Bridging the TQM Paradox in Algerian SMEs: A Financial analysis of Integrated Management System (IMS) Adoption Costs under the 2026 Finance Act.

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Abstract: Within Algeria's 2026 framework for non-hydrocarbon export diversification, a profound paradox persists: government mandates champion a "Quality Culture," yet private Small and Medium Enterprises (SMEs) face a systemic "Financing Gap" excluding them from global standards. This paper evaluates the financial feasibility of adopting Total Quality Management (TQM) via Annex SL-based Integrated Management Systems. Methodologically, the study employs a quantitative financial simulation of a representative manufacturing firm ("EL-Quality SME") regulated under Law No. 17-01. Crucially, the model treats ISO 9001:2015 not as a static product, but as a long, capital-intensive structural process transformation to accurately capture long-term financial strain. Simulation results reveal that despite state support from the 2026 Finance Act credit guarantee mechanisms (FGAR) and the Industrial Competitiveness Promotion Fund (FCIP), the heavy self-financing burden and the intangible nature of quality assets trigger severe liquidity shocks and elevated bank rejection rates. Consequently, internal financial limits create a force field blocking sustainable investment. The study concludes that this dual financing gap—driven by cash-flow pressures and banking barriers—degrades TQM from a strategic lever into a destructive "Maturity Trap." Without specialized "Quality-Credit" instruments, Algerian SMEs remain structurally excluded from international excellence standards.

Key words: management, quality, small-medium enterprise (05 words)

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Introduction:

In the current economic climate of 2026, the Algerian industrial landscape is undergoing a critical pivot toward international competitiveness. Following the mandates of the 2026 Finance Act, the national strategy for non-hydrocarbon growth relies heavily on the ability of Small and Medium Enterprises (SMEs) to penetrate the AfCFTA[1] markets. As a signatory to the African Continental Free Trade Area, Algeria's economic trajectory is defined by an accelerated push toward non-hydrocarbon export diversification. The nation has moved beyond theoretical industrial planning into a competitive global reality where Total Quality Management (TQM) is no longer a luxury, but a mandatory "passport" for market entry. However, a profound structural paradox persists: while the academic and governmental discourse champions the transition to a "Quality Culture," the private Small and Medium Enterprise (SME) sector remains largely excluded from this evolution due to a systemic Financing Gap. The paradox lays in the fact that this creates a contradictory operational reality. On one hand, macroeconomic policies demand that SMEs rapidly modernize and adopt capital-intensive frameworks like TQM to drive national export diversification. On the other hand, the microeconomic reality penalizes these exact firms; the banking sector views quality transformations as high-risk, intangible expenses rather than appreciating them as strategic assets. The pre-financing barrier, coupled with bank lending aversion, creates a structural blockade that denies the average manufacturing SME access to the TQM gateway and the global value chains it facilitates. Despite the institutional levers introduced in the 2026 Finance Act, including expanded FGAR (SME Credit Guarantee Fund) mechanisms, the banking sector continues to display high risk-aversion toward "intangible" quality assets, which lack resale value in the event of default.

This research argues that the adoption of TQM, operationally possible and manifested through a tangible, capital-intensive vehicle: the Integrated Management System (IMS QHSE Annex-SL model), is locked out of the reach of the Algerian SME due to both liquidity pressure and the inability to secure an adequate bank loan, creating a Financing Gap. The initial debate of the TQM literature argues that 'Quality is Free' because it reduces waste, the Algerian SME reality in 2026 reveals that 'Quality is Expensive' to initiate, especially when it comes to ISO certification and the modern demand for higher standards. The transition from theory to practice requires a Capital Outlay that the academic pioneers of TQM—operating in wealthier economies—often took for granted. The disparity in quality maturity across the Algerian economy is largely a function of Financial Structure. On one end of the spectrum, national champions such as ENAGEO have successfully institutionalized QHSE (Quality, Health, Safety, and Environment), supported by sovereign liquidity and institutional stability. On the other, the private SME sector faces a "Binary Risk," the certification represents for them a high-stakes drain on working capital that offers no immediate physical collateral for commercial lenders. This creates a systemic paradox: Algerian SMEs are functionally barred from the export gateway for a lack of certification, yet they lack the upfront capitalization to procure such standards without the very export revenues they are currently denied, resulting in a financial dead-end.

This paper utilizes a financial analysis simulation to quantify this gap and explain this "Maturity Trap". By analyzing the liquidity and financial impact of ISO 9001 adoption on a typical manufacturing Algerian SME, we aim to demonstrate that the barrier to TQM is not primarily

[1] The African Continental Free Trade Area (AfyCFTA) is a landmark agreement creating the world's largest free trade area by connecting 55 African Union nations into a single market of 1.3 billion people. Officially launched in 2019 and trading on January 1, 2021, it aims to boost intra-African trade, industrialization, and investment by eliminating tariffs and reducing non-tariff barriers.

managerial incompetence, but a structural lack of specialized "Quality-Credit" instruments adapted to the 2026 financial market.

This paper will answer the following problematic:

- To what extent do the financing limitations of Algerian SMEs permit the integration and capitalization of an Integrated Management System (IMS), and does the TQM 'Entry Ticket' act as a liquidity shock that effectively excludes Algerian SMEs from the global market? Moreover, does the current Algerian financial structure leave SMEs in a 'Maturity Trap' where they are too small to finance the very standards required for them to grow and compete in the international market?

This paper is organized into three sections to provide a comprehensive answer to our problematic. We begin by defining the theoretical relationship between TQM and IMS to clarify the role of standardized systems. Next, we describe the specific characteristics of Algerian SMEs to contextualize the local business environment. Finally, we conduct a detailed financial simulation, calculating the cost of ISO 9001 certification to reveal the financing gap and liquidity pressures faced by small and medium-sized manufacturers.

2. Theoretical Framework: TQM vs. IMS

Total Quality Management (TQM) is defined in this research as a holistic a multi-dimensional management philosophy rather than a set of rules (BOULAHLIB, 2024). Originating from the works of Armand Feigenbaum and the Japanese industrial revolution, TQM focuses on "Total" employee involvement and continuous improvement, a "state of being" for a firm, characterized by a scientific approach to data, and a relentless focus on continuous improvement. It represents the "Soul" of the company—a cultural state that cannot be easily measured, invoiced, or used as collateral in an Algerian bank. The TQM philosophy started with Quality Control (QC), where products were inspected after they were made. In the Algerian SME context, many firms are still stuck at this stage due to financial limitations—they react to defects rather than preventing them, which leads to high waste and "hidden costs." The term "Total" was popularized by Feigenbaum, who argued that quality is not just the job of the factory floor, but the job of every department (Accounting, HR, Sales). Kaoru Ishikawa added the "Human Element," emphasizing that every employee must be a "quality manager." In the Algerian context, many SMEs possess the "TQM Spirit" (the desire for excellence) but remain trapped in the theoretical realm because they lack the physical tools to operationalize it (Rizal HAMID, ISA, & ALTUN, 2019). The evolution of organizational excellence in the Algerian industrial sector is defined by the transition from abstract management theories to integrated technical structures. However, in the 2026 economic landscape, TQM remains an "Intellectual Asset"—a strategic intent that lacks a physical invoice or a certifiable boundary. For the Algerian SME, the challenge is not understanding the TQM theory, but capitalizing its adoption.

This is where the Integrated Management System (IMS) serves as the critical bridge. If TQM is the "Dream of Excellence," the IMS is the "Tangible Vehicle." It is the technology, a unified framework that combines multiple international standards into a single operating system. In modern industrial management, an Integrated Management System (IMS) is a unified framework that merges all aspects of an organization’s systems, processes, and standards into one smart system. Rather than managing quality, environmental impact, and occupational health and safety in separate "silos," an IMS allows a company to manage them as a single cohesive unit (Gerek & Aydin, 2025). For an Algerian SME, the IMS is the "Tangible Tool" that transforms theoretical quality into a certifiable, marketable business asset. Simply put, it is the physical Binder/Software that contains the documented procedures, risk registries, and audit results that a client—or a banker—can actually see.

Technically, we do not need an IMS to achieve a form of TQM, because TQM is primarily a holistic management philosophy and a cultural commitment to continuous improvement that predates the standardized, auditable structures of modern technological systems. However, in the modern industrial landscape—particularly within complex emerging markets like Algeria—an IMS has become a functional necessity for operationalizing TQM. Without the structured framework of an IMS to synchronize protocols, the broad goals of TQM often lack the rigorous data-driven feedback loops and risk-based thinking required for sustainability. In contemporary practice, an IMS serves as the most effective vehicle to translate abstract TQM principles into measurable, globally recognized performance outcomes, bridging the gap between internal philosophical intent and external competitive demands.

From a structural perspective, a modern IMS is built upon a unified documentation hierarchy. This typically consists of a single Integrated Management Manual, a set of shared Common Procedures (such as internal auditing, document control, and corrective actions), and specialized Work Instructions tailored to specific operational tasks. In the 2026 business environment, the structure of an IMS has become increasingly Risk-Based and Data-Driven (Muthusamy, Palanisamy, & Mohanraj, 2018). It utilizes a centralized Risk Register that evaluates every business activity through three lenses simultaneously: the impact on product excellence (Quality), the impact on the planet (Environment), and the impact on people (Safety). This holistic structure not only improves operational efficiency but also provides a "Single Source of Truth" for senior management, ensuring that a decision made to improve production quality does not accidentally compromise worker safety or environmental compliance.

Many models are used to achieve one aspect or a full TQM, such as the EFQM model, which focuses on organizational excellence and stakeholder value, or Six Sigma, which targets process precision and variance reduction. However, the most popular and widely implemented approach remains the QHSE ISO model, based on the Annex SL high-level structure and the triple QHSE certification (ISO 9001, 14001, and 45001). This dominance is primarily due to the universal language and "plug-and-play" compatibility provided by Annex SL, which harmonizes definitions and core requirements across different standards. Furthermore, while excellence models like EFQM are often seen as aspirational or subjective, the ISO-based IMS provides a tangible, auditable roadmap that carries global market authority. For companies in developing industrial landscapes, this standardized approach offers a lower barrier to entry and a more practical method for translating complex TQM theory into a verifiable, internationally recognized competitive advantage. The model is divided between two essential components:

1. The Annex SL 2.The QHSE certification

The Annex SL (Harmonized Structure) is a universal 10-clause blueprint developed by ISO, a bridge between various quality standards, to ensure all management standards share the same 10-chapter structure. By merging these administrative requirements, the firm achieves a "Single-Pass Management" model, where a single Management oversees a unified master risk register and a common Training Matrix. Most importantly, the Annex SL acts as a structural guideline for building the IMS. The normative Annex SL can be directly downloaded from the official ISO website:

Clauses 1–3 (Scope, References, and Definitions): These set the legal and linguistic boundaries, ensuring that a "Non-conformity" in production (Quality) is defined exactly the same way as a "Non-conformity" in the waste disposal area (Environment).
Clause 4 (Context of the Organization): This is the strategic "radar." It requires the SME to analyze its external environment (e.g., the 2026 Algerian Finance Act or AfCFTA competition) and its internal capabilities.
Clause 5 (Leadership): This is the "Engine." It shifts the burden from a single Quality

Manager to the CEO, mandating that the "Pillars" of Quality and Safety are driven from the top down.
Clause 6 (Planning): The core of Risk-Based Thinking. It forces the firm to identify "Threats and Opportunities," effectively turning the IMS into a financial protection tool.
Clauses 7–8 (Support & Operation): These cover the "Resources" (People, Infrastructure) and the "Doing" (Production). In an IMS, Clause 7 allows for unified training records, significantly reducing the administrative salary cost for the SME.
Clauses 9–10 (Performance & Improvement): The "Check" and "Act" phases of the Deming Cycle (PDCA). Here, the SME uses a Single Internal Audit to evaluate all QHSE pillars simultaneously.

Instead of three separate "Management Manuals," the firm produces one Integrated Manual, reducing consultancy hours by approximately 30%. Annex SL acts as the "Common frame" that allows different standards to share the same leadership, planning, and evaluation processes. By utilizing this structure, an SME can build a single manual and a unified audit plan, effectively reducing the financial costs by eliminating redundant administrative costs.

The operational manifestation of this integrated structure is known in the Algerian market as the QHSE (Quality, Health, Safety, and Environment) system. The QHSE acronym represents the three tangible "Pillars" that support the TQM temple:

- The Entry Pillar (ISO 9001 - Quality): The foundational requirement focusing on process control and customer satisfaction. It is the "Minimum Entry Ticket" for the 2026 market.
- The Environmental Pillar (ISO 14001 - Environment): Addresses the firm's ecological footprint, a requirement increasingly demanded by the 2026 Finance Act's "Green" tax incentives.
- The Human Pillar (ISO 45001 - Safety): Ensures the health and safety of the workforce, fulfilling the TQM principle of "Total Employee Involvement."

Figure 1: the relationship between TQM, IMS, ISO, QHSE



The acronym QHSE evolved primarily within the international oil and gas industry during the 1990s as a way to manage high-risk operations under a single umbrella. While it doesn't have one single inventor like a patented product, its development is linked to major global industry shifts. The QHSE represent The "Common DNA": Because ISO 9001, 14001, and 45001 all follow the same 10 clauses (Context, Leadership, Planning, etc.), as they can be fused into one system. When an Algerian SME integrates the three "pillars" into an IMS, they are building a

QHSE System (see (Ding, Xu, & Sui, 2021) and (RAHMANE, 2020)). The IMS must allow a single Responsable QHSE to manage the entire system, and If a company is certified in these three ISOs, it is technically impossible for them not to use the Annex SL structure, making the harmonized structure mandatory. The 2015 updates to ISO standards introduced Risk-Based Thinking. This shifted the IMS from being a "reactive" checklist to a "proactive" tool, forcing leadership to anticipate threats before their occurence—a core requirement for any of TQM today.

Operationally, the efficiency of an IMS is measured by its ability to reduce the financial costs. Instead of three separate and redundant audit cycles, an efficient system utilizes an Integrated Internal Audit process that satisfies all QHSE requirements in a single mission. This leads to a tangible reduction in "Man-Day" costs during the external certification process with bodies like IANOR or AFNOR, as auditors can verify shared resources and support functions (Clause 7) simultaneously. Furthermore, an efficient IMS transitions from a physical "Binder" to a Digital QMS Software, facilitating real-time Evidence-based Decision Making and ensuring that a change in a production recipe (ISO 9001) automatically updates the associated safety protocols (ISO 45001) and waste disposal logs (ISO 14001). Ultimately, an efficient IMS transforms the investment from a "Financial Burden" into a Strategic Capital Asset, optimizing the firm's solvency and liquidity ratios while providing the necessary "Pillars" to achieve long-term Total Quality Management (TQM) maturity.

From a financial analysis perspective, the link is clear: TQM is the strategic objective, the IMS is the structural methodology, and QHSE is the certified result. The "Financing Gap" occurs at the IMS level. While the 2026 Finance Act and FGAR provide mechanisms to support "tangible" production, they often overlook both the different layers of the necessary “tangible” assets, and the "intangible" capital required to fuse these three pillars. This institutional focus on hardware—such as machinery and infrastructure—neglects the procedural and intellectual architecture (ISO 9001/QMS) essential for operationalizing those assets. Consequently, the Algerian SME is left in a state of technological imbalance, where the state guarantees the 'container' (the machine) but fails to finance the 'content' (the management system), resulting in a deadweight loss of industrial efficiency. Consequently, many Algerian SMEs remain "theoretical" TQM followers, unable to afford the "Integrated Ticket" required to turn their philosophy into a certifiable QHSE reality. Another solution proposed by the state was the Industrial Competitiveness Promotion Fund (FPCI), managed by the Ministry of Industry and Pharmaceutical Production, represents the primary state-led financial instrument designed to upgrade the Algerian industrial fabric. Established as a strategic tool for economic diversification, the FPCI is mandated to subsidize the adoption of international standards, specifically ISO 9001 (QMS), ISO 14001 (EMS), and ISO 45001 (OH&S). Under current operational specifications (2025/2026), the fund provides a reimbursement-based subsidy covering up to 80% of eligible costs for consultancy and certification audits, with nominal ceilings of 2,000,000 DZD and 1,000,000 DZD respectively. However, the FPCI operates strictly as an ex-post financial mechanism; the state only disburses the 80% grant upon the successful attainment of the certificate and the full settlement of all third-party invoices. This structural requirement assumes that the applicant SME possesses sufficient internal liquidity or access to bridge financing to front 100% of the gross investment. Consequently, while the fund nominally reduces the long-term cost of quality, it does not mitigate the upfront capital barrier, effectively creating a "participation threshold" that excludes SMEs characterized by the liquidity stress and bank lending aversion identified in the current domestic market.

Moreover, reaching full TQM remains a significant challenge, as experts often equate QHSE certification to approximately 30% of a comprehensive TQM system. While a QHSE Integrated Management System effectively secures the "hard" structural components—including

documented procedures, risk-based thinking, and standardized operational controls—it primarily provides the necessary foundation for organizational discipline. The remaining 70% of the TQM journey consists of "soft" elements that fall outside the typical scope of a compliance audit, such as deep cultural transformation, total employee empowerment, and a long-term psychological commitment to excellence. Consequently, while a QHSE-IMS is a powerful catalyst for performance, it serves as a strategic cornerstone rather than the final destination of a complete TQM philosophy.

3. The Algerian SME Landscape: Structural Characteristics

The Algerian SME sector is characterized by a specific financial architecture that creates a "Resistance Field" against long-term, intangible investments like ISO 9001 and TQM. As of 2026, four structural pillars define the financial behavior of these firms:

1. Self-Financing Dominance,
2. Liquidity Fragility,
3. Asset-Light Vulnerability,
4. Institutional Bank-Aversion.

The primary characteristic of the Algerian private SME is its heavy reliance on internal equity. Unlike the state-backed model, which accesses sovereign liquidity, the private chocolate manufacturer or industrial processor typically relies on the personal savings of the owner or Informal Family Loans. When an SME is forced to choose between purchasing raw materials (working capital) and heavily investing for an ISO audit, the immediate survival of the production line always takes precedence (SI MOHAND, 2021). In 2026, over 70% of Algerian SMEs remain excluded from formal long-term investment credit, leaving them trapped in a cycle of "Low-Quality/Low-Capital" production (DAKHANE, 2024). The Algerian banking system (dominated by public banks like BEA, BNA, and BDL) is historically "Collateral-Centric." Lenders prioritize Tangible Assets—real estate, trucks, or heavy machinery—that can be seized in case of default. (BOULAHOUAT & BEZTOUH, SMEs in Algeria and the constraints of access to bank financing: empirical survey, 2022).

The financial structure of the Algerian SME is optimized for survival, not for the high-capitalization requirements of an Annex SL integration. This structural misalignment transforms TQM into a luxury good reserved for state-protected entities, while leaving the private sector in a state of 'Technical Under-investment'. SMEs often face rigid granting conditions from public banks. TQM is often perceived as "too expensive" because it requires significant investment in new technology, software, and specialized staff before any Return on Investment (ROI) is realized, especially with the absence of the adequate culture or mindset. Worse, ISO 9001 and the Annex SL structure are "Intangible Assets." Consequently, banks rarely recognize the IMS as a valid object for an investment loan. Even with the 70% FGAR (SME Credit Guarantee Fund) measures of the 2026 Finance Act, the bank still requires the SME to provide "Material Guarantees" for the remaining 30%, which most SMEs have already exhausted to buy their initial production equipment. Regardless of the financing source, From a financial analysis perspective, Algerian SMEs operate with very low Cash Ratios. Most liquidity is tied up in "Accounts Receivable" (unpaid invoices from clients) or slow-moving inventory. The IMS implementation requires an immediate "Outflow" of cash (consultants, training, and certification fees). Because these are upfront costs with a delayed ROI, they create a "Liquidity Stress" that can lead to technical insolvency.

Today, the literature on the financing limitations of SME is very well documented and has reached a strong consensus:

- Collateral Requirements: Formal lenders often demand onerous material guarantees that smaller, asset-light SMEs cannot provide.

- Human Resource Development: Lack of funds leads to insufficient training and a "wrong people in wrong positions" scenario, as SMEs cannot afford to hire or train quality management experts.
- Managerial Short-termism: Due to liquidity pressure, many Algerian managers focus on immediate profits rather than the long-term, expensive philosophy of continuous improvement.
- Technological Infrastructure: Financing gaps prevent SMEs from acquiring the necessary modern tools and digital systems required for effective quality measurement and data-driven TQM.
- Subsidy Misalignment: While programs like the National Quality Promotion Program (PNPQ) exist, they often suffer from low visibility and complex procedures that are poorly adapted to the agile needs of small businesses.

However, a critical distinction must be drawn between the inherent financial fragility of the global SME and the exacerbated liquidity stress characteristic of the Algerian industrial fabric. While SMEs are naturally sensitive to cash-flow fluctuations due to limited scale, the Algerian 'Average SME' suffers from a systemic liquidity burn driven by a lack of institutional bridging finance. In a functional credit market, the investment for quality standardization would be managed through 'intangible asset' financing or revolving credit lines. However, the Bank Aversion identified in this study—coupled with the ineffective leverage of the FGAR and FPCI's on the large scale—forces the SME into an unsustainable reliance on internal equity. This 'Forced Self-Financing' transforms a natural operational challenge into a structural blockade, effectively penalizing the most efficient manufacturers for their lack of physical collateral. To better understand the financing gap and contrast with the SMEs, we can give the example of ENAGEO:

ENAGEO, is a subsidiary of the state-owned giant Sonatrach, and was one of the first Algerian companies integrating IMS and adopting QHSE certification in 2004, to align with international standards like ISO 9001 and ISO 14001, becoming the national standard for QHSE integration in Algeria. Its data reflects a level of IMS maturity that most Algerian SMEs can only dream of without external financing. For example, they display a heavy commitment toward targets for waste management, carbon footprint reduction, and pollution prevention as part of their ISO 14001 compliance. Since 2015, ENAGEO complied with the new directives of the International Organization for Standardization (ISO) who mandated that all management standards must follow the High-Level Structure (HLS), originally called Annex SL. In 2018, the company performed a Major update to the 2015 versions of ISO 9001 and ISO 14001, and In 2021, it performed a Migration to ISO 45001:2018 for Occupational Health and Safety (ENAGEO, QHSE Management System, 2026). As of 2026, the available data on their certifications shows that ENAGEO maintains a mature IMS certified by international bodies, covering the three fundamental ISOs (ENAGEO, QHSE Management System, 2026). In addition, unlike SMEs starting from scratch, ENAGEO integrated and institutionalized its QHSE system as early on, benefiting from the massive structural and financial backing of the state. This early adoption allowed them to absorb the "Implementation Shock" decades ago, whereas modern SMEs must face the full cost in today's high-inflation market. This institutional "safety net" allows ENAGEO to treat TQM not as a financial burden, but as a strategic asset for international energy partnerships, highlighting the profound Financing Gap faced by private SMEs who must secure the same "Entry Ticket" without state-guaranteed liquidity.

ENAGEO utilizes a centralized Internal Audit Function to monitor performance across all operational sites. In 2025, they specifically focused on evaluating the "performance of the audit function" (ENAGEO, 2026) to ensure it met the rigorous governance standards of the Sonatrach Group. In the same time, they performed a transition toward Risk-Based Thinking (Clause 6 of

Annex SL). They conduct regular "Annual Operational Meetings" where QHSE performance is a primary Key Performance Indicator (KPI), treated with the same financial weight as geophysical production data (BOUTRIK, BOUYAHIAOUI, & CHERID, 2021). While ENAGEO has the luxury of a permanent internal audit department, regular SME barely secure a lasting financial position or an auditing structure. For ENAGEO, an audit is a routine checkup; for an Algerian SME, the audit is a high-stakes financial event where failing to get the certificate means losing the entire investment. For ENAGEO, ISO certification is a budgeted-line item; they operate with "State-Backed Liquidity," meaning they have a dedicated budget allocated annually by the Sonatrach group. The investment represents a minor cost of their operational budget. It does not affect their ability to pay suppliers or salaries. For the Average SME, the ISO 9001 certification is an extraordinary expense. Since the average Algerian SME has a Cash Ratio often below 20%, spending this amount creates a "Liquidity Crunch", effectively "freezing" their working capital, and preventing them from buying raw materials for 2–3 months. When ENAGEO invests in an IMS, the bank (usually a public bank like BEA) views it as "Institutional Strengthening." They do not ask for a specific collateral in return because the company is already "Too Big to Fail.” When the average SME asks for a loan for ISO 9001, the bank views it as "Pure Expense." Because an ISO manual has zero Resale Value (we can't sell a Quality Manual at an auction), the bank demands 120% Material Collateral. This is the Technical Financing Gap: The Algerian bank refuses to recognize "Quality" as an asset.

Moreover, if the SME fails the audit, they have lost the investment (Consultant fees + Audit fees). Because they have no "Risk Buffer," one failed ISO attempt can lead to Technical Bankruptcy. If ENAGEO fails an audit, they simply hire more experts and try again next month. The financial disparity between ENAGEO and the private SME sector highlights a 'Dual-Standard' in Algerian credit markets. While ENAGEO utilizes State-Sovereign Liquidity to institutionalize QHSE as a routine administrative task, the private SME faces a Capital Structure Crisis. For the latter, ISO 9001 is not a management choice, but a High-Stakes Financial Gamble where the lack of intangible asset recognition by banks creates a terminal barrier to TQM maturity.

The profitability profile of the QHSE investment is characterized by a significant "intertemporal mismatch." While the gross investment triggers an immediate cash-flow shock, the Return on Investment (ROI) remains historically sluggish, requiring a gestation period of 3 to 5 years to reach a break-even point. Consequently, during the critical initial phase, the Debt Service Coverage Ratio (DSCR)—the primary metric used by banks to validate loan repayment capacity—remains dangerously thin, often falling below the standard 1.2x threshold required for credit approval. Furthermore, within the Algerian banking sector, the "Collateral Obsession" fundamentally outweighs the qualitative benefits of the certification. Although ISO 9001 theoretically improves a firm’s Probability of Default (PD) by standardizing risk-based thinking, financial institutions largely discount these "intangible" operational gains. In a credit environment where 78% of SMEs are required to provide tangible security (mortgages) exceeding the loan value (BOULAHOUAT & BEZTOUH, 2022), the projected net earnings generated by the quality upgrade are insufficient to secure validation.

The excellent article of (Benyettou & Megnounif, 2018) gives us another insight on the adoption of the IMS by Algerian companies “*We conclude that the integration of multiple management systems has just settled in Algerian companies. The results show that most companies have many difficulties when integrating multiple management systems…, Companies have an internal difficulty of organization due the lack of motivation of the employees and lack of internal organizational culture*”. They add: “*the management of risks is totally absent in the strategy of the companies while the management of non-conformity is not a priority task for them*”

4. Financial analysis for the adoption of 9001

4.1. Methodology

The research employs a quantitative simulation model to evaluate the capital requirements and liquidity impact of adopting a Quality Management System (QMS) based on the ISO 9001:2015 standard within the Algerian private sector. We will first define ISO 9001, the process of adoption and the certification, as the methodology defines ISO 9001 not merely as a product, but as a structural transformation of organizational processes, to assert the fact that the certification is a long and difficult process. For the purpose of this simulation, the subject is a representative Algerian manufacturing SME, "EL-Quality SME". "EL-Quality SME" was designed and categorized as a manufacturing "Small Enterprise" based on Law No. 17-01 (the Algerian SME Law), which defines such entities by specific thresholds:

Workforce: Set at 40 employees, fitting the legal definition for a small-sized company (9–49 employees).

Annual Turnover: Set at 90,000,000 DZD, a conservative and realistic "average" for a business, which aligns with the lower boundary for small enterprises (not exceeding 200 million DZD) (as cited in (Dris, 2025), (Khellil & Loucif, 2024)).

Net Profit Margin (8%) represents an adjusted yet realistic benchmark for the manufacturing sector, which

saw a production increase of 6.2% in June 2025 and a projected annual growth rate of 4.1% in 2026. (APS, 2026). Manufacturing companies benefit from a reduced Corporate Income Tax (IBS) of 19%, compared to 25% for other sectors. This 6% "tax advantage" directly supports a higher net margin for producers compared to service-based SMEs. The 8% margin aligns with recent longitudinal studies of the Algerian industrial fabric. Notably, research on the financial efficiency of domestic SMEs such as (Kemmouche & Mattoug, 2022) who identifies an average **Return on Sales (ROS)** within) amounted to 5.7%, "*which indicates that the average rate of profit that SMEs make from their sales is fairly high*". The selection of an 8% Net Profit Margin for the modeled SME is substantiated through a composite performance derivation. By positioning the NPM at 8%, the model accounts for both operational efficiency and the typical financial overheads associated with mid-scale industrial production in a developing market. Furthermore, the model incorporates a 9.53% operational efficiency coefficient in working capital turnover, identifying the target enterprise as a 'high-performance' unit within the expanding non-hydrocarbon sector.

Liquidity Reserve (1,800,000 DZD) was calculated based on the Liquid Assets Ratio in Algeria (CEIC, 2024), which stood at 39.4% in 2025. In a 2026 context, this equates to roughly 2% of annual turnover kept as immediate cash, a common survival buffer for private firms relying on "finite" internal equity. Derived directly from applying the 8% margin to the 90,000,000 DZD turnover. Furthermore, this 2% buffer aligns with the Bank of Algeria's statutory Reserve Requirement Ratio (2.0% in 2025/2026), providing a modeled firm with a survival cushion consistent with national prudential standards.

The investment is bifurcated into two distinct financial phases: the Preparation Phase, which covers the "intangible" costs of specialized consultancy and staff training on the PDCA **(**Plan-Do-Check-Act**)** cycle, and the Certification Phase, which involves the formal engagement of an accredited body such as IANOR.

What is ISO 9001?

ISO 9001 is the world's most recognized International Standard for creating a Quality Management System (QMS). While your research on Total Quality Management (TQM) covers the "philosophy," ISO 9001 provides the concrete rules and structure that an Algerian SME must follow to prove they are actually managing quality. It is not a standard for the "quality of a product" itself, but for the quality of the processes that create that product. ISO 9001:2015 built on the Plan-Do-Check-Act (PDCA) cycle:

- Plan: Set objectives and identify risks
- Do: Implement the planned processes.
- Check: Monitor and measure results against the objectives.
- Act: Take actions to improve performance based on the results.

To get certified in 2026, an Algerian SME must demonstrate these seven principles:

- Customer Focus: Meeting and exceeding customer requirements.
- Leadership: Top management must be actively involved, not just signing papers.
- Engagement of People: Competent, empowered, and engaged employees at all levels.
- Process Approach: Managing activities as interrelated processes that function as a system.
- Improvement: A permanent objective to do things better.
- Evidence-based Decision Making: Decisions based on data analysis rather than "gut feeling".
- Relationship Management: Managing relationships with suppliers and partners for long-term success.

An organization must meet specific requirements across 10 Clauses (Clauses 4-10 are mandatory). ISO 9001 is often a prerequisite for contracts with larger Algerian state-owned firms (like Sonatrach) or for exporting to Europe. For an SME, it acts as the "bridge" to TQM; once it acquires the disciplined structure of ISO 9001, moving to "Total" quality becomes much easier. **Most Algerian SMEs use ISO 9001 as their first step toward TQM because it's the only part that gives them a certificate they can show to banks or for export.** According to the ISO checklist '*businesses should adopt and integrate 305 individual ISO 9001 requirements into their processes and culture when implementing an ISO 9001 quality management system'* making the adoption and certification of ISO 9001 a long and tedious journey.

When it comes to ISO 9001, a granular deconstruction of international certification data reveals a profound "Structural Quality Gap" between Algeria and its Mediterranean peers. While the Algerian Institute for Standardization (IANOR) officially reports 3,188 ISO 9001 certificates as of late 2024 (with 123 ISO 14001 certifications and 92 ISO 45001 certifications), this aggregate figure is heavily distorted by the high saturation of State-Owned Enterprises (SOEs) and massive industrial conglomerates. When these elite and public-sector entities are filtered to isolate the private manufacturing SME—the central subject of this study—the "True Penetration Rate" could collapse from a nominal 5.8% to an estimated 2%.

To deepen the analysis of this structural bottleneck, a more rigorous segmentation of the Algerian economic fabric is required. We need to deconstruct the "Small and medium enterprises" appellation and the illusion of numbers. By filtering out micro-enterprises —which represent over 97% of all registered entities (more than a million)— who are by nature unable to claim any certification, we isolate a "certification-ready" core of approximately 35,000 firms. Within this cohort, a stark internal divide exists: approximately 31,000 Small Enterprises (SEs) with 10–49 employees, and a mere 3,200 Medium Enterprises (MEs) with 50–250 employees.

While Medium Enterprises are often favored by the FGAR and FPCI mechanisms due to their established tangible collateral and higher liquidity, they represent a narrow 9% "elite" of the non-micro private sector. Modeling SARL “Al-Quality” on the Small Enterprise model is therefore empirically superior; it targets the 89.8% majority of formal employers who are currently trapped beneath a "quality ceiling." Unlike their medium-sized counterparts, these small firms lack of seizable physical assets renders them invisible to traditional bank credit. Consequently, the financing gap for small enterprises is the primary engine of the "Missing Middle" phenomenon in Algeria, preventing the vast majority of industrial units from professionalizing or accessing export markets.

However, medium enterprises are by no means exempt from this financing gap; rather, they encounter a more complex structural resistance. While their larger scale suggests improved creditworthiness, Algerian medium-sized firms are frequently caught in an 'Institutional Paradox.' As they outgrow the simplified tax and support regimes designed for small units, they face exponentially higher costs for ISO implementation, which must now cover multi-departmental hierarchies and hundreds of employees. For these firms, a structural inefficiency becomes a primary deterrent, especially when the Algerian financial system remains deeply hesitant to fund 'soft' industrial upgrades. Thus, while the small enterprise is blocked by survival-level liquidity, the medium enterprise is stifled by bureaucratic friction, ensuring that both segments of the private core remain strategically under-certified and domestically tethered.

Ultimately, and despite the clear strategic benefits, the path to quality is paved with significant financial hurdles. The "Quality Gap" in Algeria is essentially a Financing Gap. Adopting TQM and ISO 9001 is not merely a managerial decision; it is a capital-intensive investment. For an Algerian SME, the costs are multifaceted, encompassing external consultancy fees, the purchase of modern quality-control technology, rigorous staff training, and the high administrative costs of international certification bodies like IANOR or AFNOR.

Process of adoption

The journey from application to certification generally follows these nine essential steps:

- **Selection of Standard:** Confirm that **ISO 9001:2015** (or the upcoming **ISO 9001:2026** revision, expected late 2026) is the correct fit for the SME.
- **Gap Analysis:** An initial assessment compares the current processes against ISO requirements to identify what is missing.
- **Documentation & Training:** must develop a **Quality Manual**, Standard Operating Procedures (SOPs), and train staff on these new processes.
- **Implementation:** Operate the business using the new QMS for at least **3 months** to generate evidence of compliance.
- **Internal Audit:** Conduct a "mock audit" with a consultant to find and fix errors.
- **External Audit (Stage 1):** The certification body reviews the **documentation** to see if the SME ready for a full audit.
- **External Audit (Stage 2):** Auditors visit the site to verify that employees are actually following the documented processes.
- **Certification:** If successful, the SME is issued a certificate valid for **3 years**, subject to annual "surveillance audits". The Algerian Institute for Standardization (IANOR) is the primary national body. They provide training, standards, and manage the national mark of conformity. Firms like SGS Algeria or AFNOR Algeria are also widely used, especially by companies that export.

It is to be noted that the implementation of ISO 9001 serves as the foundational architecture for an organization’s Quality Management System (QMS), establishing a rigorous framework for

process consistency and customer satisfaction. Within the Algerian industrial context, individual standards are designed to govern specific operational dimensions: while the QMS focuses on quality, the ISO 14001 standard dictates the parameters for an Environmental Management System (EMS), and ISO 45001 governs Occupational Health and Safety (OH&S). When these disparate standards are unified under a single high-level structure (HLS-Annex SL), they constitute an Integrated Management System (IMS). In this holistic configuration, the QMS acts as a core subsystem of the IMS, allowing the enterprise to streamline audits, reduce documentation redundancy, and harmonize strategic objectives across quality, environmental, and safety mandates. For the modeled SME, the QMS represents the primary entry point into this integrated maturity model, facilitating future scalability into a full IMS as the firm expands its regulatory compliance.

Usual fee

In 2026, the total investment for an Algerian SME to adopt ISO 9001 typically ranges from **1,800,000 DZD to 3,500,000 DZD** ($13,500 to $26,000 USD equivalent). This cost is split between the "Internal Preparation" (Consultancy/Investment) and the "External Certification" (Audit fees). The following fee list is set to be a conservative estimate

Table 1: the investment fee for ISO 9001

Consultancy Fees	**: 800,000 – 1,800,000 DZD**. Most Algerian SMEs hire specialized firms to draft their Quality Manual and procedures, such as "Top certifier", "CEI HALFAOUI" or "BCI Algerie". We assume that maximum fee doesn't exceed the FPCI reimbursement ceiling of **2000000**.
Employee Training.	**: 250,000 – 500,000 DZD**. Training your team (Lead Auditors, internal staff) is mandatory to pass the audit. IANOR proposes an ISO 9001 training for 250000 DZA for ten days for the quality manager (QMS), without taking into account other managers and employees.
Technological Upgrades	**: 200,000 – 500,000 DZD**. This includes new quality-control software or minor hardware upgrades to meet the 2026 traceability standards (ERP, IoT sensors, OPEX…..) for example SYMLOOP proposes three technological packages from **2,500,000** to **25,000,000 DZD. 350000 DZD covers the bare minimum required to digitize the quality management layer (QMS)**
Stage 1 & 2 Audits	**: 500,000 – 1,000,000 DZD**. This covers the official review of documents and on-site inspections. The certification IANOR is a 3 years cycle, with an annual audit. The audit is a 4 days process (8 hours each), following the IAF guidelines. The IAF (International Accreditation Forum) guidelines are a set of mandatory rules that all accredited certification bodies (like IANOR in Algeria) must follow when auditing an organization. The full cycle can reach more than **1,200,00** DZD
Administrative Fees	**20,000 – 50,000** DZD for application processing.

Source: Elaborated by the author.

As said before, the certificate is valid for **3 years**, but requires annual surveillance audits, which typically cost 20% of the initial fee.

SARL EL QUALITY

The Subject: "SARL Al-Quality"
Annual Turnover: 90,000,000 DZD.
Employees: 40
Net Profit Margin (8%): 7,200,000 DZD.
Average Liquidity (Cash on hand): ~1,800,000 DZD (approx. 15% of monthly revenue, kept for payroll/emergencies).
Existing Debt-to-Equity Ratio: 40% (Most Algerian SMEs are already paying off equipment loans).

Table 2: estimation of the certification investment

Category	Item Description	Estimated Cost (DZD)
Consultancy	**Diagnostic & Implementation:** 12 months of expert guidance to build the **Annex SL** framework.	**1,100,000**
Training	**Capacity Building:** Awareness for all staff + specialized training for Internal Auditors/managers.	**400,000**
Documentation	**IMS Development:** Creation of the Quality Manual, Procedures, and Digital Logsheets.	**300,000**
Certification	**External Audit Fees:** Stage 1 & Stage 2 audits by a body like **IANOR** or AFNOR.	**600,000**
Infrastructure	**Technical Compliance:** Minor factory upgrades (signage, calibration of tools, PPE).	**300,000**
TOTAL	**The estimate of the "Entry Ticket" to Quality**	**2,700,000**

Source: Elaborated by the author.

4.2 Results and Discussion

Table 3: financial analysis results

Financial indicatos	Pre-investment	Post-investment	Variance/impact analysis
Cash on hand (treasury)	**1800000**	**200000**	**-150% liquidity shock**
Total indebtedness	**9000000**	**9000000**	**High indebtedness**
Debt to equity ratio	**40%**	**40%**	**-**
Net annual profit	**7200000**	**6300000**	**-37,5% profit erosion**
Asset tangebility	**100% (physical)**	**89% (mixed)**	**11% of assets shift to intangible**
Working capital (NWC)	**Stable**	**Critically low**	**Upfront 30% cash requirement drains 45% liquidity**
Bankability/credit score	**Moderate**	**Low**	**High gearing+intangible asset= bank rejection**
Quick ratio (acid test)	**0,2**	**0,02**	**Quick Ratio fell by 90%, signaling a "Liquidity Trap" where the firm is technically solvent but operationally paralyzed.**

Source: Elaborated by the author.

In the fiscal landscape of 2026, the adoption of the "Entry Pillar" (ISO 9001) represents a transformative but high-risk capital event for the Algerian SME. Before the investment, the simulated firm maintains a Current Ratio (CR) of 1.35, indicating a functional but narrow safety margin, and a Debt-to-Equity (D/E) ratio of 0.40. However, the implementation of ISO 9001 requires a total capital outlay of 2,700,000 DZD—approximately 37.5% of the annual net profit.

If the firm attempts to self-finance this "Entry Ticket," it faces a terminal Liquidity Drain. By diverting 1,100,000 DZD from its cash reserves and 1,600,000 DZD from its year-end net profit, the firm's liquid cash on hand collapses from 1,800,000 DZD to a critical 200,000 DZD. This 89% reduction in treasury signals a state of operational paralysis, where the firm can no longer fund its operating cycle (procuring raw materials and meeting payroll). Consequently, the Current Ratio falls to 0.78, breaching standard bank safety covenants and triggering a "High Risk" status that prevents further operational credit. With only 200,000 DZD on hand, the firm cannot bridge its Accounts Payable (DPO). If a single major client delays payment—a common

occurrence in the Algerian "Trade Credit" culture—the firm faces immediate Technical Default. While ISO 9001 is projected to improve efficiency, the Payback Period is estimated at 3 years. In an economy marked by 2026 inflationary pressures, the Opportunity Cost of freezing 2,700,000 DZD in an intangible asset for over three years is prohibitive. This mathematical reality explains why private SMEs remain structurally excluded from the QHSE "Pro-League" occupied by state-backed giants like ENAGEO, effectively stalling Algeria's TQM industrial goals.

Furthermore, ISO 9001:2015 is rarely a standalone requirement; it serves as the "Universal Management Engine" upon which specialized industry standards are built. As evidenced by the IANOR 2025 Catalogue, several critical certifications—such as NA 18193 for the transport of dangerous goods—are explicitly designed to "complete" the ISO 9001 framework rather than replace it. We identified ten additional specialized certifications directly linked to the ISO 9001 structure. This "Stacking Effect" creates a compounded Financing Gap. For a specialized firm—such as a chocolate manufacturer managing chemical logistics (NA 18193) or food safety (ISO 22000)—the 2,700,000 DZD entry fee is merely the first layer of a multi-tiered compliance requirement. While the Annex SL harmonized structure allows these to be integrated into a single Integrated Management System (IMS), each "extension" requires specialized consultancy and expert-level auditing from IANOR. Most importantly, to reach full QHSE and a potent form of TQM, Al-Quality has to invest in both ISO 14001 and ISO 45001 as well. This incrementally increases the total investment toward the 5,000,000 DZD threshold, rapidly exhausting the firm's finite equity at hand.

The financial simulation of SARL Al-Quality reveals a critical misalignment between the cost of quality infrastructure and the capital structure of Algerian SMEs. With an initial investment requirement of 2,700,000 DZD for ISO 9001—comprising 2,050,000 DZD in preparation costs and 650,000 DZD in audit fees—the firm encounters a terminal Liquidity Drain. Because the total investment exceeds the available cash reserves of 1,800,000 DZD, the adoption of an Integrated Management System (IMS) is mathematically impossible through immediate self-financing alone. Furthermore, the Profit Absorption Rate indicates that this "Entry Ticket" to TQM consumes 37.5% of the firm’s total annual net profit. From a financial management perspective, allocating nearly 40% of net earnings to an intangible asset creates yet again an unsustainable Opportunity Cost, effectively stripping the SME of the internal equity required for raw material procurement or equipment maintenance.

While 'Splitting the Investment' across multiple capital sources appears to mitigate the immediate liquidity shock, it creates a Systemic Fragility. The firm undergoes a simultaneous erosion of its treasury, its reinvestment capacity (profit), and its borrowing headroom. Ultimately, the Financing Gap is not a volume problem (the amount of DZD), but a Structural Mismatch: the Algerian banking system cannot recognize the 2.7M DZD 'Intangible Pillar' as a productive asset, regardless of how the SME attempts to distribute the cost. Unlike state-backed models like ENAGEO, which utilize sovereign liquidity to absorb these shocks, the private SME remains structurally excluded. Even when utilizing the 70% FGAR guarantee, the remaining 30% self-financing requirement (810,000 DZD) acts as a fatal Liquidity Shock – especially during financial stress and economical struggle-, proving that without specialized financial instruments that recognize quality as a productive asset, the TQM transition remains a financial impossibility for the Algerian private sector.

In the 2026 Algerian financial landscape, the SME Credit Guarantee Fund (FGAR) acts as a strategic risk-mitigation lever rather than an automatic funding source. Following the structural reforms of the 2025/2026 Finance Acts, the FGAR has expanded its intervention to include operating credits, specifically allowing SMEs to finance "soft" intangible investments such as

ISO 9001 consultancy, staff training, and QHSE audits. Under the current regulatory framework, the FGAR provides a 70% guarantee on bank loans up to a ceiling of 50 million DZD, effectively covering up to 35 million DZD of the lender's risk. To operationalize this, the fund has established formal conventions with 15 partner banks, including major public institutions like CNEP-Bank, BEA, and CPA. We need to keep in mind that the FGAR never hands a check to the SME; it only provides a "Letter of Guarantee" to the bank. This support is not interest-free nor is it guaranteed. In conventional finance, SMEs typically face interest rates between 6.30% and 6.93%, though industrial firms may benefit from state-subsidized rates as low as 2% or 3%. This means the SME is still entirely dependent on a commercial banker's approval to get the money. The FGAR will not consider the file of the SME until a bank has given you "Agreement in Principle". Because ISO 9001 is an intangible asset, the bank's risk department perceives "zero collateral" and "high risk" on their internal credit scorecards. If a commercial lender sees that taking this loan will push a firm's Debt-to-Equity (D/E) ratio above 50%, will likely reject the application for "Over-leverage," even if the FGAR is willing to provide a 70% guarantee. Consequently, it is highly probable that the bank will demand personal material collateral, such as a mortgage on the owner's residence or a lien on personal vehicles, to cover the remaining 30% residual risk. For many Algerian entrepreneurs, this requirement is a definitive deal-breaker, effectively stalling the quality transition at the negotiation stage.

While the 2026 Finance Act and the FGAR theoretically offer a 70% guarantee on operating loans, the study identifies a persistent "Collateral-Intangibility Gap." Commercial lenders, primarily the public banks, remains historically "Collateral-Centric," demanding 120% in physical guarantees for any long-term credit. In the current lending climate, commercial banks such as CNEP-Banque maintain a rigorous focus on the Asset Tangibility Ratio. Because an Integrated Management System (IMS) and its associated Annex SL documentation are classified as intangible assets with zero liquidation value, lenders assign them a null weight in risk-weighting models. Furthermore, Since an ISO certificate and its associated Annex SL documentation have zero resale value in a liquidation event, they are assigned a null value in the bank's risk-rating model. This "Intangible Asset Bias" creates a terminal Maturity Trap: the SME requires the certification to access the AfCFTA and increase revenue, yet the bank refuses the "Quality-Credit" because the certificate is not a "seizable" asset. Furthermore, the simulation demonstrates how the SME Credit Guarantee Fund (FGAR) can paradoxically transform a Liquidity Problem into a structural Solvency Problem. While the FGAR guarantee allows the SME to avoid immediate "Cash-Flow Death," it fundamentally destabilizes the firm's Balance Sheet. By converting the "Quality Investment" from a cash expense into a long-term bank loan, the SME's D/E Ratio escalates from a manageable 0.40 to a higher-risk 0,54.

Table 4: classification of the ISO 9001 investment into tangible/intangible assets and expenses

Category	Cost	SCF Classification	
Infrastructure	**300000**	**Tangible Asset**	Physical upgrades, signage, and PPE are "material" items.
Consultancy	**1100000**	**Intangible Asset**	Implementation fees are essential to creating the "system."
Documentation	**300000**	**Intangible Asset**	Digital logsheets and manuals are identifiable intangible property.
Certification	**600000**	**Intangible Asset**	The legal "right" to the certificate (audit fees).
Training	**400000**	**Expense**	**SCF Rule:** You cannot "own" staff knowledge; training is always an expense.

Source: Elaborated by the author.

To further solidify this point, we must emphesize another issue associated with intangible asset trap is the asset capitalization of ISO 9001. In the Algerian Financial Accounting System (SCF), which is closely aligned with IAS 38, the capitalization of ISO 9001 certification depends on the nature of the costs. Generally, none of the annual maintenance costs are capitalized, while only a specific portion of the initial implementation may be. A rigorous SCF analysis would suggest that only ~1.5M DZD (approx. 55%) should be added to Total Assets, while the rest should be deducted from Retained Earnings as an immediate expense. This "split" would make the Liquidity Trap more visible, as this creates an "Accounting Shock" that simultaneously reduces Net Profit (EBIT) and Retained Earnings, leading to a dual account compression. Banks typically prefer Capital Expenditures (CapEx) because the loan creates tangibility (collateral) they can seize. A loan for Operating Expenses (OpEx)—like training—is seen as immediately consumption. If the SME fails, the bank has nothing to take back. The ISO 9001 project (training and labor) is classified as uncollateralized consumption rather than asset creation. Combined together, these conditions will incentivize the bank to ask for an equivalent collateral for the 1.5 DZD. In Algerian jurisdictional practice, the transition from cash-financing to debt-financing necessitates the provision of Real Securities (Sûretés Réelles), typically in the form of a mortgage or equipment pledge. The institutional requirement for a collateral coverage ratio exceeding 100% (often 120%+) function as a liquidity and depreciation buffer. This 'Over-Collateralization' protects the lender against the valuation haircut inherent in forced liquidations and the administrative costs of the Algerian judicial recovery process. For the SME, this creates a high barrier to entry, as the bank's refusal to accept intangible assets (ISO 9001) as valid security forces the firm to freeze its most valuable physical assets to secure even a modest line of credit.

As for the FCPI, while it nominally serves as the state's primary catalyst for industrial upgrading, a granular analysis of its operational reach reveals a profound scalar mismatch. In a national economy encompassing more than 1 million SMEs, the FPCI effectively functions as an exclusive instrument for a negligible industrial elite. Empirical data indicates that fewer than 0.25% of Algerian enterprises have successfully navigated the bureaucratic and financial gauntlet required to attain ISO 9001 certification (Boucetta, 2024). This marginal penetration rate is not merely a symptom of managerial inertia, but a direct consequence of the fund's reimbursement-based architecture, which structurally excludes the 97% of firms classified as micro-enterprises or liquidity-constrained small businesses. For the modeled SME, the 2,700,000 DZD gross investment represents a prohibitive upfront capital requirement that the FPCI does not front-load. With an annual processing capacity estimated at only a few hundred high-priority industrial files nationwide, the fund lacks the distributive power to ignite a macro-level quality transition. Consequently, the FPCI operates within a functional deficit: it offers a theoretical solution to a cost problem (reimbursement) while remaining entirely silent on the pre-financing and liquidity crisis that prevents the average Algerian manufacturer from initiating the investment in the first place.

Furthermore, the fiscal capacity of the FPCI is fundamentally misaligned with the massive financing void it seeks to bridge. Even within the context of the record 2026 national budget, the specific allocations for SME quality-standardization remain a budgetary drop in the ocean. The budgetary allocation for the sub-program 'Compétitivité Industrielle'—identified in the 2026 Finance Act at 168,600,000 DZD[2]—reveals a profound 'Policy-Scale Mismatch.' When evaluated against a normative ISO 9001 investment of 2,700,000 DZD per entity, and accounting for the 80% FPCI reimbursement rate, this budget facilitates the support of fewer than 80 firms annually. For a national industrial fabric comprising approximately 35,000 manufacturing SMEs, this represents a negligible annual coverage rate. In the context of a

[2] Décret exécutif n° 26-33 du 18 Rajab 1447 correspondant au 7 janvier 2026, p. 42

12.4% GDP budget deficit, the state's reliance on this restricted, ex-post funding model ensures that quality standardization remains an 'Elite Exception' rather than a systemic catalyst for non-hydrocarbon diversification. This budgetary void creates a strategic bottleneck for the million SMEs in the country. While the government has allocated over 31 billion USD for total investment spending with a significant budget deficit of 12.4% of GDP, the vast majority of this capital is diverted toward industrial megaprojects that are viewed as faster routes to diversification and import-substitution. For the average SME, the FPCI is not merely insufficient; it is an underfunded mechanism in a high-deficit era where reimbursement delays are inevitable. In a climate where financing needs are high, the FPCI cannot realistically bridge the financing gap for the 99% of firms currently excluded from quality standards, effectively turning a support initiative into a selective reward for the most liquid industrial players

Ultimately, the Financing Gap in Algeria is not merely a lack of state guarantees, but a profound Collateral Mismatch. While the FGAR and the FPCI mitigates the financial burden for the certification and implementation of the IMF, the requirements needed remain an insurmountable wall, favoring only those firms with three years of stable balance sheets and proven export potential under the AfCFTA framework. This structural exclusion ensures that the QHSE remains the exclusive domain of state-backed giants, while the private sector remains trapped in a cycle of financial and qualitative stagnation.

CONCLUSION

The research confirms that for Algerian SMEs in 2026, the transition from TQM theory to IMS reality is primarily a financial hurdle rather than a managerial one. The simulation of EL-Quality SARL demonstrates that the investment represent a Liquidity Shock equivalent to the acquisition of an industrial vehicle. This investment destabilizes the firm's balance sheet, causing the Current Ratio to collapse below the solvency threshold. Consequently, the private sector remains trapped in a "Maturity Trap," unable to access the same quality standards as state-backed giants like ENAGEO. While the 2026 Finance Act and expanded conventions such as the FGAR and FPCI, providing some type of guarantee on operating loans and on QHSE certification, the Financing Gap is not eliminated. A residual risk remains, requiring material collateral and financial reserves that asset-light SMEs often lack. Furthermore, the banking sector's cultural bias toward tangible hardware over intangible assets (like organizational capital and standards) persists, alongside administrative delays that do not match the upfront payment needs of certification bodies.

To bridge this "gap," the study proposes three specialized instruments for 2026:

- A "Quality Voucher" Program: A 100% state-backed grant for initial audit fees to bypass bank-led hurdles.
- Intangible Asset Recognition: Reforming Algerian accounting to list ISO 9001 as a depreciable strategic asset, increasing firm book value.
- Zero-Interest "Quality Credits": Long-term loans with a 5-year grace period to match the ROI of TQM.

Without such measures, TQM remains an unattainable academic luxury, leaving the private sector structurally excluded from the AfCFTA export market. Finally, prioritizing ISO certification often puts the 'cart before the horse,' as formal quality standards require a level of structural maturity that many local SMEs have yet to achieve. Rather than treating certification as a universal starting point, policymakers and stakeholders should focus on fostering a supportive ecosystem that addresses the foundational hurdles facing struggling firms—such as limited access to flexible financing, bureaucratic complexity, and a lack of technical mentorship. By shifting the focus toward creating an environment that transforms these fragile entities into

healthy, resilient enterprises, certification becomes a natural byproduct of growth rather than an unattainable administrative burden. Only when an SME is operationally stable can it effectively internalize and sustain the rigorous quality cultures demanded by international standards

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