West Science Business and Management
Vol. 2, No. 01, March 2024, pp. 56~63

Integration of Total Quality Management (TQM) in Business Practice: A Bibliometric Analysis

Devi Susiati[1], Loso Judijanto[2], Degdo Suprayitno[3], Ertati Suarni[4]
[1]Universitas 45 Surabaya
[2]IPOSS Jakarta, Indonesia
[3]Institut Ilmu Sosial dan Manajemen STIAMI
[4]Universitas Muhammadiyah Palembang

Article Info

Article history:

Received March 2024
Revised March 2024
Accepted March 2024

Keywords:

Total Quality Management (TQM)
Business Integration
Organizational Performance
Quality Improvement
Continuous Improvement

ABSTRACT

This research methodology outlines the systematic approach to conducting a bibliometric analysis on the integration of Total Quality Management (TQM) in business practice. TQM is a widely studied and implemented management philosophy aimed at improving organizational processes and enhancing overall performance. Through bibliometric analysis, this study seeks to provide a comprehensive understanding of the existing literature landscape, key research trends, influential authors, and thematic clusters related to TQM integration in business practice. The methodology covers the selection of databases, search strategy formulation, inclusion and exclusion criteria, data extraction, analysis techniques, and interpretation methods. By employing rigorous bibliometric techniques, this research aims to contribute to the advancement of knowledge in the field of TQM and its practical implications for businesses.

Corresponding Author:

Name: Devi Susiati
Institution: Universitas 45 Surabaya
e-mail: devisusiati@univ45sby.ac.id

1. INTRODUCTION

In the rapidly evolving landscape of modern business environments, characterized by ever-increasing complexities and competitive pressures, organizations are incessantly pursuing avenues for achieving excellence and establishing sustainable competitive advantages. Central to this pursuit is the adoption of Total Quality Management (TQM), a paradigm that has garnered substantial attention and widespread adoption across industries [1]–[4]. TQM represents a holistic approach to organizational management, emphasizing continuous improvement, customer satisfaction, employee engagement, and process optimization [5].

Total Quality Management emerged as a strategic approach towards organizational excellence, focusing on continuous improvement, customer satisfaction, employee involvement, and process optimization [6]–[8]. Originating from quality control methods in the manufacturing sector, TQM has transcended industry boundaries, becoming a fundamental philosophy for enhancing operational efficiency and effectiveness across diverse

sectors [9], [10]. The evolution of TQM is marked by seminal contributions from scholars, practitioners, and industry leaders, shaping its principles, methodologies, and applications. From Deming's PDCA cycle to Juran's quality trilogy, and Ishikawa's fishbone diagram, TQM has evolved into a multifaceted framework encompassing quality assurance, customer-centricity, leadership commitment, and continuous learning.

Despite the widespread recognition and adoption of TQM, several challenges and gaps persist in its implementation and integration within business practices [11], [12]. These challenges range from cultural barriers and resistance to change to the complexities of measuring TQM's impact on organizational performance [13]–[15]. Moreover, the rapid digital transformation and globalization have added new dimensions to TQM implementation, necessitating a reevaluation of its strategies and frameworks.

This research aims to : (1) To conduct a comprehensive bibliometric analysis of scholarly publications related to Total Quality Management. (2) To identify key themes, trends, and patterns in the evolution of TQM research. (3) To propose strategic recommendations for enhancing the integration of TQM principles in contemporary business practices. This research holds significant implications for academia, industry practitioners, policymakers, and stakeholders involved in quality management and business excellence. By synthesizing existing knowledge and trends in TQM research, this study aims to provide actionable insights and guidelines for organizations seeking to leverage TQM as a strategic tool for achieving sustainable growth, competitiveness, and customer loyalty. Additionally, the findings will contribute to the advancement of TQM theory and practice, fostering continuous learning and improvement in quality management approaches.

2. LITERATURE REVIEW

Total Quality Management (TQM) is a management approach that focuses on continuous improvement of all processes within an organization [16], [17]. It involves the integration of quality into all aspects of a business, from the top management down to the frontline workers [18]. TQM is based on the principles of customer satisfaction, employee involvement, process management, and performance measurement [19]. In business practice, TQM is implemented through a variety of tools and techniques, such as quality circles, statistical process control, and continuous improvement methodologies like Six Sigma [20]. These tools help organizations to identify and eliminate defects in their processes, improve productivity, and reduce costs.

The integration of TQM into business practice has several benefits. It leads to improved customer satisfaction by ensuring that products and services meet or exceed customer expectations [21], [22]. It also increases employee engagement and job satisfaction, as employees are empowered to contribute to the continuous improvement of their work [23]. Furthermore, TQM helps organizations to become more efficient and competitive, as they are able to identify and address inefficiencies in their processes. The integration of TQM into business practice is a powerful tool for improving organizational performance [24], [25]. By focusing on continuous improvement and involving all employees in the process, organizations can achieve higher levels of customer satisfaction, employee engagement, and overall efficiency.

3. METHODS

The methodological approach employed in this research involves a systematic and comprehensive bibliometric analysis to investigate the integration of Total Quality Management (TQM) principles in business practice. The first step of this method is the identification and collection of relevant scholarly literature from reputable databases such as Scopus, Web of Science, and Google

Scholar. Keywords such as "Total Quality Management," "TQM implementation," "quality management practices," and related terms are used to retrieve pertinent articles, conference papers, and books published over the past few decades. The retrieved literature is then screened based on inclusion and exclusion criteria, focusing on studies that explicitly address TQM integration in business settings. Subsequently, bibliometric techniques such as citation analysis, co-citation analysis, and co-authorship analysis are employed to identify key themes, trends, influential authors, collaborative networks, and geographic distribution of research contributions. Additionally, thematic content analysis is utilized to categorize and synthesize the findings, providing insights into the evolution, impact, and future directions of TQM in business practice. This methodological approach ensures a rigorous and structured analysis of the literature, enabling a comprehensive understanding of the research topic and facilitating the generation of meaningful insights and recommendations.

4. RESULTS AND DISCUSSION

4.1 Research Data Metrics

Table 1. Citation Metrics

Publication years:	1968-2023
Citation years:	56 (1968-2023)
Papers:	980
Citations:	411451
Cites/year:	7347.34
Cites/paper:	419.85
Cites/author	243343.40
Papers/author	556.01
Authors/paper:	2.22
h-index:	320
g-index:	595
hI,norm:	232
hi,annual:	40.14
hA-index:	60
Papers with ACC >= 1,2,5,10,20:	976,961,909,642,305

The table presents a comprehensive bibliometric analysis of publications related to Total Quality Management (TQM) from the years 1968 to 2023. Over this period, a total of 980 papers were identified, garnering an impressive 411,451 citations with an average of 7347.34 citations per year. On average, each paper received approximately 419.85 citations, reflecting the significant impact and relevance of TQM research in scholarly discourse. The analysis also reveals a high level of collaboration among authors, with an average of 2.22 authors per paper and an average of 556.01 papers per author. The h-index, a measure of both productivity and impact, is calculated at 320, indicating a substantial influence of TQM literature. The g-index, which considers the distribution of citations among papers, is 595, further highlighting the prolific nature of TQM research. The hI,norm and hi,annual metrics provide insights into the normalized h-index and annual h-index, respectively, showcasing the enduring impact of TQM publications over time. Additionally, the hA-index of 60 signifies the top-cited papers in the field. Notably, the table also indicates the distribution of papers based on their citation thresholds, with a significant number of papers having citation counts equal to or exceeding 1, 2, 5, 10, and 20, underscoring the enduring relevance and influence of TQM research across various levels of impact. This bibliometric analysis offers valuable insights into the evolution, impact, and scholarly engagement surrounding Total Quality Management literature, highlighting its enduring significance in organizational and management studies.

4.2 Network Visualization

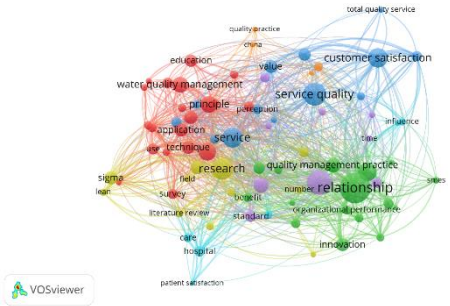

Figure 1. Network Visualization

The figure shows a bibliometric or keyword network analysis with clusters of

related terms that likely correspond to different research themes or focal areas. The interpretation of the thematic clusters from the figure is as follows:

1. Red Cluster: Central to this cluster are the terms "service," "education," "water quality management," and "principle." This suggests a focus on service quality and management principles, possibly in the context of educational services or water quality management. It could indicate research into how principles of quality management are applied in these sectors.

2. Blue Cluster: This cluster features terms like "customer satisfaction," "service quality," and "perception." This likely pertains to research on customer service quality and how it influences customer satisfaction. Studies in this area might examine perceptions of service quality and their impact on customer experiences.

3. Green Cluster: The terms "quality management practice," "relationship," "organizational performance," and "sme" (small and medium-sized enterprises) form this cluster. It appears to revolve around the relationship between quality management practices and organizational performance, with a focus on their application in SMEs.

4. Yellow Cluster: In this cluster, terms like "research," "application," "technique," and "sigma" (likely referring to Six Sigma) suggest a methodological focus, possibly looking at the application of specific research techniques or methodologies like Six Sigma in the context of quality management.

5. Light Blue Cluster: Containing terms like "care," "hospital," and "patient satisfaction," this cluster seems to be centered around healthcare quality management, particularly in hospital settings, and its relationship to patient satisfaction.

6. Purple Cluster: With terms such as "benefit," "standard," and "literature review," this cluster might represent meta-analyses or review studies that assess the benefits of quality standards and practices across different fields.

4.2 Overlay Visualization

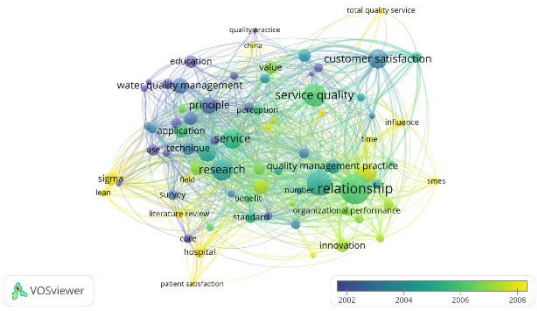

Figure 2. Overlay Visualization

The image provided is a bibliometric visualization that likely maps the trends in research topics over time, with the color gradient representing the average publication year of the articles associated with each keyword. The gradient appears to range from blue (earlier years) to yellow (more recent years).

1. Earlier Research Trends (Blue Tones): Keywords in shades of blue are indicative of topics that were the focus of research in earlier years within the timeframe shown (which seems to start from around 2002). These might include foundational methodologies and principles of service and quality management, as well as the basics of customer satisfaction. Several terms can be identified in this area such as “water”, “quality management”, “customer satisfaction”, and “technique”.

2. Mid-Term Research Trends (Green Tones): As the colors transition to green, these keywords represent topics that have received attention during the middle of the given timeframe. This may indicate a shift towards applied research, such as practical applications of quality management techniques in various settings like hospitals and small to medium-sized enterprises (SMEs). Several terms can be identified: “service quality”, “relationship”, “innovation”, and “value”.

3. Recent Research Trends (Yellow Tones): The keywords in shades of yellow suggest topics that have become prominent in the more recent years leading up to 2008. These could reflect an evolved interest towards the relationship between quality management practices and organizational

performance, possibly driven by a greater emphasis on measuring and enhancing performance in various sectors, including education and healthcare. The following topics are identified in this area: “hospital”, “sigma”, “lean”, “patient satisfaction”, “SMES”, and “total quality service”.

4.3 Density Visualization

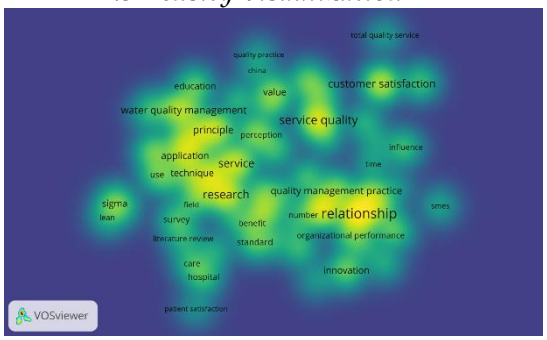

Figure 3. Density Visualization

In bibliometric visualizations, less bright areas often indicate topics that are not as densely covered in the literature and could represent emerging or future areas of research. Given the central themes of service, quality management, customer satisfaction, and the application of principles and techniques, here are some possible areas for future research that might be indicated by less bright areas:

1. Integration of New Technologies: Exploring how emerging technologies like AI, IoT, or blockchain can enhance service quality and customer satisfaction. This might be an under-represented area that could become more important.

2. Cross-Cultural Service Quality: As the keyword “China” is visible, there might be a gap in comparative studies on service quality across different cultures or regions.

3. Environmental and Sustainable Practices: How quality management practices can be integrated with sustainability principles to improve service while also addressing environmental concerns.

4. Healthcare Service Innovations: Beyond patient satisfaction, future studies might delve into the impacts of telemedicine, e-health, and other innovations in healthcare service delivery.

5. Small and Medium-Sized Enterprises (SMEs): The specific challenges and opportunities for implementing quality management practices in SMEs, which may differ from those in larger organizations.

6. Quantitative Measures of Service Impact: Developing new metrics or models to quantitatively assess the impact of service quality on organizational performance.

7. Water Quality Management: As "water quality management" seems to be a less connected term, there might be potential in researching the application of service quality principles in the context of environmental services and utilities.

8. Patient Care and Hospital Management: Future research might focus on the integration of quality management techniques in patient care protocols and hospital management systems to improve overall healthcare delivery.

4.4 Citations Analysis

The table below presents a collection of academic articles focused on various aspects of organizational improvement and quality management. These articles explore topics such as transformational leadership, total quality management (TQM), lean manufacturing, and critical factors affecting quality management. They highlight the importance of initiatives aimed at improving organizational effectiveness, with some specifically focusing on TQM as a means to achieve competitive advantage. Additionally, the table includes resources providing frameworks and instruments for assessing quality management practices. These articles collectively underscore the significance of strategic approaches to change and quality management in enhancing organizational performance and competitiveness.

Table 2. Citations Analysis

Citation	Authors	Title
13313	[26]	Leading change: Why transformation efforts fail
11582	[27]	Improving organizational effectiveness through transformational leadership

8145	[28]	Total quality control
4819	[29]	Total quality management in education
4629	[30]	Total quality management as competitive advantage: a review and empirical study
4250	[31]	Lean manufacturing: context, practice bundles, and performance
3469	[32]	An instrument for measuring the critical factors of quality management
3444	[33]	The Deming Management Method: The Bestselling Classic for Quality Management!
3401	[34]	Total quality management: the route to improving performance
3181	[35]	A framework for quality management research and an associated measurement instrument

4.5 Author Collaboration

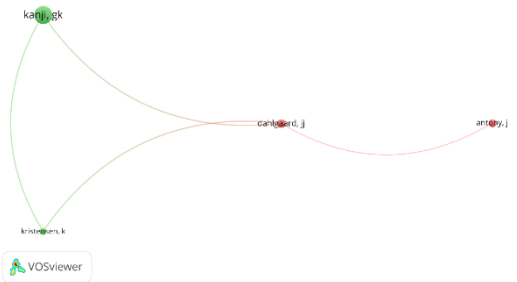

Figure 4. Author Collaboration

From the image's description, it seems there are three authors: Kanji, G.K.; Kristensen, K.; and Antony, J. Two collaboration links are depicted:

1. Kanji, G.K. and Kristensen, K.: The green line suggests a collaboration between these two authors. If the color signifies strength or frequency, green could indicate either a recent collaboration or one that has a moderate number of co-authored works, depending on the color scheme used.

2. Dahlgaard, J.J. and Antony, J.: The red line connecting these authors indicates another collaboration. The color red could denote either a strong collaboration if we interpret it as "hot," or it could suggest an older collaboration if we're interpreting the color as part of a temporal gradient.

5. CONCLUSION

In conclusion, the bibliometric analysis conducted on Total Quality Management (TQM) integration in business practice offers significant insights into the evolution, impact, and scholarly engagement surrounding this crucial field. The comprehensive examination of scholarly publications spanning from 1968 to 2023 reveals a robust body of literature, with over 980 papers garnering a remarkable 411,451 citations. The high level of collaboration among authors, as evidenced by an average of 2.22 authors per paper, underscores the interdisciplinary nature of TQM research. Moreover, the identification of thematic clusters through network visualization provides a nuanced understanding of key research areas, ranging from service quality management to healthcare quality and methodological approaches like Six Sigma. The overlay visualization further illuminates evolving research trends, from foundational principles to applied studies focusing on organizational performance and innovation. Through density visualization, potential areas for future research, such as integrating new technologies and addressing cross-cultural service quality, are identified. Overall, this analysis contributes to advancing knowledge in the field of TQM and offers valuable insights for academics, practitioners, and policymakers alike, guiding strategic efforts towards enhancing organizational excellence

and competitiveness through effective TQM integration.

REFERENCES

[1] C. J. Moin, K. R. Hossain, and L. M. Baral, "Investigating Root Causes of Sewing Defects Using TQM Tools for Quality Improvement in the Knit Garment Industry," *Text. LEATHER Rev.*, pp. 417–433, 2023.

[2] G. Issac, C. Rajendran, and R. N. Anantharaman, "A holistic framework for TQM in the software industry: a confirmatory factor analysis approach," *Qual. Manag. J.*, vol. 11, no. 3, pp. 35–56, 2004.

[3] N. F. Ikhsan, C. R. Salim, and D. A. Tasya, "Total Quality Management (TQM) And Its Implementation In Islamic Education Management," *AL-WIJDÃN J. Islam. Educ. Stud.*, vol. 8, no. 4, pp. 527–542, 2023.

[4] F. Johannsen, "A holistic approach for integrating methods in quality management," 2013.

[5] I. Verna, G. Antonucci, M. Sargiacomo, and M. Venditti, "Listening as 'Guiding Tool'in the Continuous Improvement of University Education: A Holistic Approach," *Eur. Sci. J.*, vol. 15, no. 25, pp. 57–78, 2019.

[6] A. Ghobadian and D. N. Gallear, "Total quality management in SMEs," *Omega*, vol. 24, no. 1, pp. 83–106, 1996.

[7] L. A. Echulet, "Total quality management on performance of electronic claims systems in medical insurance firms in Kenya: a case of National Health Insurance Fund, Kenya." Africa Nazarene University, 2023.

[8] U. Rao, "Total quality management in healthcare: A historical perspective for a modern definition," *Int. J. Heal. Sci. Res.*, vol. 5, no. 3, pp. 353–364, 2015.

[9] R. Isaksson, S. Ramanathan, and M. Rosvall, "The sustainability opportunity study (SOS)–diagnosing by operationalising and sensemaking of sustainability using Total Quality Management," *TQM J.*, vol. 35, no. 5, pp. 1329–1347, 2023.

[10] M. Kulenović, M. Folta, and L. Veselinović, "The analysis of total quality management critical success factors," *Qual. Innov. Prosper.*, vol. 25, no. 1, pp. 88–102, 2021.

[11] M. S. Chege and K. Brown, "Determinants of Total Quality Management Implementation in Small and Medium Enterprises in Kenya: A Survey of Small and Medium Bakeries in Kenya: A Survey of Small and Medium Bakeries in Kenya: A Survey of Small and Medium Bakeries in Nairobi County Kenya," *Int. J. Bus. Manag. Technol.*, vol. 5, no. 5, 2021.

[12] F. Albejaidi, "An investigation into the challenges towards implementation of total quality management under the Saudi Healthcare National Transformation Program–2020," *J Heal. Med Nurs*, vol. 46, pp. 1–12, 2018.

[13] S. R. Karani and W. O. Bichanga, "Effects of Total Quality Management implementation on business performance in service institutions: A case of Kenya Wildlife Services," *Int. J. Res. Stud. Manag.*, vol. 1, no. 1, pp. 59–76, 2012.

[14] K. Alofi and A. Younes, "Total quality management (TQM) implementation in the manufacturing sector in Saudi Arabia: a systematic review," *Bus. Manag. Res.*, vol. 8, no. 1, p. 41, 2019.

[15] M. Cavallone and R. Palumbo, "Delving into the soft side of TQM: an analysis of the implications of employee involvement on management practices," *TQM J.*, vol. 34, no. 5, pp. 1096–1115, 2022.

[16] M. Talha, "Total quality management (TQM): an overview," *bottom line*, vol. 17, no. 1, pp. 15–19, 2004.

[17] D. I. Prajogo and A. S. Sohal, "The relationship between organization strategy, total quality management (TQM), and organization performance—the mediating role of TQM," *Eur. J. Oper. Res.*, vol. 168, no. 1, pp. 35–50, 2006.

[18] A. O. Ahmed and A. A. Idris, "Examining the relationship between soft total quality management (TQM) aspects and employees' job satisfaction in 'ISO 9001' Sudanese oil companies," *TQM J.*, vol. 33, no. 1, pp. 95–124, 2020.

[19] M. Kaur, K. Singh, and D. Singh, "Synergetic success factors of total quality management (TQM) and supply chain management (SCM) A literature review," *Int. J. Qual. Reliab. Manag.*, vol. 36, no. 6, pp. 842–863, 2019.

[20] B. Neyestani and J. B. P. Juanzon, "Developing an appropriate performance measurement framework for total quality management (TQM) in construction and other industries," *IRA-International J. Technol. Eng. (ISSN 2455-4480)*, vol. 5, no. 2, p. 32, 2016.

[21] I. A. Ayandele and A. P. Akpan, "The practice, challenges, and benefits of total quality management (TQM) in manufacturing firms in Nigeria," *Int. J. Econ. Bus. Manag.*, vol. 3, no. 5, pp. 62–74, 2015.

[22] T. Williams and R. Howe, "W. Edwards Deming and total quality management: An interpretation for nursing practice," *J. Healthc. Qual.*, vol. 14, no. 1, pp. 36–39, 1992.

[23] Y. vijay kumar and Vv. Ramana, "TQM: A Quality and Performance Enhancer," *Res. Inven. Int. J. Eng. Sci.*, vol. 4, no. 8, pp. 2319–6483, 2014, [Online]. Available: www.researchinventy.com

[24] P. K. Ahmed, "Benchmarking innovation best practice," *Benchmarking Qual. Manag. Technol.*, vol. 5, no. 1, pp. 45–58, 1998.

[25] R. E. Mittelstaedt Jr, "Benchmarking: How to learn from best-in-class practices," *Natl. Product. Rev.*, vol. 11, no. 3, pp. 301–315, 1992.

[26] J. P. Kotter, *Leading change: Why transformation efforts fail*. books.google.com, 2007. [Online]. Available: https://books.google.com/books?hl=en&lr=&id=QiNjlp_s8FoC&oi=fnd&pg=PT38&dq=total+quality+management&ots=qSj9brsIUN&sig=4oazQcAWLYQ4otW7nPGfc8gmFhE

[27] B. M. Bass and B. J. Avolio, *Improving organizational effectiveness through transformational leadership*. books.google.com, 1994. [Online]. Available: https://books.google.com/books?hl=en&lr=&id=_z3_BOVYK-IC&oi=fnd&pg=PP11&dq=total+quality+management&ots=aUq027ylNM&sig=ULnH4f70sgZiQnsxHfKaF1FMUGs

[28] A. V Feigenbaum, "Total quality control," *New York*, 1991, [Online]. Available: https://books.google.com/books?hl=en&lr=&id=cGzxgjWUkaYC&oi=fnd&pg=PA221&dq=total+quality+management&ots=1ZeLe4-nxC&sig=0cDmGB92Mi0EwHcxzN2H_QPWiN8

[29] E. Sallis, *Total quality management in education*. books.google.com, 2014. [Online]. Available: https://books.google.com/books?hl=en&lr=&id=QAOORZ9NdHQC&oi=fnd&pg=PP1&dq=total+quality+management&ots=Yx8zGL-hJ0&sig=1K7LDCIjP22i3UgpP83n3Z8wK-Q

[30] T. C. Powell, "Total quality management as competitive advantage: a review and empirical study," *Strateg. Manag. J.*, 1995, doi: 10.1002/smj.4250160105.

[31] R. Shah and P. T. Ward, "Lean manufacturing: context, practice bundles, and performance," *J. Oper. Manag.*, 2003, [Online]. Available: https://www.sciencedirect.com/science/article/pii/S0272696302001080

[32] J. V Saraph, P. G. Benson, and R. G. Schroeder, "An instrument for measuring the critical factors of quality management," *Decis. Sci.*, 1989, doi: 10.1111/j.1540-5915.1989.tb01421.x.

[33] M. Walton, *The Deming Management Method: The Bestselling Classic for Quality Management!* books.google.com, 1988. [Online]. Available: https://books.google.com/books?hl=en&lr=&id=2vqxBQAAQBAJ&oi=fnd&pg=PR11&dq=total+quality+management&ots=3Z9fhA0lsc&sig=HpOCqu0XqkmRSV985FFHVL3l8Ww

[34] J. S. Oakland, "Total quality management: the route to improving performance," *(No Title)*. cir.nii.ac.jp, 1993. [Online]. Available: https://cir.nii.ac.jp/crid/1130000795045517312

[35] B. B. Flynn, R. G. Schroeder, and ..., "A framework for quality management research and an associated measurement instrument," *… Oper. Manag.*, 1994, doi: 10.1016/S0272-6963(97)90004-8.