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Role of SAP GTS in Import and Export Compliance Management

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Abstract : Import and export compliance requires organizations to evaluate trading partners, product classifications, licensing requirements, and transaction restrictions while maintaining evidence of their decisions. SAP Global Trade Services (SAP GTS) supports these activities through sanctioned-party screening, embargo checks, legal control, and license management. This study develops an evaluation framework that distinguishes efficient compliance processing from effective control execution. A simulated before-and-after dataset comprises 2,400 trade transactions across 30 matched operational groups, with 1,200 transactions in each period. Outcomes include documented pre-execution checks, compliance review time, exception resolution time, license-record completeness, and audit-file retrieval. An independently selected review sample contains 300 transactions per period. Documented completion of required checks increases from 93.0% to 99.0%, while audit-file deficiencies decrease from 18.0% to 8.0%. Mean active compliance review time decreases from 18.0 to 12.0 minutes, with a paired reduction of 6.0 minutes and a 95% confidence interval of 4.13–7.87 minutes. Meanwhile, flagged transactions increase from 15.0% to 17.5%, demonstrating that fewer alerts should not automatically be interpreted as better compliance. The framework emphasizes accurate master data, appropriate configuration, authorized exception decisions, and independent testing. Actual effectiveness requires verified operational evidence and cannot be established from software implementation alone.

Keywords: SAP GTS; import compliance; export compliance; sanctioned-party screening; license management; trade governance.

Introduction

International trade compliance involves determining whether a transaction may proceed, which conditions apply, and what evidence must be retained. Relevant activities include checking business partners, identifying applicable product controls, examining destination restrictions, validating authorizations, and recording decisions.

These activities differ between imports and exports and across jurisdictions. Import compliance also encompasses matters such as classification, valuation, origin, declarations, and applicable permits. Export compliance can involve product controls, end-use considerations, destination restrictions, and

authorization requirements. No single software function covers every obligation.

SAP GTS provides tools for several trade-control activities. Its Compliance Management documentation identifies sanctioned-party screening, embargo checks, and legal control. SAP learning materials also describe import and export license configuration and product-related export control. These are documented capabilities whose practical coverage depends on system configuration and the relevant business process. help.sap.com

Evaluating these capabilities requires more than measuring processing speed. Rapid approval may reflect efficient handling, but it may also indicate incomplete checks. Similarly, an increase in blocked transactions may represent improved detection rather than deteriorating performance.

This paper therefore evaluates compliance through complementary measures of coverage, evidence quality, exception handling, and administrative effort. It treats

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SAP GTS as part of an organizational control system involving technology, staff, policies, and oversight.

Literature Review

Organizational Foundations of Trade Compliance

The Bureau of Industry and Security identifies eight elements of an effective export compliance program, including management commitment, risk assessment, authorization procedures, recordkeeping, training, auditing, corrective action, and continuing maintenance. This guidance establishes that screening technology operates within a broader governance structure (BIS, n.d.).

The Office of Foreign Assets Control's 2019 compliance framework similarly emphasizes organizational responsibilities rather than reliance on a screening tool alone. It provides a sanctions-compliance reference point for organizations within its stated scope, rather than a universal standard for every international transaction (OFAC, 2019).

European Commission Recommendation 2019/1318 provides guidance on internal compliance programs for dual-use trade controls. It is cited here as a published governance framework, rather than as a complete statement of current European export-control law. Its relevance lies in organizing procedures for identifying and managing trade-control risks.

Customs Risk and Compliance Management

Widdowson (2020) presents an integrated approach to customs risk and compliance. The framework supports evaluating compliance management as a combination of risk identification, organizational responses, and continuing assessment. It also reinforces the distinction between a control process and its ultimate effectiveness.

The World Customs Organization's Revised Kyoto Convention, General Annex Chapter 6, identifies risk management, compliance measurement, and audit-based controls within customs control systems. These principles support independent testing rather than treating system-generated approval as sufficient evidence of compliance.



SAP GTS Screening and Legal Control

SAP documentation describes Compliance Management functions for screening and legal control. Its product-related export-control lesson explains the relationship between product classification and checks applied to export documents (SAP, n.d.-a, n.d.-b). This supports examining classification completeness and applicable-check coverage alongside screening outcomes.

SAP's license-type documentation explains configuration for import and export licenses. Its sanctioned-party list lesson describes list maintenance and the configuration of relevant screening settings. These functions depend on accurate records, maintained content, and appropriate rules; the documentation does not establish a universal reduction in compliance failures (SAP, n.d.-c, n.d.-d).

Enterprise Systems and Information Quality

DeLone and McLean's (2003) information systems success model distinguishes system quality, information quality, use, satisfaction, and net benefits. Applied to trade compliance, it suggests that system availability and processing speed should be assessed together with the quality of classifications, partner information, and retained decisions.

Hitt, Wu, and Zhou (2002) examine enterprise resource planning investment and business performance. Hendricks, Singhal, and Stratman (2007) investigate performance around enterprise system implementations. Both contribute to understanding enterprise technology evaluation, but neither establishes SAP GTS-specific compliance effectiveness. Their broader implication is that organizational outcomes require empirical assessment rather than inference from implementation alone.

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Research Gap

The literature provides governance principles, customs risk frameworks, and documented software capabilities. However, these sources do not supply a directly transferable estimate of SAP GTS's effect on control completeness or compliance failures.

The gap addressed here is methodological: how can organizations evaluate SAP GTS while distinguishing faster processing, stronger evidence, increased detection, and actual legal compliance?

Aim and Objectives

The study aims to assess SAP GTS-supported import and export compliance through operational and control-quality indicators.

Its objectives are to:

- Assess documented completion of applicable checks before transaction execution.
- Compare review, exception-resolution, and audit-retrieval times.
- Examine license-record completeness and audit-file deficiencies.
- Interpret screening alerts without equating alert frequency with compliance effectiveness.
- Identify implementation conditions affecting reliable control execution.

Research Hypothesis

Null hypothesis: Mean active compliance review time does not differ between pre-implementation and post-implementation periods.

Alternative hypothesis: Mean active compliance review time differs between the periods.

Review time is the primary statistical outcome. Control-quality indicators are reported separately so that efficiency is not treated as equivalent to effectiveness.

Conceptual Framework

The framework links reliable master data and configured controls with documented transaction assessment. Staff investigate exceptions and record authorized decisions. Independent review then evaluates whether supporting evidence is complete.

The proposed relationship is:

Data and configuration quality → applicable control execution → documented exception decisions → independently assessed control quality.

Processing efficiency is a parallel outcome. Faster review is beneficial only when required checks and decision quality are maintained.

The framework does not assume that every legal obligation is automated. Requirements outside configured controls remain subject to appropriate organizational procedures.

Methodology

Research Design

The study uses a matched before-and-after design with simulated aggregate values. Thirty operational groups represent stable combinations of business unit, trade direction, and product-control category.

Each group contributes 40 transactions per period, producing 1,200 transactions before implementation and 1,200 afterward. Twelve groups represent imports and 18 represent exports.

Two six-month windows are specified, separated by a three-month stabilization interval. No actual company, implementation date, or jurisdiction is asserted.



Intervention

The intervention combines SAP GTS configuration, transaction integration, master-data review, sanctioned-party list maintenance, license-record maintenance, staff training, and formal exception procedures.

It is evaluated as a combined implementation package. The design cannot isolate software effects from associated training, data correction, or process redesign.

Sampling and Eligibility

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Eligible transactions are completed import or export transactions with stable identifiers and traceable compliance records. Cancelled transactions, duplicates, and unresolved timestamp errors require exclusion under predefined rules.

Transactions should be randomly selected within each group. A separate audit sample comprises ten transactions per group per period, totaling 300 per period. Audit selection must occur independently of whether a transaction generated an alert.

For actual application, shipment characteristics, product categories, counterparties, staffing, regulatory changes, and list-update practices require comparison between periods.

Outcome Definitions

Table 1. Compliance evaluation measures

Measure	Definition	Denominator
Documented pre-execution checks	Evidence that all checks required by the applicable control matrix were completed before execution	All 1,200 transactions per period
Active review time	Staff person-minutes spent assessing and documenting transaction compliance	All sampled transactions
Exception-resolution time	Elapsed time from initial flag to recorded disposition	Flagged transactions
License-record deficiency	Missing or inconsistent evidence in a transaction requiring a recorded license	License-required subset
Audit-file deficiency	At least one missing item on the predefined evidence checklist	300 independently selected files
Audit-file retrieval time	Time to assemble the requested evidence package	Audit sample
Flagged transaction	Transaction requiring human investigation after a control alert	All transactions

A missing record does not automatically establish an unlawful transaction. Conversely, a complete file does not prove that every underlying legal judgment is correct.

Review Procedures

The audit checklist examines partner identity evidence, applicable product classification, control results, relevant license records, and exception authorization where required.

Two reviewers should independently assess files, with disagreements resolved through documented adjudication. Their criteria must remain consistent across periods. No reviewer agreement statistic is claimed without actual assessments.

Flag outcomes are categorized as requiring a control action or cleared after review. A control action may involve retaining a block, obtaining authorization, or changing the transaction; it is not automatically a confirmed violation.

Statistical Analysis

Continuous outcomes are averaged within each operational group. Paired t-tests therefore use 30 group pairs and 29 degrees of freedom.

The paired difference is defined as the pre-implementation mean minus the post-implementation mean. Confidence intervals use:

$$95\%\ \mathrm{CI} = \bar{d} \pm t_{0.975,29}\frac{s_d}{\sqrt{30}}$$

The primary test uses a two-sided significance level of .05. Secondary tests are exploratory. Categorical results are descriptive because aggregate counts do not permit appropriate modeling of transaction clustering.

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Exception-time comparisons are case-mix sensitive because flagged transactions can differ between periods.

Ethical and Governance Considerations

No actual commercial or personal records are included. A field evaluation would require organizational permission, restricted access, confidentiality safeguards, and appropriate review of employee-related information. No institutional approval is claimed.

Results

Sample Composition

Table 2. Composition of the simulated dataset

Characteristic	Before	After
Operational groups	30	30
Transactions per group	40	40
Import transactions	480	480
Export transactions	720	720
Total transactions	1,200	1,200
Transactions requiring a recorded license	240	240
Independently selected audit files	300	300

The license-required subset is included within the total population. The audit sample is also drawn from that population and must not be added to it.

Control Coverage and Evidence Quality

Table 3. Simulated control-quality outcomes

Indicator	Before	After	Change
Documented pre-execution checks	1,116/1,200 (93.0%)	1,188/1,200 (99.0%)	+6.0 percentage points
Missing or incomplete check evidence	84/1,200 (7.0%)	12/1,200 (1.0%)	−6.0 percentage points
License-record deficiencies	48/240 (20.0%)	12/240 (5.0%)	−15.0 percentage points
Audit files with deficiencies	54/300 (18.0%)	24/300 (8.0%)	−10.0 percentage points

These measures overlap and must not be summed. For example, an audited file may contain both incomplete check evidence and a license-record deficiency.

The findings represent documentation and control-execution indicators, not verified counts of legal violations.

Processing Efficiency

Table 4. Simulated paired analysis of group means

Outcome	Before mean	After mean	Reduction	SD of paired differences	95% CI for reduction	t	p
Active review time, minutes	18.0	12.0	6.0	5.0	4.13 – 7.87	6.57	<.001
Exception-resolution time, hours	9.0	6.0	3.0	4.0	1.51 – 4.49	4.11	<.001
Audit-file retrieval time, minutes	16.0	7.0	9.0	6.0	6.76 – 11.24	8.22	<.001

Review time decreases by 33.3%, and the primary null hypothesis is rejected within the simulated analysis. Exception-resolution time also decreases by 33.3%, while retrieval time decreases by 56.3%.

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Exception-resolution means are equally weighted averages of group means, rather than pooled averages across all flagged transactions.

Interpretation of Alerts

Table 5. Simulated alert outcomes

Indicator	Before	After
Flagged transactions	180/1,200 (15.0%)	210/1,200 (17.5%)
Flags requiring a control action	30/180 (16.7%)	35/210 (16.7%)
Flags cleared after review	150/180 (83.3%)	175/210 (83.3%)

Alert frequency increases while the proportion requiring action remains unchanged. This pattern cannot establish improved sensitivity because unflagged transactions have not undergone comprehensive substantive validation.

Administrative Capacity

The six-minute reduction in active review time corresponds to 120 staff hours across 1,200 transactions. This represents potential capacity released, rather than demonstrated payroll savings.



Elapsed exception-resolution hours cannot be added to active staff hours. Audit retrieval is also reported separately to avoid possible overlap with compliance work.

Discussion

The analysis demonstrates why compliance evaluation requires several measures. Shorter review time is accompanied by stronger documented coverage and fewer audit-file deficiencies. This pattern is more informative than speed alone, although it does not establish legal compliance.

SAP's documented screening, legal-control, and license functions provide plausible mechanisms for these outcomes. Standardized checks may reduce repeated assessment, while maintained records can support investigation and evidence retrieval. Actual performance remains dependent on the correctness of classifications, lists, rules, and organizational decisions.

The increase in flagged transactions is particularly important. A management objective focused solely on reducing blocks could weaken controls. More alerts may reflect broader coverage, changed counterparties, updated lists, or altered matching settings. Fewer alerts could indicate improved data quality or missed risks. Neither direction is inherently favorable.

BIS guidance reinforces the need for training, auditing, corrective action, and continuing program maintenance. These activities remain necessary even when transaction checks are automated. Likewise, WCO principles support independent compliance measurement rather than exclusive reliance on system statuses. Bureau of Industry and Security

Import and export results also require separate interpretation. Equivalent overall improvements could conceal weak performance in one direction or product category. A field study should report subgroup outcomes and investigate transactions not transferred successfully into the compliance workflow.

The before-and-after design cannot establish causation. Changes in regulations, transaction risk, staffing, or management attention may explain part of an observed improvement. Stronger evaluation would use comparable operations without implementation or a staggered rollout, supported by evidence that underlying trends are comparable.

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Practical Recommendations

Organizations should establish a transaction-specific control matrix before configuration. Each requirement needs an owner, a documented source, and a defined review process.

Master-data changes, screening content, license records, and interfaces should be monitored continuously. Exceptions require authorized decisions with clear reasons and supporting evidence.

Performance dashboards should combine coverage, aging, evidence deficiencies, review effort, and independent testing. Targets should encourage accurate decisions rather than rapid release or minimal alert counts.

Limitations

The numerical findings are simulated and provide no evidence about an actual organization. The design does not establish causal effects or isolate individual intervention components.

Evidence completeness is an imperfect proxy for compliance. The analysis does not estimate missed violations, screening sensitivity, classification accuracy, financial penalties avoided, or return on investment.

Group means conceal variation, and exception comparisons may reflect different case complexity. Actual studies should examine distributions, unresolved cases, subgroup performance, and independent substantive validation.

Conclusion

SAP GTS can support import and export compliance through screening, legal control, license management, and documented transaction handling. Its contribution depends on reliable information, appropriate configuration, trained staff, and independent oversight.

The simulated analysis provides a consistent assessment structure connecting efficiency with control coverage and evidence quality. Verified operational data are required before drawing conclusions about actual compliance improvement.

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Conflict of Interest

No commercial sponsorship or organizational relationship is asserted.

Data Availability

The tables contain simulated aggregate values. No collected transaction-level dataset accompanies this manuscript.

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