Topic: Data Analytics and mSCOA for Revenue Reporting and Optimization

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Data vs Information:

Data **vs** **Information**

What is Data Analytics?

Data Analytics is the process of collecting, analysing and interpreting information to improve decision-making.

1

Raw Data

Unprocessed facts and figures collected from daily municipal operations (e.g. meter readings, billing records, receipts, customer information).

2

Information

Raw data that has been organised and summarised into meaningful reports or datasets (e.g. monthly revenue reports, age analysis, collection rates).

3

Insight

The understanding gained from analysing information to identify trends, patterns, risks, and opportunities (e.g. identifying high-default areas or declining collection trends).

4

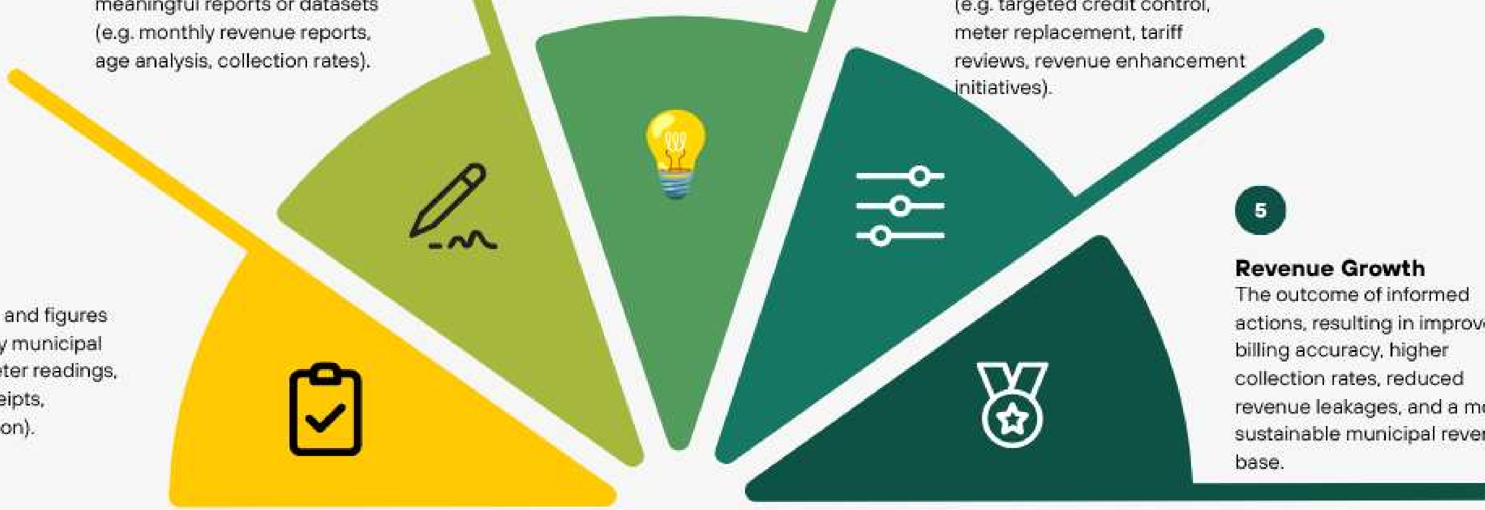
Action

Decisions and interventions taken based on those insights (e.g. targeted credit control, meter replacement, tariff reviews, revenue enhancement initiatives).

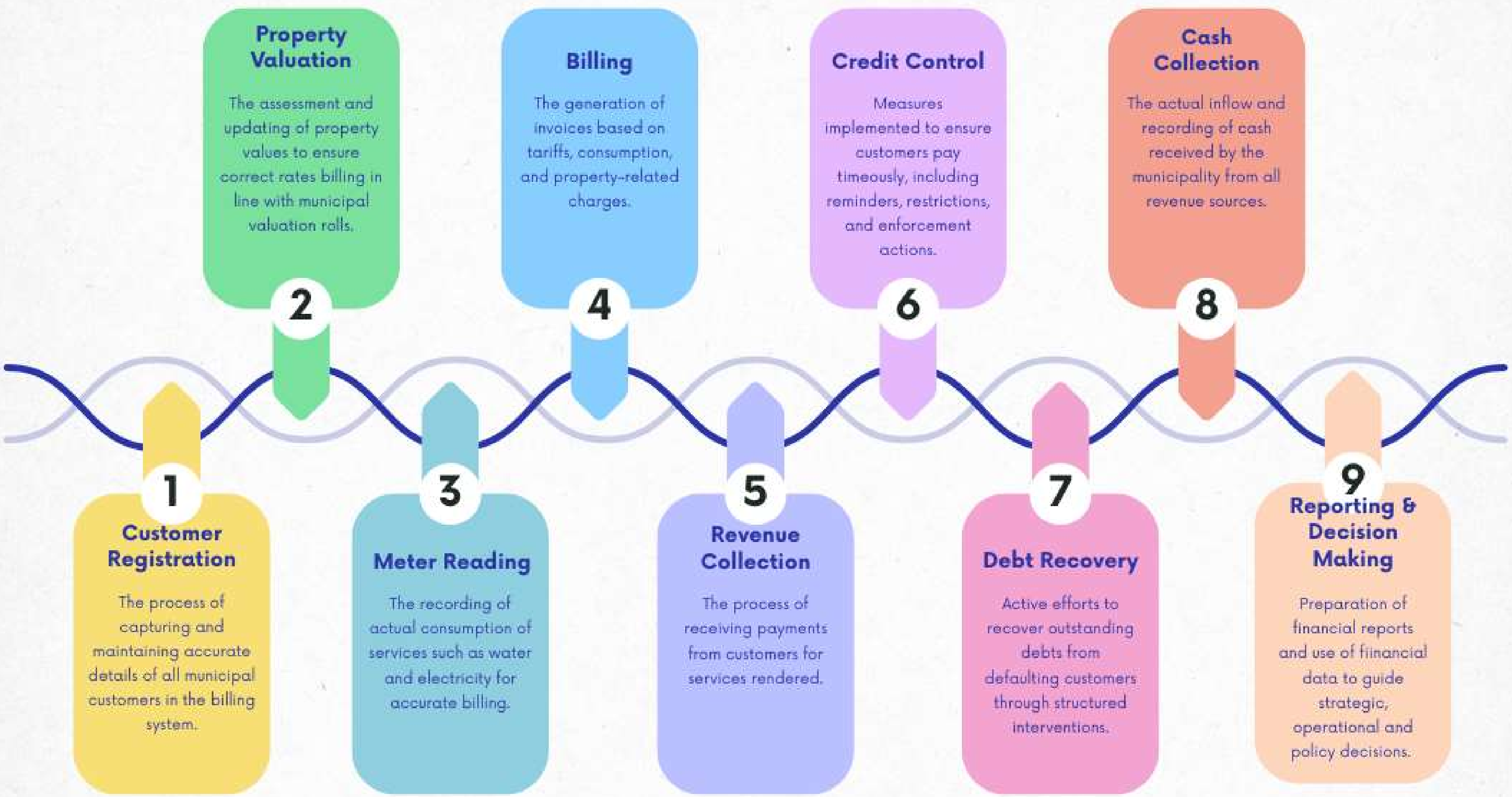
5

Revenue Growth

The outcome of informed actions, resulting in improved billing accuracy, higher collection rates, reduced revenue leakages, and a more sustainable municipal revenue base.



Revenue Value Chain



"Where is the weakest link in your municipality?"

mSCOA For Revenue

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Where mSCOA Fits In

Many municipalities think mSCOA is merely a compliance requirement.

Actually...

mSCOA is a structured data model

Funding | Region | Municipal Classification | Project | Function | Item | Costing

Which funding?
Identifies the source of financing (grants, own revenue, equitable share, or borrowing) supporting the transaction or project.

Which Ward?
Pinpoints the geographic service area where revenue is generated or services are delivered.

Which Department?
Identifies the municipal classification or business unit responsible for generating, managing, or utilising the revenue.

Which Project?
Links revenue or expenditure to a specific capital or operational initiative for tracking performance and outcomes.

Which Function?
Defines the service area or activity category (e.g. water, electricity, roads, sanitation) within the municipal structure.

Which Item?
Refers to the specific revenue or expenditure classification (e.g. tariffs, fines, rates, service charges, operational costs).

Which Cost Center?
Identifies the unit where costs and revenues are accumulated for accountability, budgeting, and performance tracking.

Simple Question: How much Revenue did we collect?

Complex Question: mSCOA - See above!

Revenue Analytics Dashboard 📊

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Billing Accuracy (Core Integrity Indicator)
➡️ Measures how correctly services are billed based on consumption, tariffs, and property data.
Key insight: Detects estimated billing, missing meters, and billing errors.

🟩 **2. Collection Performance**
➡️ Shows the percentage of billed revenue actually collected in cash.
Key insight: Identifies revenue leakage between billing and cash receipt.

🟨 **3. Age Analysis (Debtors Book Health)**
➡️ Breaks down outstanding debt by time buckets (0–30, 31–60, 60+ days).
Key insight: Highlights recovery risk and long-outstanding debts.

🟥 **4. Top 20 Debtors**
➡️ Identifies the largest outstanding accounts by value.
Key insight: Focuses credit control efforts on high-impact accounts.

🟪 **5. Revenue by Service Type**
➡️ Shows contribution of each service (water, electricity, rates, refuse, etc.).
Key insight: Highlights which services drive municipal income.

Revenue Analytics Dashboard (continued)

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6. Revenue by Ward

➡ Displays revenue performance geographically per ward.

Key insight: Supports targeted enforcement and local accountability.

7. Cash Flow Trend

➡ Tracks actual monthly or daily cash inflows.

Key insight: Indicates liquidity position and payment patterns.

8. Exceptions & Leakage Indicators

➡ Flags anomalies such as:

Zero consumption accounts
Estimated billing spikes
Missing meters
Negative billing entries

Key insight: Identifies potential revenue loss areas.

9. Indigent & Subsidy Impact

➡ Shows households receiving full or partial subsidies.

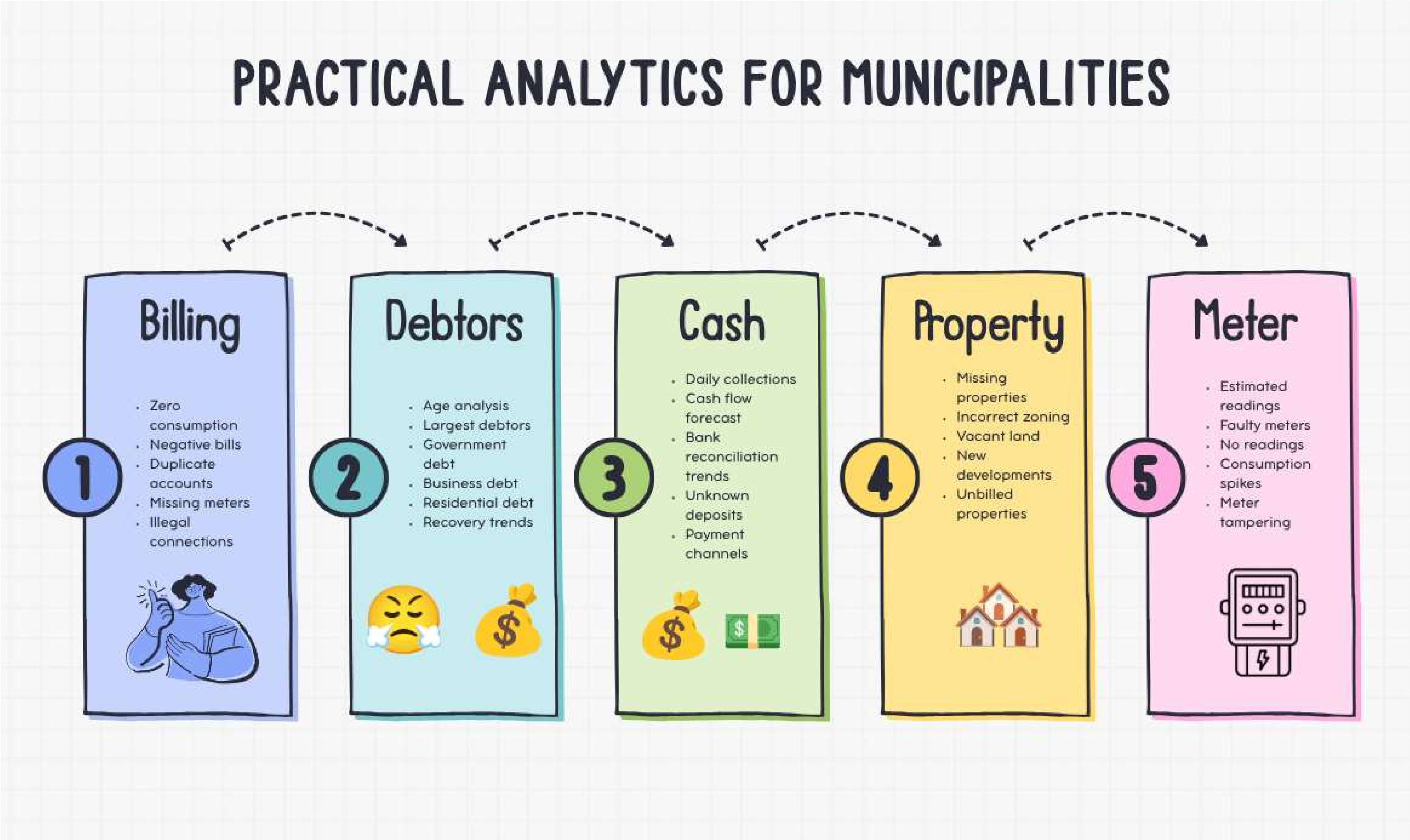
Key insight: Measures affordability and policy impact on revenue base.

10. Revenue Growth Trend

➡ Tracks revenue performance over time (monthly/quarterly).

Key insight: Shows whether interventions are improving performance.

Practical Analysis



Using Power BI / Excel

TRAFFIC LIGHT DIAGRAMS:

Using Power BI / Excel

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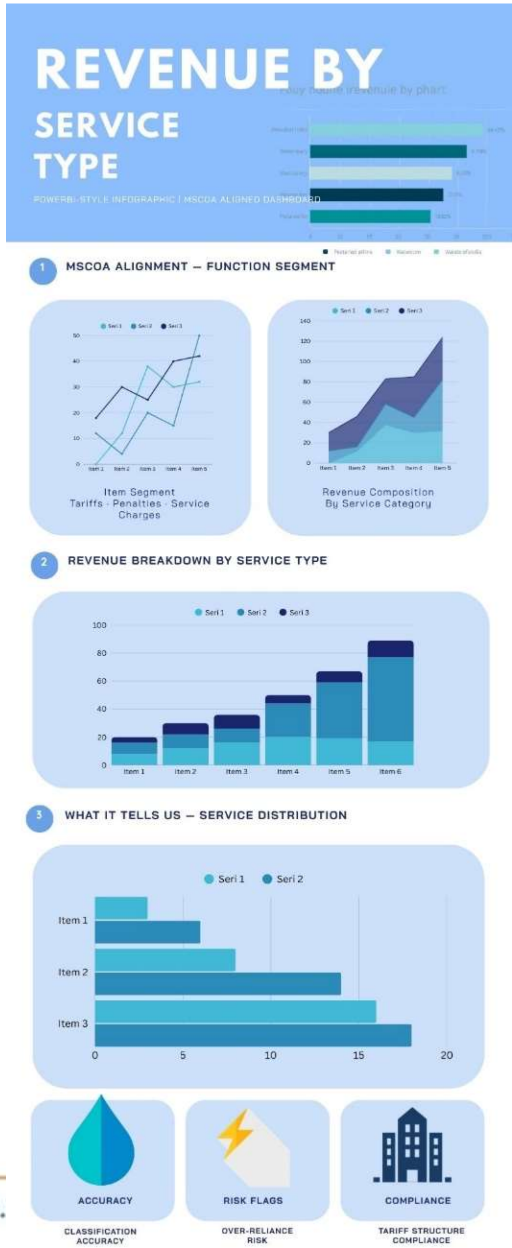
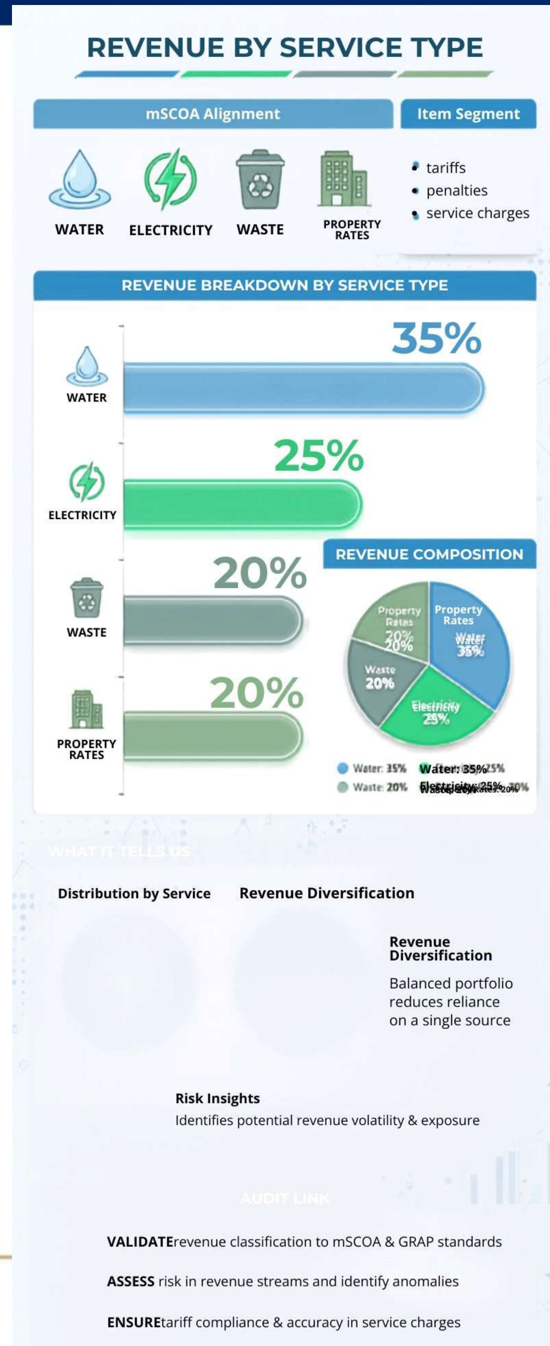
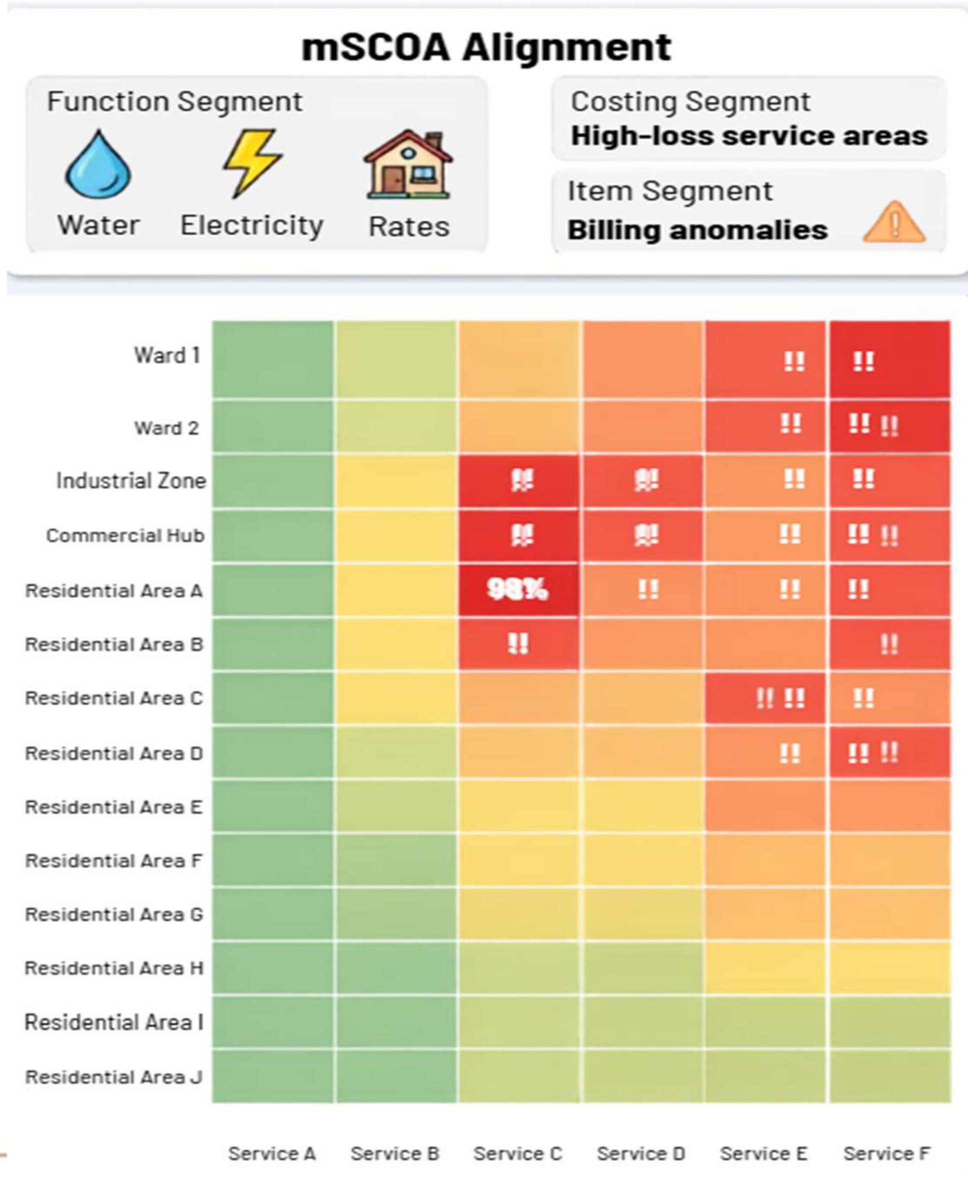
REVENUE BY SERVICE TYPE:





Using Power BI / Excel

HEAT WAVE DIAGRAMS



Case Study

CASE STUDY: “The Silent Revenue Leak in Water Billing”

🧩 **1. THE PROBLEM (What the Municipality Sees on Paper)**

A municipality notices:

•Revenue is stable on reports

•Budget shows acceptable collection rates (~92%)

•Audit outcome is still “Unqualified”

BUT:

Cash collected is consistently lower than billing trends suggest.

🚨 **2. WHAT IS ACTUALLY HAPPENING (Hidden Revenue Leakage)**

A deeper look reveals:

•High number of **estimated meter readings**

•Increasing **“0 consumption” accounts**

•Delayed **meter replacements**

•Old properties still billed on incorrect tariffs/inactive accounts

•Some areas with **no active meter verification cycle**

👉 Result:

Water is being consumed, but not accurately billed.

🔍 **3. DETECTION POINTS (Where Analytics Identifies the Problem)**

This is where your visuals become powerful.

Challenges

Summary of Key Challenges in Municipal Data & Revenue Systems

Poor data quality

➡️ Inaccurate or incomplete data that leads to unreliable reporting and weak decision-making.

System integration

➡️ Separate systems that do not communicate, causing duplication and inconsistent information.

Human error

➡️ Mistakes in data capture or classification that result in financial misstatements and audit issues.

No master data

➡️ Lack of a single source of truth for customers, properties, tariffs, and services.

Skills shortages

➡️ Limited technical capacity to analyse data, use mSCOA effectively, and interpret reports.

Manual reporting

➡️ Heavy reliance on spreadsheets instead of automated system-driven reporting.

Late reporting

➡️ Delayed information that reduces timely decision-making and corrective action.

🎯 Key Message

"“These challenges all point to one reality: weak data leads to weak decisions, and weak decisions undermine revenue performance and service delivery.”

Closing remarks

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As I conclude, I'd like to leave you with this thought.

Municipalities do not have a data shortage; they have an insight shortage. mSCOA gives us structured data, but data analytics transforms that data into informed decisions.

When we move from reporting history to predicting outcomes, we stop reacting to financial problems and start preventing them. Revenue optimisation is therefore not about collecting more money, it is about making better decisions with better data.

But technology and data alone will not transform our municipalities. The greatest obstacle is often not the system; it is our resistance to change. We cannot continue solving today's challenges with yesterday's thinking.

Innovation does not always require expensive technology. Sometimes it begins with simplifying a process, asking better questions, using the data we already have, and having the courage to do things differently.

I opened this session by saying, **"To bring about change, let us show ourselves."** Change begins with us, the choices we make, the solutions we embrace, and our willingness to challenge the status quo.

If every one of us leaves this Masterclass committed to using data more intelligently, embracing innovation, and turning information into action, we will not only improve our audit outcomes, we will build financially sustainable municipalities that deliver better services and restore public trust.

Thank You!

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