

# **Benefits and Barriers to Total Quality Management (TQM): A Review in South African Industries**

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## **Abstract**

This study aims to examine if the approach of TQM is still helpful for enhancing both customer satisfaction and business performance. The following were listed objectives of this study: (1) To review the current state of affairs on TQM use in South African industries; (2) To identify the TQM benefits in South African industries and finally; (3) To barriers to TQM's implementation in South African industries. The study followed a review approach; It gathered the predetermined articles, journals, and textbooks, did a brief review, selected the papers to proceed with an in-depth study, and classified them into four groups. The study reviewed 48 papers, from 2013 to 2021. The results revealed that Total Quality Management Systems (QMS) are an essential issue to South African Industries. Reviewing the literature on Total Quality Management (TQM) and organizational performance is the goal of this study. South African organizations must be able to meet client demands and expectations in today's competitive market and complex business environment, including excellent product quality, quick delivery, and affordable pricing. Total Quality Management (TQM) is regarded as one of the most well-liked concepts for thoroughly managing the quality of goods and services. This study also examines if the approach of TQM is still helpful for enhancing both customer satisfaction and business performance. It thoroughly evaluates the literature systematically gathered from various industry areas. The findings demonstrate that many organizations still adopt this idea today, and by so doing, this helps organizations become more competitive, develop their businesses, be more sustainable, and boost employee morale.

## **Keywords**

Total Quality Management, Business expansion and Organizational performance.

## **1. Introduction**

### **1.1 Problem statement**

Nowadays, most businesses use quality management systems (QMS). All firms must now establish a quality management system (QMS), especially in the current context of intense competition. In the context of South Africa, organizations received QMS certificates in 2012. From 2012 to 2018, the number of QMS certificates for South Africa increased at a pace of about 20.3% each year. (Patil, 2012). South Africa is ranked seventh in Africa, behind Morocco, Nigeria, Namibia, Zambia, Rwanda, and Mauritius.

This data demonstrates the widespread adoption of the Total Quality Management standard in South Africa. (Taiye, 2015) Unfortunately, some businesses in South Africa cannot keep up with their QMS. According to statistics, 2,461 certifications were revoked between 2015 and 2016. The idea of quality has gained a widespread reputation as a healing tool for many organizational faults. This is due to the deep awareness that excellent quality is somehow connected to the good performance of the employees and the organization. In his study, Cvetkovic (2014) defined quality as the degree to which customers are satisfied with a particular good or service. In a different sense, the author derived the term "quality" from the customer's perspective, which is essentially what any firm aspires to. Another study by (Doluschitz, 2013) and colleagues defined quality as the capacity of a given good or service to meet implicit or explicit standards and satisfy customers; in this case, quality must be tested and assessed before it is delivered to the client. (Thomas, 2015) offered a different definition of quality, stating that it is the degree to which the product or service complies with the previously established standards. In the competitive and dynamic corporate environment, as well as in the dynamic market condition, globalization, rapid technical advancements, competition, disruptive

business models, and emerging new markets, where things are continuously changing, are difficulties that enterprises of all sizes continue to face (Juanzon, 2018).

### **1.2 Aim of the study**

This study aims to examine if the approach of TQM is still helpful for enhancing both customer satisfaction and business performance. The study is a thorough evaluation of the literature that is systematically gathered from various South African business industries.

### **1.3 Objectives of the study**

The following are listed objectives of this study: (1) To review the current state of affairs on TQM use in South African industries; (2) To identify the TQM benefits in South African industries and finally; (3) To barriers to TQM's implementation in South African industries.

### **1.4 Scope of the study**

This study reviews the literature on TQM use in South African industries; it looks at how TQM is implemented in various sectors in the country. Thus, there is no particular focus on industry instead, it is a widespread view of TQM.

### **1.5 Value of the study**

As much as TQM has been a practice for many businesses and has been studied in South Africa for a while; there is always a need to know more about it. It is important to note that TQM techniques are crucial for businesses that want to improve organizational performance (Kentas, 2015). Reviews of TQM applications have been conducted in the past. Still, keeping in mind that studies are continuously performed, this study is vital as it provides a more recent update on TQM evolutions with a focus on South Africa.

## **2. Brief Literature Review**

According to Dewi (2020), quality is the degree to which the product or service complies with previously established standards. This definition discusses the concept of conformance, which is slightly related to testing, attempting, and concentrating the outcomes of the good or service before it reaches the consumer (Maryani, 2013). Total quality management, as a managerial term, is regarded as the logical continuation of the implemented effort in developing the service or product and enhancing it. This effort was initiated by Frederick Taylor and the way he managed to form performance improvement principles. Max Webber and his hierarchical formation of the bureaucratic theory within the field of tacking distribution, and the idea ended with Mayo and his friends in humanitarian relations, which had a strong focus on the concept (George, et al., 2013).

The word "Quality" first appeared during World War II. Following the collapse of their telecom network, it was initially utilized in the Japanese industry. The Japanese and the American Allied troops believed that the poor quality of the Japanese telephone network was the main factor in the breakdown of telecom communication (Ghoneim, 2015). In response, the two tried to employ contemporary ways of controlling quality, such as quality inspection, to remedy the issue. Because of this, the quality inspection was changed to a strictly technical activity, and monitoring operations were made responsible for functional and higher hierarchical units only (Shams, 2016). In this manner, the quality inspection was intended to aid in identifying high-quality and acceptable products and enable them to pass while discouraging low-quality products that are rejected. The proportion of approved items was a gauge of production quality (Kantardjieva, 2015). Products were deemed high quality when they met specifications.

These were the precise technical specifications used to specify what made a quality product. Since quality inspection only focused on the ultimate result or consequence, it did not affect productivity. The central management tools used to conduct quality inspection were technically stated standards and norms (Blattberg, 2014). However, the quality inspection procedure flaw was that it was impossible to scrutinize every product thoroughly. Small samples were also not considered to be fully representative of all the products when concluding them (Lin, 2019). Organizations need to be prepared to adjust to this circumstance, which demands a highly demanding product or service quality, quicker delivery, and reasonable pricing (Friedman, 2015).

Organizations must reconsider their priorities considering a new paradigm emphasizing how well they satisfy consumer needs rather than how much money they make. Businesses worldwide have purposefully exploited quality to get clients (Azlan, 2013). Customers' needs are constantly changing to meet the widening range of lifestyles, and

every product must meet the highest standards of quality and usefulness. The definition of quality itself, as shown in Table 1, and the quality perception varies from person to person.

Table 1. Definition of Quality (Macias, 2016).

|   |   |
|---|---|
| <b>Definition based on values</b>         | This indicates that quality is about the degree of cost and price comparison. What price will be reasonable in this situation.          |
| <b>Definition based on products</b>       | This indicates that the quality of a commodity is determined by its reliability. It has to do with how the product functions.           |
| <b>Based on user definition</b>           | This implies that a product's quality depends on how well it meets the demands and expectations of its customers.                       |
| <b>Description based on manufacturing</b> | Thus, quality is determined by how well a product conforms to a need.   |
| <b>Transcendent definition</b>            | This indicates that quality is difficult to describe and occasionally hazy. Like I cannot explain it, but I recognize it when I see it. |

Quality must be maintained and supplied to the customer, regardless of the definition, to please the customer and maintain the business. Organizations must implement a thorough strategy to ensure that their customers are satisfied by offering the highest quality of goods and services. The company must develop a plan focused on enhancing business operations to beat the competition and increase its competitive edge (Agarwal, 2014). Organizations need to consider the Total Quality Management (TQM) approach to address these issues. Total Quality Management undergone four stages of development (Imamoglu, 2019).

The following are the development categories: Quality assurance, quality control, quality inspection, and total quality management are listed in that order. It began in 1910 at Ford Motor Company, where inspectors were first hired to inspect the goods. Statistical process control is utilized together with sampling the product to be examined about 20 years later, in the 1920s and 1930s. Control charts were then used to differentiate between prescribed variation and random variation in processes. The third quality assurance stage was introduced around the 1950s to ensure that the product would match customers' expectations by fostering such confidence (Al-Alak, 2014).

Beginning in the 1980s, TQM's final phase clearly emphasized implementing quality management in every facet and division of the firm. Since then, Deming, Juran, and Crosby have significantly contributed to the TQM's ongoing evolution. As part of the organization's excellence goals for achieving customer satisfaction, the TQM strategy focuses on improving the processes' efficacy and responsiveness in meeting customer requirements. All the elements must collaborate as a team to guarantee the success of the concept's implementation in the organization. The organization's components, activities, and members all impact one another (Alamri, 2012). TQM was explored as a philosophy for contemporary competitiveness, along with many contributions to the field of quality management that have boosted its notoriety to current levels of competitiveness. The three steps of TQM implementation are as follows (Keskin, 2015): Stages 1 through 3 are preparation, planning, and execution. These three steps must be carried out effectively with the support of management, employee participation, and other factors like training and communication Table 2. TQM must be considered a long-term process, with the vision to improve constantly. Organizations must make plans for their future survival in addition to short-term goals (Bahari, 2015).

Table 2. TQM evolution (Kehoe, 2018).

|                                |   |
|--------------------------------|---|
| <b>Quality Inspection-1910</b> | Quality is initiated by performing a basic filtering of product quality and identifying the root cause of the issue.                                |
| <b>Quality Control-1920</b>    | During this time, the process is managed using data analysis and statistical control methods, and quality planning is improved.                     |
| <b>Quality Assurance-1950</b>  | During this time, quality planning, audits, and the usage of quality risk assessment using FMEA are all carried out.                                |
| <b>TQM- (1980s)</b>            | Comprehensive quality management began with management commitment, employee involvement, customer emphasis, and a culture of continual improvement. |

### 3. Methodology

This study follows a review approach; It consists of gathering the predetermined articles, journals, and textbooks, doing a brief review, selecting the papers to move forward with an in-depth study, and classifying them into 4 groups, considering the four steps shown in Figure 1. The paper reviewed 48 papers, from 2013 to 2021. This is because that period had more TQM publications which declined right after 2019, probably due to the Covid19 pandemic that saw many organizations closing their doors.

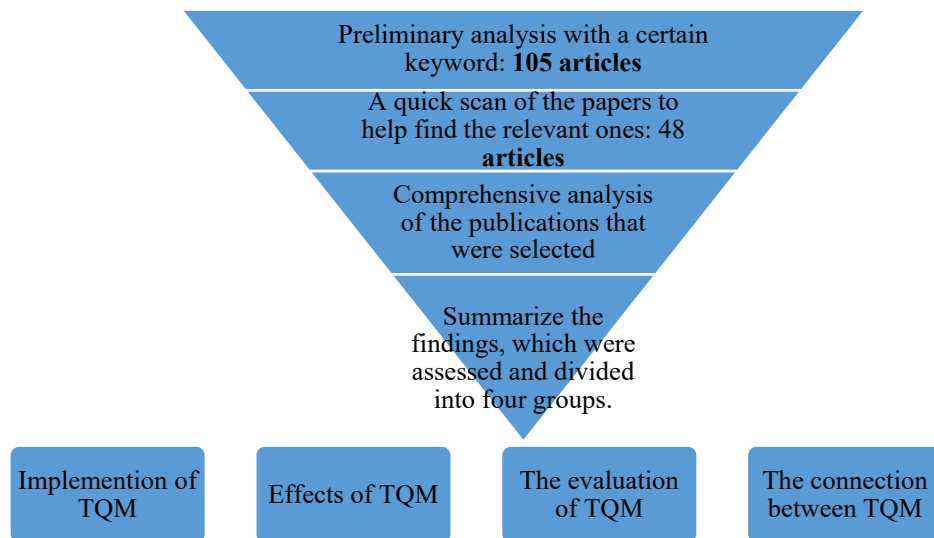


Figure 1. Study framework (Golhar, 2018).

An evaluation considers both the research topic and each paper's output. Table 3 displays the complete list of papers that were reviewed. The papers were divided into four groups: TQM application, TQM impact, TQM review, and TQM relationship. These papers were categorized into four groups based on the object variables: application of TQM, Impact of TQM, review of TQM, and relationship of TQM. The papers, which originated in South Africa but different sectors, were dispersed over 5 provinces (Gauteng, Limpopo, Northwest, Mpumalanga, and KwaZulu Natal).

Table 3. Sample (30) of the reviewed papers

| Number | Authors                    | Industry sector              |
|--------|----------------------------|------------------------------|
| 1.     | (Patil, 2012)              | Sector of education          |
| 2.     | (Taşdemir, et al., 2013)   | Sector of education (school) |
| 3.     | (Prasad, 2013)             | Sector of business           |
| 4.     | (George, et al., 2013)     | Sector of business           |
| 5.     | (Aldmour & Al-Zoubi, 2014) | Sector of Production         |
| 6.     | (Harrington & Frank, 2014) | SMME industry                |
| 7.     | (Aldmour & Al-Zoubi, 2014) | Sector of food               |
| 8.     | (Al-Alak, 2014)            | Local government             |
| 9.     | (Blattberg, 2014)          | Business industry            |
| 10.    | (Al-Alak, 2014)            | Sector of Manufacturing      |
| 11.    | (Cvetkovik, 2014)          | Sector of business           |
| 12.    | (Agarwal, 2014)            | Industry of pharmaceuticals  |
| 13.    | (Aldmour & Al-Zoubi, 2014) | Sector of banking            |
| 14.    | (Aldmour & Al-Zoubi, 2014) | Sector of Construction       |
| 15.    | (Asikhia, 2015)            | Energy industry              |
| 16.    | (Thomas, 2015)             | Sector of manufacturing      |
| 17.    | (Asikhia, 2015)            | The manufacturing sector     |

|     |                              |  |
|-----|------------------------------|--|
| 18. | (Keskin, 2015)               | Sector of construction                 |
| 19. | (Kentas, 2015)               | Sector of manufacturing                |
| 20. | (Keskin, 2015)               | Healthcare sector                      |
| 21. | (Gunaydin, 2015)             | Sector of manufacturing                |
| 22. | (Ghoneim, 2015)              | Sector of Manufacturing                |
| 23. | (Taiye, 2015)                | Technology                             |
| 24. | (Kentas, 2015)               | Sector of Manufacturing                |
| 25. | (Kumar, 2015)                | Service sector                         |
| 26. | (Attakora-Amaniampong, 2015) | Sector of education (Higher education) |
| 27. | (Keskin, 2015)               | Sector of education (school)           |
| 28. | (Kumar, 2015)                | Electricity industry                   |
| 29. | (Ghoneim, 2015)              | Sector of Manufacturing                |
| 30. | (Ghoneim, 2015)              | Sector of Manufacturing                |

## 4. Findings

According to specific papers, multiple organizations successfully use TQM in the workplace. A standardized, trustworthy instrument was created by Asikhia (2015) to assess the TQM adoption in an organization that manufactures automobile components. The findings indicated that TQM considerably impacted organizational commitment and overall performance. Aliyu (2016) measured the primary factor affecting TQM in a railway company in South Africa. The results showed that corporate culture has the highest influence. Taşdemir, et al., (2013) discovered that TQM can be successfully implemented in the education sector, and they concluded that the teaching and learning process is more effective and has raised overall quality.

### 4.1 Benefits of TQM

Many studies have documented the benefits of TQM, like Kumar (2015), who conducted a study in a South African electricity distribution company and found that the implementation of TQM had a 12% positive impact on scheduling and a 22% positive impact on wasted visits. Another study by Saqhi (2017) on TQM implementation in the South African SME (Small Medium Enterprise) sector concluded that TQM adoption could enhance the SME's competitive advantage. Similar research was conducted on SME in South Africa by Kumar (2018), who concluded that TQM implementation could improve SME financial performance. In a study conducted by Gunaydin (2015) in a South African manufacturing company, the researchers found that TQM successfully boosts overall performance and may be paired with Six Sigma to boost product quality. According to a study by Mohan (2016) in South African hotels, TQM also significantly improves an organization's competitive advantage in the hospitality sector. Coffey (2019) conducted an observation in the education sector in South Africa and concluded that TQM significantly affects student satisfaction. Aliyu (2016) collaborated with the department. When previous researchers visited a South African store to assess TQM's effects, they discovered that it had significantly increased customer satisfaction. They also realized some crucial components of TQM implementation, including a customer-focused approach, an obsession with quality, teamwork, and employee involvement. The intricacy of TQM prevents it from being adequately matched with the content of higher education, according to studies on higher education in South Africa. To improve quality in and of higher education, it is more fruitful to investigate the creation of locally relevant systemic techniques. When TQM was implemented in the organization, some researchers conducted a thorough assessment and evaluation. Most found that it successfully increased the organization's performance and competitive advantages (Attakora-Amaniampong, 2015). Shams (2016) observed that several organizations from various industries in South Africa found that TQM adoption improved customer satisfaction, increased customer orders and demand, and increased sales and profit. Harrington & Frank (2014) conducted a similar study, focusing on a pharmaceutical company in South Africa. They discovered that TQM is a holistic methodology for the general change of an organization and that it has a history of being successful in all fields if management can put it into practice. Prasad (2013) conducted research at an SME in South Africa and concluded that TQM considerably boosted product quality, increased customer happiness, and improved the operational performance of the business. These changes will strengthen an organization's competitive advantage and long-term viability.

### 4.2 Barriers to TQM

Studying the connection between TQM and organizational vision in particular industries made up the last group. MohamadDasuki (2013) studied a few industry sectors in South Africa and discovered a relationship between TQM and strategic management. She found that quality is a crucial success component. Thus, the enterprise must be focused

on implementing quality programs like TQM. Lack of knowledge, motivation and cultural issues were identified by Nahyana (2019) as the top barriers to TQM implementation in a South African construction firm. This information was provided to the management to help them develop the best plan for ensuring TQM implementation in the organization.

### 4.3 The way to go

TQM is one of the best concepts for an organization to use as a strategic approach because it is suitable for many industry sectors and is still in use today. It is also compatible with new management standards like ISO 9001 and the state of the market now. Here, we can see that TQM is widely employed in a variety of businesses and nations around the world. TQM is also still used today, as evidenced by the research papers published in the last seven years. This confirms that researchers are still interested in seeing how TQM is implemented in the organization and that TQM is still applicable in today's business environment, which is characterized by rapid change (agile). The TQM framework can be continuously improved and modified to prepare for the future adoption of industry 4.0 and society 5.0. These will enhance the organization's ability to design products and improve processes.

### 4.4 Reviewed papers details

Figure 2 shows most of the papers' year of publication from 2013 to 2021. 2015 has the highest number of publications analyzed. Figure 3, on the other hand, shows the different subjects from the papers, mainly about TQM's implementation, examination and effects. Figure 4 categorized publications by provinces from South Africa, showing that Limpopo had the highest number of publications. Finally, Figure 5 looks at the business sectors from the analyzed publications.

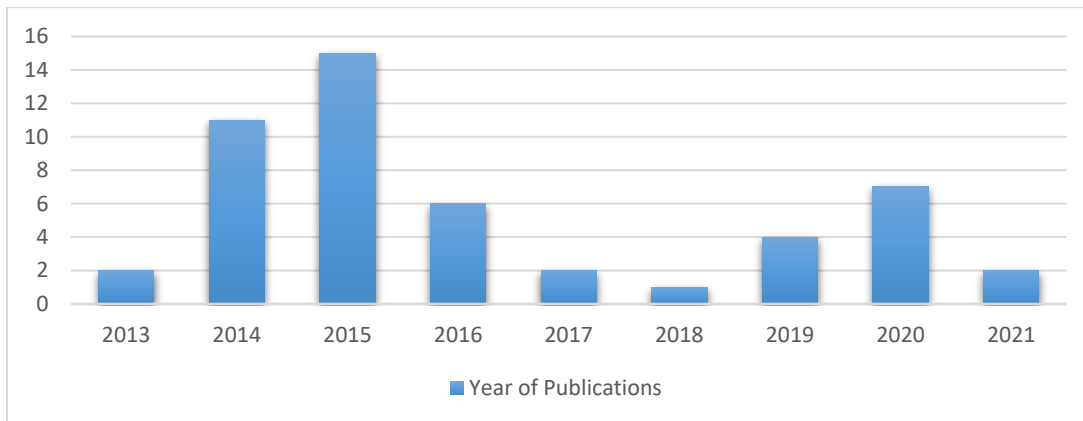


Figure 2. Year of publication.

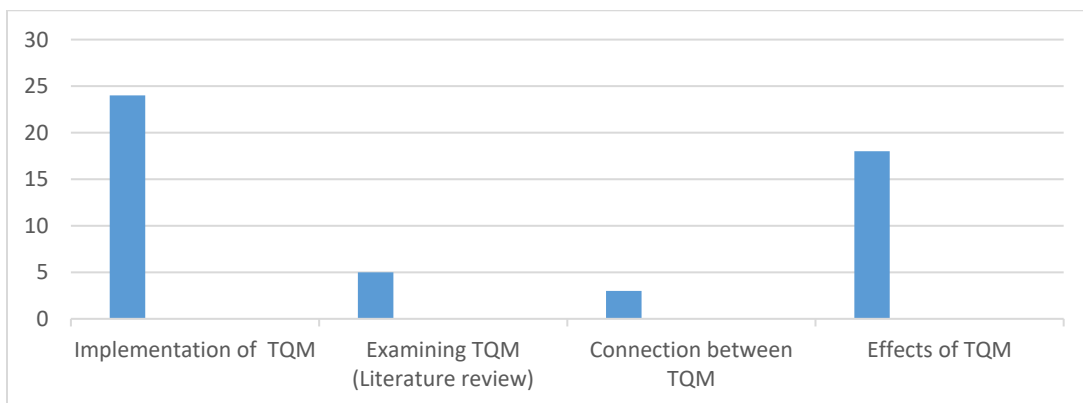


Figure 3. Subject-based Categorization of publications

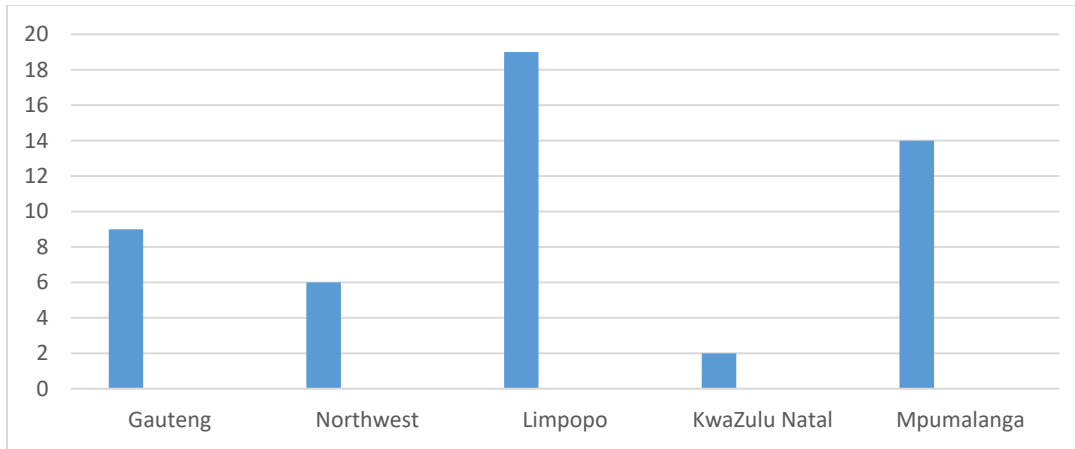


Figure 4. Categorization of publications by Province

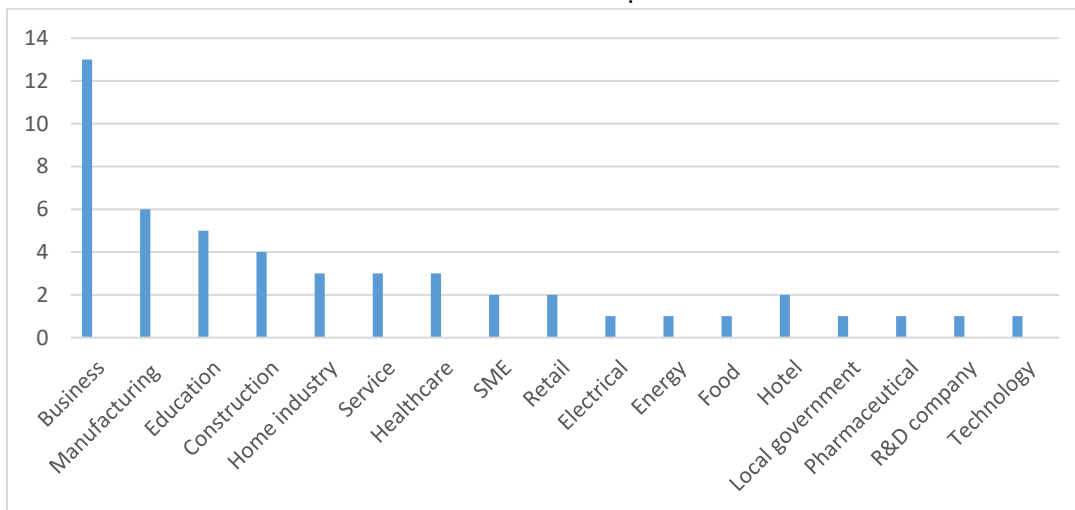


Figure 5. Categorizing publications based on the business sectors

## 5. Conclusion and future research

Total Quality Management (TQM) is still widely practised in numerous businesses and nations worldwide. TQM is focused on increasing customer satisfaction by improving the quality of products, services, and overall quality of the organization to deliver the best product or service solution to the customer. This is one of the main reasons why TQM is still appropriate in this modern environment. Another reason is that TQM is implemented with complete commitment from management and total employee involvement. It becomes a strong concept that is straightforward to comprehend and simple to implement. Furthermore, as TQM adoption in the organization must be quantified to continuously improve and stay competitive in today's business environment, the standard measurement method is required to identify the level or score of TQM implementation. Additionally, it is strongly advised to conduct research on various industry sectors, especially for new start-ups like e-commerce or digital start-ups, to ensure that TQM is still appropriate for such sectors.

## References

Agarwal, T., Market Orientation and Performance in Service Firms: The Role of Innovation. *Journal of Services Marketing*, Volume 1, pp. 56-63. 2014.

- Al-Alak, T., Gaining Competitive Advantage and Organizational Performance through Customer Orientation, Innovation Differentiation, and Market Differentiation *International Journal of Economics and Management Sciences. International Journal of Computer Applications*, Volume 108, pp. 30-41. 2014.
- Alamri, A., Organization Performance Improvement using TQM. *A Literature Review. International Review of Social Sciences and Humanities*, Volume 9, pp. 25-38. 2012.
- Aldmour, H. & Al-Zoubi, A.-Q., Generating Benchmarking Indicators for Employee Job Satisfaction. *Total Quality Management and Business Excellence*, Volume 12, pp. 27-44. 2014.
- Aliyu, A.-M., Total Quality Management (TQM). *Author Publishing House*, Volume 1, pp. 15-52. 2016.
- Asikhia, A., Customer Orientation and Firm Performance among Nigerian Small and Medium Scale Businesses. *International Journal of Marketing Studies*, Volume 11, pp. 232-340. 2015.
- Attakora-Amaniampong, E., Total Quality Management and its Impact on the Level of Customer Focus within education in S.A. *International Journal of Business and Management Invention*, 5(4), pp. 85-89. 2015.
- Azlan, A., Total Quality Management Awareness at Revenue Collection Authority in Malaysia. *Journal of Applied Environmental and Biological Sciences*, Volume 4, pp. 34-42. 2013.
- Bahari, A., An efficient CRM-data mining framework for the prediction of customer behaviour. *Procedia computer science*, Volume 8, pp. 12-18. 2015.
- Blattberg, P., Database marketing. *Past, present, and future, Journal of Direct Marketing*, Volume 7, pp. 109-125. 2014.
- Coffey, W., Improving Quality Management System Implementation in S.A education sector. *Makassar International Conference on Higher education*, 12(3), pp. 56-70. 2019.
- Cvetkovik, M., The Effects of Total Quality Management Practices on Performance within a Company for Frozen Food in the Republic of Macedonia. *TEM Journal*, Volume 3, pp. 352-361. 2014.
- Dewi, L. M., Implementation of Total Quality Management and Interpersonal Communication in Achieving Student Satisfaction through Service Quality at Yayasan Pendidikan Islam, Miftahussalam, Medan. *International Journal of Research and Review*, Volume 56, pp. 200-210. 2020.
- Doluschitz, M., Total Quality Management in the food industry Current situation and potential in Germany. *Applied Studies In Agribusiness And Commerce*, Volume 14, pp. 36-42. 2013.
- Friedman, B., Customer relationship management: concepts and technologies. *Business process management journal*, Volume 6, pp. 89-96. 2015.
- George, G., Green, G. & Gómez-López, W. Total quality management: Strategies and techniques proven at today's most successful companies. *Total Quality Management and Business Excellence*, Volume 12, pp. 26-31, 2013.
- Ghoneim, H., An analysis of the influence of organizational culture on TQM implementation in an era of global marketing. *The case of Syrian manufacturing organizations. International Journal of Productivity and Quality Management*, Volume 13, pp. 386-395. 2015.
- Gunaydin, D., Total quality management in the manufacturing process. *International Journal of Project Management*, 7(3), pp. 235-243. 2015.
- Harrington, J. & Frank, W., Applying TQM to the construction industry. *The TQM Journal*, 10(9), pp. 52-60. 2014.
- Imamoglu, A., The Mediator Role of Learning Capability and Business Innovativeness between Total Quality Management and Financial Performance. *International Journal of Production Research*, Volume 12, pp. 563-578. 2019.
- Juanzon, N., Developing an Appropriate Performance Measurement Framework for Total Quality Management. *IRA-International Journal of Technology & Engineering*, Volume 7, pp. 60-81. 2018.
- Kantardjieva, K., The Relationship between Total Quality Management (TQM) and Strategic Management. *Journal of Economics, Business and Management*, Volume 3, pp. 538-546. 2015.
- Kentas, N., Total Quality Management Implementation Failure Reasons in Healthcare Sector. *Journal of Health Science*, Volume 8, pp. 110-116. 2015.
- Keskin, A., Factors Affecting the Adoption of E-EGovernment. *Qualitative Study. Electronic Journal of e-Government*, Volume 5, pp. 105-116. 2015.
- Kumar, A. A., Framework for Quality Improvement of Infrastructure Projects. *Journal of Civil Engineering and Architecture*, Volume 5, pp. 10-23. 2015.
- kumar, D., Study of Quality Management in SMME Industry. *International Journal of Innovative Research in Science, Engineering and Technology*, 11(1), pp. 26-43. 2018.
- Lin, W., Research on customer segmentation model by clustering. *Proceedings of the 7th international conference on Electronic commerce*, Volume 5, pp. 251-261. 2019.



- Maryani, K., Clustering and profiling of customers using RFM for customer relationship management recommendations. In *2017 5th International Conference on Cyber and IT Service Management (CITSM)*, Volume 5, pp. 54-68. 2013.
- MohamadDasuki, M., The Research Study in Quality Management for a Ship Construction Company. *International Journal of Science and Research (IJSR)*, Volume 12, pp. 56-71. 2013.
- Mohan, C., comparative study of causes of time overruns in South African Hotels. *International Journal of Project Management*, 15(3), pp. 55-63. 2016.
- Nahyana, M., Project Management, Infrastructure Development and Stakeholder Engagement. *A Case Study from South Africa*, 3(2), pp. 561-572.. 2019.
- Patil, A., RFM model for customer purchase behavior using K-Means algorithm. *Journal of African Business*, Volume 12, pp. 124-132. 2012.
- Prasad, M., Necessity of Quality Control in South African Pharmaceutical industry. *INDIAN JOURNAL OF RESEARCH*, 5(9), pp. 23-32. 2013.
- Saqhi, A., Study of Quality Management System in SMME International Research Journal of Engineering and Technology. *e-ISSN: 2395 -0056*, 2(2), pp. 462-467. 2017.
- Shams, H., Total Quality Management (TQM): Implementation in Primary Education System of Bangladesh. *International Journal of Research in Industrial Engineering. Quality in Higher Education*, Volume 1, pp. 250-263. 2016.
- Taiye, M., Strategic Imperatives of Total Quality Management and Customer Satisfaction in Organizational Sustainability. *International Journal of Academic Research in Business and Social Sciences*, Volume 5, pp. 10-21. 2015.
- Taşdemir, A., Üçüncü , B. & Baker, Q.-G., Total Quality Management, Corporate Social Responsibility and Performance in the Hotel Industry. *International Journal of Hospitality Management*, Volume 13, pp. 52-70. 2013.
- Thomas, M., Development and validation of a total quality management model for Uganda's local governments. *Cogent Business and Management*, Volume 9, pp. 1-15. 2015.

## **Biographies**

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