determined by the reduction in the rate of refusal to participate in research through direct contact.

Also, the interview can ensure the formulation of the answers to all the statements, which allows the accumulation of all the data necessary to verify the research hypotheses. On the contrary, the non-response rate is very high in the case of the questionnaire.

### ***Research procedure***

The application of the questionnaires was made between April and May 2020, on teachers from pre-university education, belonging to different school units in Neamt and Bacau counties. The interview was applied online through the Google Meet platform. The participants had a free answer to a number of 7 statements regarding various aspects related to ensuring the quality of education in pre-university education. The effective application of the questionnaires consisted in completing the fields of the questionnaire. Participants were given the necessary time to complete the questionnaires in full, as a result of the detailed analysis involved. An attempt was also

made to eliminate the façade trend, by emphasizing that there are no wrong or correct answers, only personal ones.

### Findings

The results obtained in the exploratory research are interpreted and analyzed in accordance with the perception of teachers in pre-university education towards ensuring the quality of education, corresponding to the general hypotheses.

**General hypothesis 1.** Education quality management is frequently associated by teachers with performance levels. For the interpretation of general hypothesis 1, the frequency for each category of answers was calculated and the percentages will be specified. According to the graphically represented data, it is observed that 33% of the teachers mentioned the word professionalism as relevant when we talk about the quality management of education. For the fewest teachers in the research group, the word responsibility is associated with quality management of education.

**General hypothesis 2.** Most teachers appreciate that standards of quality assurance in pre-university education are needed. To interpret general hypothesis 2, the frequency for each category of responses was calculated and the percentages will be specified. According to the graphically represented data, it is observed that 23% of the teachers stated that there are too many standards, 37% of the teachers had different answers. For the fewest teachers in the research group, the standards of quality assurance of education are listed as beneficial.

**General hypothesis 3.** In the perception of teachers, the advantages of implementing procedures to ensure the quality of education aim to increase the prestige of the school. The interpretation of general hypothesis 3 was made by calculating the frequency for each category of answers and the percentages are specified. Starting from the graphically represented data, it is observed that 40% of the interviewed teachers put as a first advantage the reduction of school dropout, 10% of the teachers having different answers. For the fewest teachers in the research group, the advantage of implementing the standards of quality assurance of education are listed as the safe school environment.

**General hypothesis 4.** The main role of teachers in pre-university education regarding the quality management of education is that of a leader. The interpretation of the general hypothesis 4, was made by calculating the frequency for each category of answers, and the percentages are specified. According to the graphically represented data, it is observed that 50% of the interviewed teachers consider that their main role in the management of the quality of education is central, a leading one, 17% of the teachers having different answers. For the fewest teachers in the research group, their role in managing the quality of education is that of regulation and guidance.

**General hypothesis 5.** The problems that intervene in the management of the quality of education in the perception of teachers in pre-university education are of material nature. The interpretation of the general hypothesis 5, was made by calculating the frequency for each category of answers, and the percentages are specified. According

to the graphically represented data, it is observed that 47% of the interviewed teachers consider that the main problem in the quality management of education is material. For the fewest teachers in the research group, a special problem in the management of the quality of education is the fact that there are no qualified teachers.

**General hypothesis 6.** In the perception of teachers, the causes of the problems that intervene in the management of the quality of education are determined by the lack of resources. The interpretation of the general hypothesis 6, was made by calculating the frequency for each category of answers, and the percentages are specified.

**General hypothesis 7.** The proposed solutions for preventing and/or eliminating the problems that intervene in the quality management of education aim at the efficient management of resources. The interpretation of the general hypothesis 7, was made by calculating the frequency for each category of answers, and the percentages are specified. According to the graphically represented data, it is observed that 43% of the interviewed teachers consider that the main solution in preventing/eliminating the problems that appeared in the quality management of education is the careful management of financial resources. For the fewest teachers in the research group, the solution to the problems in the quality management of education would be the existence of free training courses.

## Conclusions

The conclusions that emerge from the applicative part are systematized by reference to the research hypotheses. The exploratory study had as general objective the identification of the perception of the teachers from the pre-university didactic education towards different aspects of the quality management of the education. For most teachers, the word professionalism is closely linked to the quality management of education. A percentage of 23% of the surveyed teachers consider that there are too many quality standards. A percentage of 50% of teachers consider that their role in quality management education is central. The main problem in the quality management of education is the limited material resources. The main cause of the above-mentioned problem is the allocation of insufficient funds. The solution to the material problem would be the careful management of financial resources and the allocation of a higher percentage of financial resources.

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Article

# A Comprehensive Instrument to Measure Teachers' Attitude towards Quality Management in the Context of Online Education

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**Abstract:** The purpose of this study is to elaborate and validate a scale for the evaluation of the teachers' attitude towards quality management, by integrating elements of online education. Nine hundred and forty-two teachers from Romania have participated in the study. The exploratory factor analysis has led to the identification of three main dimensions of the scale: (1) communication and alignment; (2) needs and opportunities; and (3) training and support. Teachers participating in managing positions or in quality assurance boards indicated a more positive attitude towards the three components. Furthermore, teachers of a higher teaching experience reported higher values in the needs and opportunities component. The results are useful to educational institutions, program designers and policy makers to evaluate the teachers' attitude towards quality management.

**Keywords:** education quality; online education; quality management scale; teacher attitude

## 1. Introduction

In today's context of knowledge society and worldwide dynamic changes, the performance of a school organization is conditioned by the efficiency of the education quality management functioning. The measurement of the teachers' attitude towards the manner of implementing quality management within the school organization becomes a necessary condition to improve the organizational performance. Since the system of education represents an important component of the knowledge society, it is necessary for those in charge to focus on the quality management within schools and its efficacy [1]. Quality education involves the integration of democratic values and principles and of the partners' rights and obligations, as it is constituted out of a spirit of transparency, responsibility, and involvement from both the school as an education provider, and of the family—student and parent—as beneficiaries of the education service. To create an efficient system of quality assurance, it is necessary to introduce a system of quality management. It is a complex task which involves the change of the mentality, which is applicable to both school and university teachers, along with a wide majority of people, who are the direct beneficiaries of the reform system. Quality management represents a system of interconnected processes meant to establish a policy of quality, quality objectives and the fulfilment of a quality education [2]. The role of quality management is to provide models for the continuous development and improvement of the organizational performance, which is reflected in

the increase of satisfaction among students, teachers, parents, schoolmasters, and members of the community.

The system of education quality indicators helps school managers to highlight the important fields of their own activity in relation to the advantages, disadvantages, and opportunities of development. The members of the commission, who are responsible with the quality management within the school, will analyse the strategies meant to improve the indicators in accordance with certain circumstances. According to Vlašić, Vale, and Puhar [3], the education quality indicators are held together within seven specific domains: achievements, learning and teaching, students' support, school ethos, resources, management, leadership, and quality assurance. Several benefits of the quality management system can be highlighted within the school organization [4]: the increase in the level of the awareness and appreciation expressed by the community, along with other interested parties, the improvement of the operational efficiency, the empowerment of the teaching staff in order to identify and implement the necessary changes, the more accurate and coherent defining of the methods and responsibilities designed for performance determination, the reduction of internal costs, the improvement of management practices, the involvement and motivation of the staff for continuous progress, the introduction of the problem solving process, the identification of procedure problems and other causes of deficiency.

Changes in attitude and perception are required from all those involved, students or teachers, along with a recalibration of the position held by the society in relation to the school. Improving the quality of education is possible when the relationship between managers and teachers is based on trust [5], given that everyone believes that they have contributed to the entire decision-making process. The essential characteristics of leadership for quality management [6] refer to the correlation of individuals' work with the organization's objectives, ensuring a comfortable and motivating work environment, cooperation with members of the organization to improve quality, providing trust between individuals, quality performance, and leadership towards quality. A quality system should assure a philosophy of the education activity based on innovation and transformative culture [7], which will lead to a common strategic view and a style of teamwork, with a significant positive impact on the students' work results and their personal, social, and academic development.

The impact of school closures during the COVID-19 pandemic has brought many challenges to education [8] that have affected the way quality management is implemented. Many schools have had to create specific management systems to ensure the quality of education in the context of the use of information technology. Educational institutions in both pre-university and university education have been forced to move from traditional teaching to online learning because of the COVID-19 pandemic. In this context, the challenge of managing changes in the quality of online teaching and learning has emerged. When traditional classroom teaching is replaced by online distance learning, the quality of services provided is not expected to decline [9]. According to Bates [10], quality assurance in distance education is tightly linked to the teaching and learning outcomes. Quality assurance management is harder to be applied in distance than traditional education, because of the distinct characteristics of online education considering its openness and flexible structure [11]. As a fact, investing in quality assurance is essential in the context of distance education since poor quality assurance can lead to high costs and low returns of investment [12]. Researchers agree that quality assurance in distance education should follow a systematic and continuous process, respected, and well perceived by educators and institutions [10]. Based on the above, it is a priority to maintain and adapt the attributes of service quality, such as the quality of the teaching-learning process, the quality of teaching staff, and the quality of planning, information management. Therefore, investigating teachers' perceptions of quality assurance in the context of online education is important for effective management in schools.

Researchers agree that perceived quality education is a determinant factor to the students' behaviour and plans and hence several scales to measure perceived quality

of education have been designed [13]. Moreover, students' perceived quality education also tends to affect their career choices and academic self-efficacy [14,15]. However, most research in the field is student-centred, while the teachers' perceived education quality is determinant to the successfulness of the quality strategy implementation. Although there are several studies investigating the factors affecting the efficacy of quality education assurance, very few are focused on measuring the teachers' attitudes towards education quality management. Recent studies [16,17] tend to focus on the examination of individual or professional attributes (teaching experience, individual factors, etc.) that can affect the teachers' teaching quality in the classroom, but not in their broader quality management and assurance tasks/responsibilities. Moreover, most of the existing education quality management scales do not consider the attributes of online teaching and the management of virtual classrooms. Towards this end, this study suggests that the dimension of distance education shall be integrated in current measurements of teachers' attitude, since the pandemic had a big socio-emotional impact on teachers and on the way that they deal with the new rising educational challenges [18,19].

Considering the above, the main research objective of this study is to propose and evaluate the Quality Management Education (QME) scale considering elements of online teaching, that were risen mainly during the pandemic. The main contribution of QME is the provision of a simple and practical instrument to measure the teachers' attitude towards education quality management in all levels of pre-university education. The instrument integrates elements of previous measurements and introduces new items regarding the efficient management of online teaching and virtual classrooms 'management. Towards this goal, the study also seeks to examine the role of teachers' individual and professional factors on their attitude towards education quality management.

Based on the above, the Research Questions (RQs) are formed as follows:

RQ1: Is the suggested Quality Management Education (QME) scale valid in terms of structure, consistency, and reliability?

RQ2: Are there any significant differences in the Quality Management Education (QME) constructs between different groups of teachers, including their characteristics of:

- (i) educational/teaching level (preschool education, primary, middle/lower secondary, secondary);
- (ii) teaching experience;
- (iii) teaching environment (rural, urban);
- (iv) professional/teaching degree;
- (v) involvement in managing position;
- (vi) participation in quality assurance position; and
- (vii) participation in the board of directors?

The findings of the study are expected to provide researchers and practitioners with a valid scale to measure the teachers' attitude towards quality management to design strategies and approaches to engage teachers more deeply in the process of quality management in their schools. Moreover, the study results contribute towards a deeper understanding of the factors that affect teachers' attitude towards education quality management during the pandemic.

## 2. Theoretical Background

### 2.1. Current Perspectives on Education Quality Management

Recent approaches to education quality management offer an innovative perspective on the dimensions that facilitate its successful application in school institutions. The EFQM (European Foundation for Quality Management) model is based on the principle that the staff and customer satisfaction, along with the integration in the community life, constitute the result of a correct application of the management components, such as leadership, policy and strategy, staff management, resources, and processes [20]. According to the Baldrige excellence framework, the efficacy of school management is positively influenced by seven

main components [21]: leadership (governing), aiming at reaching the strategic goals of the organization by establishing a bidirectional communication bridge; strategic planning through transforming the strategic outline in an action plan; focus on the customer, targeting the level of student satisfaction in relation with the competitors and the competition comparison indicators; measurement, analysis and management of knowledge through the organization of an informational system capable of sustaining the problem prediction and decision making, a set of interconnected components; focus of the labour force, given that the majority of the team will work in direct contact with the students so as to apply the strategic planning of the schools; focus on operations and functioning, by encouraging the integration of teams and global views of the activities; and correlation between the structures of the framework. Following an analysis carried out by researchers on quality management in higher education, Tari and Dick [22] identified six main dimensions: human resource management, analysis, process management, concentration of interested parties, planning, leadership, planning, and management of providers.

Alzamil [23] came up with an integrated model of education quality management to determine the improvement of efficiency and flexibility within school institutions. Since the model takes the shape of a spiral, the established improvement actions can determine the fulfilment of a process, the continuance of the actions at the same level for a different course or the passage to a superior level. In this way, the efficiency of passing the course from one level to another has been proven in what concerns the fulfilment of all the established objectives dealing with the assurance of education quality. The new framework of the knowledge society generates new models of education quality management with the purpose of promoting a culture of quality [24] within the system of education, from the interaction between the students and the teachers, as it is carried out in traditional learning, to the liaised interaction and use of technology, which is specific to online learning.

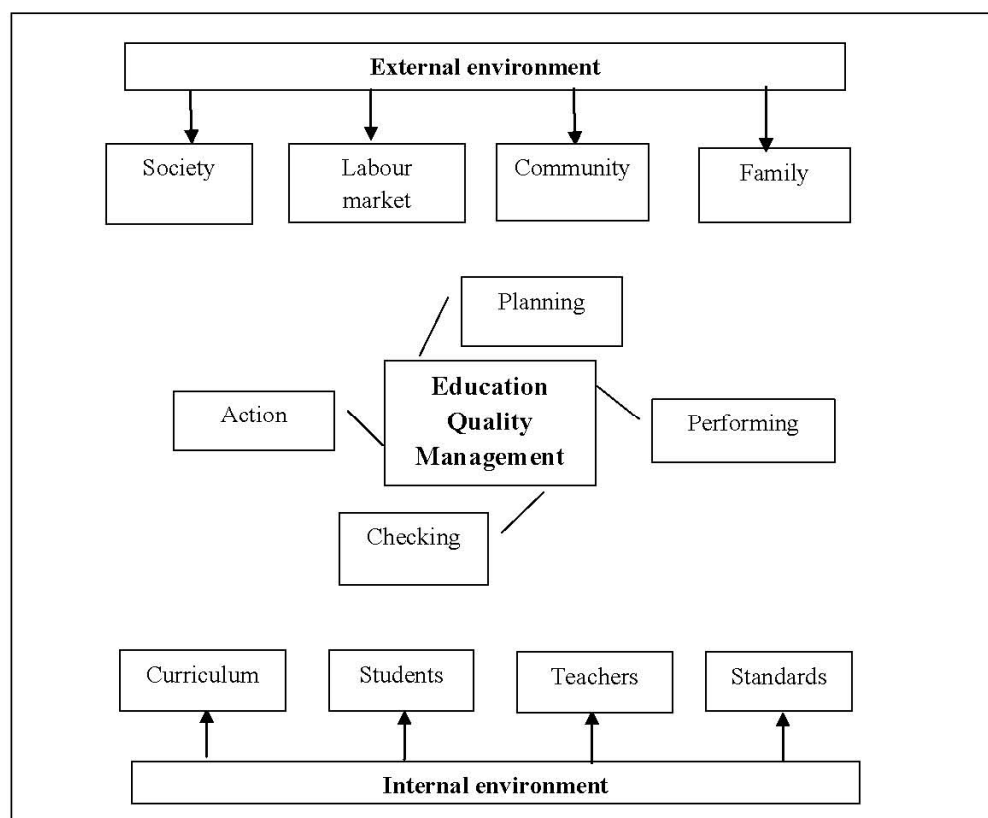
Latif et al. [13] designed and validated a six-dimensional service quality scale, through data collected from seven different higher education institutions. Their scale composed 37 items, allocated in the dimension of teacher quality, administrative services, knowledge services, activities, continuous improvement, and leadership quality. Their model provided a useful and detailed approach; however, it did not include of items of online education and group-differences were not examined in the participating population.

Another integrated model was developed by Schijns [25] to measure the service quality in terms of online education in universities. The authors applied a PLS-SEM analysis on 1287 university students to understand the service quality factors that can affect the students' satisfaction and intention to recommend their institution. Their findings indicated nine components, derived from the initial 12-component National Student Equity scale, that can significantly affect the students' overall satisfaction. The new integrated model includes, within a holistic view, both internal factors of the education system (i.e., the school milieu), and external factors (Figure 1). At the basis of the integrated model, we find Deming's wheel of quality (1993), which is a method of organizing and carrying out activities meant to continuously improve the quality management system. The phases of quality management are planning, doing, checking, and acting. A successful model of school management quality concentrates on the relations between students, teachers and the curriculum, around which several external influences gravitate: society, family, labour market requirements, need of competence and life-long learning.

## 2.2. The Attitude towards Education Quality Management

The basis of the research stems from the concept of attitude towards education quality management; however, to understand its significance, it is important to define the general concept of attitude. Eagly and Chaiken [26] defined the term 'attitude' as a psychological tendency expressed through the evaluation of a certain entity with a certain degree of pro and against bias. Attitudes can offer a favourable context for the understanding of the way of implementing quality management within the education system. In this context, the attitude towards education quality management represents the general evaluation of

the specific activities related to the implementation of quality assurance standards. All the teachers are responsible for their own attitude concerning education quality management. Thus, the attitude towards education quality management addresses the degree of encouragement concerning the conformation to the education quality assurance standards within the school organization. The research carried out in recent years has shown an increased preoccupation for the exploration of the teachers' attitude towards education quality management [27].



**Figure 1.** The integrated model of education quality management.

Although there is a series of studies which aim at investigating the factors which determine the efficacy of quality education assurance [21,28–36], very few focus on the measurement of the teachers' attitudes towards education quality management [37] or are concerned with education quality assurance [38,39]. Some of the studies are based on the validation of questionnaires, which evaluate the teachers' attitudes towards the dimensions of certain models, such as the total quality management [40,41]. An expansion of the research towards the identification of the teachers' attitudes concerning organizational changes is observed, because of the introduction of Information Technology systems, of learning and teaching management in schools [42]. It was found that there are several studies focused on measuring attitudes towards the online component of quality management, especially among students [25,43,44] and very little research among teachers.

Triggered by the above, the main purpose of this study is to elaborate and validate the scale of measuring the teachers' attitude towards the specific dimensions of quality management and examine individual and professional attributes that might affect their attitude towards education management quality.

### 3. Materials and Methods

#### 3.1. Item Generation

Within this research, a questionnaire has been developed for the measurement of the teachers' attitude towards education quality management in school education (Appendix A).

The questionnaire has 42 closed-ended questions. Most of the items have been adapted after Asif et al. [45] and Menezes et al. [21], while items 6, 7, 11, 21 and 26 are original. These items were introduced to highlight the new dimension of quality management in the context of online education (the school management is deficient in carrying out online didactic activities; the virtual classroom is made available by the school; a guide with all the steps necessary for teachers and students for online didactic activities has been provided; I have been informed, by the school management, about the rules of virtual classroom handling; I have been supported by the school management in carrying out online teaching). There are also four reversed items: 6, 19, 29 and 38. The Likert scale of measurement has been used, with five potential answers, varying from 1—meaning strong disagreement to 5—strong agreement.

The items of the questionnaire have been distributed in accordance with six dimensions which are specific to education quality management: 10 items for the leadership dimension (I1, I8, I17, I27, I32, I36, I38, I40, I41, I42), 9 items for the strategic planning dimension (I2, I16, I18, I9, I15, I28, I 29, I33, I39), 7 items concerning the student-centred dimension (I3, I10, I14, I19, I24, I30, I31), 5 items referring to the employee-centred dimension (I4, I13, I20, I35, I37), 3 items for the information management dimension (I5, I12, I34) and 5 items dealing with the online teaching quality assurance dimension (I6, I7, I11, I21, I26).

### 3.2. Data Collection and Participants

A questionnaire was distributed to 967 teachers in pre-university education in Romania, to investigate the teachers' perception on the way of implementing quality management in primary and secondary schools. All participants confirmed the approval of voluntary participation in the research. The study respects the Declaration of Helsinki concerning the rights of human subjects participating in research. The measurement scale used was the Likert Scale varying from 1 (strongly disagree) to 5 (strongly agree).

Finally, 942 teachers (815 female, 127 male) successfully completed the survey. Of them, 163 were teaching in preschool education, 222 teachers were teaching in primary education, 265 were teaching in secondary education and 292 in high school. Almost half of the teachers ( $n = 480$ ) were teaching in urban environments and half of them ( $n = 461$ ) in rural ones. A few of them were in a managing position ( $n = 115$ ), while 211 teachers were members of the quality assurance commission and 245 were members of the board of directors in their schools. The majority ( $n = 558$ ) had a high level of professional experience (didactic degree I), 99 teachers were beginner teachers, 137 teachers were definitive teachers and 148 had a didactic degree II. Finally, most of the participants (80%) were using the platform of Google Classroom, the rest were using Microsoft Teams and G-Suite (15%), while only a few declared that they were using Zoom or Adservio (5%).

### 3.3. Data Analysis

This study applied a Partial Least Square Structural Equation Modeling (PLS-SEM) approach using SmartPLS software [SmartPLS GmbH, Bönningstedt, Germany] to measure and validate the suggested education quality management scale. According to Bentler and Huang [46] and Dijkstra and Henseler [47] PLS-SEM can consistently mimic common Covariance-based SEM (CB-SEM) approaches. Moreover, researchers support that it is more suitable for complex models and social science and exploratory research [48,49], and similar research applied the PLS-SEM approach as the key Confirmatory Factor Analysis (CFA) method [50]. On the other side, a CB-SEM approach should be chosen if “the goal is theory testing, theory confirmation or comparison of alternative theories” [49] (p.144). Although many researchers focus on comparing the differences of model estimations when using CB-SEM and PLS-SEM, both methods are complementary rather than competitive. Furthermore, PLS-SEM was chosen as the CFA method because of the non-normal distribution on the data based on their values of skewness ( $<3.0$ ) [51] and normality test ( $p < 0.005$ ) [52].

To extract the dimensional structure of the suggested QME model, Exploratory Factor Analysis (EFA) is conducted on the defined set of items. To confirm and establish the structural validity of the scale, a PLS-SEM CFA is conducted on the EFA extracted components. The final model is evaluated in terms of model fitness, internal consistency, composite reliability, convergence validity and discriminant validity.

To examine the significant differences in QME components across different groups of teachers, non-parametric statistical methods (Mann–Whitney and Kruskal–Wallis) were applied because of the non-normal distribution of the data [52].

The Exploratory Factor Analysis (EFA) and the statistical analyses of descriptive statistics and tests for significant differences between groups were performed through SPSS software. The PLS-SEM analysis and evaluation of the model was applied in SmartPLS software.

## 4. Results

### 4.1. Suitability of Data for Factor Analysis

The Bartlett's test of sphericity and the Kaiser–Meyer–Olkin (KMO) test were conducted to investigate the factorability of the data and the adequacy of the sample. Results indicated a significant test statistic for Bartlett's test of  $p < 0.001$ , and a high KMO value (Table 1), confirming the suitability of the data for structural analysis. Moreover, the Spearman correlation analysis indicated relatively high correlations among items, confirming their suitability for factor analysis.

**Table 1.** KMO and Bartlett's Test.

	Kaiser–Meyer–Olkin Measure of Sampling Adequacy	0.982
Bartlett's Test of Sphericity	Approx. Chi-Square	32,455.276
	df	741
	Sig.	0.000

### 4.2. Exploratory Factor Analysis

The dimensional structure of the QME scale was identified through exploratory factor analysis (EFA). All 42 items were considered in the first round EFA. EFA was conducted using the principal axis factoring method and a Varimax rotation. All items of communality scores lower than 0.4 were excluded and then a second EFA round was performed. The second EFA indicated three components with eigenvalues above 1.0. All items performing lower than a 0.5 factor load [53] were removed. Some of the newly embedded items of online teaching were removed due to low factor loadings ( $<0.5$ ). These items included: (i) The school management is deficient in carrying out online didactic activities; and (ii) A guide with all the steps necessary for teachers and students for online didactic activities has been provided. The final three factor model included 20 items and accounted for 67% of the total variance, as depicted in Table 2.

The first dimension called "Communication and Alignment" and was composed of ten items (Cronbach's alpha = 0.940), including two items of online teaching ((i) The virtual classroom is made available by the school; (ii) I have been informed, by the school management, about the rules of virtual classroom handling). The second dimension called "Needs and Opportunities" and was composed of six items (Cronbach's alpha = 0.895). The third dimension called "Training and Support" and was composed of four items (Cronbach's alpha = 0.871), including one item of online teaching ((i) I have been supported by the school management in carrying out online teaching).

**Table 2.** Results of EFA of the 18—item perceived Quality Management Education Scale (QMES).

Factor	Item <sup>1</sup>	Factor Loading	Eigen Value	Cumulative Variance	Rotation Sums of Squared Loadings <sup>2</sup>
CAL	Communication and Alignment		21.732	61.330	19.223
CAL1	The school principal has knowledge concerning the system of quality management and implementing.	0.741			
CAL2 *	The virtual classroom is made available by the school.	0.874			
CAL3	The school organization collects and operates statistical data (e.g., student record, class attendance) in order to improve the education process.	0.671			
CAL4	Within the school, there are initiatives of promoting honest and direct communication.	0.522			
CAL5 *	I have been informed, by the school management, about the rules of virtual classroom handling.	0.539			
CAL6	The managing staff communicates efficiently with every person from the institution.	0.571			
CAL7	The managing staff is well acquainted with the concepts related to quality and with the new competences needed for the application of the quality management system.	0.733			
CAL8	The actions of the school management are in accordance with the mission, vision, and values of the organization.	0.578			
CAL9	The actions of the managing staff show their ethical commitment and respect for the law.	0.839			
CAL10	The school management concentrates on improving student and staff performance.	0.642			
NOP	Needs and Opportunities		2.000	64.325	17.985
NOP1	The needs and suggestions of the business environment are considered when designing the curriculum.	0.628			
NOP2	The system of assuming complaints, suggestions, criticism, and appreciation offers quick measures for problem solving.	0.520			
NOP3	The students' requests are considered when designing elective disciplines.	0.578			
NOP4	Within the school, there are attractive, stimulating programmes meant to bring new students.	0.619			
NOP5	The organization benefits from the opportunities of innovation in educational services.	0.629			
NOP6	The students are involved in solving the problems found.	0.612			
TRS	Training and Support		1.093	67.122	18.222
TRS1	The school management provides adequate resources for didactic and administrative staff training.	0.739			
TRS2	Information on training programmes is given by the school.	0.510			
TRS3 *	I have been supported by the school management in carrying out online teaching.	0.796			
TRS4	The school delivers surveys concerning the employees' workplace satisfaction.	0.663			

<sup>1</sup> All the items are measured on a 5-point Likert scale (1: strongly disagree to 5: strongly agree). <sup>2</sup> When factors are correlated, sums of squared loadings cannot be added to obtain a total variance. \* New items embedded regarding online teaching and virtual classroom.

#### 4.3. Confirmatory Factor Analysis and Model Fit

A PLS-SEM CFA was conducted on the 20 items extracted by EFA, through SmartPLS software to confirm and establish the structural validity of the scale.

The resulted model fit indices (Chi-Square = 1663.676, NFI = 0.893, SRMR = 0.050) indicated a good fit between the model and the observed data [54–56]. Moreover, the scores of the outer loading factors were valid ( $>0.7$ ). The model's internal consistency was evaluated in terms of Rho\_alpha and composite reliability (CR). All the values of Cronbach alpha and Composite Reliability (CR) demonstrated internal consistency ( $>0.7$ ) [47] and all AVE values were above 0.5 [57–59]. Item-total correlation were also examined, and significant correlations were shown to exist between the factors ( $p < 0.01$ ).

Finally, the convergence validity was evaluated through Average Variance Extracted (AVE) that were all above the acceptance threshold of 0.7 [47]. The extracted values are depicted in Table 3.

**Table 3.** Construct reliability and validity of the Quality Management Education scale (QMES).

Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
CAL	0.940	0.950	0.658
NOP	0.895	0.897	0.656
TRS	0.871	0.872	0.721

#### 4.4. Discriminant Validity

To reinforce the validity of the construct validity, the discriminant validity was assessed according to the criterion of Fornel and Larcker [59], which is the most widely used method. According to this criterion, the square root of each construct's AVE should have a greater value than the correlations with other latent constructs. As depicted in Table 4, the QME scale supports the discriminant validity between the three constructs [59].

**Table 4.** Discriminant validity.

Latent Constructs	CAL	NOP	TRS
CAL	0.811		
NOP	0.849	0.810	
TRS	0.837	0.782	0.849

Note. The discriminant validity was assessed using the criteria of Fornel and Larcker [59] by comparing the square root of each AVE in the diagonal with the correlation coefficients (off-diagonal) for each construct in the relevant rows and columns.

#### 4.5. Descriptive Statistics

The descriptive statistics results indicated that teachers hold average a positive attitude towards the three components of the QME scale. As depicted in Table 5, the component of communication and alignment received the highest scores, compared to the rest components of needs and opportunities, and training and support. It is also worth mentioning that all items of online teaching received high scores ( $>3.9$ ) (CAL2: mean = 4.35, stdev = 1.03, CAL5: mean = 4.13; stdev = 1.16; TRS3: mean = 3.95; stdev = 1.27), indicating a positive attitude towards the online teaching dimensions of quality education in the examined teacher population.

**Table 5.** Descriptive statistics ( $n = 942$ ).

	Minimum	Maximum	Mean	Std. Deviation
CAL	1.00	5.00	4.197	0.914
NOP	1.00	5.00	3.738	0.936
TRS	1.00	5.00	3.723	1.085

#### 4.6. Differences between Teacher Groups

The normality distribution test indicated that the factor items are not normally distributed ( $p < 0.01$ ) in the examined groups of teachers. Hence, non-parametrical statistical methods (Mann–Whitney and Kruskal–Wallis) were used to examine the potential significant differences in QEMS within the examined teacher groups.

The teacher groups were defined from the questionnaire collected feedback, according to the following attributes:

- Educational/teaching level: preschool, primary, middle/lower secondary, secondary;
- Teaching environment (area where the school institution is located): urban, rural;
- Professional/teaching degree (beginning teacher, definite teacher, teacher with didactic degree II, teacher with didactic degree II);
- Teaching experience (in years);
- Managing position: yes, no;
- Member of the Commission for Quality Evaluation and Assurance (or a similar entity within the school): yes, no;
- Member of the Council of Administration (board of directors, etc.): yes, no.

Gender was excluded from the analysis, since female teachers out-weighed males in the sample. Similarly, we did not examine any differences based on the used e-learning platform, since the majority (80%) reported the use of the same platform, Google Classroom.

Educational/teaching level and teaching environment did not indicate any association with the scale components. Teaching experience revealed significant differences in the component of NOP where teachers with didactic degree I reported the highest values in the component, while teachers with didactic degree II reported the lowest values.

Interestingly, all the teacher groups related to managing roles or positions revealed significantly higher scores across all the QEM constructs. Teachers who held a managing position perceived higher items in the three components compared to teachers who were not occupied in any managing position. Likewise, the teachers who were members of the quality assurance team or were on the directory board reported significantly higher values in the measured components (CAL, NOP, TRS) than those teachers who were not members. The effect sizes of the detected significant differences were examined based on the epsilon squared value, and the result was interpreted based on the standardized difference as suggested in Rosenthal [60] (p. 19). The results indicated medium effects ( $0.2 < r \leq 0.5$ ) in the CAL and TRS components between different groups of managing positions, in TRS between different groups of members of the broad directors, and in all three components (CAL, NOP, TRS) between different groups of teaching experience. The calculated effect sizes were low ( $r \leq 0.2$ ) in the other cases, implying that future research should be conducted in different teacher populations, or a replicated study, as suggested in [61].

All significant associations are presented in Table 6.

**Table 6.** Significant differences in the Management of Quality of Education component results between teacher groups (Mann–Whitney and Kruskal–Wallis test).

	CAL	NOP	TRS
Grouping Variable: Managing position			
Mann-Whitney U	34,934.500	38,195.500	30,862.500
Wilcoxon W	377,312.500	380,573.500	373,240.500
Z	−4.662	−3.429	−6.131
Asymp. Sig. (2-tailed)	0.000 *	0.001 *	0.000 *

**Table 6.** *Cont.*

	CAL	NOP	TRS
Grouping Variable: Member of the quality assurance commission			
Mann-Whitney U	67,175.500	66,565.500	65,303.500
Wilcoxon W	334,721.500	334,111.500	332,849.500
Z	−2.885	−3.037	−3.409
Asymp. Sig. (2-tailed)	0.004 *	0.002 *	0.001 *
Grouping Variable: Member of the board of directors			
Mann-Whitney U	69,822.500	70,167.000	64,053.000
Wilcoxon W	313,075.500	313,420.000	307,306.000
Z	−4.290	−4.161	−5.847
Asymp. Sig. (2-tailed)	0.000 *	0.000 *	0.000 *
Grouping Variable: Teaching experience			
Chi-Square	7.296	12.199	4.871
df	3	3	3
Asymp. Sig.	0.063	0.007 *	0.182

\* Statistical significance at level  $p = 0.05$ .

## 5. Discussion and Implications

The main purpose of this study was to propose and validate a new scale to measure the teachers' attitude towards quality management in education, across all pre-university stages. The suggested model was based on previous scales encompassing items leadership, strategic planning, student-centred items, employee-centred items, information management, online teaching quality assurance dimension as well as several original items suggested in the study. The main difference with previous scales is the integration of all quality management dimensions in a simple scale and the adjustment to the current trends of online teaching and learning caused by the pandemic. Hence, the proposed scale includes elements with regards to the provision of school support on online teaching activities and on the management of virtual classrooms.

The EFA results generated a new three-dimensional model, clearly indicating the components of communication and alignment, needs and opportunities, and training and support. Regarding communication and alignment, it is more than obvious that communication practices and technologies have become increasingly important for school organizations. Adequate internal communication within the educational institution has had a positive impact on organizational effectiveness and efficiency. In terms of the needs and opportunities that define the quality management, it is important that educational services comply with the requirements of the main beneficiaries. Therefore, the quality management is the expression of the usefulness of the product offered, as well as the extent to which by all its characteristics meets the needs of students, teachers, parents and society. From the perspective of training and support, it is certain that the quality of teachers and managers depend on the teaching and learning processes and the results of education. Continuous professional training of teachers in new fields through training, counselling, and consulting programs is a strategic direction of quality management.

The PLS-SEM results revealed the validation of the scale, indicating internal validity, reliability, convergence validity and model fitness. The analysis of differences between the examined teachers' groups revealed interesting insights. The findings come in accordance with previous studies in the field of traditional and face-to-face education. As the results of teaching experience (in years) was positively associated with the teachers' attitude towards QEM. This finding comes in accordance with previous studies, where teachers of a higher teaching experience tend to indicate more positive attitudes towards teaching

trends, e.g., online teaching [62,63] or digital integration [64]. Previous studies have also proved a positive relationship between the teachers' teaching experience with the quality of teaching [16]. According to the results of the research conducted by Elumalai et al. [43], there is a positive relationship between different variables and the quality of e-learning in higher education. The results of recent studies [44] have shown that students' attitudes towards e-learning are positively influenced by certain factors, such as the perceived usefulness of e-learning, self-management of learning and self-efficacy. The data of another research [25] show that the most important factors of students' satisfaction with the quality of services at the level of online education in universities are the content and structure of the study and Professors/Lecturers, followed by academic guidance and counseling, testing and evaluation and the task of study. Similarly, teachers holding managing and administrative roles or positions reported significantly higher scores in the QEM dimensions. This finding highlights the need to further engage teachers with managerial tasks, to leverage their interest and positive attitude towards quality management in education.

Overall, the study resulted in the construction of an up-to-date, comprehensive, and reliable questionnaire focused on education quality management that can be used in future studies to draw useful conclusions on the teachers' attitude towards QEM and to identify the factors determining quality management and quality assurance in education. Theoretically, the findings of this study offer additional insights to researchers in understanding the factors that affect the teachers' perceived quality education, as well as further details on perceived quality items regarding online teaching and virtual classroom management. The replication and evaluation of this model in different populations can contribute to the deeper understanding of the role of individual attributes on teachers' perceived quality education in different educational contexts and countries.

Moreover, the proposed Quality Management Education Scale provides a fast and practical instrument that can be applied by educational institutions and professional development program designers to evaluate the teachers' attitude towards quality management, across all pre-university levels. Professional development program designers and educational institutions can apply the scale to better design the teachers' development paths and strategies to engage them in quality management tasks.

## 6. Limitations

This study brings some limitations. One main limitation is the generalizability of the findings. The participants come from one country (Romania) and belong in the pre-university teaching stages. Similar studies in different populations might generate different results. One other limitation is the underrepresentation of male teachers in the examined sample. Although gender has been excluded from the group-based analysis, it might have affected the differences indicated in different groups of teachers where there were significantly more female teachers than male teachers who tend to share similar attitudes. Finally, the survey is based on individual self-reported measures and hence it is prone to bias. Future research should extend this work by using different methods of data collection, like, for instance, observations, course recordings, and focus groups.

## 7. Conclusions

The efficient implementation of education quality management offers benefits both to the students and to teachers, and to society; it generates the orientation of the education process and its lining towards standards, its continuous improvement and responsibility. This solid basis is applicable to schools and higher education, along with lifelong learning. In the long run, quality management contributes to sustainable economic growth and to the formation of more stable and responsible governments, precisely because it assures the adaptation to the requirements, needs and learning styles of the students, to the current values of the society, as well as to future perspectives.

To this end, this study designed and validated an instrument to efficiently assess the teachers' attitude towards quality management of education, across all pre-university

teaching stages. The proposed scale is composed of 20 items and three components: (1) communication and alignment; (2) needs and opportunities; and (3) training and support. The PLS-SEM-based CFA demonstrated the scale's validity and reliability, indicating internal consistency, convergence validity and model fitness. The examination of a series of individual and professional (managerial) attributes revealed several significant differences between different groups of teachers. The findings of this study shed light on the role of individual factors on teachers' attitude towards the education quality management and provide a valid and practical scale that can be implemented across all levels of pre-university education. The results are useful to educational institutions, program designers and policy makers to evaluate the teachers' attitude towards quality management and design strategies to engage teachers in quality management tasks and to achieve efficient quality management outcomes.

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## Appendix A

**Table A1.** Quality Management Education Scale (QMES) Items.

	Items
I1	The school principal has knowledge concerning the system of quality management and implementing.
I2	The needs and suggestions of the business environment are considered when designing the curriculum.
I3	The system of assuming complaints, suggestions, criticism and appreciation offers quick measures for problem solving.
I4	The institution meets the employees' expectations.
I5	The school organisation collects and operates statistical data (e.g., student record, class attendance) in order to improve the education process.
I6	The school management is deficient in carrying out online didactic activities.
I7	The virtual classroom is made available by the school.
I8	Within the school, there are initiatives for promoting honest and direct communication.
I9	The organisation is capable of adapting to rapid changes.
I10	The students' requests are considered when designing elective disciplines.
I11	A guide with all the steps necessary for teachers and students for online didactic activities has been provided.
I12	The school institution facilitates the exchange of knowledge among all individuals.
I13	The employees of the institution are involved in organisation.
I14	Within the school, there are attractive, stimulating programmes designed to bring in new students.

Table A1. Cont.

	Items
I15	The organisation benefits from the opportunities of innovation in educational services.
I16	The material and technological resources (e.g., laboratories and hardware) are considered in the development and improvement of the curriculum.
I17	The actions carried out by my managers are inspiring and worth taking as an example.
I18	All the members are involved in identifying the problems and solutions for the school organization.
I19	The interaction with the students offers a short-term relationship.
I20	Every employee has competence in the role they have in the school organisation.
I21	I have been informed, by the school management, about the rules of virtual classroom handling.
I22	The school management provides adequate resources for didactic and administrative staff training.
I23	I know the mission, vision, and values of the organisation.
I24	The organisation is capable of anticipating and solving problems.
I25	Information on training programmes is given by the school.
I26	I have been supported by the school management in carrying out online teaching.
I27	The managing staff communicates efficiently with every person from the institution.
I28	The institution facilities (e.g., classrooms, laboratories, computers) are well maintained according to the periodic maintenance plans.
I29	At school, few of the resources I need to fulfil my duties are available.
I30	The students are involved in solving the problems found.
I31	The relationship with the students allows identification of new needs and offers new services.
I32	The managing staff are well acquainted with the concepts related to quality and with the new competences needed for the application of the quality management system.
I33	The employees from all the school levels (preschool, primary school, middle/lower secondary school, secondary school) are involved in producing resource distribution policies and planning.
I34	The school delivers surveys concerning the employees' workplace satisfaction.
I35	I receive feedback concerning my own effectiveness and the fulfilment of objectives.
I36	The managing staff discusses many quality-related problems during the administration council meetings, concerning the application of the quality management system.
I37	The number of employees is adequate in relation to the workflow.
I38	The school managers are very little preoccupied with the coaching of new leaders.
I39	I know exactly what is expected from me within the organisation.
I40	The actions of the school management are in accordance with the mission, vision, and values of the organisation.
I41	The actions of the managing staff show their ethical commitment and respect for the law.
I42	The school management concentrates on improving student and staff performance.

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"Gheorghe Asachi" Technical University of Iasi, Romania  
5th International Conference of the Doctoral School  
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# **Use of Balanced Scorecard Designer Light – in order to develop the main processes within the school “Alexandru Ioan Cuza” Economic High School Piatra Neamț**

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"Gheorghe Asachi" Technical University of Iasi \***

**SECTION 5. ENGINEERING AND MANAGEMENT**

**Use of Balanced Scorecard Designer Light –  
in order to develop the main processes within the school  
“Alexandru Ioan Cuza” Economic High School Piatra Neamt**

Balanced Scorecard is a strategic performance management framework that is designed to help an organization monitor its performance and manage the execution of its strategy.

In a recent global study of the management tools used, Balanced Scorecard proved to be the sixth most widely used management tool in the world, which also had one of the highest ratings, satisfaction.

The concept, with two components BS personal (BSP) and BS organizational (BSO), was introduced in 1992 by Robert Kaplan and David Norton.

## **Use of Balanced Scorecard Designer Light – in order to develop the main processes within the school “Alexandru Ioan Cuza” Economic High School Piatra Neamt**

The BSO identifies several dimensions of the organization, representing areas where organizations need to achieve results, at the level of departments, teams or individuals.

Depending on the type of company, the essential dimensions can be: financial aspect, customers, internal processes, knowledge and learning, quality of service, market share, etc.

Kaplan and Norton stop at four fundamental dimensions, which give four perspectives from which to examine the organization's business.

The four Balanced Scorecard perspectives are: Financial Perspective, Customer Perspective, Internal Process Perspective, Learning and Development Perspective.

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Research has shown that organizations that use a Balanced Scorecard approach tend to outperform organizations without a formal approach to performance management at the strategic level.

BSC Designer is powerful software that allows organizations to design, implement, and use a customized Balanced Scorecard to track critical performance data and progress toward the organization's goals.

For organizations with a strong desire to grow and succeed, BSC Designer can provide the tools you need to lead your organization effectively.

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Balanced Scorecard Designer is a software that facilitates the analytical approach of performance management, facilitating the interconnection of processes related to the creation and computerized management of balanced dashboards (Balanced Scorecards).

The strategy, the annual planning and the management system of the quality and of the operations in the cart of the school “Alexandru Ioan Cuza” Economic High School Piatra Neamț were created based on this model.

The use of BSC Designer is the framework for the entire organization-wide planning and quality assessment. Through this we were able to create a practice-oriented model, a model suitable for an educational institution.

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**Balanced Scorecard Designer or strategy planning software**

There are 5 steps in the strategic planning process (five levels of abstraction for strategic planning):

- Step 1. Defining the attributes of the strategy: Mission, Vision, Values
- Step 2. Formulation of the strategy: Frameworks, Strategic Commentary, Strategic Themes, Prioritization
- Step 3. Strategy description: Objectives, Strategy maps, KPIs, Initiatives, Budgeting, Risk
- Step 4. Waterfall
- Step 5. Execution

# Use of Balanced Scorecard Designer Light – in order to develop the main processes within the school “Alexandru Ioan Cuza” Economic High School Piatra Neamt

Balanced Scorecard Designer or strategy planning software



Figure 1. 5-Step Strategic Planning Process

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The BSC model is the framework for the whole evaluation of planning and quality. Through this we were able to create a practice-oriented model, a model suitable for an educational institution.

An important aspect is that neither the model nor its elements are direct copies, but individual applications. Using this model of quality development, the institution learned and adopted the fundamental idea of the model, its practices and justification:

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- Basic function:** making a curriculum; pedagogical leadership skills; personalization (individual study plans); student services; correlation with real life.
- Development function:** educational institution; active development; quality control. Each student learns the necessary skills in multidimensional work environments, obtains a qualification, finds a job or continues his studies
- **Auxiliary function:** systematic planning; inter-collegiality.
- Efficiency:** result indicators; financial indicators; quality indicators; development indicators.

## **Use of Balanced Scorecard Designer Light – in order to develop the main processes within the school “Alexandru Ioan Cuza” Economic High School Piatra Neamt**

The systematic use of BSC over the years has resulted in continuous development and a number of improvements at all levels of activity in the institution.

- First of all, it was possible for the institution as a whole to focus its development on certain selected sections, to the detriment of unsystematized, individual actions.
- The model was developed as a basis for the structure and function of work teams. In addition to sector-specific teams, there are also teams that combine leadership competence and pedagogical skills to serve all ancillary and educational functions within the institution.
- Viable connections with the field of work. The liaison between the technical sector advisory committees, sector-specific organizations and real-life representatives creates an active forum for development by field.
- Team engagement at all levels results in concrete pedagogical progress in favor of students.

# Use of Balanced Scorecard Designer Light – in order to develop the main processes within the school “Alexandru Ioan Cuza” Economic High School Piatra Neamt

The screenshot shows the 'Balanced Scorecard - HIGH SCHOOL - BSC Designer Light' application. The main window displays a table with columns for Name, Progress, Value, Baseline, Target, Measure, Weight, Min, Max, and Update status. The 'Name' column is expanded to show a tree view of perspectives: Financial Perspective, Customer Perspective, Internal Process Perspective, and Learning & Growth Perspective. The table lists measures for each perspective, all with a weight of 1 and an update status of 'No update inte...'. The 'Financial Perspective' measure is highlighted in bold.

Name	Progress	Value	Baseline	Target	Measure	Weight	Min	Max	Update status
Balanced Scorecard - HIGH SCHOOL									
Financial Perspective					<b>Score</b>	<b>1</b>	0	100	<b>No update inte...</b>
Customer Perspective					Score	1			No update inte...
Internal Process Perspective					Score	1			No update inte...
Learning & Growth Perspective					Score	1			No update inte...

At the bottom of the window, there are tabs for 'General', 'Data', 'Performance', and 'Context'. The 'General' tab is active, showing fields for 'Name' (Financial Perspective), 'Description', 'Measure' (Score), and 'Owner'.

Figure 2. BSC perspectives

# Use of Balanced Scorecard Designer Light – in order to develop the main processes within the school “Alexandru Ioan Cuza” Economic High School Piatra Neamț

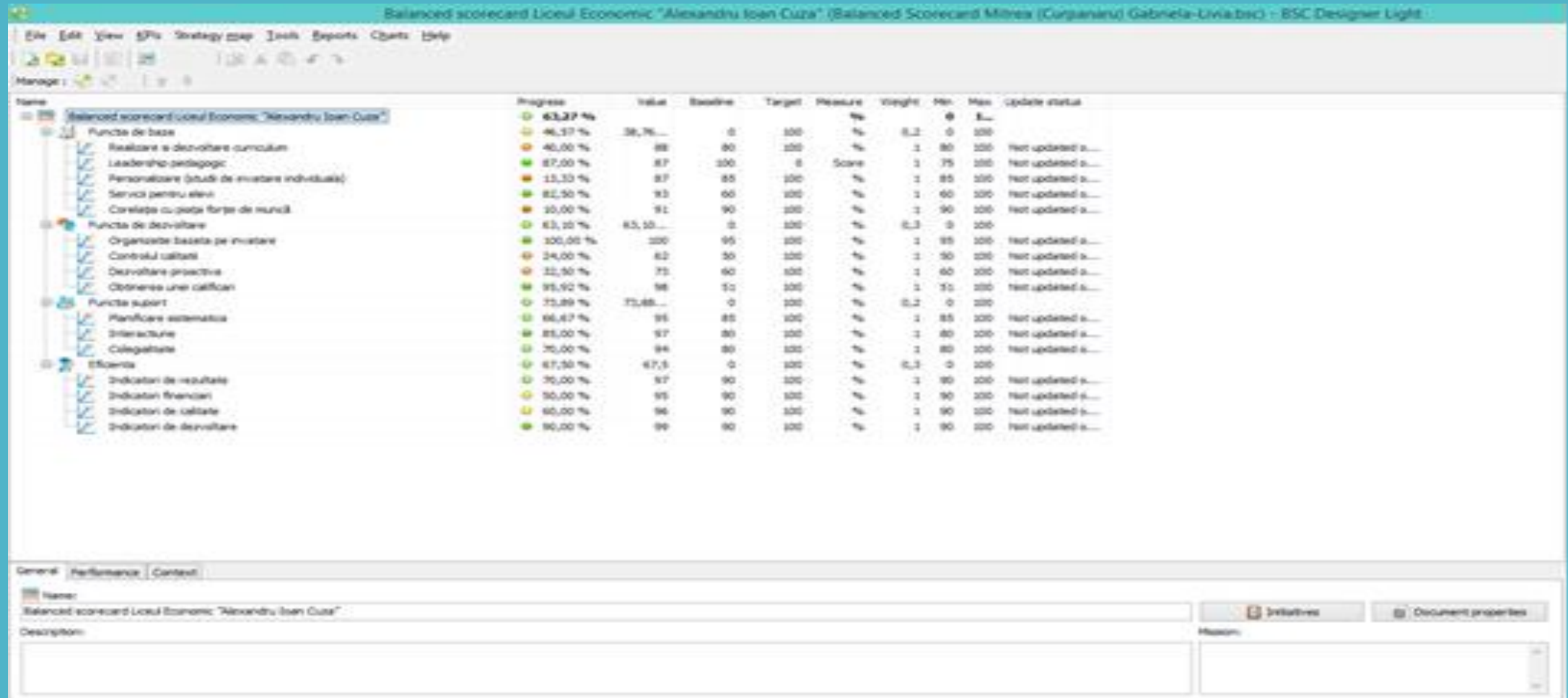


Figure 3. Detailed BSC perspectives

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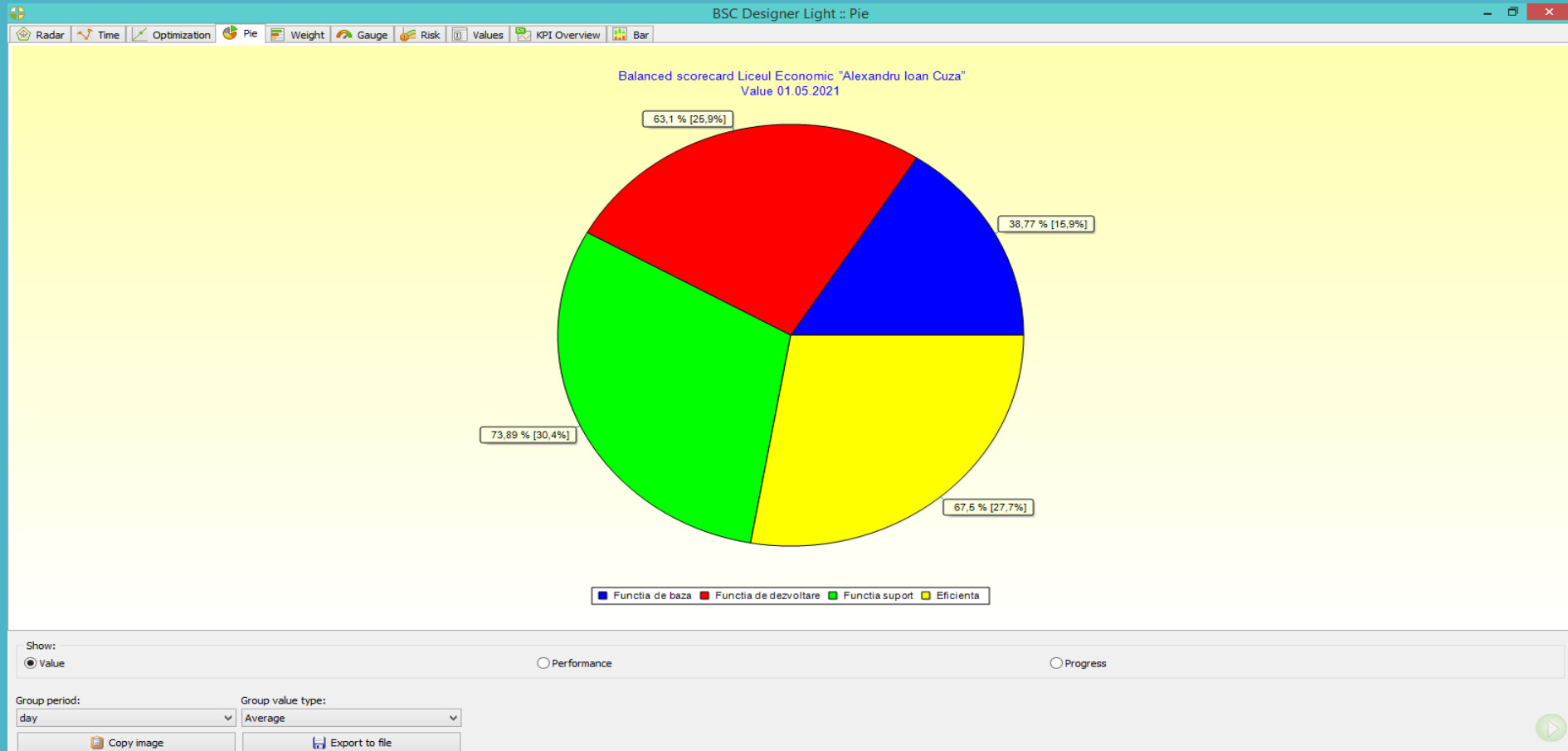


Figure 3. Value BSC perspectives

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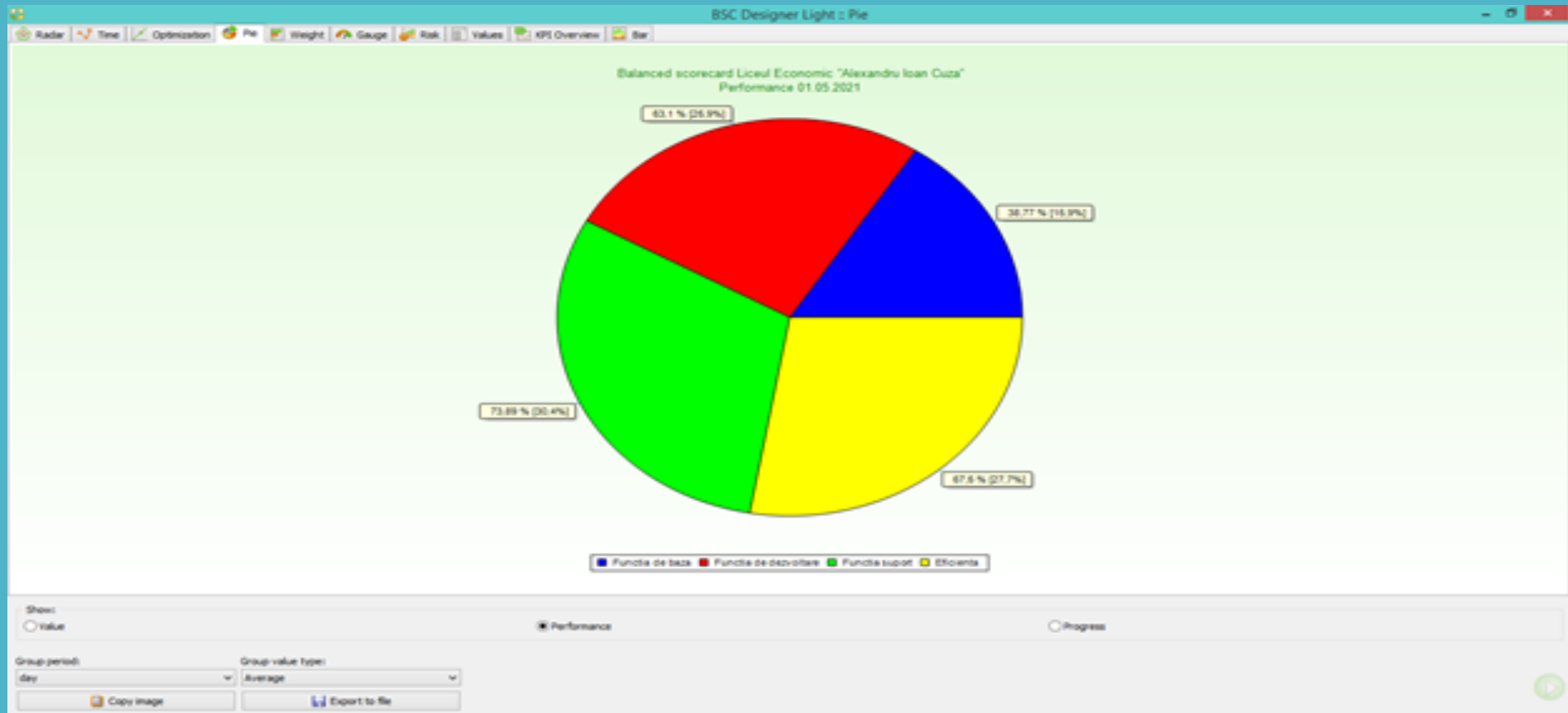


Figure 4. Performances BSC perspectives

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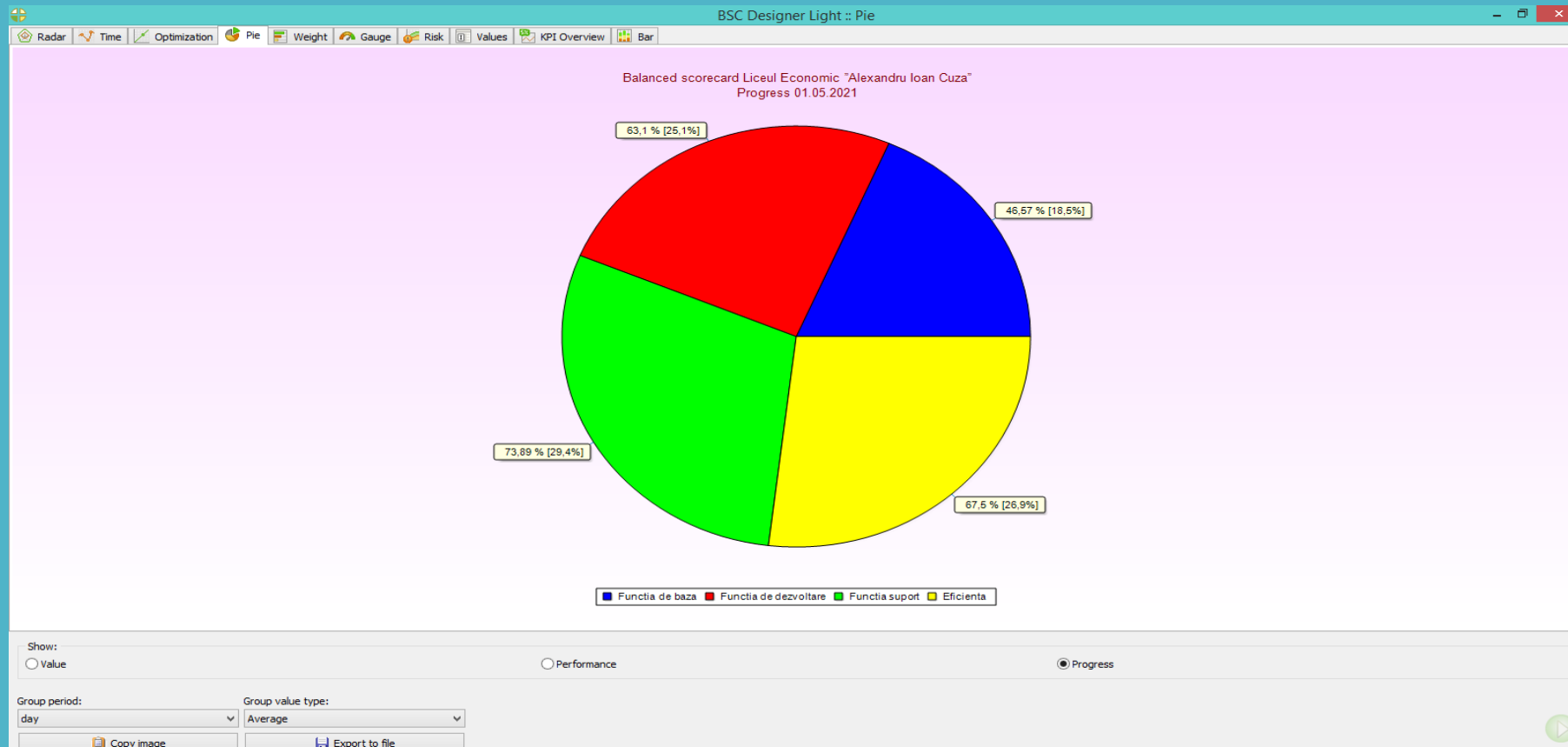


Figure 5. Progress BSC perspectives

# Use of Balanced Scorecard Designer Light – in order to develop the main processes within the school “Alexandru Ioan Cuza” Economic High School Piatra Neamt

	PROS	CONS
<p><b>Scorecard in a Spreadsheet (like Excel)</b></p> 	<p>Good for a single-user scorecard</p> <p>Good for creating a prototype</p> <p>No need for additional investments</p> <p>No training needed</p>	<p>Historical data is hard to manage</p> <p>The risk of spaghetti-style scorecard</p> <p>Time consuming KPI normalization and weighting</p> <p>The need to agree on the workflow</p> <p>Strategy map is frozen</p>
<p> SCORECARD IN EXCEL VS. SCORECARD IN SPECIALIZED SOFTWARE WWW.BSCDESIGNER.COM</p>		
	PROS	CONS
<p><b>Scorecard in Specialized Software</b></p> 	<p>Easy to manage multi-level KPIs</p> <p>Live strategy map</p> <p>Team work and access management</p> <p>Keeping scorecard up to date</p> <p>Cascading/alignment</p>	<p>Subscription costs</p> <p>Requires additional training</p>

Figure 6. Strategy planning and execution software

# Use of Balanced Scorecard Designer Light – in order to develop the main processes within the school “Alexandru Ioan Cuza” Economic High School Piatra Neamt

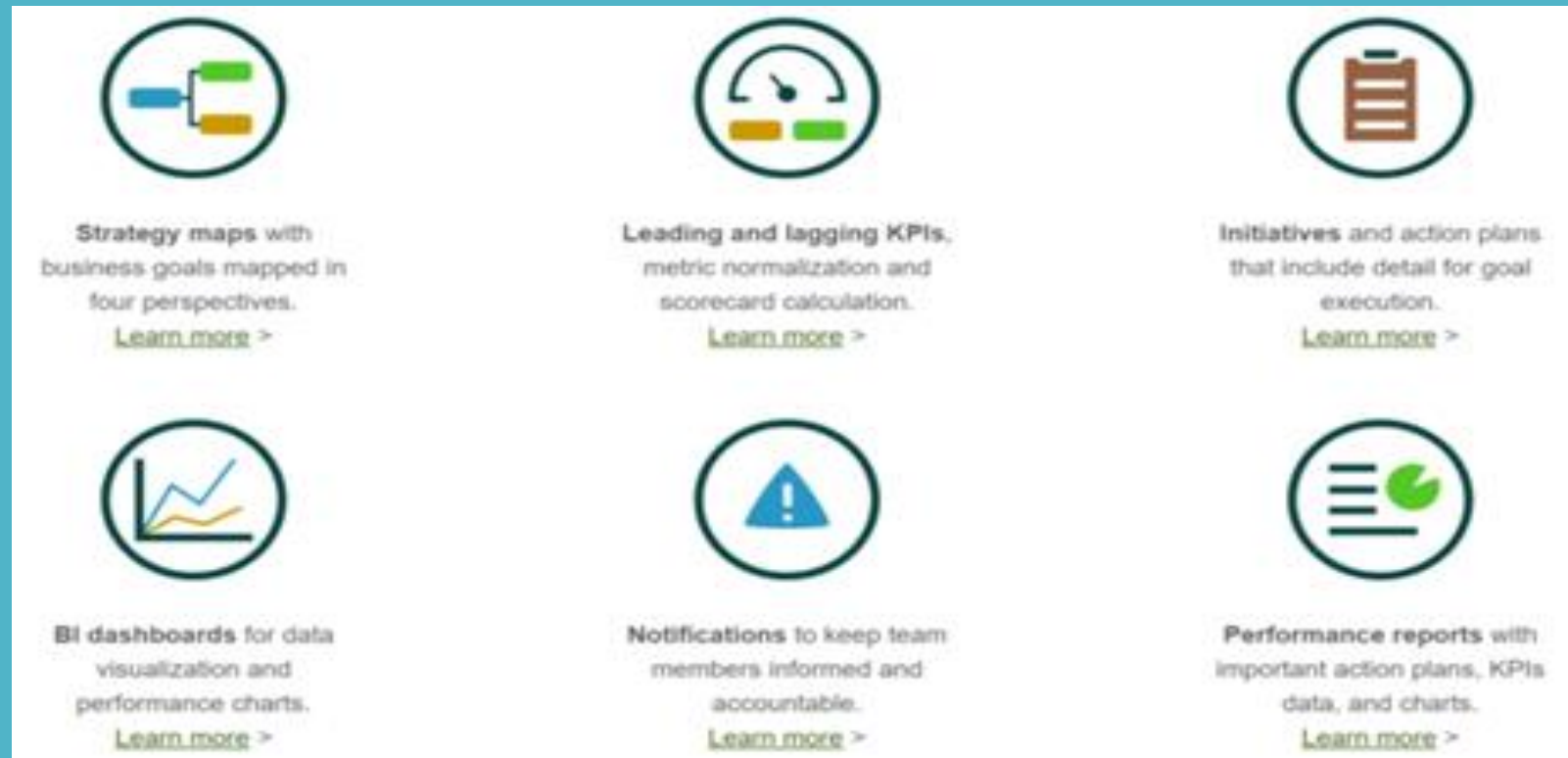


Figure 7. Execution of the strategy with BSC Designer

**Use of Balanced Scorecard Designer Light –  
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**Conclusions:**

The Balanced Scorecard method includes an analysis of causal relationships with an effect on strategic objectives, which allows for the timely assessment of critical success factors and adjustments where necessary.

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**Conclusions:**

Knowing in detail the causal relations, by making the dashboard, the leaders observe the movements from the established targets in the shortest time as they take place and have the capacity to act immediately on the causes that produced them.

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**Conclusions:**

*Using dedicated software, BSC Designer Light, we conclude that entities can choose and adapt to their own information needs placed by management and success reporting. The use can be made in association with notions specific to another situation, with the provision of providing prompt answers to managers' expectations.*

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**Recommendations for implementing the practice:**

*There are 3 key recommendations for success:*

- the relevance and systematic activity of the management staff regarding the use of the model,*
- continuous feedback on concrete progress,*
- achievement → motivation → staff commitment.*

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**Recommendations for implementing the practice:**

*The application of BSC in the Technological Economic-Administrative High School is an appropriate tool to be used in quality management and assurance, as well as for strategic planning within a pre-university educational institution.*

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<https://bscdesigner.com/>

<https://bscdesigner.com/strategic-planning-process.htm>.

# **ANEXE**

# CERTIFICATE



## 2021 6th International Conference on Education Reform and Modern Management (ERMM2021)

<http://www.6th-ermm.org/>

### ORAL PRESENTATION

Paper ID: M8331

Title: EFQM Excellence Model-European Foundation for Quality  
Management

Authors: Curpănaru Gabriela-Livia

has given an oral presentation at 2021 6th International Conference on Education Reform and Modern Management (ERMM2021) which was held online on April 11, 2021. The oral presentation was favored and approved of by the attendees for its superior quality and great pragmatic value.





# American Journal Of Engineering Research

ISSN (online) : 2320-0847

ISSN (print) : 2320-0936

## Certificate for Publication

This is certify that the paper entitled “**Total Quality Management – An Instrument for Improving Organizational Efficiency**” journal with following details:

Authors Name : [Curpănaru Gabriela-Livia](#)

Journal Name : [American Journal of Engineering Research](#)

Publication : [Volume 10, Number 5, 2021](#)



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## DIPLOMĂ DE PARTICIPARE

*Se acordă studentului doctorand*

**Gabriela-Livia Mitrea Curpanaru**

pentru susținerea lucrării la cea de-a 4-a ediție a Conferinței  
Internaționale a Școlii Doctorale TUIASI - 19-21 mai, 2021.

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# CERTIFICATE



## 2021 International Conference on Modern Management and Education Research (MMER2021)

<http://www.mmer2021.org/>

### ORAL PRESENTATION

Paper ID: MMER632

Title: The Model of Quality Assurance in Education by  
Implementing E-Learning and Blended Learning

Authors: Gabriela-Livia Curpănaru

has given an oral presentation at 2021 International Conference on Modern Management and Education Research (MMER2021) which has been held online on July 4, 2021. The oral presentation was favored and approved of by the attendees for its superior quality and great pragmatic value.





# Certificate of Publication



This is to confirm that  
**Gabriela Livia Curpanaru**  
Published following article

**Six Sigma quality management model to improve process performance**

Volume 3, Issue 7, pp: 709-712

**[www.ijaem.net](http://www.ijaem.net)**

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## Certificate

Office Code :	M1867	Date :	2021-07-04
MIC No. :	2854	Status :	Published

## Article Details

This is to certify that following paper has been published in IOSR Journals.

Article Title	:	Total Quality Management vs. Six Sigma
Author's Name	:	Gabriela Livia Curpanaru
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**FLORINA PÎNZARU**  
CHAIR STRATEGICA 2021

**CONSTANTIN BRĂȚIANU**  
CHAIR STRATEGICA 2021

October 21-22, 2021

DATE

# ***CERTIFICAT OF PARTICIPATION***

This is to certify that **GABRIELA CURPĂNARU** has participated at *The Third International Conference on Innovation Psychology, Education and Didactics - ICIPED*, organized by “Vasile Alecsandri” University of Bacău, Romania, on 17<sup>th</sup> - 18<sup>th</sup> September 2021.



“Vasile Alecsandri” University of Bacău  
RECTOR  
Prof. Carol SCHNAKOVSKY, PhD



Conference Coordinator,  
Assoc. Prof. Liliana MĂȚĂ, PhD





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# CERTIFICATE OF ACCEPTANCE

Certificate of acceptance for the manuscript (ijerph-1545267) titled:  
A Comprehensive Instrument to Measure Teachers' Attitude towards Quality Management  
in the Context of Online Education

Authored by:

Katerina Tzafilkou; Liliana Măță; Gabriela Livia Curpanaru; Ionut Viorel Stoica; Lucian  
Nicolae Voinea; Constantin Sufaru

has been accepted in *Int. J. Environ. Res. Public Health* (ISSN 1660-4601) on 19 January  
2022



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# CUPRINS

1. INTRODUCERE
2. EFQM Excellence Model – European Foundation for Quality Management
3. Systematic Literature Review in the Field of Education Quality Management
4. Total Quality Management – An Instrument for Improving Organizational Efficiency
5. The Integrated Quality Assurance Model in the Context of Online Education
6. Performance management in organizations
7. The Role of School Managers in Implementing the Quality of Education
8. Application of Total Quality Management (TQM) in Education
9. Models for measuring the performance of an organization
10. Performance management – a strategic and integrated approach to ensuring the success of organizations
11. Quality Management and Leadership in Education
12. The Model of Quality Assurance in Education by Implementing E-Learning and Blended Learning
13. Six Sigma –quality management model to improve process performance
14. Total Quality Management vs. Six Sigma
15. Exploratory Research to Investigate the Perception of Teachers in Pre University Education towards Quality Management of Education
16. A Comprehensive Instrument to Measure Teachers' Attitude towards Quality Management in the Context of Online Education
17. Use of Balanced Scorecard Designer Light – in order to develop the main processes within the school “Alexandru IoanCuza” Economic High School Piatra Neamț