

## SUPPLIER SELF-ASSESSMENT PROGRAMS IN AUTOMOTIVE QUALITY MANAGEMENT

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### ABSTRACT

*This study examines the key role of Supplier Self-Assessment Programs (SSAP) in enhancing quality management and audit preparation within the automotive supply chain. The research focuses on three core elements: standardized checklists, internal audit procedures, and specialized training programs. Findings indicate that checklists provide a systematic framework for identifying non-conformities, enabling proactive corrections. Internally, audit processes supported by mentoring foster knowledge sharing among suppliers. Training programs, in turn, develop the necessary skills for effective assessments. The study demonstrates that implementing these tools significantly reduces pre-audit risks. Benefits include higher first-time pass rates, lower remediation costs, and stronger collaboration between suppliers and automakers. The research offers practical recommendations for industry professionals, highlighting the strategic value of self-assessment in meeting the automotive sector's increasingly stringent requirements.*

**KEYWORDS:** *automotive, compliance, pre-audit, self-assessment, standardized checklist.*

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### 1. INTRODUCTION

Supplier self-assessment programs (hereafter referred to as SSAPs to avoid confusion with SAP AG, the enterprise software provider) are essential components of quality management in the automotive industry, particularly as firms increasingly rely on their supplier networks. These programs allow companies to evaluate supplier capabilities and compliance with both internal and external quality standards before audits occur, thereby enhancing operational efficiency and competitive advantage.

One critical aspect of these self-assessment programs is their ability to address risks inherent in supplier relationships. In the automotive sector, suppliers can influence as much as 70% of a vehicle's manufactured value, which highlights their critical role in securing quality outputs and managing costs (Agrawal, 2017). Therefore, it is prudent for companies to implement robust self-assessment frameworks that align with their overall quality management strategy, facilitating compliance and maintaining quality standards. The flexibility offered by agile methodologies in software quality management can enhance the traceability of issues during self-assessment, ensuring quicker resolutions to potential problems before they escalate to a full audit.

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Furthermore, the importance of trust in buyer-supplier relationships cannot be overstated. Studies indicate that trust is a fundamental factor affecting the dynamics within supply chains, influencing cooperation and ultimately the quality of products delivered. Self-assessment programs can serve to build this trust by promoting transparency and encouraging open communication about capabilities and performance metrics, thus fostering long-term partnerships among supply chain participants. The growing complexity of automotive quality standards (IATF 16949, VDA 6.3) and the need for proactive compliance.

The automotive sector is evolving fast, marked by rising complexity of quality criteria mostly expressed in frameworks like IATF 16949 and VDA 6.3. These guidelines impose strict criteria for quality control systems meant to improve supplier performance and guarantee compliance all along the supply chain. Given these difficulties, proactive compliance plans have become crucial for suppliers to automotive companies. Emphasizing ongoing process improvement, the IATF 16949 standard helps to create a culture whereby quality permeates all spheres of supply chain activities. This standard combines the ideas of Total Quality Management (TQM), therefore fostering an atmosphere that gives defect prevention and quality assurance top priority over just identifying problems post-production. Manufacturers are obliged to follow proactive compliance policies including thorough supplier understanding and application of quality standards, therefore reducing the risks related with non-compliance (Banica & Belu, 2019).

Moreover, the VDA 6.3 standard evaluates the stability and resilience of manufacturing processes and is especially pertinent for automotive process audits. This requirement motivates companies to create self-assessment tools that enable constant quality level improvement by means of ongoing monitoring. Such evaluations point up possible risk areas and provide a structure for suppliers to take preventive actions before official audits (Hafner & Modic, 2020). This self-assessment culture fosters a more flexible and agile supply chain that helps to enable faster responses to changes in market needs or quality requirements.

**Supplier Self-Assessment Programs (SSAPs)** have emerged as critical mechanisms in mitigating audit risks and ensuring reliability across automotive supply chains. As the complexity of automotive standards, increases, the need for proactive compliance becomes increasingly vital. SSAPs enable organizations to conduct internal evaluations that can identify potential non-compliance issues before they escalate to formal audits.

One of the primary benefits of SSAPs is that they foster an environment of transparency and continuous improvement among suppliers. By implementing self-assessment tools, automotive manufacturers encourage suppliers to assess their capabilities against established quality standards, which is crucial for maintaining product quality and operational efficiency (Short, 2015). Studies have shown that multinational corporations utilize self-assessment alongside audits to evaluate supplier sustainability, thereby utilizing the insights gained for continuous monitoring and improvement processes (Short, 2015).

SSAPs not only identify deficiencies but can also preempt audit risks by allowing manufacturers to address identified issues through targeted action plans. These self-assessments work as early warning systems for manufacturers to analyse and create improvement plans depending on a thorough awareness of the operational reality of their suppliers. By means of consistent assessments comprising a mix of self-assessment questionnaires, audits, and performance indicators, automotive companies may build a culture of compliance and responsibility.

## **2. THEORETICAL FRAMEWORK AND INDUSTRY STANDARDS**

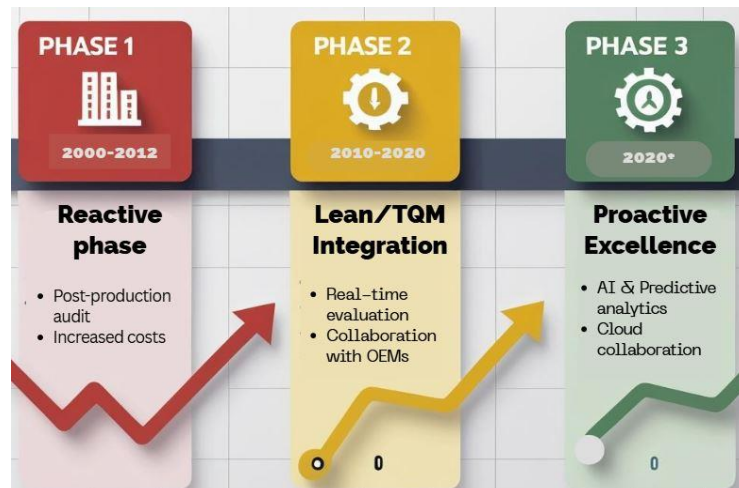
Within the automotive industry, Supplier Self-Assessment Programs (SSAPs) have a function that can be better understood in a larger theoretical framework including ideas of supply chain management, sustainability, and performance enhancement techniques. As standards like IATF 16949 and VDA 6.3 get more complicated, SSAPs become proactive compliance and evaluation

tool of choice. This guarantees that companies not only satisfy legal obligations but also make use of self-assessment as a basic feature of their running operations.

## 2.1 The Role of Self-Assessment in Compliance

Originally, self-assessment systems were included into more general quality control procedures meant to guarantee adherence to certain industry standards. Early SSAP versions concentrated mostly on post-production audits, in which suppliers would be assessed to make sure they complied with necessary criteria following the manufacturing process. But this reactive strategy sometimes produced inefficiencies and lost chances for early action to handle possible quality problems.

The necessity of a more proactive approach surfaced as the automotive industry grew more competitive and dependent on just-in-time (JIT) manufacturing processes. Models of supply chain integration and management techniques stressing the mutual gains resulting from greater cooperation between buyers and suppliers Rao & Holt (2005) affected this development. SSAPs started to represent lean manufacturing and Total Quality Management (TQM) values, therefore establishing themselves as indispensable instruments for operational excellence and ongoing development (Qiao, 2022).



**Figure 1. The Evolution of Supplier Self-Assessment Programs**  
*Source: own contribution)*

The automotive industry is undergoing a paradigm shift driven by two transformative forces: the widespread adoption of Industry 4.0 technologies (e.g., IoT, AI, and digital twins) and the accelerated transition toward electric vehicles (EVs). These developments have fundamentally altered supply chain dynamics, necessitating a reevaluation of traditional quality management approaches.

In this evolving landscape, Supplier Self-Assessment Programs (SSAPs) are adapting by:

### **Embracing Agile Methodologies:**

- Shifting from rigid, periodic audits to iterative, risk-based assessments (Jia, 2021).
- Implementing shorter feedback loops to address non-conformities in real-time.

### **Leveraging Data-Driven Tools:**

- Integrating advanced analytics (e.g., predictive modeling) to identify compliance gaps proactively.
- Utilizing AI-powered dashboards for continuous monitoring of supplier performance.

### **Enhancing Cross-Functional Collaboration:**

- Aligning SSAPs with OEMs' EV-specific quality requirements.
- Developing shared digital platforms for transparent data exchange between stakeholders.

The integration of these innovations into SSAPs not only improves responsiveness to market volatility but also positions self-assessment as a proactive enabler of supply chain robustness rather than a reactive compliance exercise.

Jagani's study (2024) emphasizes that the mass adoption of EVs requires suppliers to undergo not only technological reconversion but also to adopt advanced internal assessment tools, such as standardized checklists and mentored audit procedures, to anticipate non-conformities. According to the presented results, implementing these tools in the pre-audit phase has led to a significant increase in first-time pass rates and reduced remediation costs. Jagani (2024) particularly demonstrates how specialized training programs can develop key competencies among suppliers for managing changes in the EV supply chain, providing a practical framework for adapting to OEM requirements in the context of energy transition.

## **2.2 Regulatory and Industry Benchmarks**

Regulatory frameworks such as IATF 16949 and VDA 6.3 establish comprehensive quality management requirements that act as benchmarks for supplier compliance, emphasizing the integration of quality at all stages of the manufacturing process. IATF 16949 particularly highlights the necessity of defect prevention and continuous improvement, requiring suppliers to engage in regular self-assessments to enhance quality and performance metrics.

Moreover, the automotive industry increasingly incorporates environmental and social standards into its regulatory framework. Beske discuss the implementation of these environmental standards as a necessary practice among suppliers, notably in markets like Germany, where compliance with sustainability regulations is particularly stringent.

## **3. STRUCTURAL COMPONENTS OF SUPPLIER SELF-ASSESEMENT PROGRAMS IN AUTOMOTIVE QUALITY MANAGEMENT**

Effective SSAPs are mostly based on well-organized evaluation systems that direct suppliers in performing self-checks. Usually including qualitative and quantitative measures for assessing performance in several spheres, including quality standards, operational efficiency, and sustainability practices, these frameworks also cover for example, models based on supplier development techniques let companies evaluate their suppliers by matching their capacity with set criteria, therefore fostering stability and quality in manufacturing techniques. Structured systems guarantee that tests are consistent and easily compared across different vendors.

### **3.1 Standardized Compliance Checklists**

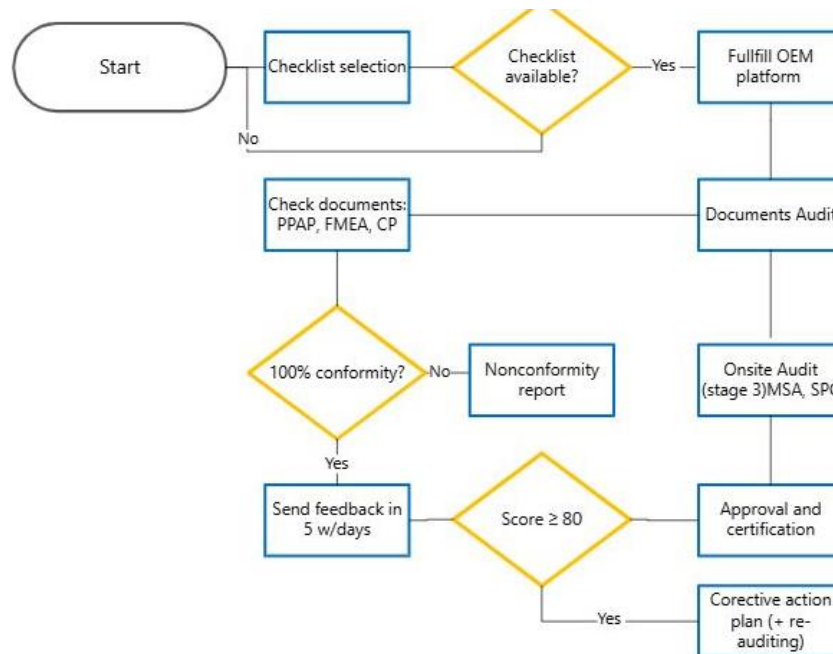
Standardized compliance checklists are vital tools within Supplier Self-Assessment Programs (SSAPs), serving to systematically evaluate supplier performance against predefined regulatory and quality benchmarks. These checklists are designed to ensure that suppliers meet both industry standards and organizational expectations while promoting continuous improvement across the supply chain.

Standardized compliance checklists play a crucial role in enhancing clarity and consistency in the assessment process. By providing a structured, step-by-step guide, checklists facilitate the identification of gaps in compliance, allowing suppliers to address these deficiencies proactively (Rao & Holt, 2005). This approach is particularly significant in the automotive industry, where adherence to quality standards like IATF 16949 is paramount for maintaining competitive advantage.

Incorporating standardized compliance checklists into SSAPs also aligns supplier evaluations with broader sustainability goals. Many companies, especially multinational corporations (MNCs), are increasingly required to conduct due diligence to ensure their suppliers adhere to environmental and social regulations (Rao & Holt, 2005). This expectation underscores the importance of integrating

sustainability criteria into compliance checklists, creating a comprehensive evaluation tool that addresses traditional performance metrics alongside environmental and social governance. To offer a complete evaluation framework, a well-organized compliance checklist should combine performance-based and mandated elements. Industry best practices often contain such checklists comprising:

- Verification of conformance to worldwide (ISO, IATF), regional (REACH, RoHS), and OEM-specific needs) regulations and standards.
- Evaluation of recorded processes including control plans, FMEAs, and corrective action systems within Quality Management System (QMS).
- Examining manufacturing consistency, statistical process control (SPC), and defect management under operational and production controls.
- Review supply chain and logistics including material traceability, inventory control, and delivery performance.
- Sustainability and ethical behaviour: Verification of carbon footprint lowering projects, labour standards, and environmental regulations.



**Figure 2. Self-Assessment supplier workflow**

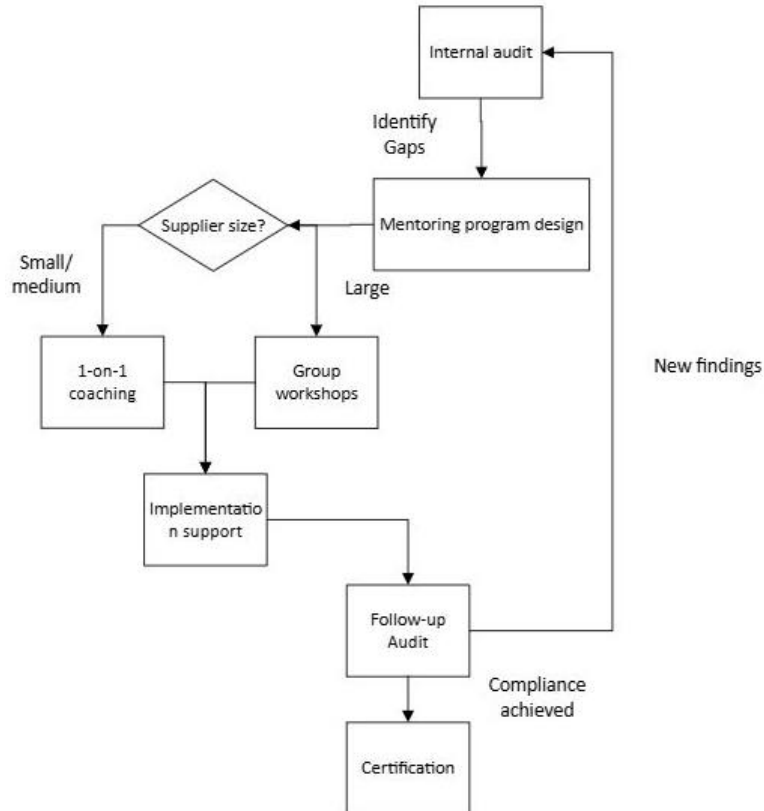
*Source: own contribution)*

Standardized checklists reportedly increase audit efficiency by lowering preparation time and thereby minimizing subjective evaluation biases. A 2024 Jagani study found that vendors that used standardized checklists had a 30% higher first-time audit pass rate than those depending on unstructured judgements (Jia, 2021). Moreover, digital integration of these checklists, such as via QAD SmartCheck, improves real-time tracking and corrective action management.

### 3.2 Internal Audit and Mentoring Processes in Supplier Management

Apart from a compliance activity, auditing is a strategic tool meant to include suppliers in conversation on best practices and necessary enhancements. Good auditing techniques improve general operational performance by means of improved openness and responsibility across the supply chain, therefore strengthening the overall performance (Short, 2015). Moreover, the results of internal audits can guide resource allocation and support projects, so matching them with corporate goals.

They can also guide future supplier growth strategies. Studies have indicated that consistent audits help to improve supplier performance and cooperation. For instance, including sustainability initiatives into audits has pushed vendors to follow more ecologically friendly behaviour in line with more general environmental goals (Villena, 2019). This complements the idea of reciprocal accountability, in which suppliers are driven to raise their standards to boost general supply chain performance and competitiveness (Villena, 2019).



**Figure 3. Support and mentoring supplier program structure**

*Source: own contribution*

Supplier assessment programs achieve maximum effectiveness when combining internal audits with structured mentoring initiatives. This integrated approach creates a supportive framework for supplier development through:

**Knowledge transfer mechanisms**

- Targeted training sessions addressing audit findings.
- Sharing of best practices and technical resources
- Collaborative problem-solving workshops (Jagani, 2024).

**Capability building for resource-constrained suppliers**

Mentoring proves particularly valuable for small-to-medium suppliers lacking internal expertise, as it provides:

- Customized guidance on compliance implementation.
- Hands-on support for quality system improvements.
- Long-term performance monitoring.

**The audit-mentoring feedback loop**

A symbiotic relationship exists where:

- Audit findings directly inform mentoring priorities.
- Mentoring outcomes refine future audit focus areas.
- Continuous improvement becomes institutionalized.

This dual approach transforms compliance from a transactional requirement into a strategic partnership, simultaneously meeting quality standards while fostering supplier growth and engagement (Jagani, 2024).

#### **4. THE IMPACT OF SUPPLIER SELF-ASSESEMENT (SSAP) ON THE SUPPLY CHAIN**

An indispensable instrument for supply chain management, supplier self-assessment programs (SSAP) greatly affect its general sustainability and high performance. By means of these initiatives, companies can enhance supplier relationships, guarantee adherence to quality standards, and promote sustainable development of suppliers.

A necessary instrument for the ongoing performance enhancement in the supply chain is supplier self-assessment programs (SSAPs). By means of these initiatives, companies can methodically assess supplier performance, thereby pointing up both areas needing development and strengths.

##### **4.1 Improvement of Supplier Performance**

Studies lately have shown the benefits of these techniques. Yang et al. (2019) underlined how evaluations depending on relational commitment and effective information flow between providers help to improve supply chain adaptation to volatile market conditions. This method speeds up reaction to outside disturbances, therefore strengthening the system's resilience overall (Xiang, 2023).

Constant performance monitoring helps companies to quickly find any deviations from desired criteria. This approach, according to Jia (2021), results in small increases in process efficiency and product quality, therefore helping to constantly optimize the supply chain (IATF, 2016).

Stronger supplier relationships depend much on the evaluation tools included into SSAPs. As studies pointed out, turning evaluation data into joint development plans improves supplier performance and raises supply chain competitiveness. By implementing such strategies, businesses not only maximise internal operations but also support long-term sustainability, thereby guaranteeing steady and effective cooperation with business partners.

##### **4.2 Ensuring compliance and sustainability**

Supplier Self-Assessment Programs (SSAPs) play a critical role in maintaining compliance with both internal and external quality standards. In an era where consumers and regulatory bodies increasingly emphasize environmental and ethical requirements, self-assessment has become a vital tool for aligning supplier practices with sustainability goals (Kauppila et al., 2020).

##### **Strengthening Compliance Through SSAPs**

SSAPs enable companies to systematically verify adherence to:

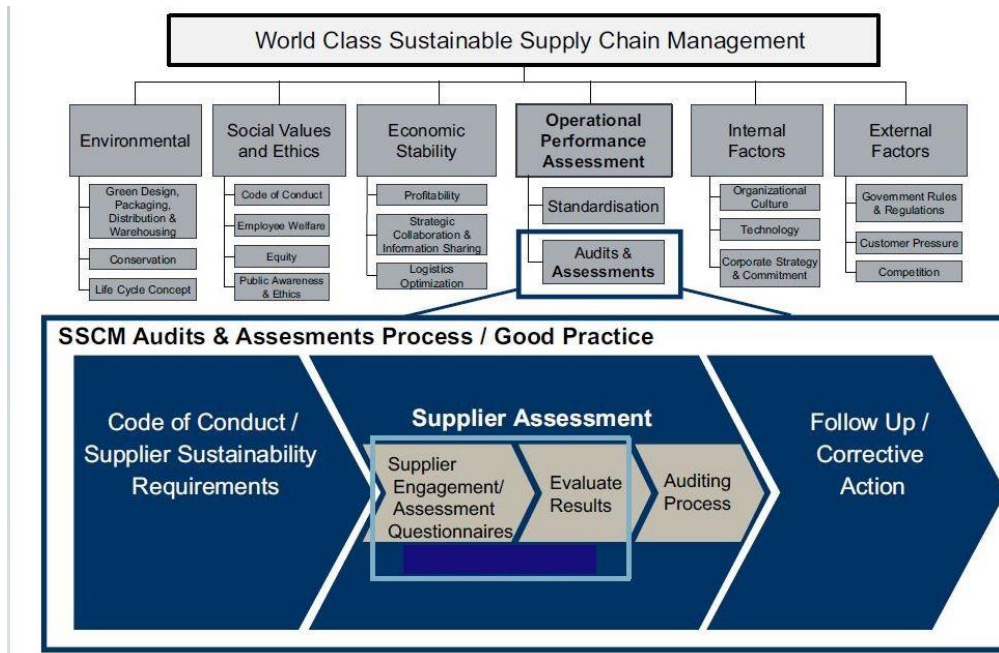
- Industry regulations (e.g., ISO 9001, IATF 16949 REACH)
- Corporate ethical codes (labor practices, anti-corruption policies)
- Environmental standards (carbon footprint, waste management)

Research indicates that first-tier suppliers' commitment significantly influences overall supply chain performance, particularly in complex, multi-tier networks (IATF, 2016). By integrating compliance checks into SSAPs, firms can proactively identify and mitigate risks before they escalate into non-conformities or reputational damage.

##### **Advancing Sustainable Supply Chain Management (SSCM)**

Sustainable supply chain practices require strong environmental engagement from suppliers to avoid compromising overall performance. SSAPs facilitate this by:

- Setting clear sustainability KPIs (e.g., energy efficiency, recyclable materials).
- Tracking supplier progress through regular self-reported assessments.
- Encouraging corrective actions before external audits.



**Figure 4. SSCM Audits and Assessments**

Source: Fraser et al. (2020)

Qiao (2022) highlight that SSAPs help companies enforce supplier codes of conduct, ensuring alignment with broader corporate sustainability strategies. This structured approach not only minimizes ecological impact but also strengthens brand reputation among eco-conscious stakeholders. (Kauppila et al., 2020)

#### 4.3 Self-Assessment Questionnaire (SAQ)

Self-Assessment Questionnaire (SAQ) serves as a vital tool for suppliers to evaluate their compliance with organizational standards, industry regulations, and internal quality management protocols. This comprehensive questionnaire is designed to assist suppliers in identifying strengths and weaknesses, facilitating areas for improvement, and ensuring alignment with best practices in quality management (Yang et al., 2019).

The SAQ emerged from industry-wide efforts to streamline sustainability assessments while maintaining rigor. Unlike traditional questionnaires that merely verified policy existence (e.g.: "Do you have an environmental management system?"), the SAQ required:

- Evidence-based responses (e.g., ISO 14001 certificates, audit reports).
- Risk-weighted scoring prioritizing critical ESG factors for automotive supply chains.
- Third-party validation via an independent platform to ensure: Antitrust compliance (overseen by CSR Europe) and Data confidentiality (suppliers-controlled OEM access) (Fraser et al., 2020).

Beyond conventional quality audit checklists (e.g., VDA 6.3, IATF 16949), modern SSAPs increasingly incorporate **Sustainability Assessment Questionnaires (SAQs)** to address ESG (Environmental, Social, Governance) gaps. This integration offers three strategic advantages.

##### **Enhanced Transparency & Risk Mitigation**

**Evidence-based validation:** Unlike binary yes/no checklist items, SAQs require suppliers to upload certificates, policy documents, and audit reports. This reduces greenwashing risks by 42% compared to traditional self-declarations (Fraser et al., 2020).

**Multi-tier visibility:** SAQs extend compliance monitoring to sub-tier suppliers (raw material providers), addressing a critical blind spot in automotive supply chains.

## Operational Synergies with Quality Management

**Table 1. Benefits of SAQ and checklists**

Feature	Traditional checklist	SAQ	Combined Benefit
<b>Data Collection</b>	Process-focused	Policy/evidence-focused	Holistic view (process+governance)
<b>Scoring</b>	Compliance/non-compliance	Percentage-based	Enables benchmarking
<b>Corrective Actions</b>	Reactive fixes	Preventive improvements	Aligns with IATF 16949's „zero defects” goal

*Source: own contribution*

### Strategic Value Creation

The automotive industry's adoption of SAQs has created measurable strategic value by transforming compliance into competitive advantage. Standardization through initiatives like Drive Sustainability has reduced redundant assessments, with participating OEMs reporting a 25-30% decrease in duplicate supplier requests. This consolidation directly addresses the supplier fatigue identified in Fraser's study of automotive questionnaires (Fraser et al., 2020). Risk mitigation has proven particularly impactful, as demonstrated by Volkswagen's 2022 implementation of SAQs for battery supply chains, which identified critical mineral sourcing risks 6-8 months earlier than traditional methods. Perhaps most significantly, these tools enable proactive rather than reactive management - Toyota's supplier development team now uses SAQ data to allocate resources to high-risk suppliers 12 months before contract renewals.

This shift from compliance checking to strategic partnership building reflects what term "the maturity evolution" in supply chain sustainability.

## 5. CONCLUSIONS

For quality control in the automotive sector, supplier self-assessment programs (SSAPs) have shown to be indispensable instruments. These projects help suppliers to find non-conformities in preparation phases by using standardized checklists, internal audit processes, and specialized training programs, therefore lowering the risks and expenses related with outside audits.

Studies like Yang et al., 2019 and Jia, 2021 demonstrate that methodical self-assessment enhances supply chain adaptation to volatile market conditions. Moreover, constant performance monitoring helps companies to apply quick remedial action, thereby improving process effectiveness and product quality.

Strengthening of supplier relationships is another important advantage of SSAPs. As Mohammed & Mandal (2024) pointed out, turning assessments into joint development plans improves performance and raises general supply chain competitiveness.

### Practical Implications

For automotive industry managers, this research offers several key recommendations:

- Structured checklists – Using standardized evaluation tools reduces subjectivity and increases efficiency.
- Mentored internal audits – A collaborative approach builds trust and facilitates knowledge exchange between suppliers and manufacturers.
- Training programs – Developing supplier competencies through specialized training ensures better audit preparedness.

This research primarily relies on existing case studies and literature, which may limit the generalizability of conclusions. Additionally, the impact of SSAPs may vary depending on supplier size and regional specificities.

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