


Document with suspicion heatmap (red = CNN-flagged)

فاتورة ضريبية
Taxable Invoice
Sales Trans




From: Aldawaa Medical Company
Address:
Issue Date: 2026-03-17 03:18 AM
Telephone:
Invoice No.: 34024609813808
Branch No.: P340
Register No.: P340_2
Pharmacist Name: الدواء يوسف احمد علي
VAT Number: 300544591200003
Customer Name: RAYAN Alsubhi
Customer Mobile No.: 966553054844
Arbahi Loyalty No.: 8989282

شركة الدواء الطبية
 بيق - الصفا - شارع عثمان بن عفان
 2026-03-17 03:18 AM
 34024609813808
 P340
 P340_2
 الدواء يوسف احمد علي
 300544591200003
 RAYAN Alsubhi
 966553054844
 8989282

| Sr. No. | Item Code | Item Description | QTY | Unit Price | Discount | VAT % | VAT Amount | Total Price (SAR) |
|---------|-----------|--|--------|------------|-----------------|----------------------|----------------------|--------------------------|
| مستل | رقم الصنف | وصف الصنف | الكمية | سعر الصنف | قيمة خصم العروض | نسبة الضريبة المضافة | قيمة الضريبة المضافة | رصيد الإجمالي ريال سعودي |
| 1 | 201930 | DETTOL H'S ORIGINAL 50ML بيزول سبوم اليدين الاطفي 50 مل | 1.00 | 15.38 | 0.00 | 15 | 2.31 | 17.69 |
| 2 | 201930 | DETTOL H'S ORIGINAL 50ML بيزول سبوم اليدين الاطفي 50 مل | 1.00 | 15.38 | 15.38 | 15 | 0.00 | 0.00 |
| 3 | 100689 | DIZINIL 20 TAB ديزينيل 20 قرص | 1.00 | 9.40 | 0.00 | 0 | 0.00 | 9.40 |
| 4 | 100046 | ADOL SINUS 24 TABLETS ادول سينوس 24 كمحول | 1.00 | 10.90 | 0.00 | 0 | 0.00 | 10.90 |

| | | |
|-------------------|--------|-----------------------|
| Total Sold Items | 4.00 | عدد الاقساط المباعة |
| Total Discount | 15.38 | الخصم لحسم العروض |
| Total Before VAT | 35.68 | الإجمالي قبل الضريبة |
| VAT | 2.31 | مضافة قيمة المضافة |
| Grand Total (SAR) | 379.90 | الإجمالي (ريال سعودي) |



Return & Refund Policy
 Provide the original invoice to the same purchasing branch with the product in its original condition without use or any damage
 Return & Refund are available within 7 days from purchase time
 The following items cannot be returned or refunded:
 Items that require cold temperature storage such as insulin and Hormones.
 Items that require fixed storage temperature such as baby milk and food.
 Personal care products such as (shaving machines and tools, Oral care products ...etc.) unless there is a manufacturing defect within 7 days

Top suspicious regions

Each thumbnail is the 128x128 patch fed to the CNN, with its score and predicted edit type / field.

1

34024609813:
P340
P340_2
دواء يوسف احمد علي
966553054844

100%
CPI
Company

2

ورة ضريبة
ble In

100%
CPI
Metadata

3

35.68
2.31
379.90

100%
CUT
Total/payment

4

DETTOL
علي 50 مل
DIZINIL

100%
CUT
Total/payment

5

ضريبية
axable

99%
CUT
Other

Approach

ResNet-18 patch classifier (128×128, stride 64) trained on FINDIT2 (Tornes et al., ICDAR 2023). Two auxiliary heads classify the modification technique and the document field affected; the binary backbone is frozen so the headline patch precision (92.25%) is preserved while adding explainability. The image-level fraud score is the top-k mean of patch probabilities over text-bearing regions only (edge density ≥ 0.02). The Saudi VAT QR check validates the ZATCA Phase-1 TLV format and cross-checks the QR's declared totals against pytesseract OCR of the printed receipt body.

Reported numbers vs paper

| METRIC | OURS | PAPER |
|------------------------|--|-------------------------------|
| Patch precision | 92.25% (this work) | 79.41% (paper OH-JPEG) |
| Patch F1 / AUC | 91.79 / 0.97 | — |
| Image-level F1 (top-k) | 29.66 | 28.39 (paper ChatGPT-relaxed) |
| Mod head test acc | CPI 73 · CUT 100 · IMI 38 · PIX 55 · Other 14 | |
| Entity head test acc | Total/payment 67 · Metadata 47 · Product 27 · Company 24 | |

Raw model output

- Patches scored: 936 Text-rich: 513 Flagged ≥ 0.08 : 374
- Top-k mean fraud score: 0.9982 CNN risk: HIGH Duplicate: 1.00 (exact_duplicate)
- Patch CNN flagged 374 of 513 text-rich patches (top score 1.00).
- Top 5 suspicious regions clustered around image coordinates (384,512), (768,64), (896,1344), (256,960), (704,64).
- Predicted modification mix across top regions: 3× CUT, 2× CPI.
- Predicted entity types: 2× Total/payment, 1× Company, 1× Metadata, 1× Other.
- Document is an EXACT duplicate of a file already analysed in this session (resubmission).

ZATCA QR — decoded fields & full check list

seller_name: ■■■■■■ ■■■■■■ 340
vat_number: 300544591200003
timestamp: 2026-03-17T03:18:50Z
total: 37.99
vat: 2.31

[PASS] payload decodes

Base64 + TLV well-formed; 5 tag(s) found.

[PASS] all mandatory tags present

Tags 1 (seller), 2 (VAT#), 3 (timestamp), 4 (total), 5 (VAT) all present.

[PASS] VAT number format

300544591200003 — 15 digits, starts and ends with 3.

[PASS] timestamp valid

2026-03-17T03:18:50Z (parses as ISO 8601).

[PASS] amounts numeric

Total 37.99 SAR · VAT 2.31 SAR.

[PASS] VAT \leq total

VAT amount does not exceed invoice total.

[WARN] VAT rate \approx 15%

Implied rate 6.47% deviates 8.5pp from 15%. Could be mixed-rate / exempt items — review the line items.

[WARN] seller name on receipt

'■■■■■■ ■■■■■■ 340' partially matches OCR text (token overlap 33%). Review manually.

[FAIL] invoice total matches receipt

DISCREPANCY: QR total 37.99 SAR but receipt shows 379.90 SAR — likely decimal-shift tampering.

[PASS] VAT amount matches receipt

QR VAT 2.31 SAR appears in the receipt OCR.