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**Project: Risk Management
Fraud Detection and Analysis with Social Benefit Payments**

1.0 Project Background

Governments have demonstrated interest in caring for children, youth and family in a more sustainable manner. With such high interest comes with high budget allocation creating interest and opportunities for deliberate errors, malicious interest or fraud. Officers and insiders, third-party providers, and clients may exploit weaknesses in the system.

Project Objective:

The objective of this project analyzes various risks capable of causing fraud associated with the on boarding and payments of social benefits to caregivers for children, youth and families. The objective is broken into three (3):

- Identify and analyze risk areas relating to duplicate payments, over payments, payments made to inactive caregivers and unapproved payments
- The risk matrix applied to each risk area assessed to determine its likelihood and impact that informs priority and resource allocation
- Recommend risk prevention, detection, and correction techniques guided by COSO Internal Control - Integrated Framework

Methodology:

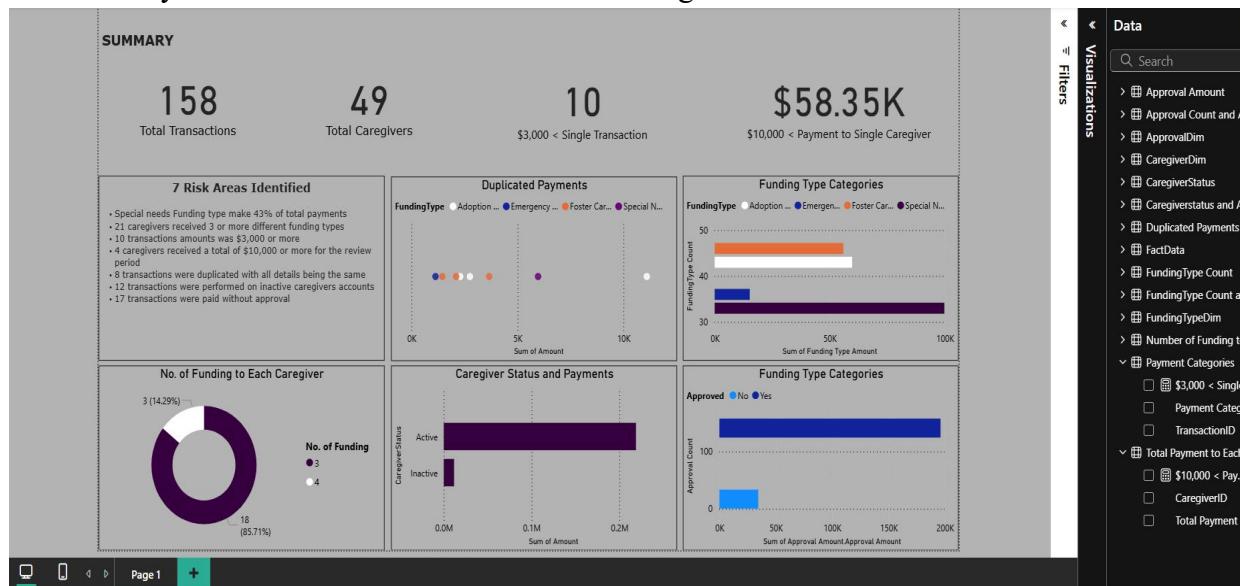
The following methods were deployed in

- Acquired sample datasets. 158 transactions were generated which includes information relating to: ***Transaction ID, Transaction date, Funding type, Amount, Caregiver ID, Caregiver name, Caregiver address, Date first registered, Caregiver active status, Transaction approval status***

- The datasets were sorted and cleaned using Microsoft Power Query

The screenshot shows the Microsoft Power Query Editor interface. The main area displays a table with 26 rows and several columns: TransactionID, Date, FundingType, Amount, CaregiverID, and CaregiverName. A specific step in the 'Applied Steps' pane is highlighted, labeled 'Added Conditional Column'. The 'Properties' pane on the right shows the name 'FactData'.

- The cleaned datasets were analysed with demonstrated dashboards using Microsoft Power BI



2.0 Project Outcomes

After analyzing the generated datasets, seven (7) risk areas of focus were identified:

- Funding Type Proportions
- Caregiver With More Than Two Funding Types
- Single Payment of \$3000 Or More
- Total Payment To Each Caregiver Higher Than \$10,000
- Duplicated Payments
- Inactive Status With Payment
- Unapproved Payments

2.1 Funding Type Proportions

During the year under review, 43% of the total expenditure relates with Special Needs, 26% for Adoption Subsidy, 24% Foster Care and 7% Emergency. There should be the need to ascertain if the spending patterns falls within the approved budget for each funding type.

| FundingType | Sum of Amount | Sum of Amount |
|-------------------------|---------------|---------------|
| Adoption Subsidy | 59705 | 26% |
| Emergency Child Support | 15235 | 7% |
| Foster Care Allowance | 55875 | 24% |
| Special Needs Funding | 99734 | 43% |
| Grand Total | 230549 | 100% |

2.2 Caregiver With More Than Three Funding Type

The expected number of funding type for each caregiver is expected to be 2 or less. Out of the 49 caregivers, 21 had unusual funding types with more than 2. Total value exposure to this risk type is \$201,996.

| Irregular Funding Type | |
|-------------------------|-----------------------|
| Row Labels | Count of Funding Type |
| All Caregivers | 49 |
| Unusual Funding Numbers | 21 |
| Usual Funding Numbers | 24 |
| Grand Total | 49 |

2.3 Single Payment of \$3000 or More

It is expected that any single payment above \$3000 needs to go through additional review and a higher approval matrix. Out of the 158 transactions, 10 transactions were identified to fall above \$3000. The exposed amount to this risk is \$62,496. There is a need to check if the additional review and the right approval matrix has been followed.

| Highly Exposed Single Amount Paid | |
|-----------------------------------|------------------------|
| Row Labels | Count of Single Amount |
| All Caregivers | 158 |
| Highly Exposed Amount | 10 |
| Lowly Exposed Amount | 148 |
| Grand Total | 158 |

2.4 Total Payment To Each Caregiver Higher Than \$10,000

It is expected that any total of all payments above \$10,000 to one caregiver within any year under review needs to go through additional review for appropriateness. Out of the 49 caregivers, 4 total payments to each caregiver was identified to fall above \$10000. The total exposed amount to this risk type is \$58,351. There is a need to check if the additional review has been followed.

| Highly Exposed Total Amount Paid | |
|----------------------------------|-----------------------|
| Row Labels | Count of Total Amount |
| All Caregivers | 49 |
| Highly Exposed Amount | 4 |
| Lowly Exposed Amount | 45 |
| Grand Total | 49 |

2.5 Duplicated Payments

Duplicated payments are two or more transactions with the same details paid to the same caregiver at the same amount. 8 transactions out of the 158 were identified to be duplicated at a total exposed amount of \$30,462.

| Duplicated Payments | |
|-----------------------------|------------------------|
| Row Labels | Count of Single Amount |
| All Caregivers | 158 |
| Duplicated transactions | 8 |
| Non-duplicated transactions | 150 |
| Grand Total | 158 |

2.6 Inactive Account With Payment Activity

Caregiver accounts needs to be active to receive payments as required. Payments received for an inactive account is a red flag that needs to be further investigated. 12 transactions were identified as 2 separate caregivers received multiple payments on their inactive accounts. The total exposed amount to this risk is \$11,654.

Inactive Account with Transactions

| Row Labels | Count of Single Amount |
|-------------------------------------|------------------------|
| All Caregivers | 158 |
| Inactive Accounts with transactions | 12 |
| Active Accounts with transactions | 146 |
| Grand Total | 158 |

2.7 Unapproved Payments

Payment made without adequate approval required heavy investigation. 17 transactions spread across 17 caregivers was identified. A total exposed mount to this unapproved payment risk is \$34,457.

Unapproved Payments

| Row Labels | Count of Transaction_ID |
|--------------------|-------------------------|
| All Customers | 158 |
| Unapprove payments | 17 |
| Approved payments | 141 |
| Grand Total | 158 |

3.0 Risk Metrics

The risk metrics is defined by the risk level rating, likelihood rating and impact rating.

3.1 Risk Level

Risk level rating is defined by the *likelihood* rating and *impact* rating of each risk category.

| Risk Level | Rating |
|-------------|-------------|
| Low Risk | 2 and below |
| Medium Risk | 3 - 4 |
| High Risk | 5 and above |

3.2 Likelihood

Defined as the number of the affected transaction expressed as a percentage to the total number of transactions observed.

| Likelihood | Percentage Referred | Rating |
|-------------|---------------------|--------|
| Unlikely | Less than 10% | 1 |
| Likely | Between 10% and 40% | 2 |
| Very Likely | Higher than 40% | 3 |

3.3 Impact

Defined as the total amount value of the affected transactions.

| Impact Severity | Percentage Referred | Rating | Investigation and Resolution Timeline |
|-----------------|-------------------------------|--------|---------------------------------------|
| Minor | Less than \$10,000 | 1 | Up to 2 months |
| Serious | Between \$10,001 and \$50,000 | 2 | Up to 1 month |
| Major | Higher than \$50,000 | 3 | Up to 1 week |

3.4 Fraud Risk Area Risk Assessment

| Risk Category | Likelihood | | Impact Severity | | Risk Rating | Risk Level |
|--|------------|--------|-----------------|--------|-------------|------------|
| | Percentage | Rating | Amount | Rating | | |
| Caregiver With More Than Two Funding Type | 67% | 3 | \$201,996 | 3 | 6 | High |
| Single Payment of \$3000 or More | 4.3% | 1 | \$62,496 | 3 | 4 | Medium |
| Total Payment To Each Caregiver Higher Than \$10,000 | 8.2% | 1 | \$58,351 | 3 | 4 | Medium |

| | | | | | | |
|--|-------|---|----------|---|---|--------|
| | | | | | | |
| Duplicated Payments | 5.1% | 1 | \$30,462 | 2 | 3 | Medium |
| Inactive Account With Payment Activity | 7.6% | 1 | \$11,654 | 2 | 3 | Medium |
| Unapproved Payments | 10.8% | 2 | \$34,457 | 2 | 4 | Medium |

3.5 Risk Areas Priority and Required Controls

Due to scarce resource and budget constraints, the assessed risk areas must be prioritized as follows considering the overall risk rating and the impact severity amounts. Controls to assist prevent, detect and correct the identified risk areas guided by COSO Internal Control - Integrated Framework

| Risk Priority | Risk Category | Recommended Controls based on COSO Internal Control - Integrated Framework |
|---------------|--|--|
| 1 | Caregiver With More Than Two Funding Type | <ul style="list-style-type: none"> • Segregation of duties for case entry, review and approvals • Mandatory dual-approval for high-value payments, special needs funding • Automated workflow that prevents a person from both creating and approving payments • System enforced payment calculation rules • Automated caps on maximum allowable benefits • System block to payments on inactive, suspended, or closed cases • Identity verification procedures for new beneficiaries |
| 2 | Single Payment of \$3000 or More | |
| 3 | Total Payment To Each Caregiver Higher Than \$10,000 | |

| | | |
|---|--|---|
| 4 | Duplicated Payments | <ul style="list-style-type: none"> • Unique transaction identifiers and duplicate detection automation • Regular reconciliation and mandatory investigation • Risk-based monitoring • Regular training and competency reviews |
| 5 | Inactive Account With Payment Activity | |
| 6 | Unapproved Payments | |