

THE USE OF THE EXCELLENCE EFQM MODEL IN THE HEALTHCARE SECTOR

Ikram Ahidar¹
Imadeddine Oubrahim
Forough Farhadi Cheshmeh Morvari

Received 11.02.2023.
Revised 02.05.2023.
Accepted 15.05.2023.

Keywords:

Literature review, organizational business excellence, quality management systems, EFQM, healthcare sector.

Original research



ABSTRACT

As the healthcare sector is under growing pressure to enhance patient outcomes and reduce costs, quality management systems are becoming increasingly essential to ensure high-quality care and efficient operations. The EFQM (European Foundation for Quality Management) model serves as a framework for assessing an organization's quality management system. This paper provides an overview of the implementation of EFQM in the healthcare sector based on the literature analysis. Findings revealed that the EFQM model is unsuitable for the hospital sector and needs to be customized before it can be used for practical application. In addition, the EFQM model can also be integrated into local, national, or international country-specific models. However, regarding the model's application sector, the EFQM model can be applied to any specialty (emergencies, medical services, primary care services, intensive care services, and so on). To the best of our knowledge, the proposed study is the first that sheds light on the importance of the integration and customization of the EFQM model when it is used in the healthcare sector by various case studies in the literature.

© 2023 Journal of Engineering, Management and Information Technology

1. INTRODUCTION

The healthcare sector is a critical sector that has a significant impact on individuals and communities worldwide (Burlea-Schiopoiu & Ferhati, 2020). As the demand for healthcare services continues to increase, there is a need for healthcare organizations to implement effective quality management systems (QMS) to enhance patient care outcomes, ensure patient safety, and improve operational efficiency. A robust QMS enables healthcare providers to identify and address potential risks and opportunities for improvement proactively (Rawshdeh et al., 2022). Furthermore, implementing a QMS can help healthcare organizations comply with regulatory requirements and achieve accreditation or certification, which can enhance their reputation and attract more patients. In

addition to implementing QMS, healthcare organizations can benefit from adopting business excellence models, such as the Baldrige Performance Excellence Framework (Garvin D., 1991), the Deming Model (Anderson et al., 1994) and the European Foundation for Quality Management (EFQM) Model (Calvo-Mora et al., 2015). They have been utilized worldwide to improve the quality of patient care and assess the performance of healthcare organizations (Antunes et al., 2023; Noronha et al., 2023).

The Baldrige Criteria for Excellence in Performance, or the American Model of Total Quality Management (TQM), was developed in response to a crisis in American competitiveness during the information age. Established by the United States Congress in 1987, the model has seven categories that provide strategic direction for the whole system. These categories include

¹ Corresponding author: Ikram Ahidar
Email: ikram.ahidar@gmail.com

leadership, strategic planning, customer and market focus, information and analysis, focus on human resources, management of business processes, and results. Over 60 national and regional awards use the Baldrige criteria as their framework (Garvin D., 1991). Second, the Deming Model (also known as the Japanese Model of TQM), has been in place since 1951, with the Japanese Union of Scientists and Engineers establishing the Deming Award to acknowledge contributions to quality and product. Rather than providing a structured framework for organizing and ranking criteria, the award assesses 10 criteria that carry equal weight. (Anderson et al., 1994). Finally, the EFQM Excellence Model, or the European model of TQM, is utilized as a foundation for good management practices and long-term sustainability. Although each organization is unique, the model offers a generic, non-prescriptive framework consisting of nine criteria that can be applied to any organization. While there are differences among these models of excellence, most of their objectives and criteria overlap (Heras-Saizarbitoria et al., 2011; Hosseini Ezzabadi, et al., 2015).

Several studies have compared these models, highlighting differences in their application category, criterion, scope of assessment, value, and concept (Bohoris, 1995; Doulatabadi & Yusof, 2018; Porter & Tanner, 2004; Vaxevanidis et al., 2006). Overall, different countries and regions have developed their own national models of excellence or have adopted established models of Total Quality Management (TQM), including the American, Japanese, and European models. A study conducted by Mohammad (2010) provides a summary of the situation regarding the Business Excellence Award and associated models in various regions and countries worldwide. Analysis of the data reveals that European countries tend to prefer the EFQM excellence model or models developed from it, while American countries lean toward the Baldrige criteria as their primary model for excellence, with many models being based on these criteria (Mohammad, 2010).

The EFQM model offers a holistic approach to evaluating healthcare organizational performance and management, including assessing the QMS (Bocoya-Maline et al., 2023). The EFQM model allows healthcare organizations to have a deeper understanding of their own progress through self-assessment (Bou-Llusar et al., 2009). This enables organizations to determine where they stand in their journey toward excellence and plan their next steps (Bocoya-Maline et al., 2023; Nicolaou & Kentas, 2017; Oubrahim et al., 2022a). EFQM has developed several tools to assist organizations in completing this process, ranging from a simple questionnaire to simulating an EFQM award evaluation. This approach prioritizes a customer-focused approach, continuous improvement, and stakeholder engagement. Selecting an appropriate model or benchmark allows healthcare organizations to improve their business excellence, enhance patient care outcomes, and ensure patient safety. By prioritizing

these objectives and choosing an appropriate model or benchmark, healthcare organizations can improve their overall performance and contribute to the advancement of the healthcare industry. This model also gives a guideline for organizations to establish an appropriate management system regardless of the sector, size, structure or maturity (Ahidar et al., 2018). It is a complete model that can be used either at the private sector or the public sector (Miralles, 2007). Based on the reasons cited above, the EFQM model was selected as the preferred model for the healthcare sector assessment.

In light of the ongoing COVID-19 pandemic, research efforts have increasingly focused on the healthcare sector. As such, the use of an excellence model such as EFQM in the healthcare sector has been chosen to be researched. The purpose of the paper is to provide an overview of how the EFQM model is used within the healthcare sector, as well as to examine feedback from those who have implemented the model in their own practices.

The remainder of this paper is structured as follows. Section 2 goes into the methodology employed to conduct the study. Section 3 includes the literature review. The findings and discussions are presented in Section 4. Finally, the summarized conclusion is discussed in Section 5.

2. RESEARCH METHODOLOGY

Given the critical nature of the healthcare sector, which strives to provide quality care that directly or indirectly impacts human lives, and the abundance of quality and excellence models, frameworks, and awards, the objective of this study is to investigate the utilization and advantages of the EFQM excellence model in healthcare. Specifically, the study aims to address the following research questions:

RQ1. How do decision-makers operating in the healthcare sector utilize the EFQM model?

RQ2. What are the benefits associated with the adoption of the EFQM model in the healthcare sector?

The present study focuses on articles published in the widely recognized academic databases, Elsevier and Emerald, which are widely used search tools in academia. While there are several databases available, these two were chosen due to their extensive coverage. However, it should be noted that this study is not quantitative in nature, and the objective is not to conduct an exhaustive analysis of all articles. The aim is qualitative, with the purpose of identifying key characteristics related to the application and use of the EFQM model in the healthcare sector. Only peer-reviewed journal articles were included in the study, and conference papers and unpublished works were excluded. The search terms "EFQM" and "HEALTH" were used in all texts, summaries, keywords, and titles. Review papers and case studies were considered in the

study, without any specific time frame. The search ended in April 2023, resulting in 864 articles in Emerald and 622 articles in Elsevier. After initial screening, a total of 140 articles were identified, which were then rigorously analyzed for practical application and use of the EFQM model. Finally, 50 articles were selected and analyzed using Excel to group the data by job description, place of application, country, methodology, and any integrated models. The steps of the study are summarized in Figure 1.

3. LITERATURE REVIEW

EFQM model and reported their strengths and weaknesses. They integrated the model with different tools and created "modules for excellences" based on the strengths and weaknesses. Others strengths and weaknesses were also identified in different studies (Naylor, 1999; Arcelay et al., 1999; Nabitz & Klazinga, 1999; Hayes, 2007; Ferrándiz-Santos et al., 2010), and several actions were proposed for implementation. PARETO has been used by different authors (Martínez, 2012) for prioritizing the essential key points, (del Río, et al., 2006) use the score achieved as an internal reference to monitor changes in the quality of service. (Holland & Fennell, 2000) have concluded that the

assessment tool generated useful discussion within hospitals and provided an opportunity for the teams to explore current issues relating to their services. Factors that managers take into consideration during the implementation process to let the EFQM model be an ideal tool for supporting the delivery of clinical governance are discussed in (Jackson, 2000; Escrig & de Menezes, 2016). The EFQM model has been used for both internal and external assessment by authors such as Nabitz and Walburg (2000), Moracho et al. (2001), Ugalde et al. (2001). Rodríguez-González et al. (2019). The assessment must be aligned with continuous improvement and repeated as necessary to follow the scores of the different criteria. (Favaretti et al., 2015), applied the model over ten years and demonstrated improvement in evaluation results. Barriers and difficulties encountered in the process of EFQM implementation are discussed (Moeller & Sonntag, 2001; Jackson & Bircher, 2002; Guven-Uslu, 2005; Ignacio et al., 2001; Stahr, 2001), mentions improvement of performance indicators such as the reduction of average length of stay for a dedicated hernia service. Simón et al. (2001) suggest that the EFQM vocabulary is not suitable for healthcare and should be integrated with the Joint Commission.

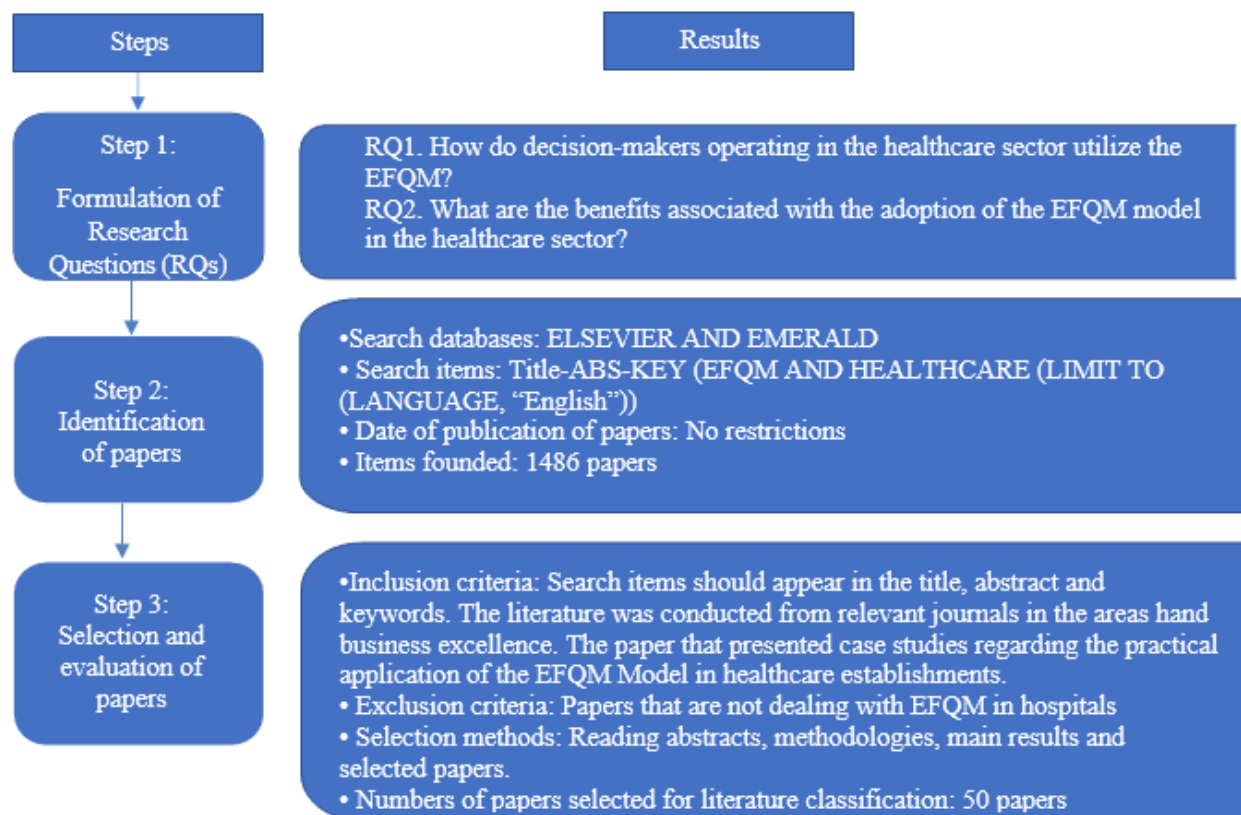


Figure 1. Research methodology

However, (Palacio et al., 2002), has translated it into clinical terms to make it understandable and easy for

users, and (Moreno-Rodríguez et al., 2013), has proposed a consensus support model based on linguistic

information to conduct the self-assessment. Several authors highlight the importance of not neglecting the link between strategic and operational levels in the application of the models and the implication of several levels of managers, (Sánchez et al., 2004; Rodríguez-Balo & Ferrándiz-Santos, 2004; Vakani et al., 2011; Verner, et al., 2007). Robles-García et al. (2005), used some factors of the EFQM relative to “people” to assess the satisfaction of hospital workers, (van Harten et al., 2002), underlined the positive effects both in the EFQM-score and the staff’s work satisfaction. The EFQM model has been applied, adapted and integrated by several authors in various contexts (Martínez-Rodríguez, 2008; Ayuso-Murillo et al., 2017; Ahidar et al., 2019; Mishra et al., 2018; Palani Natha Raja et al., 2007; Emilio Pariente, 2003; Oliver, 2005; Harr, 2001). Miralles (2011) has tested the model before applying it to validate it. Manzanera et al. (2014) used the model to evaluate previous approaches in literature. (Bartolomé-Benito et al., 2017) proposed the use of the balanced scorecard as a dashboard to display all the indicators based on the EFQM. (Jackson & Morgan, 2007) used the RADAR approach for the application of the EFQM.

Regarding the strengths of the EFQM model, (Stewart, 2003) found that the “customers” result showed a high level of customer awareness, customer satisfaction, and generic training. (Saz Moreno et al., 2007) found strengths in processes and people. (Fariñas-Álvarez et al., 2008) used the EFQM model to benchmark different hospitals, identifying good practices in hospitals within the national health system.

Moreover, some authors have used the EFQM model for specific activities or objectives. For instance, Mateo et al. (2009) used the EFQM for the unit security plan, while Mingo-Gómez et al. (2012) and Hashemy et al. (2016) used the model for measuring the satisfaction of personnel and human empowerment. Additionally, and de la Fuente Rodríguez et al. (2013) and Saura et al. (2014) used the model to measure patient safety.

4. FINDINGS AND DISCUSSIONS

According to the analysis, the EFQM model has been employed across various sectors, particularly in healthcare. The way in which this model is utilized varies depending on the requirements of managers. On one hand, some healthcare organizations integrate the EFQM model with other standards or models, while on the other hand, some prefer to use it independently but adjusted to suit their operations. Findings revealed that there is a little difference between the numbers of papers per publisher (Figure 2).

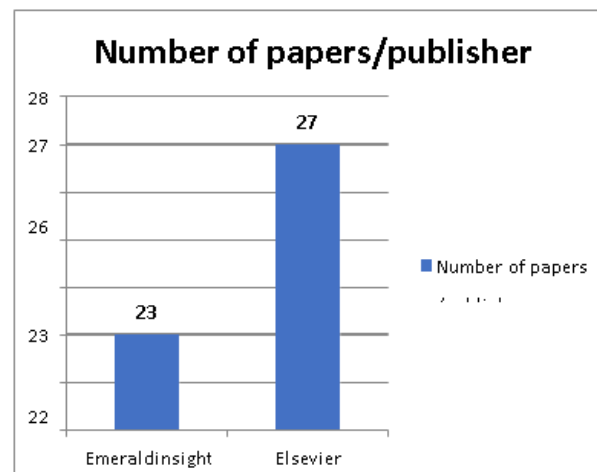


Figure 2. Number of papers per publisher

Furthermore, the results showed that the first articles that deal with the application of the model appeared in 1998/ 1999, this can be explained by the fact that the EFQM model was developed in 1992 and began to be applied in the late nineties (Figure 3).

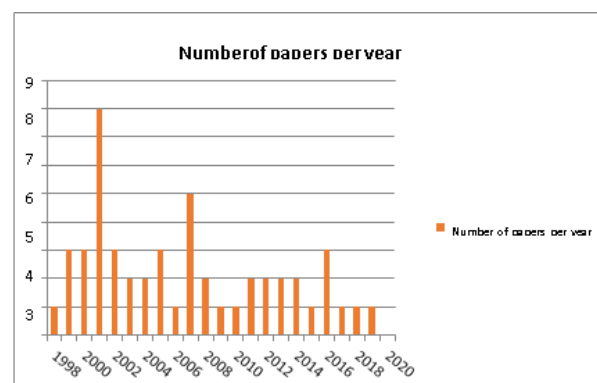


Figure 3. Number of papers per year

Indeed, in 1999, the EFQM launched the revision of the model and created the network of partners.

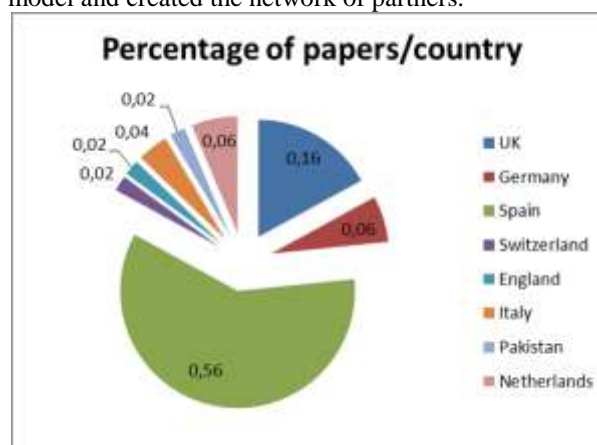


Figure 4. Percentage of papers per country

The year 2001 saw a high number of publications; this is explained by the launch of the levels of excellence in 2001 by the European Foundation for Quality Management.

The EFQM model is more widespread in Europe. For the 50 papers filtered, the EFMQ was applied in different countries (Figure 4) such as: Spain, Germany, UK, Netherlands ...The most of the papers are located in Spain (56 %).

Institutions prefer to integrate the EFQM model with other models or to apply it on its own (Figure 5). 28 studies were applied without integration into other models, 22 studies were integrated into different models in particular sectoral and national models specific to the countries where the model was applied. Only 2 studies have integrated the EFQM model with ISO family, this is explained by the fact that hospitals do not have the obligation to be ISO certified unlike the automotive sector where customers require certification IATF 16949 (before ISO TS 16949).

45 studies have adapted the model to the activity before applying it because terminology is important and make the self-assessment easy to understand. The authors find that the EFQM model is not suitable for the hospital sector and must be personalized before the use in order to be effective.

The healthcare sector has some unique characteristics that distinguish it from other industries. Healthcare organizations have to deal with complex patient needs, high levels of risk and uncertainty, and a range of stakeholders with competing interests.

Therefore, to effectively apply the EFQM model to the healthcare sector, it needs to be adapted to address the specific challenges and requirements of healthcare organizations. For instance, the EFQM model should incorporate the values of patient-centered care and the importance of involving patients and their families in decision-making processes.

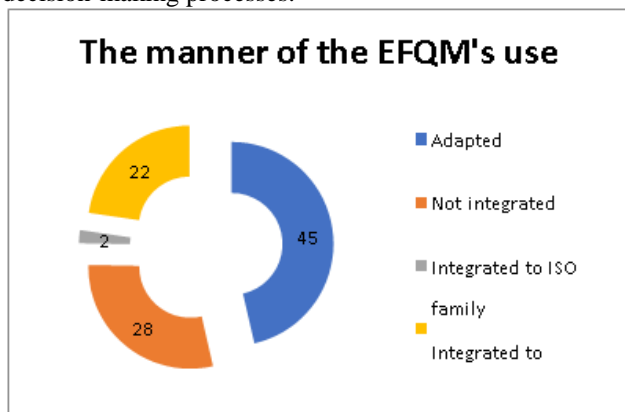


Figure 5. The manner of the EFQM's use

Additionally, healthcare organizations need to take into account the regulatory requirements and standards that govern the industry, such as those related to patient safety, privacy, and confidentiality. Therefore, the EFQM model needs to be aligned with these regulations and standards to ensure compliance and enhance the overall quality of care.

In conclusion, the EFQM model can be a valuable tool for healthcare organizations to improve their performance and enhance the quality of care they provide. However, to be effective in this sector, the model needs to be adapted to address the unique characteristics and requirements of healthcare organizations.

Regarding the sector of application of the model, the model has been applied to different specialties:

- Emergencies (Moreno-Rodríguez et al., 2013)
- Internal medicine (Martínez, 2012)
- Primary care services (Emilio Pariente, 2003)
- Intensive care services (Saura et al., 2014)
- Dental practice (Vakani et al., 2011)
- Pharmacy (Rodríguez-González et al., 2019)
- Acute care (Möller & Sonntag, 1998)
- Service unit Rehabilitation (Möller & Sonntag, 1998)
- Mental health (Holland & Fennell, 2000)
- Learning disability (Holland & Fennell, 2000)
- Forensics (Holland & Fennell, 2000)
- Anti addiction center (Nabitz & Walburg, 2000)
- Maternity (Ignacio et al., 2001)
- Oncology (del Ríoa, et al., 2006)
- Coronary heart disease services (Jackson & Morgan, 2007)
- Hospitalization zone (Saura et al., 2014)
- Surgical area (Saura et al., 2014)
- Intensive medicine service (Saura et al., 2014)
- Diabetic service (Mishra et al., 2018) and others.

All the experiences (100%) show positive feedback on using the EFQM model on healthcare sector, because it a suitable tool that shows the strengths and weaknesses of any organization (hospital, primary care...) and specialties.

The studies that have been adapted the model suggest that the EFQM is more effective when it is adapted and integrated with others standards.

The EFQM was integrated to different tools, models or standards. Sometimes it is integrated or combined with one other standard, two or more depending on the need and the objective of the establishment. The different techniques, methods or tools that were used with the model EFQM can be classified in two categories: local and national or international (Table 1).

The table 1 shows that the model EFQM can be integrated with various models, techniques local, national and international.

The scorecard is the most used tool in our case (three studies), because of the common points that exist between EFQM and BSC. In fact, the axis of the BSC: financial, customer process, education and growth are included in the EFQM which will make the integration easier.

Table 1. The methods and techniques combined with the EFQM in literature in healthcare sector

Local and national	International
PUACS (Preparation-Undertake-Analyze-Correct-Sustain) (Mingo-Gómez et al., 2012)	SWOT (Rodríguez-González et al., 2019)
CPC (Contrato Programa de Centro) (Bartolomé-Benito et al., 2017)	BALANCED SCORE CARD (Rodríguez-González et al., 2019)
The approach of LOPEZ-FRESNO (Manzanera et al., 2014)	SURVEYS (Rodríguez-González et al., 2019)
Consensus support model based on linguistic information (Moreno-Rodríguez et al., 2013)	AHP (Mingo-Gómez et al., 2012)
JCI (Joint Commission International) (Miralles, 2011)	FOCUS GROUP (Mingo-Gómez et al., 2012)
the Catalan Institute of Health (Miralles, 2011)	DMAIC (Mingo-Gómez et al., 2012)
EET (los ejes transversales) (Ferrándiz-Santos et al., 2010)	6 SIGMA (Mingo-Gómez et al., 2012)
Key indicators of the Spain National health system (Martínez-Rodríguez, 2008)	BSC (Bartolomé-Benito et al., 2017)
The APEX PH (Assessment Protocol for Excellence in Public Health). (Oliver, 2005)	SCORECARD (Saura et al., 2014 ; Rodríguez-Balo & Ferrándiz-Santos, 2004)
(NPHPSP) National Public Health Performance Standards Program (Oliver, 2005)	MBNQA (Martínez-rodríguez, 2008; Palani Natha Raja et al., 2007)
The personal satisfaction survey (Robles-García et al., 2005)	kanji Business Excellence Model (Palani Natha Raja et al., 2007)
Receptive context of change model (Güven-Uslu, 2005)	TQM (Saz Moreno et al., 2007)
Model GIB (General, Integrativo y Básico) (Rodríguez-Balo & Ferrándiz-Santos, 2004)	DELPHI (Moreno-Rodríguez et al., 2013 ; Oliver, 2005)
BASAM (van Harten et al., 2002)	PARETO (Martínez, 2012)
The model of Lorenzo (Palacio et al., 2002)	modèle Hoshin Kanri (Rodríguez-Balo & Ferrándiz-Santos, 2004)
ACE (Accountability, Culture, Effectiveness) (Holland & Fennell, 2000)	Matrix chart (Möller & Sonntag, 1998)
INK Model (Institute of Dutch Quality model) (Nabitz & Klazinga, 1999)	

5. CONCLUSION

The proposed study has demonstrated that the EFQM model is highly recommended for the hospital sector, as it provides managers with insights into the strengths and weaknesses of their organization. However, for an effective implementation, it is advisable to adapt or integrate the model with other relevant techniques, standards or methodologies that managers consider useful. Our research has reviewed various models that have been successfully integrated with the EFQM in literature, which can serve as a source of inspiration for professionals and researchers.

To ensure a successful implementation, it is important to prepare an adapted or integrated EFQM model that is well-structured and based on validated methodologies or approaches published in literature. This will enable an easy, efficient and optimal implementation process.

Nonetheless, the implementation of an integrated EFQM model must also take into account the potential obstacles and challenges that have been highlighted in the literature. For instance, there is a risk of neglecting the importance of a critical variable, as well as a lack of communication and competent resources. Therefore, these potential issues should be addressed in the

planning phase to ensure the success of the integrated system. Furthermore, it is important to note that the implementation of an integrated EFQM model should be viewed as an ongoing process rather than a one-time event. Managers must continuously monitor and evaluate the system to identify areas that require improvement and make necessary adjustments. This ensures that the system remains relevant and effective in the constantly evolving healthcare landscape.

In addition, involving all stakeholders in the implementation process is crucial (Oubrahim & Sefiani, 2022; Oubrahim et al., 2023; Oubrahim et al., 2022a; Oubrahim et al., 2022b; Oubrahim et al., 2022c). This includes not only managers but also staff, patients, and other external stakeholders such as regulatory bodies. Their feedback and insights can provide valuable perspectives that can be incorporated into the integrated EFQM model.

Finally, it is essential to ensure that the implementation of an integrated EFQM model is aligned with the organization's overall goals and objectives. This will ensure that the system is integrated seamlessly into the existing structure and processes, and contributes towards achieving the desired outcomes.

References:

- Ahidar, I., Sarsri, D., & Sefiani, N. (2018). Hybrid self-assessment drives quality improvement at auto parts manufacturer. *Global Business and Organizational Excellence*, 37(4), 27–36.
- Ahidar, I., Sarsri, D., & Sefiani, N. (2019). Approach to integrating management systems: Path to excellence application for the automotive sector using SYSML language. *The TQM Journal*. Retrieved January 11, 2019, from DOI: 10.1108/TQM-02-2018-0025
- Anderson, J. C., Rungtusanatham, M., & Schroeder, R. G. (1994). A theory of quality management underlying the Deming management method. *Academy of management Review*, 19(3), 472–509.
- Antunes, J., Hadi-Vencheh, A., Jamshidi, A., Tan, Y., & Wanke, P. (2023). TEA-IS: A hybrid DEA-TOPSIS approach for assessing performance and synergy in Chinese health care. *Decision Support Systems*, 113916.
- Arcelay, A., Sánchez, E., Hernández, L., Inclán, G., Bacigalupe, M., Letona, J., María González, R., et al. (1999). Self-assessment of all the health centres of a public health service through the European Model of Total Quality Management. *International Journal of Health Care Quality Assurance*, 12(2), 54–59.
- Ayuso-Murillo, D., de Andrés-Gimeno, B., Noriega-Matanza, C., López-Suárez, R. J., & Herrera-Peco, I. (2017). Quality management, a directive approach to patient safety. *Enfermería Clínica (English Edition)*, 27(4), 251–255.
- Bartolomé-Benito, E., Jiménez-Carramiñana, J., Sánchez-Perruca, L., Bartolomé-Casado, M. S., Dominguez-Mandueño, A. B., Martí-Argandoña, M., ... & Miquel-Gómez, A. (2017). Desarrollo y evolución de un cuadro de mando integral en atención primaria: lecciones aprendidas. *Revista de Calidad Asistencial*, 32(1), 40–49.
- Bocoya-Maline, J., Rey-Moreno, M., & Calvo-Mora, A. (2023). The EFQM excellence model, the knowledge management process and the corresponding results: An explanatory and predictive study. *Review of Managerial Science*. Retrieved April 30, 2023, from <https://link.springer.com/10.1007/s11846-023-00653-w>
- Bohoris, G. A. (1995). A comparative assessment of some major quality awards. *International Journal of Quality & Reliability Management*, 12(9), 30–43.
- Bou-Llusar, J. C., Escrig-Tena, A. B., Roca-Puig, V., & Beltrán-Martín, I. (2009). An empirical assessment of the EFQM Excellence Model: Evaluation as a TQM framework relative to the MBNQA Model. *Journal of Operations Management*, 27(1), 1–22.
- Burlea-Schiopoiu, A., & Ferhati, K. (2020). The Managerial Implications of the Key Performance Indicators in Healthcare Sector: A Cluster Analysis. *Healthcare*, 9(1), 19.
- Calvo-Mora, A., Navarro-García, A., & Periañez-Cristobal, R. (2015). Project to improve knowledge management and key business results through the EFQM excellence model. *International Journal of Project Management*, 33(8), 1638–1651.
- de la Fuente Rodríguez, J. M., García, E. I., Aguado, O. R., Benitez, G. R., Salado, J. S., & Fernández, R. C. (2013). La seguridad en los cuidados de los pacientes en las emergencias extrahospitalarias. *Revista de Calidad Asistencial*, 28(2), 117–123.
- del Ríoa, M. P., Feliu, J., Roch, I., Sánchez, A., Ordóñez, A., García-Caballero, J., & González-Barón, M. (2006). Aplicación del modelo europeo de calidad en oncología. *Revista clinica espanola*, 206(3), 129–136.
- Doulatabadi, M., & Yusof, A. (2018). Self-Assessment and Quality Awards Models: A review of practice and process.
- Emilio Pariente. (2003). Experiencia de autoevaluación con el modelo europeo de excelencia en la gerencia de atención primaria Torrelavega-Reinosa. *Rev Calidad Asistencial*, 18(6), 369–78.
- Escrig, A. B., & de Menezes, L. M. (2016). What is the effect of size on the use of the EFQM excellence model? *International Journal of Operations & Production Management*, 36(12), 1800–1820.
- Fariñas-Álvarez, C., Ansorena-Pool, L., Álvarez-Díez, E., Herrera-Carral, P., Valdor-Arriarán, M., Piedra-Antón, L., Díaz-Mendi, A. R., et al. (2008). ¿Es posible unared de benchmarking entre hospitales públicos? Proceso de creación de la Red. 7. *Revista de Calidad Asistencial*, 23(5), 199–204.
- Favaretti, C., De Pieri, P., Torri, E., Guarrera, G., Fontana, F., Debiasi, F., & Flor, L. (2015). An EFQM excellence model for integrated healthcare governance. *International Journal of Health Care Quality Assurance*, 28(2), 156–172.
- Ferrándiz-Santos, J., Lorenzo-Martínez, S., Navarro-Royo, C., Alguacil-Pau, A. I., Morón-Merchante, J., & Pardo-Hernández, A. (2010). Utilización de los ejes transversales del modelo EFQM en el ámbito sanitario público. *Revista de Calidad Asistencial*, 25(3), 120–128.
- Garvin D. (1991). How the Baldrige award really works. *Harvard Business Review*, 6(69), 80–93.
- Guven-Uslu, P. (2005). Benchmarking in health services. *Benchmarking: An International Journal*, 12(4), 293–309.
- Harr, R. (2001). TQM in dental practice. *International Journal of Health Care Quality Assurance*, 14(2), 69–81.
- Hashemy, S. H., Yousefi, M., Soodi, S., & Omid, B. (2016). Explaining Human Resource Empowerment Pattern and Organizational Excellence among Employees of Emergency of Guilan's University Hospitals. *Procedia—Social and Behavioral Sciences*, 230, 6–13.

- Hayes, S. (2007). Reviewing and improving a clinical effectiveness department's quality assurance model: Lessons learned. *International Journal of Health Care Quality Assurance*, 20(3), 264–272.
- Heras-Saizarbitoria, I., Casadesús, M., & Marimón, F. (2011). The impact of ISO 9001 standard and the EFQM model: The view of the assessors. *Total Quality Management & Business Excellence*, 22(2), 197–218.
- Holland, K., & Fennell, S. (2000). Clinical governance is “ACE” – using the EFQM Excellence Model to support baseline assessment. *International Journal of Health Care Quality Assurance*, 13(4), 170–177.
- Hosseini Ezzabadi, J., Dehghani Saryazdi, M., & Mostafaeipour, A. (2015). Implementing Fuzzy Logic and AHP into the EFQM model for performance improvement: A case study. *Applied Soft Computing*, 36, 165–176.
- Ignacio, E., Rodríguez-Cornejo, M. J., López-Sánchez, A., Cruzado, M. D., Martínez-Mora, M., Arriaga, E., Carnicer, I., et al. (2001). Un modelo de Gestión de la Calidad Total para la enfermería hospitalaria. *Revista de Calidad Asistencial*, 16(4), 234–242.
- Jackson, S. (2000). Achieving clinical governance in Women's Services through the use of the EFQM Excellence Model. *International Journal of Health Care Quality Assurance*, 13(4), 182–190.
- Jackson, S., & Bircher, R. (2002). Transforming a run down general practice into a leading edge primary care organisation with the help of the EFQM excellence model. *International Journal of Health Care Quality Assurance*, 15(6), 255–267.
- Jackson, S., & Morgan, G. (2007). Change of heart: How a team of North Kirklees Primary Care Trust clinicians used performance management principles to improve coronary heart disease services. (K. Hurst, Ed.) *International Journal of Health Care Quality Assurance*, 20(1), 61–76.
- Manzanera, R., Jardí, J., Gomila, X., RamónPastor, J., Ibáñez, D., Gálvez, G., Albertí, C., et al. (2014). Design of an integrated management system (IMS) in a government-run medical evaluation organisation. *The TQM Journal*, 26(6), 550–565.
- Martínez, J. A. A. (2012). Gestión de Calidad en Medicina Interna. Desde Pareto al EFQM. *Medicina Clinica*, 138(7), 306–311.
- Martínez-Rodríguez, R. (2008). Cuestionario de evaluación de la calidad asistencial en un servicio de urgencias urológicas. *Actas urológicas españolas*, 32(7), 717–721.
- Mateo, J. M. M., de la Fuente, Á. S.-V., & Borrego, M. V. (2009). Estrategia de implantación y evaluación de una unidad funcional de gestión de riesgos sanitarios en un área de atención primaria es crucial para garantizar la seguridad de los pacientes. *Revista de Calidad Asistencial*, 24(3), 95–103.
- Mingo-Gómez, M. T., Navas-Cámara, F. J., Bayona-Marzo, I. A., Pérez-Gallardo, L., & Fernández-Pérez, O. J. (2012). Satisfacción laboral del fisioterapeuta en la sanidad pública de Castilla y León. *Fisioterapia*, 34(6), 251–256.
- Miralles, J. D. (2011). El modelo de acreditación del Departament de Salut de Catalunya: Un modelo para atención primaria. *Rehabilitación*, 45, 72–80.
- Miralles, J. D. (2007). Comparativa de 3 modelos de gestión de calidad: EFQM, ISO, JCAHO. *FMC-Formación Médica Continuada en Atención Primaria*, 14(6), 328–332.
- Mishra, V., Samuel, C., & Sharma, S. K. (2018). Supply chain partnership assessment of a diabetes clinic. *International Journal of Health Care Quality Assurance*, 31(6), 646–658.
- Moeller, J., & Sonntag, A. K. (2001). Evaluation of health services organisations – German experiences with the EFQM excellence approach in healthcare. *The TQM Magazine*, 13(5), 361–367.
- Mohammad, M. (2010). National Quality/Business Excellence Awards in different countries. Retrieved from <http://www.nist.gov/>
- Möller, J., & Sonntag, H. (1998). Systematic analysis and controlling of health care organisations lead to numerical health care improvements. *Health Manpower Management*, 24(5), 178–182.
- Moracho, Ó., Colina, A., Amondarain, M. Á., Aguirre, L., Ruiz-Álvarez, E., & Salgado, M. V. (2001). Experiencia práctica del proceso de evaluación externa con el Modelo de Excelencia de la EFQM en el Hospital de Zumárraga. *Revista de Calidad Asistencial*, 16, 322–329.
- Moreno-Rodríguez, J. M., Cabrerizo, F. J., Pérez, I. J., & Martínez, M. A. (2013). A consensus support model based on linguistic information for the initial-self assessment of the EFQM in health care organizations. *Expert Systems with Applications*, 40(8), 2792–2798.
- Nabitz, U. W., & Walburg, J. A. (2000). Addicted to quality – winning the Dutch Quality Award based on the EFQM Model. *International Journal of Health Care Quality Assurance*, 13(6), 259–265.
- Nabitz, U. W., & Klazinga, N. S. (1999). EFQM approach and the Dutch Quality Award. *International Journal of Health Care Quality Assurance*, 12(2), 65–71.
- Naylor, G. (1999). Using the Business Excellence Model to develop a strategy for a healthcare organisation. *International Journal of Health Care Quality Assurance*, 12(2), 37–45.
- Nicolaou N., & Kentas, G. (2017). Total Quality Management Implementation Failure Reasons in Healthcare Sector. *J. of Health Science*, 5(2). Retrieved April 30, 2023, from <http://www.davidpublisher.org/index.php/Home/Article/index?id=30113.html>

- Noronha, A., Bhat, S., Gijo, E. V., Antony, J., Laureani, A., & Laux, C. (2023). Performance and service quality enhancement in a healthcare setting through lean six sigma strategy. *International Journal of Quality & Reliability Management*, 40(2), 365–390.
- Oliver, J. G. (2005). Calidad en salud pública. *Gaceta Sanitaria*, 19(4), 325–332.
- Oubrahim, I., & Sefiani, N. (2022). Supply chain performance measurement systems: Benefits and drawbacks. *International Journal of Latest Engineering and Management Research (IJLEMR)*, 7(9), 24–28.
- Oubrahim, I., Sefiani, N., & Happonen, A. (2022a). Supply chain performance evaluation models: a literature review. *Actalogistica*, 9(2), 207–221.
- Oubrahim, I., Sefiani, N., Happonen, A., & Savastano, M. (2022b). Sustainable supply chain performance evaluation: An empirical study using Best Worst Method. 2022 International Interdisciplinary Humanitarian Conference for Sustainability (IIHC) (pp. 1184–1190). Presented at the 2022 International Interdisciplinary Humanitarian Conference for Sustainability (IIHC), Bengaluru, India: IEEE. Retrieved March 29, 2023, from <https://ieeexplore.ieee.org/document/10059815/>
- Oubrahim, I., Sefiani, N., Quattrociochi, B., & Savastano, M. (2022c). Assessing the relationships among digitalization, sustainability, SC integration, and overall supply chain performance: A Research Agenda. 2022 14th International Colloquium of Logistics and Supply Chain Management (LOGISTQUA) (pp. 1–6). Presented at the 2022 14th International Colloquium of Logistics and Supply Chain Management (LOGISTQUA), EL JADIDA, Morocco: IEEE. Retrieved November 17, 2022, from <https://ieeexplore.ieee.org/document/9938110/>
- Oubrahim, I., Sefiani, N., & Happonen, A. (2023). The Influence of Digital Transformation and Supply Chain Integration on Overall Sustainable Supply Chain Performance: An Empirical Analysis from Manufacturing Companies in Morocco. *Energies*, 16(2), 1004.
- Palani Natha Raja, M., Deshmukh, S. G., & Wadhwa, S. (2007). Quality award dimensions: A strategic instrument for measuring health service quality. *International Journal of Health Care Quality Assurance*, 20(5), 363–378.
- Palacio, F., Pascual, I., & Daniel, J. (2002). Modelo europeo de excelencia. Aplicación en primaria de un modelo adaptado: resultados. *Revista de Calidad Asistencial*, 17(2), 87–92.
- Porter L.J. & Tanner S.J. (2004). Overview of the national and international quality awards. Assessing Business Excellence (pp. 65–89). Elsevier. Retrieved October 24, 2018, from <http://linkinghub.elsevier.com/retrieve/pii/B9780750655170500079>
- Rawshdeh, M., Keathley, H., Obeidat, S., Athamenh, R., Tanash, M., & Bani Hani, D. (2022). Factor Analysis of Quality Management Systems Implementation in Healthcare: An Online Survey. *Healthcare*, 10(10), 1828.
- Robles-García, M., Dierssen-Sotos, T., Martínez-Ochoa, E., Herrera-Carral, P., Díaz-Mendi, A. R., & Llorca-Díaz, J. (2005). Variables relaciona das con la satisfacción laboral: Un estudio transversal a partir del modelo EFQM. *Gacetasanitaria*, 19, 127–134.
- Rodríguez-Balo, A., & Ferrándiz-Santos, J. (2004). Integración del Modelo EFQM y el despliegue Hoshin Kanri en un área de atención primaria. *Revista de Calidad Asistencial*, 19(1), 45–52.
- Rodríguez-González, C. G., Sarobe-González, C., Durán-García, M. E., Mur-Mur, A., Sánchez-Fresneda, M. N., Pañero-Taberna, M. de las M., Pla-Mestre, R., et al. (2019). Use of the EFQM excellence model to improve hospital pharmacy performance. *Research in Social and Administrative Pharmacy*, 16(5), 710–716.
- Sánchez, E., Darpón, J., Garay, J. I., Letona, J., González, R., & José Pérez, M. (2004). Política de calidad en Osakidetza-Servicio Vasco de Salud. *Revista de Calidad Asistencial*, 19(3), 189–199.
- Saura, R. M., Moreno, P., Vallejo, P., Oliva, G., Álava, F., Esquerra, M., Davins, J., et al. (2014). El equipo de expertos está trabajando en el diseño, implantación y evaluación de un modelo de gestión de la seguridad del paciente en varios hospitales de Cataluña.. *Medicina Clínica*, 143, 48–54.
- Saz Moreno, V. del, Blanco Canseco, J. M., Revuelta Alonso, A., Tapias Merino, E., Parrilla Martínez, M., & Esponera Román, P. (2007). La evaluación de la organización de un equipode Atención Primaria a través del modelo European Foundation for Quality Management de Excelencia. *Semergen, Soc. Esp. Med. Rural Gen. (Ed. Impr.)*, 113–118.
- Simón, R., Guix, J., Nualart, L., M. Surroca, R., & Carbonell, J.-M. (2001). Utilización de modelos comoherramienta de diagnóstico y mejora de la calidad: EFQM y Joint Commission. *Revista de Calidad Asistencial*, 16, 308–312.
- Stahr, H. (2001). Developing a culture of quality within the United Kingdom healthcare system. *International Journal of Health Care Quality Assurance*, 14(4), 174–180.
- Stewart, A. (2003). An investigation of the suitability of the EFQM Excellence Model for a pharmacy department within an NHS Trust. *International Journal of Health Care Quality Assurance*, 16(2), 65–76.
- Ugalde, M., Sierra, F., & Pardo, P. (2001). El proceso de evaluaciónexterna de las organizaciones que se presentan a los reconocimientosbasados en el Modelo de Excelencia de la EFQM. *Revista de Calidad Asistencial*, 16, 330–338.
- Vakani, F., Fatmi, Z., & Naqvi, K. (2011). Three-level quality assessment of a dental hospital using EFQM. *International Journal of Health Care Quality Assurance*, 24(8), 582–591.

- vanHarten, W. H., Casparie, T. F., & Fisscher, O. A. (2002). The evaluation of the introduction of a quality management system: A process-oriented case study in a large rehabilitation hospital. *Health Policy*, 60(1), 17–37.
- Vaxevanidis, N. M., Krivokapic, Z., Stefanatos, S., Dasic, P., & Petropoulos, G. (2006). An overview and a comparison of ISO 9000: 2000 quality system standards with related automotive ones (QS9000, ISO/TS 16949) and TQM models (MBNQA and EFQM). *Annals of the Faculty of Engineering Hunedoara*, IV(2), 155–166.
- Vernero, S., Nabitz, U., Bragonzi, G., Rebelli, A., & Molinari, R. (2007). A two-level EFQM self-assessment in an Italian hospital. *International Journal of Health Care Quality Assurance*, 20(3), 215–231.

Ikram Ahidar

University Hospital Center
IbnSina Rabat,
Rabat, Morocco

ikram.ahidar@gmail.com

ORCID: 0000-0002-3538-3895

Imadeddine Oubrahim

University Abdelmalek Essaïdi,
Tétouan,
Morocco

[imadeddine.oubrahim@](mailto:imadeddine.oubrahim@etu.uae.ac.ma)

etu.uae.ac.ma

ORCID: 0000-0003-2060-2546

**Forough Farhadi Cheshmeh
Morvari**

Sapienza University Di Roma,
Roma, Italy

[Farhadicheshmehmorvari.1990200](mailto:Farhadicheshmehmorvari.1990200@studenti.uniroma1.it)

@studenti.uniroma1.it
