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TOTAL QUALITY MANAGEMENT (TQM) IMPLEMENTATION IN THE ETHIOPIAN MANUFACTURING INDUSTRIES: A SYSTEMATIC REVIEW OF PRACTICES, CHALLENGES, AND INSIGHTS

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ABSTRACT

Purpose: It is to comprehensively analyze the adoption of Total Quality Management in Ethiopian manufacturing industries, identify problems, investigate reported insights, and evaluate the impact of TQM on performance, competitiveness, and sustainability.

Methods: A systematic literature review (SLR) employing a thematic approach was performed to identify, critically appraise, and comprehend practices and problems, investigate reported insights, and evaluate the impact of Total Quality Management (TQM) on performance in Ethiopia's manufacturing sector.

Findings: Total Quality Management in Ethiopia's manufacturing industry is increasingly aligned with international standards, such as ISO 9001, EFQM Excellence, and MBNQA Performance Results. ISO 900 has enhanced operational performance, but many organizations view it more as a compliance measure than a strategic shift. Inadequate leadership, insufficient training, and fragmented quality programs hinder TQM adoption. There is a steady shift toward innovation-focused and digital quality management. Integrating global quality frameworks offers a path to better competitiveness and organizational excellence.

Research limitations: This review focused on specific sectors and utilized cross-sectional methods, self-reported data, and findings that are context-dependent. This scope limits generalizability and reduces insights into the long-term effects of TQM.

Practical implications: Integrating TQM frameworks can drive Ethiopia's manufacturing sector towards sustainable competitiveness, innovation, and excellence.

Originality/value: This study represents the first systematic review of Total Quality Management (TQM) in Ethiopia. To provide a comprehensive understanding it combines theoretical and thematic approaches.

Keywords: TQM implementation, Manufacturing industries, Systematic review, Ethiopia

INTRODUCTION

In the dynamic world of globalization and a competitive market, and a complex business environment, organizations continue to face the effects of change, fast technological advances, and disruptive business models (Eltawy & Gallear, 2017). These emerging new markets are challenging organizations regardless of their size (Žitkienė & Deksnys, 2018). Organizations must be prepared to adjust their competitive strategies in response to these scenarios, including stringent product or service quality standards, expedited delivery, and competitive pricing. Among these competitive strategies, organizations worldwide have employed quality as the most effective approach to meet these needs (Wassan et al., 2023; Anil & Satish, 2019)). Due to this scenario, the organization must

devise a new quality focus strategy, not on how much it is making, but on how much it is satisfying its customers' requirements (Oakland, 2014). The need to apply a comprehensive concept on how to maintain the level of customer satisfaction by delivering the highest quality of their products became important. This concept leads to Total Quality Management (TQM), which can enhance corporate operations to surpass competition and strengthen competitive advantage (Ramlawati & Putra, 2018).

TQM is a comprehensive management system that can be regarded as a philosophy, model, strategy, or technique for quality management (Kaynak & Rogers, 2013). Total Quality Management (TQM) is a framework that engages and empowers employees to enhance an organization's competitiveness in terms of its goods, services, processes, and business environment, with an emphasis on customer satisfaction (Sadikoglu & Olcay, 2014). In TQM, all organizational members must engage in quality improvement or control at every process within the organization, which will influence long-term success (Dahlgaard et al., 2019). Furthermore, it is an all-encompassing quality management strategy aimed at enhancing the quality of products and services through perpetual improvements based on constant feedback (Mitra, 2016). Consequently, numerous firms are adopting the principles of Total Quality Management (TQM) to address the problems arising from the volatile global environment.

Total Quality Management (TQM) is a comprehensive sub-discipline of management science that encompasses a variety of competing quality tools, including quality circles, Kaizen, Six Sigma, Total Productive Maintenance, and Quality Function Deployment, as well as frameworks such as ISO 9001, EFQM Excellence, and the Baldrige Performance Excellence. These models offer various approaches to quality management and can therefore be viewed as supplementary techniques for quality management systems (Rehmani et al., 2023). The presence of these models can be perceived as impacting the execution of TQM. Decisions on the selection of models or frameworks for quality management procedures are largely influenced by the culture of quality management, making it the preferred choice over other alternatives. (Schiavone et al., 2022) contend that the majority of institutions adopt quality management frameworks through a trial-and-error basis, which impacts their dedication to attaining success in the whole process. Consequently, although the necessity of these models is acknowledged within the strategic and operational frameworks of companies, there is an insufficient understanding of how to identify the best-fit model to adopt based on the firm's characteristics, how to implement the model for maximum efficacy, and how to assess its impact and success.

Due to the nature of the value creation process, the manufacturing industry was the first sector to standardize TQM across the globe. Since the manufacturing industry's value chains can be easily mapped and predicted (Tonelli et al., 2016), this sector simplifies quality management outcomes more than the service industries. However, (Al Khamisi et al., 2018) argue that, regardless of the type of sector in which a firm operates, practical knowledge of TQM, coupled with a clear understanding of the organizational goals, value propositions, and resources, is key to achieving quality management goals.

The manufacturing sector makes a significant contribution to economic development in both developed and developing countries (Tesfahunegn, 2015). Total Quality Management (TQM) is increasingly recognized as a strategic tool for enhancing operational efficiency, competitiveness, and customer satisfaction within Ethiopian manufacturing industries (Adem & Virdi, 2023). Nonetheless, although the previous study's findings indicated growth in sectors such as textiles, food processing, and building materials, the application of TQM methods in Ethiopia faces prevalent hurdles within the manufacturing domain. This sector is crucial for economic development; yet, numerous enterprises have ongoing quality-related issues, such as inconsistent product standards, insufficient implementation of formal quality frameworks, and inadequate employee training (Mesganaw et al., 2023; Fasika, Bete, 2003).

As we review the literature, there is no comprehensive review of the Ethiopian manufacturing sector concerning TQM implementation. To tackle this gap, investigating the literature of TQM implementation in Ethiopian manufacturing industries is essential. Therefore, this research is intended to systematically review some relevant literature that examines the implementation of TQM and its validation within the manufacturing sector in this country. This enables a comprehensive understanding of the actual practices, obstacles, lessons learned, and influences during the implementation of TQM, as well as forward-looking research directions for future study, so that related problems can be continually addressed. To address this, the following research questions are forwarded.

1. What Total Quality Management (TQM) practices have been implemented in Ethiopian manufacturing industries?
2. What obstacles hinder the successful execution of Total Quality Management in Ethiopian manufacturing sectors?

3. What insights does the literature provide to address these challenges and enhance TQM adoption in the domain?
4. How does TQM influence performance, competitiveness, and sustainability within Ethiopian manufacturing sectors?

THEORETICAL FRAMEWORKS

In recent advancements, contemporary Total Quality Management (TQM) frameworks have been tailored to meet the evolving difficulties faced by organizations. Prioritizing continuous improvement, customer focus, and organizational excellence becomes important. The International Quality Standard 9001 process, EFQM Excellence, and MBNQA Performance Frameworks are recognized as comprehensive approaches. A prior literature review suggests that these models serve as effective tools for harmonizing production methods with quality goals in increasingly competitive and globalized contexts.

The ISO 9001:2015 Quality Management System (QMS) framework plays a pivotal role in supporting TQM implementation within manufacturing industries by promoting process standardization and risk-based thinking. The standard emphasizes a systematic approach to process management, ensuring that organizational activities are clearly defined, measured, and continuously improved to achieve consistent quality outcomes (Bravi et al., 2019). Quality Standard 9001:2015 incorporates risk management principles that enable firms to identify potential sources of variation, assess their impact on product quality, and implement preventive measures (Psomas & Antony, 2015). Empirical research suggests that organizations implementing ISO 9001:2015 tend to exhibit superior manufacturing performance. This performance is characterized by enhanced process efficiency, diminished defects, and heightened customer satisfaction, attributable to a more robust connection among quality planning, operational control, and strategic decision-making (L. M. Fonseca & Domingues, 2018). Thus, ISO 9001:2015 provides a structured framework for utilizing TQM concepts to enhance the correlation between quality performance and systematic process control.

The EFQM Excellence Model offers a comprehensive framework for implementing Total Quality Management concepts in manufacturing organizations, integrating strategic leadership, process management, and continuous improvement. In contrast to prescriptive standards, this model employs a comprehensive approach that highlights enablers, leadership, personnel, strategy, partnerships, and processes, in conjunction with the intended outcomes, thereby promoting a robust alignment between quality practices and organizational performance (L. Fonseca, 2022). The methodology in the manufacturing sector advocates for a systematic assessment of quality protocols and the execution of enhancement strategies grounded in evidence-based management (Calvo-Mora et al., 2015). Moreover, research indicates that the use of EFQM enhances operational excellence by promoting process integration and employee involvement (Martusewicz et al., 2024). Furthermore, it enables effective adoption of TQM and strengthens the relationship between quality improvement and companies' performance through self-assessment and continuous learning procedures.

For the implementation of TQM principles in the manufacturing sector, the MBQA is also a recognized model. It effectively integrates leadership, strategic planning, and performance measurement into a cohesive system. This framework aims to enhance organizational excellence by prioritizing systematic evaluation, fact-based decision-making, and continuous improvement (Karambelkar & Bhattacharya, 2021).

The Baldrige framework prompts firms in manufacturing to evaluate their performance across essential dimensions and operations (Alanazi, 2025). Empirical evidence suggests that manufacturers implementing the Baldrige criteria achieve enhanced quality outcomes, including improved process efficiency, innovation capacity, and customer satisfaction, due to its comprehensive emphasis on performance excellence and stakeholder value (Ford, 2022). The Baldrige framework enhances TQM performance in the sector by aligning quality management practices with strategic objectives and measurable outcomes, thereby promoting excellence-driven operations. These models collectively enhance the principles of Total Quality Management by employing organized and complementary methods to achieve quality-driven production performance.

REVIEW METHODS

The review adhered to a systematic literature review (SLR) employing the PRISMA process to find, screen, and incorporate pertinent research on TQM implementation in Ethiopian manufacturing industries.

In the identification phase, a comprehensive search was conducted using the Dimensions database with the keywords "Total Quality Management" AND "Manufacturing*" AND "Ethiopia*" to collect relevant literature on

TQM practices, challenges, and insights. The paper was extracted on September 27, 2025, from the domains of commerce, management, tourism, and service strategy, as well as management and organizational behavior, covering the years 2000 to 2024. This search initially yielded 404 publications, which were subsequently evaluated for relevance and eligibility.

During the screening phase, after 87 duplicate records were removed, 169 studies that did not focus on Ethiopian manufacturing industries were excluded. The remaining 148 studies were assessed based on predefined criteria, requiring that each study address aspects of TQM implementation or manufacturing performance within the Ethiopian context.

In the eligibility stage, the shortlisted studies were evaluated against the remaining inclusion and exclusion criteria of studies that focus on Ethiopian manufacturing industries, TQM implementation, practices, challenges, or outcomes, and were published in peer-reviewed journals, conference proceedings, dissertations, or credible institutional reports. Only English-language publications (or translated works) were considered that reflect modern TQM practices. After excluding studies in non-English languages (n = 3) and non-peer-reviewed journals (n = 93), 52 papers remained eligible.

Finally, in the inclusion phase, 31 publications that did not align with the concept and objectives of the review were removed. Only 21 studies met all inclusion criteria and were considered for detailed review. Data extracted from these studies included the specific TQM practices implemented, reported challenges or barriers, insights, lessons learned, and strategies for effective implementation, as well as the reported effects of TQM on the industry's performance. This structured approach ensured that the review comprehensively captured the current state of TQM implementation in Ethiopia's manufacturing sector in terms of the contemporary quality management implementation frameworks. The detailed screening process is illustrated in Figure 1: PRISMA flow diagram.

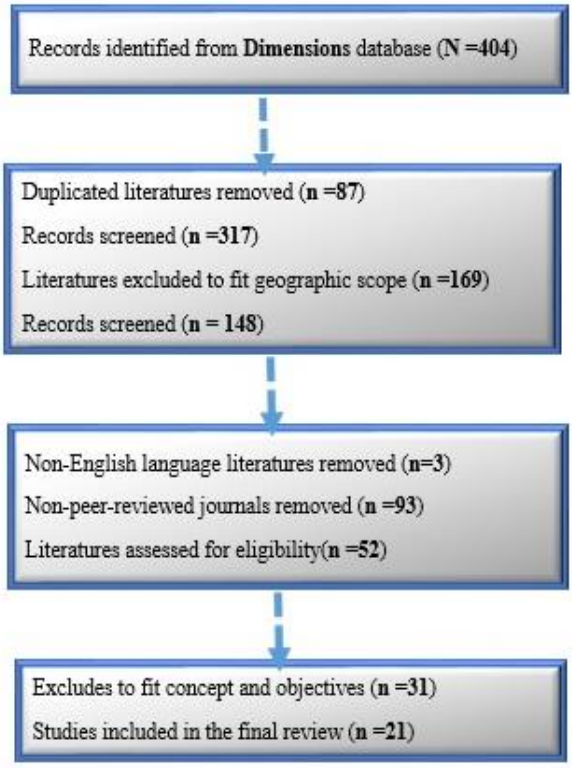

Figure 1: PRISMA flow diagram

4. REVIEW DISCUSSION

Total Quality Management (TQM) has emerged as a fundamental element of competitive advantage and sustainable development in Ethiopia's manufacturing industry. Based on studies summarized in Table 1, this thematic review synthesizes key empirical and conceptual studies, focusing on four major themes. This encompasses TQM practices, implementation issues, authors' perspectives, future possibilities, and the scope and impact of TQM within manufacturing sectors.

TQM Practices in the Ethiopian Manufacturing Sector

TQM practices in the manufacturing sector of Ethiopia indicate a gradual alignment with ISO 9001:2015, the EFQM Excellence Model, and the Malcolm Baldrige National Quality Award. Regarding the integration of these modern frameworks, empirical research indicates that Ethiopian manufacturing companies have increasingly prioritized process standardization, personnel training, and quality audits within their quality management systems (Addis, 2020). ISO 9001:2015 serves as a foundational framework, emphasizing process-based thinking, risk management, and continual improvement. Those organizations that practice ISO demonstrate markedly greater levels of TQM implementation compared to their non-certified peers. Customer orientation, process management, and quality culture are specifically linked to improved operational performance (Adem & Virdi, 2021; Addisu, 2020). This indicates that it served as a base for integrating TQM principles through defined processes and compliance-oriented quality systems.

Whereas the EFQM Model goes beyond mere compliance by promoting corporate excellence throughout leadership, strategy, and innovation. This aligns with recent Ethiopian research, which highlights creativity as a mediator between Total Quality Management (TQM) and financial performance (Warie, Huluka, & Bariso, 2024). Consequently, research emphasizes the integrative potential of quality management in attaining competitive advantage. The MBNQA Framework similarly underscores the importance of leadership commitment, strategic alignment, customer focus, and results orientation. This also aligns with essential TQM features established in Ethiopian situations. For example, leadership commitment, employee involvement, and continuous improvement are acknowledged (Beshah & Kitaw, 2014; Adem & Virdi, 2023). Ethiopian firms that adopt these principles demonstrate enhanced organizational success, consistent with the Baldrige model philosophy.

Challenges in Implementing TQM

Although Total Quality Management is practiced in Ethiopia, the manufacturing sector faces various constraints. Most of these inconsistencies resemble contemporary quality management practices. Researchers regularly identify obstacles, including cultural resistance to change, financial constraints, insufficient leadership commitment, and inadequate training (Haile, 2019; Gebremedhin & Raju, 2016). The ISO 9001:2015 framework offers a systematic method for addressing these challenges. However, misunderstandings regarding ISO have resulted in incomplete and compliance-focused implementations in numerous Ethiopian companies (Gebregergs, 2019; Tessema Belai, 2007). This signifies a discrepancy between the ISO's objective to establish a culture of continuous improvement and the TQM practice of procedural compliance, which is devoid of strategic integration.

Similarly, the EFQM Excellence Model underscores the importance of holistic and participatory approaches in quality transformation. Yet, Ethiopian studies reveal an insufficient commitment from top management, inadequate employee training, and limited resource allocation (Gebremedhin & Raju, 2016; Haile, 2019; Hailu et al., 2017). Due to culture and structural resilience, the lack of systematic evaluation mechanisms and cross-functional collaboration also weakens alignment with EFQM's principles (Alemu, 2011; Berhane & Maganti, 2018). The MBNQA Framework, which stresses strategic alignment, leadership accountability, customer focus, and results orientation, offers a pathway to address these leadership and measurement deficiencies. Nonetheless, Ethiopian firms often prioritize short-term financial metrics over non-financial indicators such as customer satisfaction, process innovation, and learning outcomes. This limits the balanced scorecard perspective that MBNQA advocates (Gezew, 2022; Mohamed & Singh, 2021).

Furthermore, while the contemporary quality frameworks, process integration, system-wide enablers, and organizational alignment collectively emphasize that synergistic adoption yields more sustainable outcomes, the fragmentation of improvement models in Ethiopian manufacturing contradicts the integrated systems approach (Hailu, Mengstu, & Hailu, 2018; Berhe, 2021). Therefore, addressing Ethiopia's TQM implementation challenges requires not only capacity building and leadership development but also framework alignment. This indicates that ensuring quality initiatives evolve from compliance-based practices to strategic, integrated, and innovation-driven quality systems, consistent with global excellence standards.

Insights and Prospects for TQM Implementation

Investigations of Ethiopian industries indicate that TQM practices have been gradually increasing. These growing insights and opportunities indicate a transition towards contextually adaptive quality management. Despite existing hurdles, research highlights the possibility of effective TQM implementation through effective leadership, employee engagement, the incorporation of global frameworks, and the digitization of quality follow-up systems Kitaw & Bete's (2003). These critical success factors closely align with the core principles of ISO process, EFQM excellence, and MBNQA integration. Within this paradigm, ISO 9001:2015, which aligns with Kitaw & Bete's (2003)

observation, suggests that QM and process management improve operational performance in this area. The framework's focus on risk-based thinking and technological integration makes it a useful guide for quality monitoring with digital tools and analytics. Thereby, manual procedures and unreliable performance tracking could be removed.

The EFQM Excellence Model promotes a balance between process efficiency, innovation, stakeholder engagement, and societal value within enterprises. Mulugeta and Virdi (2019) identified leadership, training, process orientation, and customer interaction as essential success factors (CSFs). This also aligns with Berhe, Gebremichael, and Beyene's (2023) proposal of a cohesive Kaizen framework that enhances competitiveness through systemic improvement rather than fragmented activities. The EFQM approach facilitates sustainable competitiveness and long-term value development for Ethiopian manufacturing by fostering adaptive excellence.

The Malcolm Baldrige National Quality Award (MBNQA) Framework underscores the systemic aspect of quality achievement. Warie, Bariso, and Huluka (2024) established that the dedication of senior management is crucial for enhancing organizational performance, as illustrated by the coffee processing industry. Hailu et al. (2018) similarly emphasized the need for integrating various continuous improvement models, such as TQM, JIT, and Kaizen. Anticipating the incorporation of innovation and data-informed decision-making into Total Quality Management is also essential. As proposed by Warie and Huluka (2024) and Adem and Virdi (2023), the Knowledge Management and Measurement emphasis of the MBNQA corresponds with this Idea

Extent and TQM influence in the Sector

The review of the research presents the significant and diverse impact of Total Quality Management (TQM) on performance. For instance, empirical research in Ethiopia consistently demonstrates that the use of Total Quality Management (TQM) promotes operational efficiency and fosters improvements in innovation-related activities. Adem and Virdi (2021) established a strong relationship between TQM methodologies (process management, customer orientation, and quality culture) and operational efficiency. Their subsequent research (Adem & Virdi, 2023) demonstrated that these operational enhancements serve as an intermediate for enhanced financial performance, which aligns closely with the ISO 9001:2015.

Sector-specific information further substantiates the extensive impact of TQM. In the brewing sector, Solomon (2022) showed favorable relationships between the implementation of Total Quality Management and organizational performance. This analysis illustrates the emphasis of ISO 9001:2015 on customer satisfaction and process consistency. Likewise, Gezew (2022) documented enhanced process efficiency and product quality within the cement sector. These results align with the enabling characteristics of the EFQM Excellence Model. Furthermore, in the textile industry, Addis (2020) and Addisu (2020) reported substantial improvements in productivity and quality. Consequently, they contend that the excellence of EFQM and the results-oriented mindset of MBNQA are evident in their analysis. Moreover, research in high-precision industries, like weapons and plastic manufacturing, has validated TQM's role in minimizing defects, enhancing dependability, and facilitating process improvement through learning (Berhane & Maganti, 2018; Hagos & Maganti, 2018). These results exemplify the MBNQA's performance excellence framework.

Table 1: Reviewed articles summary

S.No.	Authors	Title	Theory/Model/Methods	Their findings
1	Addis, Sisay, (2020)	An exploration of quality management practices in the manufacturing industry of Ethiopia	Quantitative survey design SPSS, employing descriptive statistics, & factor analysis	Top management commitment, employee involvement, training, process management, and continuous improvement strengthening leadership support, workforce engagement, and systematic process control is essential for enhancing overall quality performance.
2	Adem, Muhugeta Kebede; Virdi, Sandeep Singh, (2021)	The effect of TQM practices on operational performance: an empirical analysis of ISO 9001: 2008 certified manufacturing organizations in Ethiopia	A cross-sectional survey 302 managers and senior QM experts, 73 ISO 9001:2008 certified manufacturing, SEM Modeling	Among the practices used only supplier quality management, continuous improvement and process management were found to have significant and positive effect on the operational performance of the ISO 9001:2008 certified manufacturing organizations in Ethiopia.
3	Warie, Gemechu Hotessa; Huluka, Admasu Tesso; Bariso, Elfinah Udessa, (2024)	Organizational innovation in the relationship between total quality management and business financial performance: case of coffee processing firms in Gnji zone, Ethiopia	Quantitative research design with survey data, SPSS and regression analysis.	Leadership, continuous improvement, and employee involvement positively affect organizational innovation, which in turn mediates the link between TQM and business financial performance.
4	Adem, Muhugeta Kebede; Virdi, Sandeep Singh, (2023)	The structural link between TQM practices and financial performance: the mediating role of operational performance	Quantitative survey, SPSS and SEM modeling	Leadership commitment, process management, and continuous improvement significantly enhance operational performance, which in turn leads to improved financial performance. Operational performance plays a crucial mediating role between TQM efforts into financial gains.
5	Bashah, Birhanu; Kitaw, Daniel, (2014)	Quality management practice in Ethiopia	Descriptive statistics and comparative analysis	Quality management practices in Ethiopia were still at an early stage, characterized by: limited top management commitment, inadequate employee involvement, and weak process control systems.
6	Berhe, Hafte Hailu; Gebremichael, Hailekiros Sibhatu; Bevene, Kinfe Tsegay, (2023)	Development, validation and verification of innovative integrated Kaizen philosophy (CI) framework and its implementation procedure for enhancing manufacturing industries sustainable competitiveness	Mixed-method research design, combining literature review, expert consultation, and empirical validation, SPSS and SEM	Integrated Kaizen framework, linking leadership, employee involvement, training, process control, and continuous improvement, significantly enhances operational efficiency, innovation, and sustainable competitiveness.
7	Hailu, Hafte; Mengstu, Solomon; Hailu, Tewedros, (2018)	An integrated continuous improvement model of TPM, TPS and TQM for boosting profitability of manufacturing industries: An innovative model & guideline	Conceptual and empirical approach, SPSS and factor analysis	Integrated CI model, linking maintenance, lean production, and quality practices, significantly improves operational efficiency, cost reduction, and profitability.
8	Hailu, Hafte; Kedir, Abdelkadir; Bassa, Getachew; Jilcha, Kassu, (2017)	Critical success factors model developing for sustainable Kaizen implementation in manufacturing industry in Ethiopia	quantitative case study, 32 CSF items and 19 indicators, SPSS, factor analysis, and regression. Eight CSFs.	Training, leadership, planning, and reward systems as the most significant factors driving sustainable Kaizen outcomes. Continuous improvement requires strong employee involvement, regular evaluation, and recognition.
9	Warie, Gemechu Hotessa; Bariso, Elfinah Udessa; Huluka, Admasu Tesso, (2024)	An assessment of top managers' commitment to business performance: a case study of the coffee processing industry in Gnji Zone, Ethiopia	Case study design, structured questionnaires and interviews with managers &SPSS	Top management commitment, leadership support, strategic decision-making, and resource allocation has a strong positive effect on business performance indicators such as productivity, quality, and profitability.
10	Berhane, Hagos; Margani, Pramila Devi, (2018)	Impact of Total Quality Management Practices on Quality Performance: A Case Study on Armament Manufacturing Industry	Quantitative case study design, structured questionnaire, targeting managers and employees, SPSS	TQM practices including leadership commitment, employee involvement, process management, and continuous improvement have a significant positive effect on quality performance.

11	Berhe, Hadru Hailu, (2021)	Application of Kaizen philosophy for enhancing manufacturing industries' performance: exploratory study of Ethiopian chemical industries	Exploratory case study design, surveys and interviews with employees and managers and SPSS	Implementing Kaizen practices such as continuous improvement, employee participation, process optimization, and training positively impacts operational efficiency, product quality, and overall organizational performance.
12	Gebremedhin Mezgebe Kidane, Prof. Dr. R. Satya Raju, (2016)	Total quality management implementation and its impact on organizational performance in effort manufacturing industries case study Ethiopia	Quantitative survey design, managers and employees, structured questionnaires and analyzed with SPSS and regression analysis.	Effective TQM practices, leadership commitment, employee involvement, process management, and continuous improvement significantly enhance productivity, product quality, and overall organizational performance.
13	Haile Shitahun Memiastie, (2019)	The effect of total quality management practice on organizational performance - the case of bahir dar textile SC	Case study design, questionnaires from managers and employees, SPSS, correlation, and regression analysis.	Leadership commitment, employee involvement, process control, and continuous improvement positively influence operational efficiency, product quality, and overall organizational performance.
14	Gezeyw Mengesa, (2022)	Effect of total quality management on organization performance: A case study on national cement s.co.	Case study design, managers and employees, structured questionnaires SPSS, regression analysis.	Leadership commitment, employee involvement, process management, and continuous improvement have a significant positive impact on product quality, operational efficiency, and overall organizational performance,
15	Mohamed Abdi and Ajit Pal Singh, (2021	Effect of total quality management practices on nonfinancial performance: an empiric analysis of automotive engineering industry in Ethiopia	Quantitative survey design, questionnaires, from managers and employees SPSS, correlation, and regression analysis.	Leadership commitment, employee involvement, process management, and continuous improvement positively influence nonfinancial performance measures such as product quality, customer satisfaction, and operational efficiency; emphasizing the role of TQM in enhancing organizational effectiveness beyond financial metrics.
16	Addisu Mellawuu, (2020)	TQM adoption effects on an organizational performance; a case study on bahirdar textile share company	Case study design Questionnaires, managers and employees SPSS and regression analysis.	TQM adoption covering leadership commitment, employee involvement, process control, and continuous improvement positively impacts operational efficiency; product quality, and overall organizational performance.
17	Alemu Moges Belayhh, (2011)	Effects of Quality Management Practices and Concurrent Engineering in Business Performance	Quantitative research design, questionnaires, managers and employees SPSS correlation, and regression analysis.	Process optimization, team collaboration, continuous improvement, and integrated design-production planning positively influence product quality; operational efficiency; and overall business performance, emphasizing that combining quality management with concurrent engineering enhances competitiveness and organizational outcomes.
18	Mulugeta Kebede Adem, Dr. Sandeep Singh Virdi, (2019)	Implementation of the Critical Success Factors of TQM in ISO 9001: 2008 Certified Manufacturing Organizations in Ethiopia	Quantitative survey design questionnaires, SPSS, and regression analysis.	Top management commitment, employee involvement, process management, training, and continuous improvement positively influences organizational performance, product quality, and operational efficiency.
19	Haile Yeshaneew Bayu, Dr. Satya Raju R, (2016)	The extent of TQM practices in Ethiopian manufacturing firms: An empirical evaluation	Quantitative survey design, questionnaires, factor analysis, and correlation analysis.	Leadership commitment, employee involvement, process management, and continuous improvement varies across firms, with many organizations implementing TQM partially rather than fully.
20	Solomon Mesfin, (2022)	Influence of Total Quality Management on the Performance of Brewery Company in Gondar, North Ethiopia	Case study design, questionnaires and analyzed using SPSS correlation, and regression analysis.	Leadership commitment, employee involvement, process management, and continuous improvement positively affect operational efficiency, product quality, and overall organizational performance.
21	Haaos Berhane, Pramila Devi Mazanti, (2018)	Effects of Total Quality Management Practices on Operational Performance of Ethiopian Plastic Industry	Quantitative survey, structured questionnaires, SPSS, correlation, and regression analysis.	Leadership commitment, employee involvement, process management, and continuous improvement positively influence operational performance, enhancing product quality, efficiency, and overall organizational effectiveness.

When examining research publications per year, as shown in Figure 2, the time-based distribution of studies on Total Quality Management (TQM) and its impact on Ethiopian manufacturing performance begins after 2010. At

that time, there was no conducted study in the field. Instead, it spans from the early 2010s to 2024, with a notable increase after 2015. Earlier studies mostly focused on performance enhancement, but recent research integrates TQM with sustainability, innovation, and strategic management, highlighting its evolving role in achieving organizational excellence. Overall, the trend suggests the persistent and growing significance of TQM in Ethiopia's modern industry.

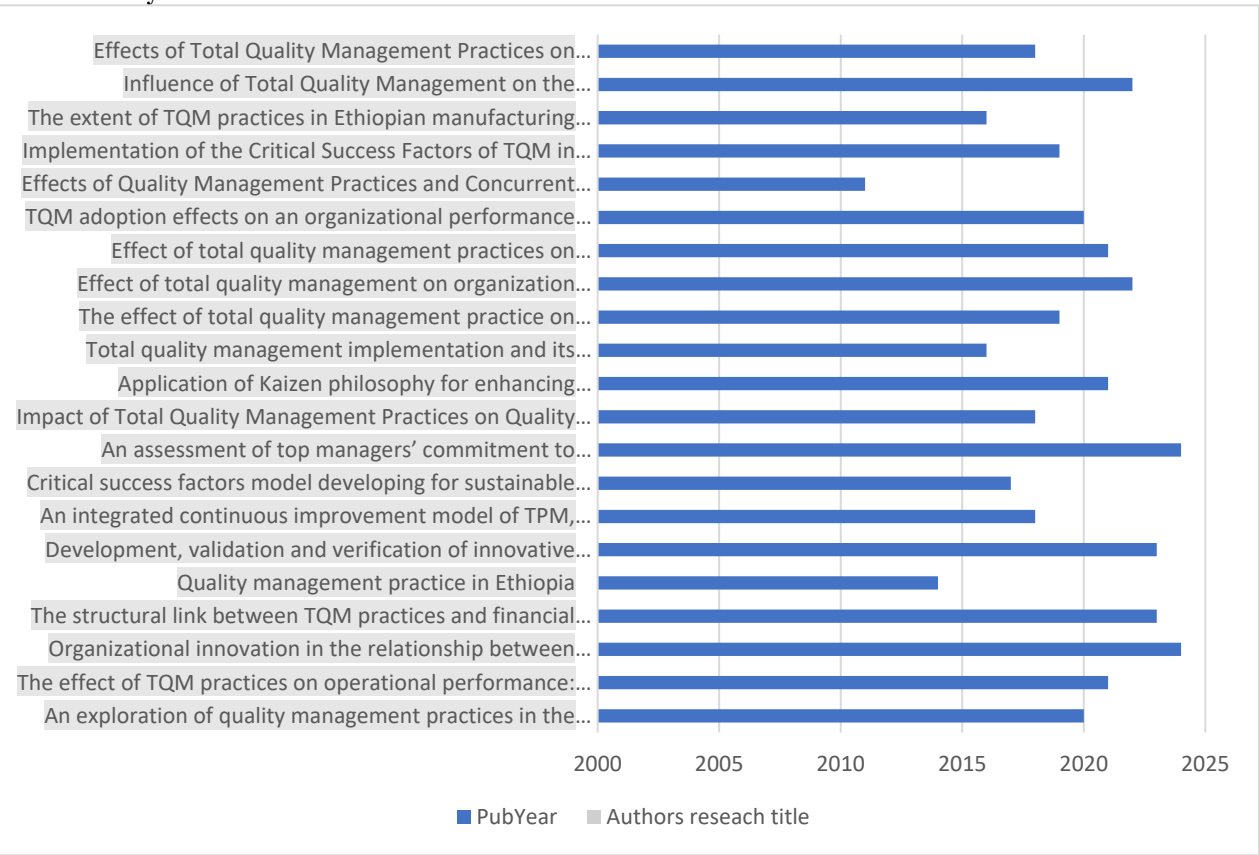

Figure 2: Reviewed articles per publication year

SUMMARY OF KEY FINDINGS

The implementation of Total Quality Management (TQM) in Ethiopia's manufacturing sector is demonstrating increasing alignment with global standards, such as ISO 9001:2015, the EFQM Excellence Model, and the Malcolm Baldrige National Quality Award (MBNQA) Framework. ISO 9001:2015 provides a fundamental framework that prioritizes process-oriented thinking, risk management, and ongoing enhancement. ISO-certified organizations demonstrate greater TQM maturity and enhanced operational performance in terms of customer orientation and process management. When the EFQM and MBNQA frameworks enhance ISO, TQM enables organizations to foster leadership involvement, creativity, and strategic coherence, resulting in sustained competitiveness and operational excellence.

Despite significant advancements, Total Quality Management practice in Ethiopian manufacturing is impeded by insufficient leadership commitment, inadequate employee training, financial and cultural limitations, and a disjointed application of standards. Numerous companies pursue ISO certification as a compliance measure rather than a strategic transformation instrument, leading to incomplete integration of TQM principles. The fragmentation of various quality initiatives (ISO, Kaizen, TQM, JIT, etc.) is a systemic enhancement problem.

Recent evidence suggests a gradual shift toward innovation-driven and digitally facilitated quality management. Leadership engagement, employee involvement, and framework integration are recognized as critical success factors (CSFs). The integration of process discipline, comprehensive excellence, and performance focus provides a unified approach to enhancing efficiency, competitiveness, and resilience in this area.

CONCLUSION

The analysis of Total Quality Management (TQM) implementation in Ethiopia's manufacturing sector reveals a gradual yet significant shift from a fragmented to a more holistic approach to quality excellence. The involvement in international quality standards, as represented by ISO 9001, EFQM Excellence, and MBNQA models, demonstrates the sector's recognition and growth. This is not simply a certification process, but a holistic philosophy for organizational transformation.

Empirical evidence consistently demonstrates that organizations implementing structured frameworks, such as ISO 9001:2015, attain quantifiable improvements in process efficiency, customer satisfaction, and operational performance. The EFQM and MBNQA frameworks enhance these advancements by incorporating leadership, innovation, strategic alignment, and continuous learning, thereby establishing avenues for sustainable competitiveness. This indicates a transition from short-term compliance to long-term organizational success.

Nevertheless, persistent constraints, lack of leadership commitment, inadequate training, cultural resistance, and fragmented implementation hinder the full realization of TQM's potential. Many companies are trapped in a compliance-focused mindset, prioritizing certification over cultural change. This disparity highlights the need for leadership development, employee empowerment, and the integration of quality methodologies into the system.

The future of TQM in Ethiopian manufacturing relies on integrating innovation, digitization, and fact-based decision-making into quality management systems. The effective integration of the complementary strengths of ISO 9001:2015's process discipline, EFQM's holistic excellence, and MBNQA's results orientation can create a synergistic framework that promotes resilience, competitiveness, and sustainable industrial growth. Ethiopia's evolving TQM journey demonstrates that quality excellence is achieved not through mere compliance but through a strategic commitment, learning, and innovation-driven transformation.

RESEARCH LIMITATIONS

This review analyzed 21 prior studies of TQM practices in the Ethiopian manufacturing sector and acknowledged the following major limitations. The majority of the studies are sector-specific and contextually limited. Their primary focus was on ISO-certified companies or specific sectors, including textiles, coffee processing, and cement. This limits the generalizability of results across the broader manufacturing sector. Secondly, the majority of studies employed cross-sectional designs, which may limit the ability to observe the longitudinal effects of TQM practices on performance. Third, there exists a methodological similarity in their study, specifically in the use of survey-based self-reported data as opposed to objective performance metrics. The review ultimately highlights the Ethiopian context, which may differ markedly from that of other developing economies in terms of institutional support, industrial maturity, and cultural dynamics, thereby advising caution against making broad inferences.

PRACTICAL IMPLICATIONS

The findings emphasize the necessity for planned and systematic deployment of TQM throughout Ethiopia's manufacturing sector. The findings indicated that practitioners must integrate ISO 9001:2015, EFQM, and MBNQA concepts into a cohesive quality management framework that fosters innovation, learning, and stakeholder value. Policymakers and industry regulators must prioritize leadership development, budget allocation, and digital infrastructure to enable the effective spread of Total Quality Management. This study presents opportunities for academics to conduct longitudinal and comparative assessments on how contextual factors, including organizational culture and technical preparedness, affect TQM success in rising economies, particularly in developing and industrialized nations. The integration of digital technologies, Industry 4.0 tools, and data analytics into TQM frameworks may reveal new pathways for achieving smart manufacturing and quality resilience. Research focused on policy should also investigate how governmental initiatives, capacity-building programs, and institutional incentives may accelerate the dissemination and institutionalization of TQM methodologies in the region.

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