

# A Comprehensive Taxonomy of Invoice and Purchase Order Discrepancies

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## **Abstract**

The reconciliation of invoices against purchase orders (POs) is a foundational process in corporate finance and procurement. This process is highly susceptible to a wide variety of errors, which can lead to significant financial loss, regulatory non-compliance, and operational friction. Despite the critical nature of this function, a detailed, structured classification of these errors is often overlooked. This paper introduces a comprehensive taxonomy of 82 distinct discrepancy types, which are systematically organized into 15 major categories. This classification framework covers the full spectrum of potential issues, from simple data entry mistakes and calculation errors to complex semantic mismatches and compliance failures. By providing a granular, structured overview of these discrepancies, this paper serves as a foundational reference for internal auditors, procurement professionals, and finance departments seeking to design and implement robust control systems and standardized verification protocols.

## **1 Introduction**

In the procurement-to-pay (P2P) cycle, the invoice verification step serves as a critical control point to ensure that payments are made only for goods and services that were properly ordered, received, and authorized. This verification typically involves a three-way match between the purchase order, the goods received note (GRN), and the vendor invoice.

However, the complexity and high volume of transactions, combined with the potential for human error at multiple stages, result in a high frequency of discrepancies. These discrepancies are not uniform; they vary significantly in nature, severity, and origin. An error can be a simple typographic mistake, a deliberate overcharge, a misunderstanding of contract terms, or a systemic failure in documentation.

Identifying and resolving these issues is paramount. Uncorrected errors can lead to direct financial losses from overpayments, duplicate payments, and unauthorized charges. Furthermore, they can cause compliance failures, leading to audit penalties and damaging vendor relationships.

While the existence of such errors is well-known, a comprehensive, structured framework for their classification is necessary. This paper aims to fill that gap by presenting a detailed taxon-

omy of 82 distinct discrepancy types. These are grouped into 15 logical categories to provide a clear and organized model for understanding the challenges of invoice and PO verification.

## 2 The 15-Category Discrepancy Taxonomy

The following classification details the 15 primary categories of discrepancies, with a brief explanation for each of the 82 types.

### 2.1 Quantity Discrepancies

This category pertains to errors in the invoiced number of goods or services. It includes four types:

- **Over-billing on quantity:** The invoice charges for more items than the PO ordered (e.g., PO for 1000 units, invoice for 1200).
- **Under-billing on quantity:** The invoice charges for fewer items than the PO ordered, which may or may not be correct.
- **Unit conversion errors:** The PO lists "cases" but the invoice bills for "individual units," leading to a quantity mismatch.
- **Partial shipments not reflected:** The invoice bills for the full order, but only a portion of the goods was delivered.

### 2.2 Price Discrepancies

Errors related to the cost of goods or services. This category covers five types:

- **Unit price variance:** The price per item on the invoice (\$12/unit) is higher than the contracted PO price (\$10/unit).
- **Missing discounts:** Agreed-upon volume or promotional discounts are not applied to the invoice total.
- **Price tier mismatches:** The invoice applies a standard price when a special contracted price tier was expected.
- **Currency conversion errors:** The invoice uses an incorrect or outdated exchange rate for a foreign currency transaction.
- **Unauthorized price increases:** The vendor has raised the price without a corresponding approved change order.

### 2.3 Tax and Calculation Errors

This category includes six types of errors related to tax application and basic arithmetic:

- **Incorrect tax rates:** An 18% tax is applied when a 5% rate is correct for the item or service.
- **Calculation errors:** The total tax amount ( $Tax\ Amount$ ) *does not equal*  $Subtotal \times Tax\ Rate$ .

- **Duplicate tax application:** Tax is calculated on the line items and \*again\* on the subtotal.
- **Missing tax details:** The invoice lacks a required Tax ID or GSTIN number for validation.
- **Tax on exempt items:** Tax is applied to goods or services that are legally tax-exempt.
- **Surcharge miscalculations:** Additional fees (e.g., fuel) are calculated incorrectly.

## 2.4 Duplicate Invoices

This critical category involves attempts to receive payment multiple times for the same transaction and includes four types:

- **Exact duplicates:** The same invoice number (e.g., #INV-2025-001) is submitted two or more times.
- **Near-duplicates:** A duplicate invoice is submitted with minor changes (e.g., a new date or a slightly different amount).
- **Cumulative vs. incremental billing overlaps:** A new invoice for \$5000 is submitted, but it includes \$3000 from a previous, already-paid invoice.
- **System-generated duplicates:** A technical glitch causes the same invoice to be sent or entered multiple times.

## 2.5 Missing/Incomplete Data

Errors of omission where critical data is absent from the invoice (seven types):

- **Missing PO reference:** The invoice lacks a PO number, making automated matching impossible.
- **Missing line item details:** The invoice shows a total but does not itemize the products or services.
- **Missing vendor info:** The invoice does not clearly state the vendor's name, address, or contact details.
- **Missing payment terms:** It is unclear when the payment is due or what discounts apply.
- **Missing tax details:** The invoice lacks a tax ID or a breakdown of tax charges.
- **Missing invoice date:** The invoice does not have a date, which is critical for aging and payment terms.
- **Missing delivery information:** There is no reference to a delivery note or proof of delivery.

## 2.6 Unauthorized Charges

This category covers six types of fees and charges on an invoice that were not agreed upon in the purchase order:

- **Freight charges not in PO:** The invoice adds a 15% freight charge when the PO specified "FOB supplier".
- **Handling charges:** A fee for "handling" is added without prior agreement.
- **Cold chain surcharges:** A fee for refrigerated transport is added, but was not on the PO.
- **Expedited delivery fees:** The vendor adds a rush fee that was not authorized by the buyer.
- **Tariffs/customs:** Unexpected import duties are passed on to the buyer.
- **Service charges:** A generic "service charge" is added without justification.

## 2.7 Line Item Description Mismatches

This complex category (eight types) involves discrepancies between the PO and invoice descriptions:

- **Description text mismatches:** PO lists "500ml Distilled Water," invoice lists "Distilled H2O 500ml".
- **OCR errors:** A scanner misreads "Part 123" as "Part 1Z3".
- **Abbreviation variations:** PO lists "International Business Machines," invoice lists "IBM".
- **Unit format differences:** PO lists "500 GB," invoice lists "0.5 TB".
- **Wrong product:** The invoice lists a different product or part number than what was ordered.
- **Specification mismatches:** The PO ordered "Blue widgets," but the invoice lists "Red widgets".
- **Brand differences:** The PO specified a premium brand, but the invoice lists a generic equivalent.
- **Embedded quantity mismatches:** PO lists "50" units, invoice lists "1 box (50 units)".

## 2.8 Documentation & Reference Errors

These seven types of errors involve incorrect or conflicting reference information:

- **Wrong PO number:** The invoice references PO-2024-001, but the items belong to PO-2025-001.
- **Incorrect cost center:** The invoice allocates funds to the "Marketing" department instead of "Engineering".
- **Wrong service dates:** The invoice bills for services in "March" when the PO was for "February".
- **Missing shipment reference:** The invoice does not include the GRN or tracking number as required.
- **Conflicting dates:** The invoice date is earlier than the purchase order date.

- **Wrong bill-to address:** The invoice is sent to the wrong legal entity within a corporate group.
- **Vendor mismatches:** The PO is with "Vendor Inc.," but the invoice is from "Vendor LLC," a different legal entity.

## 2.9 Data Entry & Formatting Errors

These seven types are typically human errors in data transcription:

- **Transposition errors:** The amount is \$5,120, but the invoice shows \$5,210 (digits reversed).
- **Decimal point errors:** The invoice lists "\$1,000.00" when the correct amount is "\$10.00".
- **Zero/letter substitution:** The invoice number "INV-O123" is entered as "INV-0123".
- **Missing leading characters:** An ID "00456" is entered as "456".
- **Date format inconsistency:** The system expects MM/DD/YY, but the invoice uses DD/MM/YY.
- **Currency confusion:** The invoice lists "\$500," but it is ambiguous whether this is USD, CAD, or AUD.
- **Typing errors:** Simple spelling mistakes in vendor names, addresses, or item descriptions.

## 2.10 Timing Issues

Discrepancies related to the chronology and submission timeline of documents (three types):

- **Late invoice submission:** The invoice is received on Mar 20 for goods delivered on Jan 15 (>30 days).
- **Back-dated invoices:** An invoice is submitted in the current month but dated for a previous, closed accounting period.
- **Service period overlaps:** An invoice for "Jan 1-31" overlaps with a previous invoice for "Jan 15-Feb 15".

## 2.11 Calculation Errors

These five types of errors are distinct from tax calculations and involve failures in basic invoice arithmetic:

- **Line total calculation errors:** The invoice states  $\text{Unit } \$10 \times \text{Qty } 5 = \$60$ , when it should be \$50.
- **Subtotal mismatches:** The sum of all line item totals does not equal the stated subtotal.
- **Invoice total errors:** The sum of  $\text{Subtotal} + \text{Tax} - \text{Discount}$  does not equal the  $\text{GrandTotal}$ .
- **Discount calculation errors:** A 10% discount on \$1000 is incorrectly calculated as \$50 instead of \$100.

- **Rounding error accumulation:** Small rounding errors on hundreds of line items lead to a significant total discrepancy.

## 2.12 Vendor/Payment Details Errors

Critical errors (six types) that can lead to misdirected payments or compliance issues:

- **Vendor account mismatches:** The invoice is from Vendor ID 12346, but the PO was issued to Vendor ID 12345.
- **Incorrect banking details:** The invoice lists a new bank account that does not match the vendor's master file.
- **GSTIN mismatches:** The Tax ID on the invoice does not match the one on file for that vendor.
- **Wrong payment method:** The invoice requests a "wire transfer" when the vendor is set up for "ACH".
- **Unapproved vendors:** An invoice is received from a vendor not registered in the master vendor file.
- **Vendor name variations:** The PO is with "Tech Solutions," but the invoice is from "Tech-Solutions Inc.".

## 2.13 Authorization & Approval Errors

These four types of discrepancies violate internal financial controls:

- **Amount exceeds approval authority:** The invoice is for \$15,000, but the manager's PO approval limit is \$10,000.
- **Line items not in PO:** The invoice includes "installation services" that were not on the original PO.
- **Missing change orders:** The PO was for \$5,000, and the invoice is \$7,000, but no change order was approved for the extra \$2,000.
- **Services not delivered:** The invoice is for a service that has not been performed or verified as complete.

## 2.14 Format & Quality Issues

Five types of physical or digital document quality issues that prevent verification:

- **OCR recognition failure:** The invoice is a low-quality scan, and text (e.g., the total) cannot be read.
- **Unclear handwritten amendments:** A handwritten note on the invoice is illegible or unauthorized.
- **Non-standard formats:** The invoice is submitted in an unusual format (e.g., an image in a Word doc).

- **Multiple invoices in one document:** A single PDF file contains 10 separate invoices, confusing the process.
- **Corrupted/illegible documents:** The submitted file is corrupted and cannot be opened.

## 2.15 Compliance & Regulatory Issues

A critical category of five types of errors that violate legal or regulatory standards:

- **Missing invoice number:** The invoice lacks a unique, sequential number, which is a legal requirement in many jurisdictions.
- **E-invoicing non-compliance:** The invoice is not submitted via the government-mandated e-invoicing portal.
- **GST on unregistered vendors:** The invoice charges a tax (like GST or VAT) from a vendor who is not legally registered to do so.
- **Reverse charge not applied:** The invoice fails to note that the "reverse charge" mechanism applies for a specific service.
- **Restricted party transactions:** The transaction is with a vendor on a government-sanctioned or restricted party list.

## 3 Discussion and Implications

This taxonomy reveals that invoice-PO discrepancies are not a single problem but a collection of distinct, multifaceted challenges. We can observe several key groupings:

- **Financial & Numerical Errors:** (Categories 1, 2, 3, 11) These have a direct and immediate financial impact, affecting cash flow and expense reporting (e.g., over-billing, price variance, calculation errors).
- **Referential & Logging Errors:** (Categories 5, 8, 9, 10) These are errors in the data "scaffolding" that connects documents. Missing PO numbers, timing issues, or transposition errors break the audit trail and require manual investigation.
- **Authorization & Compliance Errors:** (Categories 6, 12, 13, 15) These represent significant business risks. Unauthorized charges, vendor mismatches, and regulatory non-compliance can lead to fraud, financial penalties, and legal action.
- **Interpretive & Quality Errors:** (Categories 7, 14) These are arguably the most complex. Line item mismatches require semantic understanding (knowing "Distilled H2O" is the same as "Distilled Water"), while format issues represent a technical barrier to verification.

The granularity of these 82 types provides a precise vocabulary for finance and procurement teams to identify, log, and analyze errors. An organization might find, for example, that 30% of its issues stem from "Unauthorized Freight Charges" (Category 6), while another finds its main problem is "Vendor Account Mismatches" (Category 12). This level of detail is essential for targeted process improvement.

## 4 Conclusion

This paper has presented a comprehensive classification framework consisting of 15 major categories and 82 distinct types of discrepancies that occur between invoices and purchase orders. This taxonomy moves beyond a general "errors" label and provides a structured, granular model for understanding the full spectrum of potential issues.

This classification serves as a foundational tool for organizational improvement. It can be used by internal audit teams to develop more comprehensive testing procedures, by finance departments to standardize error logging and analysis, and by procurement leaders to identify and remedy the root causes of process friction. A clear understanding of *what* can go wrong is the first and most critical step in designing robust internal controls to ensure that it does not.