



Getting started with

IN-D Income Analysis

PRODUCT WALKTHROUGH

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Introduction

Purpose

The purpose of this documentation is to provide a step-by-step assistance on how to setup the portal for the back office to process the digitized output of the processed income analysis documents and how a processor can do the review and mark it for export for downstream applications.

For integrations, a different set of APIs are given to upload documents, check status of processing, handle rejections and export the analysed data. But that is not under the scope of this document.

Overview

There are two different portals in the back-office system. One for the Admin to manage processors, manage fields to be extracted, and assign queues for the processors. The other portal is for the processors to review the digitized output of the assigned cases.

Portal Setup

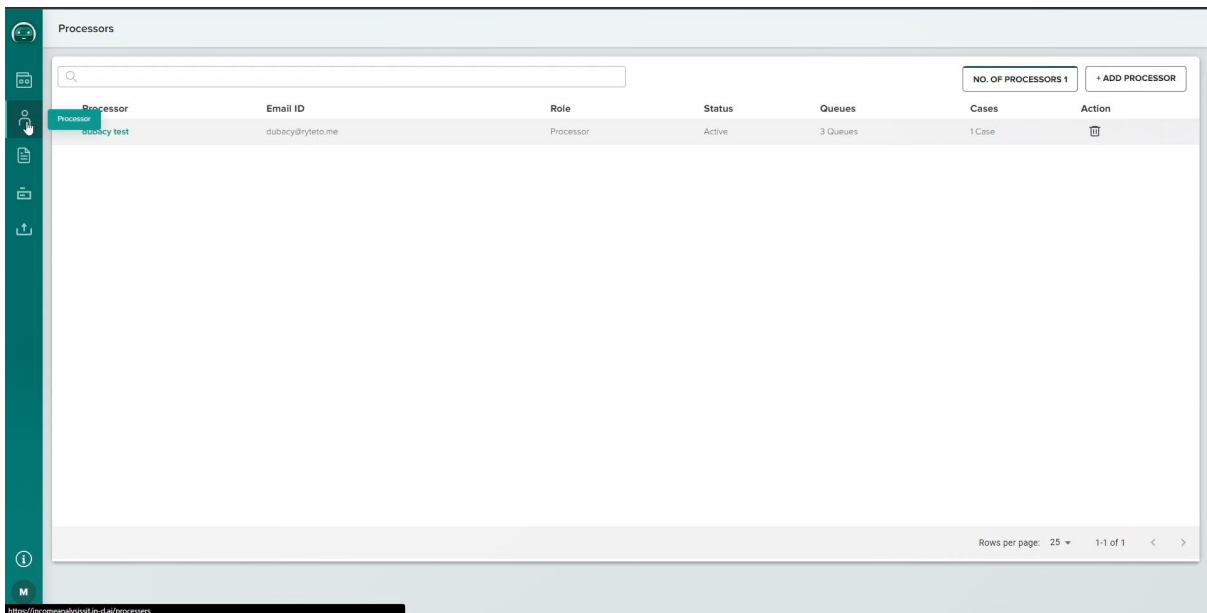
1. Setup queues

Login to the Admin portal with the admin login credentials shared by IN-D. Go to Queues menu and create queues for different segments in the organisation and assign corresponding processors and respective document types. Click on "Add queue" button and assign the processors and document types related to the queue. Few sets of default queues are given to start things up easily

Queue	Document Types	Cases	Processors	Action
Corporate ✓	2 Types	0 Cases	1 User	🗑️
SME ✓	2 Types	0 Cases	1 User	🗑️
Individuals ✓	2 Types	1 Case	1 User	🗑️

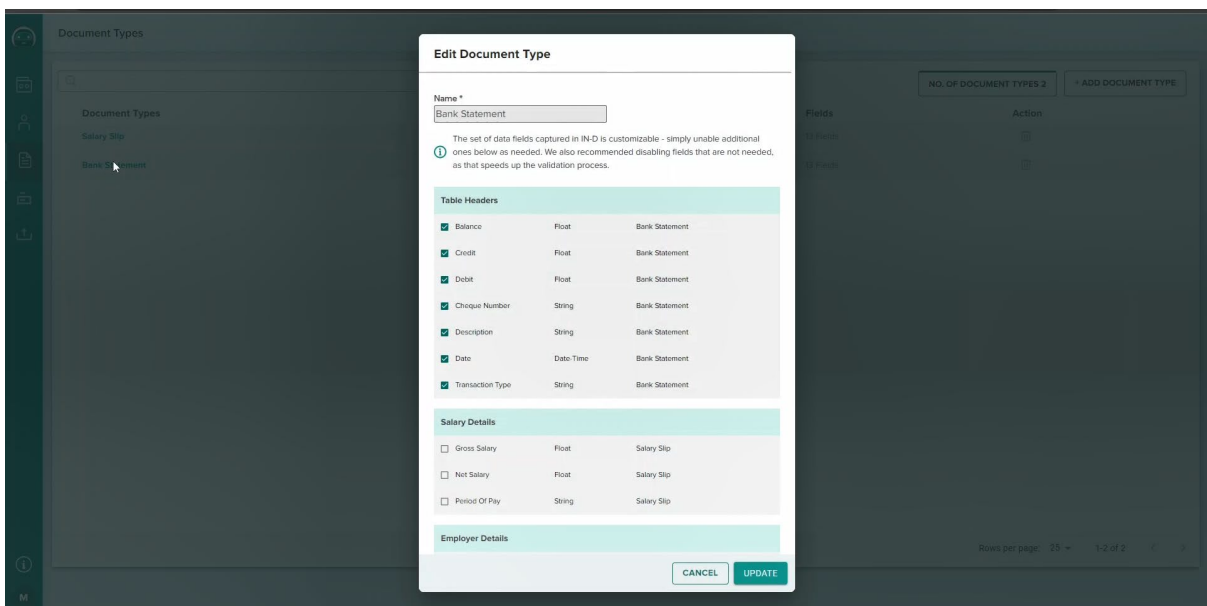
2. Add & manage processors

Go to the Processors menu to add, remove, or manage processors in the platform. Invitation email would be sent to the email address added. The processor should set up their account by clicking on the Activate button and setting a password for the account. Only activate accounts can be added in a queue.



3. Manage document type & fields

Go to Document type menu to manage the existing document types available. Users can customize the document type name and associated header and table fields.

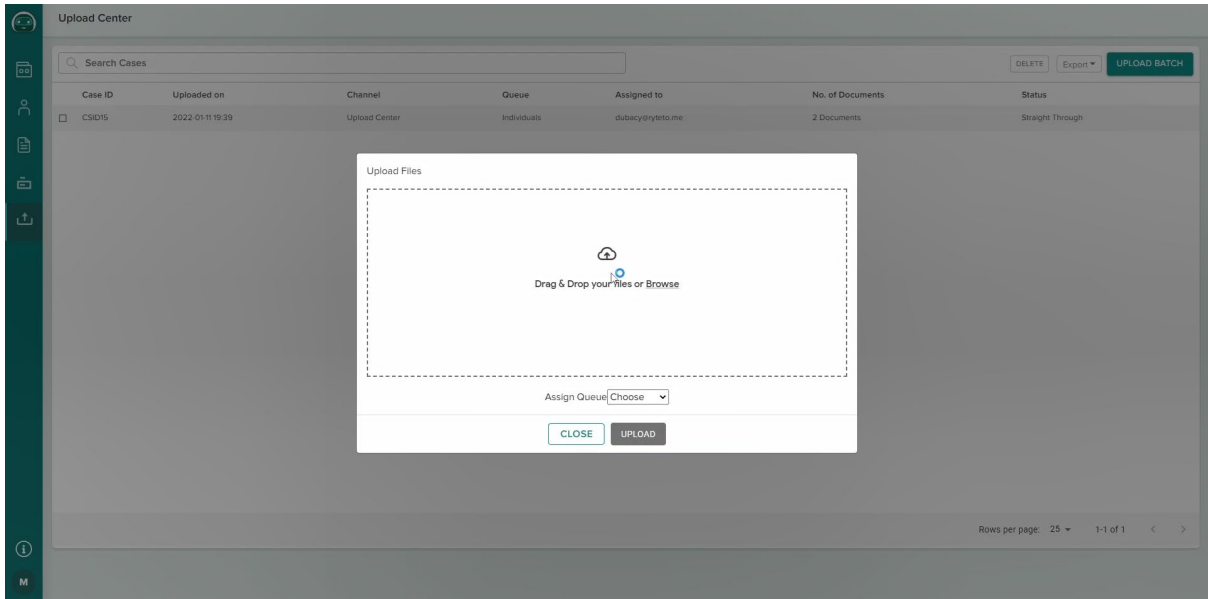


All the available fields can also be managed in the Fields menu. The datatype of a field and the field name can be changed, and even new fields can be added to the system.

With all the document types customized, new fields added, processors invited and assigned to the queue, the portal setup is complete.

4. Upload Centre

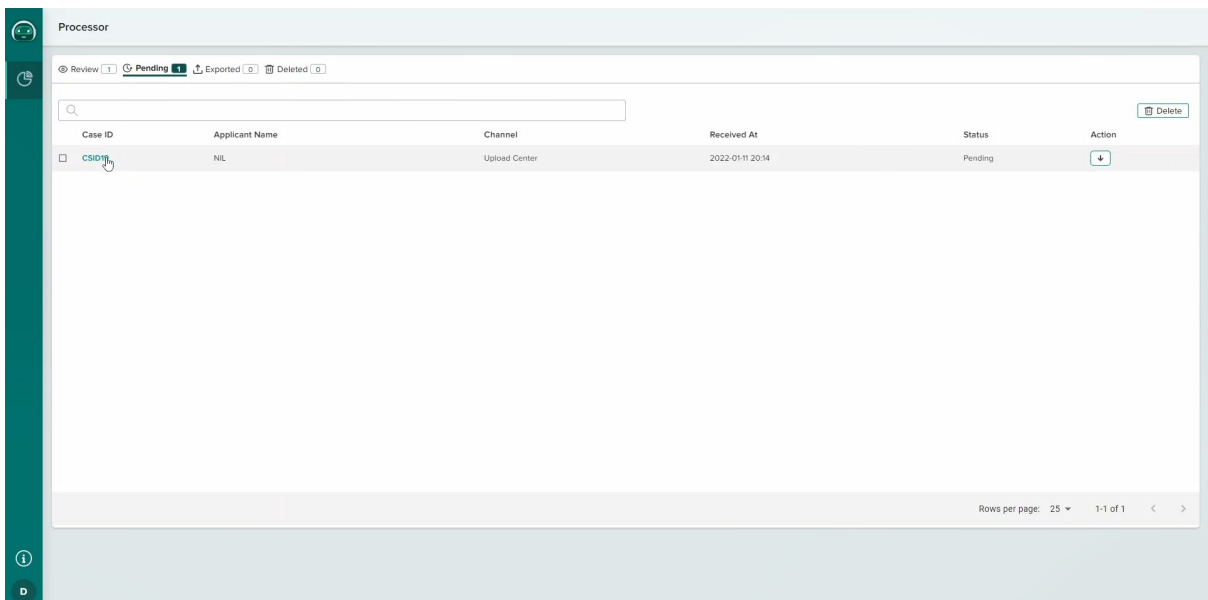
A provision to test the solution in UI is given under the title "Upload Centre". Provisions are given to choose the documents from the local and assign a queue to which the incoming cases are assigned. Provisions to export the cases and to check the status are given in this screen.



Review Digitized Output

1. Reassure Uploads

Login to the processor's portal with the credentials the processors must have created when activating their accounts. The user is directly taken to the "Pending" tab on login. The latest uploaded cases will be listed in this tab. The status will be "Processing" when IN-D Doc Element Identifier component is processing the document for correcting the skewness in the document if present. Once the processing is complete, the case becomes clickable and is ready to do the first review.



Provision to reassure the uploaded documents before the digitization is given. This gives an opportunity to reject the case or split/merge documents or even delete any specific pages/documents before sending it to the extraction queue. The processor needs to click on "Mark as ready" to show their approval for the case. The document is sent to the extraction queue post that.

- Confidence score that shows the level of confidence which can be used by the processor to skip the green marked items
- Provisions are given to show where it is taking the information from helping better review in no time

Click on the "Done" button once satisfied with the results. You can look at the extracted table information in the "Table" tab in the top. If you click on a cell in the table in the bottom, it will show where the data lies in the document in the image view on top.

TRANSACTION_TYPE	DATE	VALUE DATE	DESCRIPTION	REF NO./CHEQUE NO.	DEBIT	CREDIT	BALANCE
Net Banking	2020-07-20	20 Jul 2020	BY TRANSFER- NEFT/AL	TRANSFER FROM 3199	0.0	107722.0	808748.76
Net Banking	2020-07-20	20 Jul 2020	TO TRANSFER-IND Life	55B9020259478I GAG	257870	0.0	792961.76
Salary	2020-07-31	31 Jul 2020	BULK POSTING-BY SALY-		0.0	107722.0	696683.76
Net Banking	2020-08-03	3 Aug 2020	TO TRANSFER-IND IMPS	IMPS0012882347 BMOJ	16500.0	0.0	874183.76
Net Banking	2020-08-03	3 Aug 2020	TO TRANSFER-IND IMPS	IMPS0012882335 BMOJ	10000.0	0.0	864183.76
Net Banking	2020-08-03	3 Aug 2020	TO TRANSFER-IND Mont	IMPS0012882335 BMOJ	10000.0	0.0	854183.76
Net Banking	2020-08-09	9 Aug 2020	TO TRANSFER-IND Book	IMPS0012882335 BMOJ	20000.0	0.0	834183.76
Others	2020-08-10	10 Aug 2020	WITHDRAWAL TRANSFER-	TRANSFER TO 33359530990	12879.0	0.0	821304.76
Net Banking	2020-08-10	10 Aug 2020	BY TRANSFER- NEFT/AL	TRANSFER FROM 3199	0.0	107722.0	929026.76
ATM Transaction	2020-08-28	28 Aug 2020	DEBIT-ATMCard AMC 4I		148.75	0.0	928878.01
Card Transaction	2020-09-01	1 Sep 2020	BULK POSTING- KF Cess		0.0	1.25	928879.26
Net Banking	2020-09-04	4 Sep 2020	TO TRANSFER-IND IMPS	IMPS0013261960 OMOJ	16500.0	0.0	912379.26

IN-D performs running balance checks on the debit, credit, and the balance column to check whether there is a chance of OCR error or manual intervention. Wrong cell navigator is provided to go through the table across the highlighted wrong cells alone.

Along with the extracted data, we have an extra column that says "Transaction type" which will categorize a transaction by understanding what is written in the description section.

CSID19 REJECT CASE MARK AS REVIEWED

TEXT FIELDS **TABLE** SAVE DOCUMENT

JobID_22

DATE	VALUE DATE	DESCRIPTION	REF NO./CHEQUE NO.	DEBIT	CREDIT	BALANCE
20 Jul 2020	20 Jul 2020	BY TRANSFER- NEFT/ALLAH20210411*ALLAH2020567119*M/s. MEDICAL SUP-	TRANSFER FROM 319961044301	0.0	1,07,722.00	8,08,748.76
20 Jul 2020	20 Jul 2020	TO TRANSFER-INB Life Insurance Corporatio LIC_Ref-	SSB190202594781 GAIZVSON8	25,787.00		7,82,961.76
31 Jul 2020	31 Jul 2020	BULK POSTING-BY SALARY-	TRANSFER TO		1,07,722.00	8,90,683.76
3 Aug 2020	3 Aug 2020	TO TRANSFER-INB IMPS/P2A/021819855286/XXX XXX442FUNB	IMPS0012882347 SMOADAKMNO6	16,500.00		8,74,183.76
3 Aug 2020	3 Aug 2020	TO TRANSFER-INB IMPS/P2A/021819856104/XXX XXXX116VJLB	IMPS0012882335 SMOADAKMWH4	10,000.00		8,64,183.76
3 Aug 2020	3 Aug 2020	TO TRANSFER-INB Monthly expenditure-	IM84943309 TRANSFER TO 33359530990	10,000.00		8,54,183.76
9 Aug 2020	9 Aug 2020	TO TRANSFER-INB Books-	IM85193154 TRANSFER TO 33359530990	20,000.00		8,34,183.76
10 Aug 2020	10 Aug 2020	WITHDRAWAL TRANSFER-	TRANSFER TO 38563105739	12,879.00		8,21,304.76
20 Aug 2020	20 Aug 2020	BY TRANSFER- NEFT/ALLAH20210411*ALLAH20233774975*M/s. MEDICAL SUP-	TRANSFER FROM 3199423044304		1,07,722.00	9,29,026.76
28 Aug 2020	28 Aug 2020	DEBIT-ATMCard AMC 459200*0407 SILVER-GLOBAL		148.75		9,28,878.01
01 Sep 2020	01 Sep 2020	BULK POSTING- KF Cess Reversal AMC 082020-			1.25	9,28,879.26

Use Magic Grid Read Table

DATE	VALUE DATE	DESCRIPTION	REF NO./CHEQUE NO.	DEBIT	CREDIT	BALANCE
2020-07-20	20 Jul 2020	BY TRANSFER- NEFT/ALLAH20210411*ALLAH2020567119*M/s. MEDICAL SUP-	TRANSFER FROM 319961044301	0.0	107722.0	808748.76
2020-07-20	20 Jul 2020	TO TRANSFER-INB Life Insurance Corporatio LIC_Ref-	SSB190202594781 GAIZVSON8	25787.0	0.0	782961.76
2020-07-31	31 Jul 2020	BULK POSTING-BY SALARY-	TRANSFER TO	0.0	107722.0	890683.76
2020-08-03	3 Aug 2020	TO TRANSFER-INB IMPS IMPS/P2A/021819855286/XXX XXX442FUNB	IMPS0012882347 SMOJ	16500.0	0.0	874183.76
2020-08-03	3 Aug 2020	TO TRANSFER-INB IMPS IMPS/P2A/021819856104/XXX XXXX116VJLB	IMPS0012882335 SMOJ	10000.0	0.0	864183.76
2020-08-03	3 Aug 2020	TO TRANSFER-INB Monthly expenditure-	IM84943309 TRANSFER FROM	10000.0	0.0	854183.76
2020-08-09	9 Aug 2020	TO TRANSFER-INB Book-	IM85193154 TRANSFER T	20000.0	0.0	834183.76
2020-08-10	10 Aug 2020	WITHDRAWAL TRANSFER-	TRANSFER TO 3856310	12879.0	0.0	821304.76
2020-08-20	20 Aug 2020	BY TRANSFER- NEFT/ALLAH20210411*ALLAH20233774975*M/s. MEDICAL SUP-	TRANSFER FROM 3199	0.0	107722.0	929026.76
2020-08-28	28 Aug 2020	DEBIT-ATMCard AMC 459200*0407 SILVER-GLOBAL		148.75	0.0	928878.01
2020-09-01	1 Sep 2020	BULK POSTING- KF Cess Reversal AMC 082020-		0.0	1.25	928879.26
2020-09-04	4 Sep 2020	TO TRANSFER-INB IMPS IMPS/P2A/021819855286/XXX XXX442FUNB	IMPS0013261960 OMOJ	16500.0	0.0	912379.26

Transaction Type Legend:

- Card Transaction
- Bank Credit
- Bill Pay
- Loan
- Demand Draft
- UPI
- Net Banking
- Bank Charges
- Cheque
- Salary
- Payment Gateway
- Auto Debit
- Insurance Credits
- Medical Payments
- Alcohol Purchase
- Minimum Balance Charges
- Cheque Bounce Charges
- Negative Balance Charges
- SIP
- Mutual Funds
- Others
- Net Banking
- ATM Transaction
- Card Transaction
- Net Banking

A list of transaction type is provided to the processor to choose from for a specific transaction. All dubious transaction types will be highlighted for easier review and get immediate attention from the processor.

Processors can reassure the table extraction by confirming the structure of table it has detected. IN-D's table detection module will be providing the table boundary information for reassurance. The rows and columns can be rearranged if the table is not detected with cent percent accuracy.

CSID19 REJECT CASE MARK AS REVIEWED

TEXT FIELDS **TABLE** SAVE DOCUMENT

JobID_22

Date	Value Date	Description	Ref No./Cheque No.	Debit	Credit	Balance
20 Jul 2020	20 Jul 2020	BY TRANSFER- NEFT/ALLAH20210411*ALLAH2020567119*M/s. MEDICAL SUP-	TRANSFER FROM 319961044301	0.0	1,07,722.00	8,08,748.76
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3 Aug 2020	3 Aug 2020	TO TRANSFER-INB Monthly expenditure-	IM84943309 TRANSFER TO 33359530990	10,000.00		8,54,183.76
9 Aug 2020	9 Aug 2020	TO TRANSFER-INB Books-	IM85193154 TRANSFER TO 33359530990	20,000.00		8,34,183.76
10 Aug 2020	10 Aug 2020	WITHDRAWAL TRANSFER-	TRANSFER TO 38563105739	12,879.00		8,21,304.76
20 Aug 2020	20 Aug 2020	BY TRANSFER- NEFT/ALLAH20210411*ALLAH20233774975*M/s. MEDICAL SUP-	TRANSFER FROM		1,07,722.00	9,29,026.76

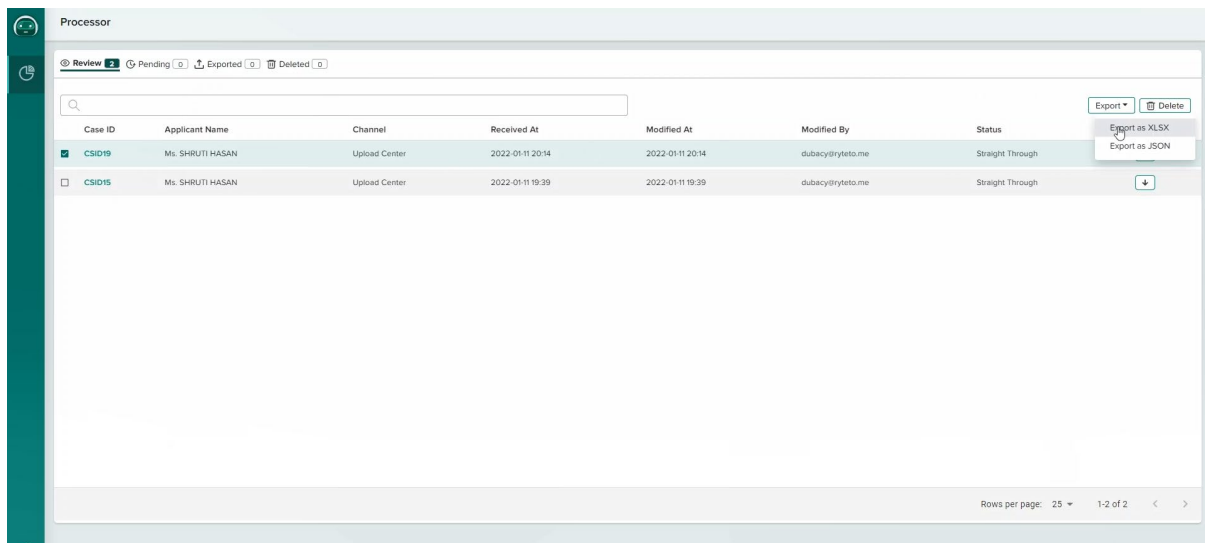
1 of 0 Use Magic Grid Read Table

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Net Banking	2020-09-04	4 Sep 2020	TO TRANSFER-INB IMPS IMPS/P2A/021819855286/XXX XXX442FUNB	IMPS0013261960 OMOJ	16500.0	0.0	912379.26

The user can assign the table header to perform the reconciliation and transaction type mapping operations. Once satisfied with the structure, the user can click on "Read table" to redo the calculations and mapping.

Click on the save document to save the progress and proceed to the next document in the same batch. The "Mark as Reviewed" button must be clicked to mark all the documents in the case to "Reviewed" and change the status of the case as "Reviewed".

Now the user can click on the export button after choosing the respective case to export it for downstream processing or decision making. The options to export both as JSON and spreadsheets are given for integrations and analysis purposes respectively.



In the excel you can find around 95+ calculations done, 25+ transaction types mapped and 10+ header items detected and available for analysis. The system also provides provision to check the similarity across cases, profile data for the applicant, etc. The details which are readily available are given in below.

Output Format

As mentioned earlier, the output is available both in JSON and spreadsheets. The only difference in the data availability is that the JSON will also have the confidence score for a particular field, which would not be available in the spreadsheet. The general output can be found in three sections

1. Header fields & Consistency Checks
2. Table fields & Transaction types
3. Calculations
4. Fraud Checks & Condition Checks

Header fields & Consistency Checks

The following are header fields available out of the box.

1. Applicant Name
2. Account Number
3. IFSC Code
4. Account Open Date
5. Type of Account
6. Applicant Address
7. Bank Name

Consistency checks are performed for all these header fields and similarity score are generated along with the available output data for manual comparison.

Table Fields & Transaction types

All the table columns would be extracted by default. But the rule checks would operate only for the following fields

1. Date of transaction
2. Description
3. Debit
4. Credit
5. Balance

The transaction types to which the transaction items are mapped to are listed below.

1. ATM Transaction
2. Card Transaction
3. Bank Credit
4. Bill Pay
5. Loan
6. Demand Draft
7. UPI
8. Net Banking
9. Bank Charges
10. Cheque
11. Salary
12. Payment Gateway
13. Auto Debit
14. Insurance Credits
15. Medical Payments
16. Alcohol Purchase
17. Minimum Balance Charges
18. Cheque Bounce Charges
19. Negative Balance Charges
20. Mutual Funds
21. Insurance purchase
22. FDs
23. Society Maintenance
24. Property Tax
25. Advance Income tax payments
26. Credit Card payment
27. Insurance pay-outs
28. Sweep In/Out

Calculations

The following calculations are available out of the box.

1. Monthly Average Balance
2. Total Credited Amount
3. Total Debited Amount
4. No of Credit Transactions
5. No of Debit Transactions
6. Total Transactions
7. No of Salary Transactions
8. Amount of Salary Credited
9. Amount of Salary Debited
10. No of Cheque Transactions
11. Amount of Cheque Credited
12. Amount of Cheque Debited
13. No of Net Banking Transactions
14. Amount of Net Banking Credited
15. Amount of Net Banking Debited
16. No of Payment Gateway Transactions
17. Amount of Payment Gateway Credited
18. Amount of Payment Gateway Debited
19. No of Auto Debit Transactions
20. Amount of Auto Debit Credited
21. Amount of Auto Debit Debited
22. No of Bank Charges Transactions
23. Amount of Bank Charges Credited
24. Amount of Bank Charges Debited
25. No of ATM Transaction Transactions
26. Amount of ATM Transaction Credited
27. Amount of ATM Transaction Debited
28. No of Card Transaction Transactions
29. Amount of Card Transaction Credited
30. Amount of Card Transaction Debited
31. No of Bank Credit Transactions
32. Amount of Bank Credit Credited
33. Amount of Bank Credit Debited
34. No of Bill Pay Transactions
35. Amount of Bill Pay Credited
36. Amount of Bill Pay Debited
37. No of Loan Transactions
38. Amount of Loan Credited
39. Amount of Loan Debited
40. No of Demand Draft Transactions
41. Amount of Demand Draft Credited

42. Amount of Demand Draft Debited
43. No of UPI Transactions
44. Amount of UPI Credited
45. Amount of UPI Debited
46. No of Insurance Credit Transactions
47. Amount of Insurance Credit Credited
48. Amount of Insurance Credit Debited
49. No of Medical Payment Transactions
50. Amount of Medical Payment Credited
51. Amount of Medical Payment Debited
52. No of Alcohol Purchase Transactions
53. Amount of Alcohol Purchase Credited
54. Amount of Alcohol Purchase Debited
55. No of Minimum Balance Charge Transactions
56. Amount of Minimum Balance Charge Credited
57. Amount of Minimum Balance Charge Debited
58. No of Cheque Bounce Charge Transactions
59. Amount of Cheque Bounce Charge Credited
60. Amount of Cheque Bounce Charge Debited
61. No of Negative Balance Charge Transactions
62. Amount of Negative Balance Charge Credited
63. Amount of Negative Balance Charge Debited
64. No of SIP Transactions
65. Amount of SIP Credited
66. Amount of SIP Debited
67. No of Mutual Fund Transactions
68. Amount of Mutual Fund Credited
69. Amount of Mutual Fund Debited
70. No of Insurance purchase Transactions
71. Amount of Insurance purchase Credited
72. Amount of Insurance purchase Debited
73. No of FD Payment Transactions
74. Amount of FD Payment Credited
75. Amount of FD Payment Debited
76. No of Society Maintenance Transactions
77. Amount of Society Maintenance Credited
78. Amount of Society Maintenance Debited
79. No of Property Tax Transactions
80. Amount of Property Tax Credited
81. Amount of Property Tax Debited
82. No of Adv Income Tax Payment Transactions
83. Amount of Adv Income Tax Payment Credited
84. Amount of Adv Income Tax Payment Debited
85. No of Credit Card Payment Transactions

CONFIDENTIAL TO RECIPIENT

86. Amount of Credit Card Payment Credited
87. Amount of Credit Card Payment Debited
88. No of Other Transactions
89. Amount of "Others" Credited transactions
90. Amount of "Others" Debited transactions
91. Sum of Insurance Credit
92. Sum of Medical Payment
93. Sum of Alcohol Purchase
94. No of High Credit Value
95. No of High Debit Value
96. No of Negative Balance Entries
97. No of Cheque Bounce Charge

Apart from these calculations, the system also provides the following information

1. EOD Balances
2. Monthly Average Balances
3. Salary Calculations
4. Monthly Credit Value
5. SIP (Month-wise spend)
6. Mutual Fund (Month-wise spend)
7. Insurance Purchase (Month-wise)
8. FD Payment (Month-wise)
9. Society Maintenance (Month-wise)
10. Property Tax (Month-wise)
11. Advance Income Tax Payments (Month-wise)
12. Credit Card Payments (Month-wise)

Fraud Checks & Condition Checks

There are two layers of fraud check happens in the Bank Statements.

1. Forensics – Deep-learning based models would analyse the difference in fonts, alignment, and pixel differences to detect document tampering
2. Logical approach – We currently run 3 checks on the bank statement
 - a. Check whether the running balance is perfectly reconciled. This would eliminate any manipulation on one entry
 - b. New account check – Notifies if the account has been started recently
 - c. Frequent transactions – Notifies if the account has more than three reversals in less than two days.