

Analytics Suite

Accounts Payable Module

Prepared for: City Auditor's Office, City of Tulsa

Prepared by: 9b

Dec. 20, 2019

Project Overview

Why this project was completed:

Accounts Payable is one of the most important transactional processes within the Finance department because it directly affects the City of Tulsa's cash outflow and vendor-employee relationships.

Potential pain points include high processing costs, inefficient processes, and fraudulent transactions; if undetected, these could result in cash leakage and customer dissatisfaction.

The 9b team developed an interactive Tableau dashboard that automatically locates and details these challenges in the Accounts Payable process.

This process dashboard provides context for the wealth of data stored in the MUNIS financial system, yielding sharper insights and ultimately, increased efficiency and reduced costs in Accounts Payable.

How this project benefits the City:

- **Auditors:** pinpoints risks the Accounts Payable process and details how frequently and to what extent they occur.
- **Managers:** increases transparency of Accounts Payable and inspires solutions to meet strategic goals and safeguard City assets.
- **ERP Administrators:** targets training opportunities in Accounts Payable and informs improvements to MUNIS.

Scope

Create data analytics and visualizations for automated oversight of Accounts Payable.

Objectives

- Identify and detail the risks occurring in Accounts Payable by process step.
- Calculate the City's time *and* cost to process invoices to help establish a bar of Accounts Payable performance.
- Reduce complexity of AP/MUNIS, enabling stakeholders to monitor process performance and make data-driven decisions.
- Collaborate with stakeholders to deliver the highest value throughout development of the Analytics Suite. See *Page 7*.

Methodology

- Read internal literature and explore the data environment.
- Interviewed Finance staff to understand procedures and priorities.
- Documented the Accounts Payable process and assigned risks to each step.

Results

- **55+ data analytics** track key steps in the Accounts Payable process, flagging invoices, vendors, and checks as they move through workflow and accumulate risks.
- **Dynamic processing time and cost views** show how much time it takes and how much it costs the City to process invoices in a selected period. This is a *new dimension for analysis* built during this Module and will allow managers to compare City processing costs to industry standards.
- **Tableau dashboards** capture all data analytics and views in one accessible location. See *Exhibits starting on Page 4*.

Background

The Accounts Payable process begins with invoice entry in MUNIS. Accounts Payable personnel enter invoices sent to them from vendors by mail or email. Select departments outside of Accounts Payable are permitted to enter invoices as well. This initial entry causes funds to be set aside for products that have been received or services that have been provided, and initiates vendor payment.

The funds that have been set aside for payment are subtracted from the remaining available budget. The invoice is then released through an approval process.

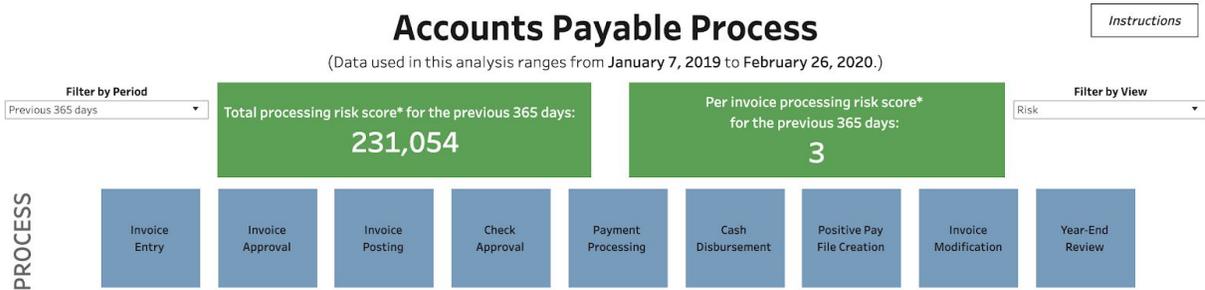
After approval, Accounts Payable personnel post the invoices and set a payment to be made 25 days after the invoice date. Detail records are created for these transactions under the general ledger accounts affected and the invoice is ready to be included in the next check run. Accounts Payable personnel print checks and send a prepared electronic file transfer payment batch to Treasury for processing payments to be made by electronic funds transfer.

The Accounts Payable process significantly impacts the City of Tulsa's cash outflow and customer satisfaction, particularly if not performed efficiently and with precision. Fortunately Accounts Payable produces large volumes of data in MUNIS, which 9b has leveraged through analytics solutions to help City stakeholders test performance and drive business outcomes.

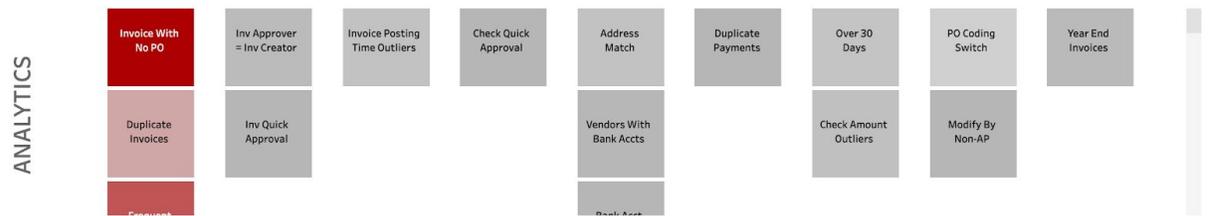
Exhibit: Tableau Dashboards

The Accounts Payable dashboard built in Tableau visualizes the process in three interactive sheets.

- The **Process Sheet** breaks down the Accounts Payable process by workflow step.



- The **Analytics Sheet** shows each analytic directly below its related process step. Shading indicates each analytic's score (assigned weight multiplied by the number of exceptions).



There are three sets of analytics in this Module, flagging process risk, cost, and time.

- The **Details Sheet** provides transaction details, which allow the user to understand what conditions triggered the analytic. Details are hidden until an analytic is selected.

DETAILS

| VenInvID | TestNum | Date | Inv_Entry_Dt | Invoice_Departm... | Clerk_Emp_ID | ClerkName | ClerkDepar.. | Vendor_Name | ApproverName | Step_Numb.. | Action_ |
|----------|-----------|------------------|--------------|--------------------|--------------|-----------|--------------|-------------|--------------|-------------|---------|
| 14 | 5/9/2019 | 5/9/2019 12:0... | | | | | | | | 0 | |
| 14 | 2/28/2019 | 2/28/2019 12:... | | | | | | | | 0 | |
| 14 | 4/1/2019 | 4/1/2019 12:0... | | | | | | | | 0 | |
| 14 | 4/30/2019 | 4/30/2019 12:... | | | | | | | | 0 | |
| 14 | 5/30/2019 | 5/30/2019 12:... | | | | | | | | 0 | |
| 14 | 7/24/2019 | 7/24/2019 12:... | | | | | | | | 0 | |
| 14 | 8/1/2019 | 8/1/2019 12:0... | | | | | | | | 0 | |
| 14 | 9/3/2019 | 9/3/2019 12:0... | | | | | | | | 0 | |
| 14 | 10/1/2019 | 10/1/2019 12:... | | | | | | | | 0 | |
| 14 | 11/4/2019 | 11/4/2019 12:... | | | | | | | | 0 | |
| 14 | 5/13/2019 | 5/13/2019 12:... | | | | | | | | 20 | A |
| 14 | 5/13/2019 | 5/13/2019 12:... | | | | | | | | 20 | F |
| 14 | 5/13/2019 | 5/13/2019 12:... | | | | | | | | 20 | A |

Filters

The user can employ the filter on the right to view the analytics that flag **risks**, **costs** or **processing times** in the Accounts Payable process. The filter on the left allows the user to see those occurrences **in the previous 7 days, 30 days, 365 days, fiscal year, or previous month** (e.g. Previous January).

These dynamic filters calculate the **total processing risk score** and **per invoice processing risk score**; **total processing cost** and **per invoice processing cost**; and **total processing time** and **per invoice processing time**—all based on a selected period.

AP Process Risk Score for Previous 365 Days



AP Process Cost for Previous 365 Days

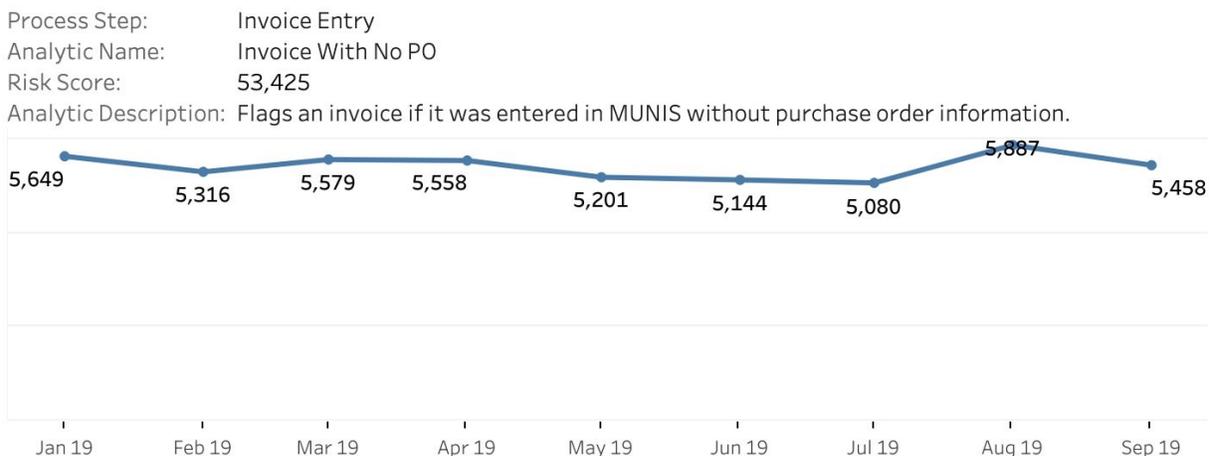


AP Process Time for Previous 365 Days



Additional view

When a user hovers over an analytic box in the workflow visualization, a tooltip displays a trend line graph that shows the monthly total of occurrences the particular analytic was flagged.



Analytic Scores

A set of stacked bar graphs show analytic scores **by invoice, by vendor, by employee, by approver** and **by department**. Below: The user can quickly see which invoices have the highest risk, which accumulates as they move through the process. The user can filter these results by time period, by view (risk, cost, time) and by individual test.

By Invoice



Multipliers

The user can perform sensitivity analysis by assigning different multipliers to the analytics and seeing the outputs change across the entire Module. This interactive dashboard allows users to model strategic management decisions and review the predictive results of those decisions.

| Analytics | | Multipliers |
|--------------------------------|---|-------------|
| 1 AP Invoice Entry Time | Enter average time spent for each performer in the process | 5 |
| 2 Non-AP Inv Entry Time | Enter average time spent for each performer in the process | 7 |
| 3 Inv Approval Time | Enter average time spent for each performer in the process | 3 |
| 4 Inv Posting Time | Enter average time spent to complete the whole batch process | 10 |
| 5 Check Approval Time | Enter average time spent to complete the whole batch process | 3 |
| 6 100K Check Process Time | Enter average time spent for each performer in the process | 4 |
| 7 Print Check Process Time | Enter average time spent to complete the whole batch process | 15 |
| 8 EFT Process Time | Enter average time spent to complete the whole batch process | 7 |
| 9 Wire Process Time | Enter average time spent to complete the whole batch process | 10 |
| 10 Cash Disb. Time | Enter average time spent to complete the whole batch process | 10 |
| 11 Pos. Pay File Creation Time | Enter average time spent to complete the whole batch process | 10 |
| 12 Inv Mod Time | Enter average time spent for each performer in the process | 5 |
| 13 5K Check Process Time | Enter average time spent for each performer in the process | 5 |
| 14 Invoice With No PO | Enter the risk multiplier to adjust the total risk score of tests | 1 |
| 15 PO After Invoice | Enter the risk multiplier to adjust the total risk score of tests | 1 |

Exhibit: Analytics Suite

Accounts Payable is the fifth Module in an Analytics Suite being developed by 9b for the City of Tulsa. Vendors is scheduled as the next Module to be completed.

