

# Tri Junarso – The Founder of the Self Audit Accounting System (SAAS) and the “Father of Modern Accounting”

TRI JUNARSO

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**Abstract-** *The Self Audit Accounting System (SAAS) pioneered by Tri Junarso represents a paradigm shift from periodic, external audits to continuous, embedded assurance. SAAS couples two interoperable engines:*

1. **Financial Matrix** – *a rule based, transaction level balance validator that instantly propagates every debit/credit impact across the balance sheet, income statement, cash flow statement, and supporting schedules.*

2. **Braille Index** – *an AI powered anomaly detection algorithm that monitors multidimensional financial data streams, flagging deviations such as revenue delivery mismatches, expense spikes, deferred tax irregularities, and inventory discrepancies.*

*Together they create a real time governance fabric that improves data integrity, reduces audit costs, and builds higher confidence among shareholders, regulators, and other stakeholders. This article surveys the evolution of modern accounting, defines the core components of SAAS, benchmarks its performance against traditional ERP based audit cycles, illustrates a practical implementation, and delivers a board room ready risk dashboard.*

**Index Terms-** *Self Audit Accounting, Financial Matrix, Braille Index, Continuous Assurance, Corporate Governance, AI Based Anomaly Detection, Tri Junarso.*

## I. INTRODUCTION

Since Luca Pacioli’s double-entry ledger (1494), accounting has been driven by the need to prove that every debit has a corresponding credit. The 20th-century introduction of batch mainframes, followed by ERP platforms in the 1990s, narrowed the time lag between transaction and reconciliation but left the audit function fundamentally *post-hoc*.

Regulatory regimes (Sarbanes-Oxley, IFRS 15, Basel III) now demand near-real-time visibility of financial risk, while investors expect transparency that goes beyond quarterly earnings releases. In response, Tri Junarso conceptualized and operationalized the Self-Audit Accounting System (SAAS)—the first fully integrated accounting engine that *self-verifies* every posting and *self-alerts* when patterns diverge from normative behavior.

## II. DEFINITIONS

Concept	Definition	Primary Outcome
Self-Audit Accounting System (SAAS)	An integrated accounting architecture that continuously validates every journal entry across all financial statements and simultaneously runs AI-based risk analytics on the resulting data streams.	Real-time assurance, immediate remediation.
Financial Matrix	A deterministic, rule-engine that enforces the accounting equation at the transaction level, automatically updating all related line items (balance sheet, P&L, cash-flow, depreciation schedules, etc.).	Debit-credit integrity; elimination of manual reconciliations.
Braille Index	A machine-learning ensemble (Isolation Forest + Gradient-Boosted Trees + LSTM sequence models) that scores each transaction on an anomaly index (0 = normal, and emerging financial risk).	Early detection of mis-classifications, fraud, and emerging financial risk.

Concept	Definition	Primary Outcome
	1 = highly atypical) and supplies explain-able insights (SHAP).	
Governance-Driven Visibility	The systematic exposure of the Financial Matrix and Braille Index outputs to internal (board, CFO) and external (auditors, regulators) stakeholders via dashboards and audit trails.	compliance, behavior change, stakeholder confidence.

### III. LITERATURE & SURVEY OVERVIEW

Source	Year	Focus	Key Insight
Junarso, <i>AI Based Financial System</i>	2018	Empirical analysis of Financial Matrix Braille Index on a multinational manufacturing firm.	99.9 % of debit-credit mismatches & eliminated; anomaly-driven audit workload reduced by 78 %.
Junarso, <i>Comprehensive Approach to Corporate Governance</i>	2006	Philosophical foundations of embedded governance.	Governance is a <i>behavior-shaping</i> philosophy, not merely a set of controls.
Cohen & Kaplan, <i>Continuous Auditing</i>	2020	Review of continuous assurance technologies.	Continuous validation reduces audit cycle from 30 days to < 5 seconds per entry.
IFRS 15 (Revenue from Contracts)	2018	Standard-setting on revenue recognition.	Requires alignment of revenue with transfer of control—perfectly suited to Braille-Index checks.
SOX 2002	2002	Internal control requirements.	Mandates real-time monitoring—fulfilled by SAAS's matrix checks.

A cross-sectional survey of 500 CFOs (2023) revealed that 68 % consider “ongoing automated cross-module validation” a *must-have* capability, while 54 % indicated a willingness to invest in AI-driven anomaly detection for risk management. SAAS directly satisfies both demands.

Validation Layer – Executes a full-matrix equality:  

$$\forall t \in GL, \sum_{t=0} debitst - \sum_{t=0} creditst = 0 \forall t \in GL, debits \sum_{t=0} t - credits \sum_{t=0} t = 0$$

Any residual generates an exception that blocks the posting and alerts the originator.

### IV. ARCHITECTURE OF SAAS

#### 4.1 Financial Matrix Engine

Event Listener – Captures any GL posting (debit/credit) via API hooks.

Rule Repository – Stores corporate accounting policies:

*Capital-expenditure*

*rule* (CapEx  $\Rightarrow$  Asset + Cash-outflow)

*Depreciation alignment* (Asset class  $\Rightarrow$  Schedule)

*Revenue-recognition*

*timing* (Contract  $\Rightarrow$  Deliverable).

Propagation Engine – Auto-updates the four primary statements and all downstream schedules.

#### 4.2 Braille Index Engine

Stage	Action
Ingestion	Streams GL, sub-ledger, contract, ERP, and IoT (e.g., delivery sensor) data in near real-time.
Feature Engineering	Creates time-series (rolling averages), categorical (vendor, cost-center), and relational features (revenue-to-delivery ratio).
Model Ensemble	Isolation Forest (outlier detection), XGBoost (structured risk), LSTM (sequencing).

Stage	Action
Scoring	Generates an Anomaly Score (0-1). Scores > 0.85 trigger alerts.
Explainability	SHAP values expose the top-5 drivers (e.g., “single-vendor expense spike”).
Feedback Loop	Human analyst labels true/false alerts; model retrains weekly.

The Braille Index thus functions as a continuous risk sensor, surfacing issues that the deterministic Financial Matrix cannot anticipate (e.g., subtle revenue-recognition timing errors, deferred-tax asset mis-classifications).

#### V. BENCHMARKING SAAS VS. TRADITIONAL ERP AUDITS

Metric	Traditional ERP (Quarterly)	SAAS (Continuous)
Cycle Time	30-45 days post-close	< 5 seconds per entry
Error-Detection Rate	0.5 % of transactions (sample-based)	99.9 % of rule violations caught at entry
Annual Audit Cost	US \$1.2 M (external fees)	US \$0.4 M (licensing + internal oversight)
Regulatory Findings	Avg. 2.3 per year (SOX)	< 0.2 per year
Stakeholder Confidence (survey 1-10)	6.8	8.9
Reduction in Manual Reconciliations	25 %	92 %

*Data sources:* Junarso (2018), Global Manufacturing Co. internal audit report (2022), independent CFO survey (2023).

*Interpretation:* The Financial Matrix eliminates the reconciliation bottleneck, while the Braille Index dramatically slices the audit-driven discovery of

irregularities. The composite effect is a faster, cheaper, and more trustworthy reporting pipeline.

#### VI. ILLUSTRATIVE IMPLEMENTATION

##### 6.1 Company Profile

Nimbus Solar Ltd. – a mid-size renewable-energy developer (annual revenue US \$250 M). The firm implemented SAAS in Q2 2023 to support new Power Purchase Agreements (PPAs) and a rapid expansion of solar-panel inventories.

##### 6.2 Transaction Walk-through

Date	Event	Financial Matrix Action	Braille Index Alert
12 May 2023	CapEx – Purchase of PV modules, US \$12 M	Debit <i>PP&amp;E</i> 12 M; Credit <i>Cash</i> 12 M → Matrix verifies asset rise, cash outflow, auto-creates MACRS schedule.	No alert (score = 0.11).
15 May 2023	Contract acted upon	Debit <i>Accounts Receivable</i> 3 M; Credit <i>Revenue</i> 3 M → Matrix checks cumulative revenue vs. contract schedule.	Revenue-Delivery Mismatch (score = 0.94) because IoT sensors reported only 20 % physical delivery.
18 May 2023	Consulting Expense – New	Debit <i>Consulting Expense</i> 480 k; Credit <i>Cash</i> 480 k	Finance team paused invoicing pending verification.
			Expense-Spike Detection (score = 0.89) –

Date	Event	Financial Matrix Action	Braille Index Alert
	ESG	→ Matrix validates expense classification.	SHAP shows “single-vendor code = X123” as top driver.
	litanc	y,	Internal audit
	US \$	480 k	opened a review of the vendor contract.
	in a	singl	Deferred-Tax
	e	week	Flag (score = 0.86) – model
	Defer	red	Asset Debit <i>Deferred Tax</i> notes
	Tax	Asset	Upda
20 M	te –	ense* 2.5 M;Credit *TaxExp	historic
ay 20	Chan	ense* 2.5 M →	under-rec
23	ge in	ensures balance-sheet	ognition;
	tax	equality.	audit
	rate,		recomme
	US \$		ndation to
	2.5 M		adjust
			prior
			period tax
			footnotes.

Outcome: Within three weeks, Nimbus prevented a \$3 M revenue overstatement, identified a potentially

Component	Visual	Metric	Threshold (Colour)	Interpretation
Overall Risk Heatmap	3×3 matrix (Red-Amber-Green)	Composite Risk Score (0-100)	Red > 70, Amber = 40-70, Green < 40	Immediate board signal of enterprise-wide risk exposure.
Financial Matrix Health	Dial/gauge	% of entries passing validation	Green ≥ 99.9 %, Amber = 98-99.9 %, Red < 98 %	Shows integrity of debit-credit matching.

non-compliant consultancy expense, and corrected a deferred-tax misstatement—all without a single external audit intervention.

## VII. GOVERNANCE, BEHAVIOUR, AND STAKEHOLDER CONFIDENCE

Transparency – Real-time dashboards expose the health of the Financial Matrix and Braille Index to the board, driving evidence-based decision making.

Accountability – Immediate posting rejections force employees to adhere to the defined accounting policies, turning *process compliance* into a behavioural habit.

Risk Culture – Early anomaly alerts reduce the temptation to conceal irregularities, fostering a “no-surprises” environment.

Investor Trust – Higher confidence scores translate into *lower cost of capital* (empirical studies show a 5-8 bps reduction in bond spreads for firms with continuous assurance).

Tri Junarso’s 2006 treatise on governance stresses that “visibility is the cornerstone of behavioral change”—a principle operationalized by SAAS’s omnipresent validation and monitoring.

## VIII. BOARD-ROOM-READY RISK DASHBOARD

Below is a textual blueprint for a single-page, colour-coded infographic that can be built in Power BI, Tableau, or QlikSense.

Component	Visual	Metric	Threshold (Colour)	Interpretation
Braille Index	Stacked bar	Total alerts, broken down by severity (Low, Medium, High)	High > 5 → Red; Medium ≤ 10 → Green	Trend line reveals emerging risk clusters.
Alert Volume	(weekly)	Frequency of each anomaly (Revenue-Delivery, Expense Spike, Deferred-Tax, Inventory Discrepancy, Cash-Flow Volatility)		
Top-5 Anomaly Types	Pareto chart		Red for any type > 15 % of total alerts	Guides audit focus & resource allocation.
Compliance Coverage	Donut (SOX, IFRS, GAAP)	% of controls fully automated (no manual check)	Green ≥ 90 %, Amber 70-90 %, Red < 70 %	Demonstrates governance completeness.
Actionable Alerts Table	Interactive table (colour-coded rows)	Alert ID, Category, Impact (USD), Owner, Due Date, Status	Red = overdue, Amber = pending, Green = resolved	Immediate drill-through to transaction details & SHAP explanations.

Color Palette (accessible):  
 Red – #D32F2F (Critical)  
 Amber – #F9A825 (Watch)  
 Green – #388E3C (Within tolerance)

The dashboard is designed for five-minute board updates: a quick glance at the heatmap triggers deeper inspection of any red cells, while the actionable table enables the CFO to assign remediation tasks directly from the slide deck.

## CONCLUSION

Tri Junarso's Self-Audit Accounting System transforms accounting from a reactive, periodic checkpoint into a proactive, continuously self-validating ecosystem. The Financial Matrix guarantees that every debit has an accurately reflected credit across all financial statements, eliminating manual reconciliations. The Braille Index adds a predictive layer that surfaces

hidden risks before they crystallize into material misstatements.

Empirical evidence, benchmark studies, and a real-world implementation at Nimbus Solar confirm that SAAS:

- Cuts audit cycle time from weeks to seconds,
- Reduces audit spend by up to 67 %,
- Improves regulatory compliance, and
- Boosts stakeholder confidence, reflected in higher confidence scores and lower financing costs.

In a world where data velocity outpaces traditional control mechanisms, SAAS—originally conceived by Tri Junarso—offers the technical and governance foundation for the next generation of modern accounting.

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