

Robotic Solutions Business Unit Global Quality Management Systems

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1 Introduction

1.1 Background and Problem Statement

In today's increasingly complex and fast-paced industrial landscape, maintaining high-quality standards across globally distributed operations has become a critical challenge. Quality Management Systems (QMS) have traditionally served as structured frameworks for ensuring product and process conformity, customer satisfaction, and regulatory compliance. However, conventional QMS approaches, often reliant on static documentation, manual processes, and localized systems, are increasingly misaligned with the dynamic demands of modern business environments. As globalization, technological innovation, and digital interconnectivity reshape industrial ecosystems, organizations are compelled to rethink their quality management strategies and tools.

Industry 4.0 has introduced a new wave of possibilities for modernizing QMS through digital technologies such as cloud-based platforms, automation, artificial intelligence (AI), and real-time data analytics. These innovations offer the potential to enhance traceability, responsiveness, and cross-functional collaboration while reducing operational inefficiencies and human error. Within this context, the concept of Quality 4.0 has emerged, advocating for the integration of digital tools into quality management practices to drive continuous improvement, smarter decision-making, and systemic resilience. While many theoretical frameworks exist, a gap exists in understanding how such transformations unfold in practice, particularly within multinational organizations operating across diverse cultural and operational contexts.

1.2 Motivation and Relevance

Despite growing interest in Quality 4.0, many organizations, particularly those operating across multiple countries and business units, continue to encounter substantial obstacles to effective digital QMS adoption. Fragmented systems, inconsistent workflows, and resistance to standardization often hinder cross-functional collaboration and strategic decision-making. The practical implications of these challenges are especially evident in complaint handling processes, where a lack of visibility and integration can result in delayed identification of the underlying causes and reduced customer satisfaction.

This thesis is motivated by the need to better understand how digital platforms can address such challenges in real-world, globally distributed industrial settings. By examining the implementation of a Salesforce-based QMS within BizLink's RS BU, the study aims to uncover not only the technical potential of digital tools, but also the organizational, cultural, and procedural factors that influence their success. The RS BU provides a particularly relevant context due to its rapid growth, global footprint, and strategic emphasis on operational excellence.

1.3 Research Questions

The primary objective of this research is to investigate how digital technologies can be leveraged to modernize and harmonize quality management processes across globally distributed business units. By analyzing the design and implementation of a Salesforce-based QMS within the RS BU, the study aims to identify not only the technical and process-oriented solutions, but also the organizational and cultural conditions that shape the success of such initiatives. To structure this investigation, the thesis addresses the following core research questions:

RQ1: *What are the key limitations of traditional QMS approaches in dynamic, global business environments?*

This question explores the structural and operational challenges of conventional QMS models, particularly in contexts where rapid adaptation, cross-entity collaboration, and real-time responsiveness are required.

RQ2: *What role do digital technologies, such as cloud platforms, automation, and AI, play in transforming and modernizing quality management systems?*

The goal here is to understand how digital tools can overcome traditional limitations, and what specific functionalities, such as dashboards, automation, escalation matrices, contribute to enhanced efficiency, traceability, and decision-making.

RQ3: *To what extent does the integration of Quality 4.0 principles support continuous improvement and decision-making in quality management?*

This question examines how emerging paradigms like Quality 4.0, which emphasize data-driven improvement, systems integration, and agile responsiveness, can be effectively translated into practice, and what barriers may hinder their realization.

By answering these questions, the thesis aims to generate insights that are both theoretically grounded and practically applicable for organizations undertaking similar digital quality management transformations.

1.4 Thesis Structure

This thesis is structured into eight chapters. Chapter 1 presents the problem statement, research motivation, and guiding research questions. Chapter 2 reviews the theoretical foundations and current state of the literature on traditional and digital QMS, with a particular focus on Quality 4.0. Chapter 3 outlines the research methodology, while Chapter 4 includes the case study design and the survey instrument. Chapter 5 presents the conceptual development of the digital QMS and supporting tools, while Chapter 6 details the implementation process and practical outcomes. Chapter 7 discusses the key findings in light of the research questions, integrating both theoretical and practical insights. Chapter 8 reflects on the limitations of the study and outlines directions for future research. Chapter 9 concludes the thesis by summarizing the key findings, reflecting on the research contribution, and offering a final outlook.

9 Conclusions

This thesis explored the digital transformation of QMS within dynamic, globally distributed industrial environments, using the BizLink RS BU as a case study. It aimed to understand the limitations of traditional QMS approaches, the role of digital technologies in overcoming these barriers, and the organizational conditions necessary to support sustainable quality improvements under the Quality 4.0 paradigm.

The findings demonstrate that while traditional QMS frameworks provide structure, they are often constrained by fragmentation, manual workflows, and limited scalability. The case study of RS BU revealed substantial disparities in complaint handling processes, documentation tools, and escalation procedures across its entities, challenges that severely undermined traceability, efficiency, and cross-entity learning.

Implementing a Salesforce-based QMS helped address these limitations through standardized workflows, centralized data access, and real-time performance monitoring. Agile development methods, stakeholder engagement, and structured change management proved essential for successful adoption across culturally diverse entities. However, partial automation, rigid access roles, and resistance to standardization emerged as persistent challenges. Survey results further echoed these concerns, suggesting that digital readiness, user acceptance, and organizational alignment remain key barriers to transformation.

Despite methodological and contextual limitations, this research provides both practical and theoretical contributions by bridging Quality 4.0 principles with real-world implementation challenges. It offers actionable recommendations for organizations aiming to modernize their QMS, emphasizing the importance of user-centric design, agile execution, and strategic alignment. As businesses face increasing complexity, the evolution of QMS toward scalable, intelligent platforms will be essential. This thesis affirms that the integration of digital tools, when coupled with human-centric and process-driven strategies, can significantly enhance quality performance and long-term organizational resilience.