

# Malcolm Baldrige National Quality Award (MBNQA) Quality Tool in Education: A Systematic Literature Review

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**Abstract: Purpose** – The purpose of this study is to determine the effects of the Malcolm Baldrige National Quality Award (MBNQA) quality tool in education. Identifying the main themes of these effects is an additional aim of the present study. Understanding these issues can enable higher and secondary education centres to direct their management towards achieving outstanding results. **Design/methodology/approach** – A systematic literature review was conducted based on data from two academic publishers, Emerald, Taylor and Francis. The 41 peer-reviewed journals articles were published between 1990 and 2023 and presented the results of the MBNQA quality tool in education. **Findings** – According to this research, several implications of the MBNQA quality tool in education are presented. The review of the literature reveals that there are many results found about the application of the quality tool in Tertiary and Secondary education, the challenges they face in terms of innovation, human resources and operations, as well as the achievement of excellent results from the application of the methodology. The main topics supported in the literature are human resources, knowledge management and the quality of services offered for the satisfaction of teachers and students. **Research limitations/implications** – An important limitation is that data were drawn from only two major journals (Emerald, Taylor and Francis), as implementation of the MBNQA quality tool is mainly found in the private sector. In addition, many keywords such as Quality Assurance and Business Excellence, led to application of the quality tool in businesses and organisation and little is its application in the public sector and education as a result the findings of articles were limited. An equally important limitation is that the authors did not always have got access to all databases and peer-reviewed journals, as well as in any review articles in languages other than English. **Practical implications** – This research is of interest to academic researchers, scholars and key decision makers in the field of education. The advantages recorded from the implementation of the MBNQA quality tool and the limitations from the study and presentation of the 41 articles motivate academic researchers to further study service quality in order to create a climate focused on learning for the satisfaction of students and teachers so as to fill the gap of limited publications in the field of education. **Originality/value** – Many models have been adapted to higher education including the MBNQA quality tool. The MBNQA appears to have the largest number of historical applications in higher education, with its focus on customer satisfaction and improvement information. However, the systematic literature review reveals the increasing trend of using quality tools in the field of education in recent years. Moreover, literature reviews on the use of models in this field are limited. Therefore, more research is needed to determine the benefits, as well as limitations and outcomes of applying qualitative tools in Education in the future.

**Keywords:** MBNQA, Systematic literature review, Total Quality Management, Business Excellence and Education, Baldrige award, Quality Assurance.

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## 1. Introduction and motivation

Promoting the quality management of organisation and businesses is a goal of many public organisation and private businesses (Anastasiadou & Zirinoglou, 2015a;2015b;2020a;2020b;2020c; Taraza & Anastasiadou, 2019a;2019b; Papadimitriou, et al., 2022; Anastasiadou & Papadaki, 2019). Many statistical tools and quality models have been used to improve processes. Productivity and efficiency of these organisations including the quality tool of Baldrige, known for his work in promoting quality management and for the creation of the Baldrige Award, which is awarded to companies and organisations that demonstrate excellence in their activities (Anastasiadis et al., 2016; Anastasiadou & Anastasiadis, 2019; Anastasiadou, 2015;2016;2018a;2018b;2018c;2018d; Taraza et al., 2023; Papadaki & Anastasiadou, 2019). While Baldrige's legacy is primarily associated with his contributions to the business world, his ideas about quality management and performance excellence can be applied to many other areas, including education (Anastasiadou et al., 2016a; 2016b; Anastasiadou et al., 2014; Anastasiadou & Taraza, 2019a;2019b;2019c; 2020a;2020b). Educational institutions are increasingly evaluated based on their ability to deliver results and achieve specific goals (Fisher et al., 2001). The importance of quality in education is a matter of priority for nations and many efforts have been made to improve it. The international literature presents many examples of quality principles with significant results in the administration of higher education institutions (Yeo and Li, 2014; Min et al., 2012; Vauterin et al., 2011; Nadir et al., 2009; Owlia and Aspinwall, 1996). If a company or public agency does not meet

the Malcolm Aldridge standard's required references for the evaluation it is rejected and does not receive the corresponding award (NIST, 1995).

In 1999, with the Bologna treaty, the way to its upgrade was opened of higher education of the EU countries. The establishment of the European Council in 2006 had intended to encourage Higher Education institutions to introduce or develop internal quality assurance systems following specific standards, including the Malcolm Aldridge quality tool. There were a total of 15 Minas awarded over the period 2001-2021, representing 15 different higher education institutions that were recognised and awarded for their quality (Table 1).

**Table 1: Malcolm Aldridge National Quality Award Winners**

Year	Secondary and Tertiary Education	Journal
2021	The Charter School of San Diego	It shows an overall increase in successful school transitions (graduation) from 95.7% to 98.1%. It established market leadership as the largest independent charter school in its service area and had the largest market share in San Diego.
2019	Howard Community College	Howard Community College has consistently outperformed local and national benchmarks for degrees and certificates by more than 200%. The educational institution managed to triple the graduation rate of black students within two years of entering the college. State funding of the college is the best in the state in the 10 last years.
2018	Alamo Colleges District	Alamo Colleges District's four year graduation rate increased by 150%, with a simultaneous increase in the number of students accepted on scholarship. Students' satisfactions with the overall educational experience is 88.4% more than two percentage points higher than the national norm, as measured by the Community College Survey of Student Engagement.
2018	Tri County Tech	Student completion and transition rates have been in the top 25 percent nationally for eight fiscal years. At the same time seventy percent of its high school graduates go on to further education in adult colleges or technical schools with an increased rate of vocational rehabilitation.
2015	The Charter School of San Diego	The school maintained overall student and parent satisfaction levels close to 100 percent from 2010 to 2015, with the same teaching staff at 90 percent, which it selects on strict degree criteria. The innovation of the school is the continuous evaluation of financial performance.
2013	Pewaukee School District	Teachers with the goal of empowering students and their needs use indicators and conduct continuous assessments to adjust instruction in the classroom. Action plans are reviewed every 90 days. Staff satisfaction scores for pay, benefits and initiative exceed the national average.
2010	Montgomery County Public Schools	In 2010, half of graduates scored a college readiness score of 3 or higher on at least one Advanced Placement exam, twice the state rate and three times the national rate. To achieve this he focused on the students' knowledge and skills necessary to achieve the goal.
2008	Iredell Statesville Schools	Outstanding continued collaboration of the district with the school to improve student learning. He used the Plan – Do – Study – Act cycle system to identify and implement opportunities for student improvement and increased student performance. To meet the '21 <sup>st</sup> century skills for leaders and teachers' strategy, he implemented assessment rubrics that led to improves staff capacity.
2005	Jenks Public Schools	Academic Performance Index scores exceed state and national level. The school's innovation was its student exchange programs with schools in China.
2005	Richland College	The school implemented for measures of continuous grading of students regarding the convenience, variety of courses and intellectual development. The school gained a reputation for leadership in field of education and many professors became presidents of other colleges.
2004	Kenneth W. Montfort College of Business	Montfort College of Business was ranked top in student satisfaction measures. Montfort College of Business is one of five undergraduate only business schools in the nation accredited in both business and accounting.
2003	Community Consolidated School District 15	Student performance increased from 42 percent to 82 percent for reading from 42 percent to 82 percent for science.
2001	Chugach School District	Reading achievement test scores increased by a large percentage. In the four subject areas tested on the Alaska High School Graduation Qualifying Exam, Chugach School District exceeded the stage average.
2001	Pearl River School District	Student and parent satisfaction increased to a great extent. A complex set of scan able progress indicators provides continuous up to date monitoring of area performance.
2001	University of Wisconsin Stout	Immediate vocational rehabilitation of graduates was achieved at a rate of 98 percent. This has been achieved with a Mission Driven Market Smart focus on a range of programs leading to professional careers mainly in industry and education.

In the field of education, many institutions have become recipients of the MBNQA. In the USA the MBNQA is considered the most prestigious quality award in education as well as in the public sector (NIST, 1995;1996;1997;1998;1999;2000a;2000b). Universities based on the standard quality tool carry out regular evaluations of their services in order to keep pace with the rapid changes of technology and economics related to learning and competition in the field of their services (Kim et al., 2014). Despite the widespread use of the MBNQA quality management system by businesses and public organisations few studies have been carried out in the field of education (Manville et al., 2019; Breus et al., 2017; Eltobgy and Radwan, 2010; Beard, 2009). The lack of a literature review of the MBNQA quality model in this area prompts further research and creates the

need for further investigation focusing on the practical implications of the tool. This study seeks to review the literature in order to identify and answer the question:

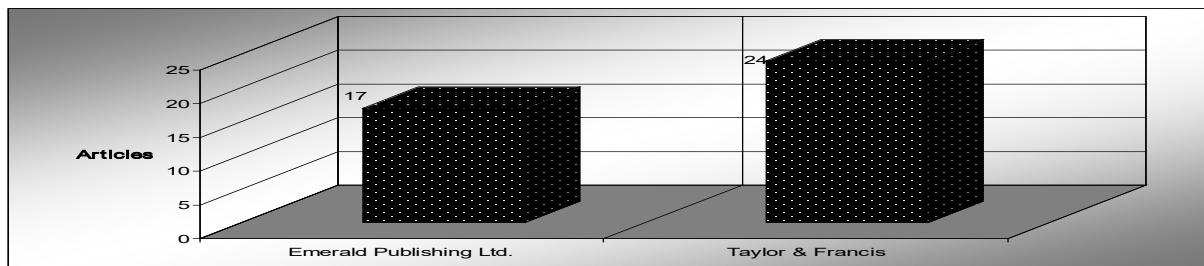
How is the MBNQA quality tool used in education and what is its contribution to future research?

The present study aims to systematically review the literature on the MBNQA quality management system in order to identify and record examples or highlight the benefits of implementing the model in the field of education.

## 2. Methodology

After the selection of the research topic and the thorough study of corresponding researches regarding the assurance about the quality in education, the research question was formulated according to the aims and objectives of the study. In recent years, academic interest in quality assurance has continued and more and more research has been undertaken (Aamodt et al., 2016).

This systematic literature review focuses on the implementation of the MBNQA quality system in the field of education highlighting significant benefits at the organisational level (Buytendijk et al., 2011). In the field of education, the interest in the application of the tool is increasingly, while academic interest makes it necessary to carry out more studies and publications to further facilitate research and conduct comparative results (Al – Dahiyat, 2020). In order to achieve the search, there was a gathering and recording of articles related to the achievement of the purpose of this research, moreover, articles were obtained from academic journals that are considered reliable (Alblooshi et al., 2021), and published after a critical selection. The selection of these journals Emerald and Taylor and Francis was based on the fact that they are universally known and reliable and the articles are published after checking their reliability and validity by specialized review staff, while their evaluation was also done by the members of the writing team, who held continuous meetings for the analysis of the data, the evaluation, the rejection of irrelevant articles and the final recording of conclusions.



**Figure: 1: Malcolm Baldrige National Quality Award and its applications in education**

The investigation brought to the surface a number of studies and after thorough study those relevant to the subject were identified, taking into account the title, the summary and the conclusions of each research. The 41 published articles presented in Figure 1. Of these articles 17 were selected from Emerald magazine and 24 from Taylor and Francis. Although in the field of education there are not many publications regarding the Malcolm Baldrige quality tool (Ronko & Mezquida, 2018), however, the literature review records the benefits of applying the model.

At the review stage, the specific articles of the present study were selected based on their reliability and evaluation (Trainfield et al., 2003). The literature search was based on the following terms: MBNQA, Systematic literature review, Total Quality Management, Business Excellence and Education, Baldrige award, Quality Assurance. The specific articles were selected taking into account the title, abstract and conclusions contained in them. The credibility of the articles was based on their judgment by specialised staff, before their publication and their evaluation was done by the members of the writing team. In Table 2, the title of the articles, the year of publication, the authors and the journal of publication are presented in detail, while the final conclusions are recorded in a column in order to compare them and help in further research (Hu et al., 2015).

**Table 2: Malcolm Baldrige National Quality Award and results in Education**

Study	Title	Journal
Chatterji & Kiran (2022)	The influence of human, organizational and relational capital of universities on their performance: a developing economy perspective	Journal of Intellectual Capital Emerald Publishing Limited 1469-1930
Alauddin & Yamada (2022)	TQM model based on Deming prize for schools	International Journal of Quality and Service Sciences Vol. 14 No. 4, 2022 p.p. 635-651 Emerald Publishing Limited
Cook & Zhang (2019)	The Baldrige Award's falling fortunes	Benchmarking: An International Journal Vol. 26, No. 6, 2019 p.p. 1972-1994 Emerald Publishing Limited
Bluin & Smith (2019)	Measuring the continuous quality improvement orientation of medical education programs. A validity study of the Baldrige: Are We Making Progress questionnaire	International Journal of Health Care Quality Assurance Vol. 33, No. 2, 2020 p.p. 158-171 Emerald Publishing Limited
Ah – Teck & Starr (2012)	Principals' perceptions of quality in Mauritian schools using the Baldrige Framework	Journal of Educational Administration Vol. 51, No. 5, 2013 p.p. 680-704 Emerald Publishing Limited
Sampaio et al (2012)	A comparison and usage overview of business excellence models	The TQM Journal Vol. 24, No. 2, 2012 p.p. 181-200 Emerald Publishing Limited
Anif (2007)	Baldrige theory into practise: a generic model	International Journal of Educational Management Vol. 21, No. 2, 2007 p.p. 114-125 Emerald Publishing Limited
Ruben et al. (2006)	Evaluating the impact of organizational self assessment in higher education. The Malcolm Baldrige Excellence in Higher Education framework	, 2007 p.p. 230-250 Emerald Publishing Limited
Mizikaci (2006)	A systems Approach to program evaluation model for quality in higher education	Quality Assurance in Education Vol. 14, No. 1, 2006 p.p. 37-53 Emerald Publishing Limited
Alshare & Grandon (2005)	The Baldrige Education Criteria or Performance Excellence Framework Empirical test and validation	International Journal of Quality & Reliability Management Vol. 23, No. 9, 2006 p.p. 1118-1157 Emerald Publishing Limited
Jacob et al. (2004)	An empirical assessment of the financial performance of Malcolm Baldrige Award winners	International Journal of Quality and Reliability Management Vol. 21, No. 8, 2004 p.p. 897-914 Emerald Publishing Limited
Harer (2003)	Performance measures of Quality for academic libraries. Implementing continuous improvement projects. A Delphi study	Advances in Library Administration and Organization Vol.20, 2003 p.p. 229-296 Emerald Publishing Limited
Pannirselvam & Ferguson (2000)	A study of the relationships between the Baldrige categories	International Journal of Quality & Reliability Management, Vol. 18, No. 1, 2001 p.p. 14-34 Emerald Publishing Limited
Lee et al. (2000)	Strategy formulation framework for vocational education: integrating SWOT analysis, balanced scorecard, QFD methodology and MBNQA education	Managerial Auditing Journal 2000 p.p. 407 – 423 Emerald Publishing Limited
Loomba & Johannessen (1997)	Malcolm Baldrige National Quality Award Critical issues and inherent values	Benchmarking for Quality Management & Technology, Vol. 4, No. 1, 1997 p.p. 59-77 Emerald Publishing Limited
Tumalla & Tang (1994)	Strategic quality management Malcolm Baldrige, Malcolm Baldrige and European Quality Awards and ISO 9000 certification Core concepts and comparative analysis	International Journal of Quality & Reliability Management Vol.13, No. 4, 1996 p.p.8-38
Feurer & Chaharbaghi (1992)	Baldrige Winners	Emerald Backfiles 1992
Tran & Kula (2023)	Juggling quality labels with centralised analytics: How the first Nordic triple crowned business school does it	Total Quality Management & Business Excellence 2023
Mendes & Alves (2022)	The balanced scorecard in the education sector. A literature review	International Journal of Educational Management Cogent Education, 2023, 10.2160/120
Chen et al. (2017)	Critical quality indicators of higher education	Total Quality Management & Business Excellence Vol. 28, Issue 1-2
Martinez Caro et al. (2015)	An application of the performance evaluation model for e-learning quality in higher education	Total Quality Management and Business Excellence Vol.26, Issue 5-6
Sadeh & Garkaz (2015)	Explaining the mediating role of service quality between quality management enablers and students' satisfaction in higher education institutes: the perception of managers	Total Quality Management & Business Excellence, Vol. 26, Issue 11-12
Ree et al. (2014)	A study on education quality using the Taguchi method	Total Quality Management & Business Excellence Vol. 25, 2014, Issue 7-8 p.p. 935-943
Yeo & Li (2014)	Beyond SERVQUAL: The competitive forces in higher education in Singapore	Total Quality Management & Business Excellence Vol. 25, Issue 1-2 p.p. 95-123
Garcia & Martinez (2014)	Development and validation of a measure of the quality management practices in education	Total Quality Management & Business Excellence Vol 25, Issue 1-2, p.p. 57-79
Karimi et al. (2013)	A study of the Baldrige Award framework using the applicant scoring data	Total Quality Management & Business Excellence Vol.25, Issue 5-6 p.p. 461-477
He et al. (2011)	Validation of the theoretical model underlying the Baldrige criteria: Evidence from China	Total Quality Management & Business Excellence Vol. 22, Issue 2 p.p. 243-263
Ali et al. (2010)	Testing the criticality of HR TQM factors in the Malaysian high education context	Total Quality Management & Business Excellence Vol. 21, Issue 11 p.p.1177-1188
Quinn et al. (2009)	Service quality in higher education	Total Quality Management & Business Excellence Vol. 20, Issue 2 p.p.139-152
Bayraktar et al. (2008)	An instrument for measuring the critical factors of TQM in Turkish higher education	Total Quality Management & Business Excellence Vol. 19, Issue 6 p.p. 551-574

Tambi et al. (2008)	The ranking of higher education institutions: A deduction or delusion?	Total Quality Management & Business Excellence Vol. 19, Issue 10 p.p. 997-1011
Wen et al. (2008)	The quality movement: where are we going? Past, present and future	Total Quality Management & Business Excellence Vol. 33, Issue 1-2 p.p. 92-112
Asan & Taynas (2007)	Integrating Hoshin Kanri and the Balanced Scorecard for Strategic Management: The Case of Higher Education	Total Quality Management & Business Excellence Vol. 18, Issue 9 p.p. 999-1014
Calvo Mora et al. (2005)	Relationships between EFQM Model Criteria: A case study in Spanish Universities	Total Quality Management & Business Excellence Vol. 16, Issue 6 p.p. 741-770
Grant et al. (2004)	A Comparative Quality Management in US and International Universities	Total Quality Management & Business Excellence Vol. 15, Issue 4 p.p. 423-438
Aksu (2003)	TQM readiness level perceived by the administrators working for the central organization of the Ministry of National Education in Turkey	Total Quality Management & Business Excellence Vol. 14, Issue 5 p.p.595-608
Grant et al. (2002)	Quality management in US higher education	Total Quality Management & Business Excellence Vol. 13, Issue 2 p.p. 207-215
Przasnyski & Tai (2002)	Stock performance of Malcolm Baldrige National Quality Award Winning Companies	Total Quality Management & Business Excellence Vol. 13, Issue 4 p.p. 475-488
Zink et al. (1994)	Quality assessment: instruments for the analysis of quality concepts based on EN 29000 the Malcolm Baldrige Award and the European Quality Award	Total Quality Management & Business Excellence Vol. 5, Issue 4, p.p. 329-343
Taylor & Adair (1994)	Evolution of quality awards and self assessment practices in Europe: a case for considering organization study	Total Quality Management & Business Excellence Vol. 5, Issue 4, p.p. 227-237
Kanji & Searstone (1990)	Quality control is the way of thinking of quality assurance	Total Quality Management & Business Excellence Vol. 1, Issue 2 p.p. 259-268

From the 41 sample articles examined, an evaluation was carried out by each researcher and after recording the personal conclusions a meeting was held to discuss the results, compare them, evaluate them and record them in the final table. The last column shows the great contribution of the Baldrige quality tool to the field of education and the improvement of procedures in this area, with the simultaneous satisfaction of parents, teachers, pupils and students. It must be emphasised that with the bibliographic review of the articles it was possible to identify limitations. Table 1 presents tertiary institutions that have been awarded the Malcolm Award and the benefits of its implementation, while in table 2 it becomes clear that the application of this single purpose even in schools or institutions that have not been awarded has consistently confirmed significant changes and benefits in education.

### 3. Results

The 41 sample articles presented in this research refer to the application of the Baldrige quality tool in primary, secondary and tertiary education, higher education (Chen et al., 2017; Martinez et al., 2015; Ali et al., 2010; Calvo-Mora et al., 2005). The published articles show an ever-increasing interest among researchers and academics. The quality tool of the Malcolm Baldrige model plays an important role in education and despite the challenges faced by modern institutions the purpose of the quality tool is to improve any kind of process, thus increasing the satisfaction not only of students and learners, but also of educational researchers, academics, parents.

Of the 41 articles studied in this research, 17 are published in Emerald and 24 more in Taylor & Francis and these journals are globally recognized by the academic and research community. As can be seen in Figure 2, the MBNQA quality system from very early in 1990 began to be applied in the field of education. After 2001 there was a growing interest in the implementation of MBNQA quality system in education. Figure 2 shows the annual increase in publications on MBNQA quality system implementation from 1990 to present. From 2001 to 2011 there was a big interest in the application of the tool in education. After 2012, the interest in this specific quality tool in education remains undiminished, which attests to the literature that some authors continue to recommend that higher education use the Malcolm Award to document performance (Chen et al., 2017).

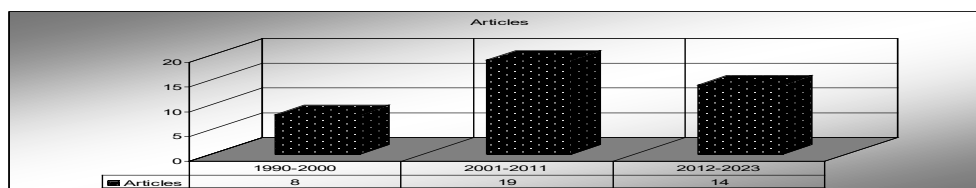


Figure 2: Number of relevant publications from 1990 to 2023

The selected articles were read repeatedly by experienced team members, who continuously took notes to document the research. The team members met to reach an agreement on the recording of the final data, because this method of analysis requires the researchers to have special experience and knowledge to draw valid conclusions. The application of the quality model at all levels of education shows that leadership plays an important role in shaping vision. What should be realised is that effective implementation of MBNQA quality system must be treated with due care and commitment from manager in order to deliver benefits to the organisation that will enable and bring about the effective implementation.

Quality tools are essential in education as they can improve efficiency, evaluation with simultaneous feedback and saving time. The MBNQA was created to measure and reward excellence and can be successfully applied to educational institutions, helping to improve the quality of education they provide. The model offers a practical framework for collecting data on educational institutions, which can be used to evaluate their performance. By recognizing the importance of quality and incorporating the model into their strategic planning, organisations can make positive changes that will benefit their students and their future as well.

#### **4. Discussion**

During the bibliographic review, 41 articles were selected from Emerald and Taylor and Francis journals, after their study and evaluation by all members of the research team. The credibility of these articles is based on their evaluation by specialised staff and their publication. These articles analyse the MBNQA quality tool and its contribution to the field of education. However, during the search for articles it was found that minimal research has been carried out for the use of statistical and quality tools in the field of education, as it is known that they were originally designed for their application in the private sector (Lukrafka et al., 2020). While exploring the articles in the respective Emerald and Taylor and Francis journals, which allow access to a wealth of online articles in all disciplines, several key words, such as MBNQA, Systematic literature review, Total Quality Management, Business Excellence and Education, Baldrige award, Quality Assurance, were used to facilitate their identification.

It is a fact that the model shows great adaptability in the field of education and many educational organisations have successfully used this model and have received the National Quality Award in higher and secondary education in many parts of the world, regardless of size and demographic characteristics.

#### **5. Conclusions, limitations and agenda for future studies**

The application of the MBNQA quality tool has not been widely studied in the field of education, with the consequence that there is insufficient literature regarding the standard and other related quality models. For this reason, it was also difficult to find articles aimed at education, of all levels. It is necessary to further investigate the standard of quality in the educational sector, as well as to record and publish future proposals by researchers and academics. This research seeks to collect and record the results of the application of the Baldrige quality tool in the educational sector, with the aim of recording the benefits, establishing the need for further research on the use of the tool at each level of education separately and the recording beneficial outcomes and weaknesses.

The findings of this research prove that the application of the model in primary, secondary and tertiary education can bring significant benefits in the implementation of processes, in the saving of financial and human resources, with the simultaneous satisfaction of educational staff, pupils, students and parents. In addition, through the detailed presentation of the advantages of applying the model in schools and universities, all levels are encouraged to make a corresponding application in order to achieve their goals and improve their efficiency. The present review study faced some limitations, one major limitation is the fact that the articles selected from only two journals (Emerald, Taylor and Francis). It should be noted that the researchers did not have got access to all databases. Another limitation is that because quality tools such as Baldrige's were originally designed for the private sector, minimal studies have been conducted in the field of education. It is suggested that more studies should be conducted on the model with the help of big data sets considering algorithms connected with programming of Big Data Brooks in the Cloud (Souravlas et al., 2020;2021a;2021b;2021c;2022; Tantaraki et al., 2020; Souravlas & Anastasiadou 2022a;2022b; Souravlas 2019; Souravlas & Katasavonis, 2019), especially during the period of pandemic where the Social Media Technology were used (Papademetriou et al., 2022) and that conclusions and weaknesses be recorded and published.

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