Analytics Suite
Accounts Receivable Module

Prepared for: City of Tulsa
Prepared by: 9b
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About 9b

9b is a benefit corporation based in Tulsa, Oklahoma. We do analytics to make organizations awesome and help communities thrive. As a benefit corporation, 9b is legally empowered to pursue positive stakeholder and community impact alongside profit. Visit 9bcorp.com for more.

Overview

Why we did this project

The Accounts Receivable (A/R) division of the City of Tulsa's Finance Department aims to create, adjust, and send invoices accurately to help the organization collect from customers in a timely manner and maintain balanced accounts.

In partnership with the City Auditor's Office, 9b automated and visualized data stored in Munis, the City's Enterprise Resource Planning (ERP) system, to alert stakeholders of various sources of risk and waste in A/R processes that could hinder these business objectives.

Many of the daily processes are performed manually, requiring time-consuming workarounds with the previous ERP system. Three A/R employees are responsible for managing these processes as well as the organization's customer master file.

The custom tools (see Project Deliverables) built in the A/R Module will help stakeholders optimize resources and lower risk in the various A/R processes ahead of the division's full transition to Munis slated for mid-2021.

How we did this project

A/R is the tenth module in an audit analytics solution for the City of Tulsa. Similar to past modules, the 9b team read available internal and external A/R literature, mapped the data environment, and interviewed A/R process owners. After doing so, we developed a framework for writing analytics and creating interactive visualizations in Tableau, the City's business intelligence platform.
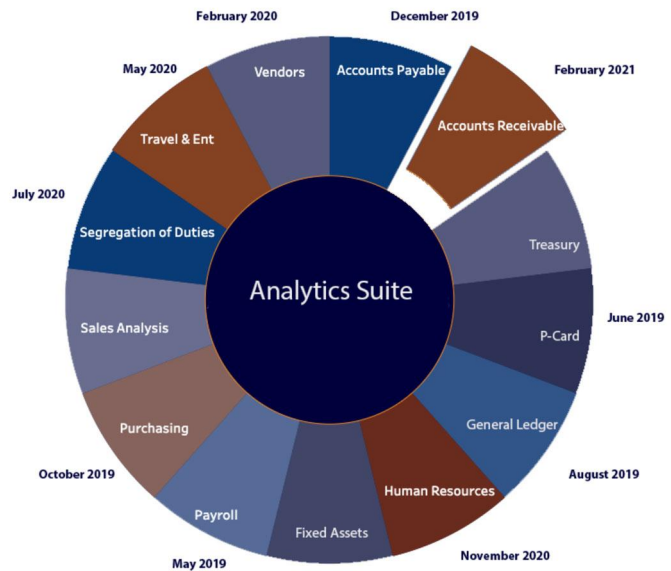
Project Deliverables

- 25 data analytics integrate with Munis to locate risk, waste, and training opportunities. *Pg 3*
- Process dashboard in Tableau shows analytics with high risk by process step. *Pg 4*
- Scorecards in Tableau detail analytic results by transaction, employee, and more. *Pg 5*

Next Steps

9b will work with Internal Audit to identify and train users of the Accounts Receivable dashboards. User training will help 9b further refine the dashboards to meet the City's needs.

Sample of Analytics

Data analytics track transactions (bills and invoices) as they move through the documented A/R process and collect flags. Each analytic is asking a question of transaction. If the transaction meets the criteria, the analytic will flag the transaction. A single transaction could collect flags for each of the tests below. See Pg 4.

As in previous modules (Accounts Payable, General Ledger, etc.), data analytics not prioritized for this project have been recorded for future development.

| Step	Analytic	Description	Use case
Request to Bill	First Bill by Dept	Flags if an invoice represents the first bill sent by a department.	Validate the entry and/or address any issues early with training.
Invoice Entry	Duplicate Invoices	Flags if two or more invoices in the system are entered within 29 days of each other and match on customer number and amount.	Investigate and/or recommend training.
Invoice Approval	Quick Approval	Flags if an approver approves an invoice within 45 seconds of their previous approval.	Examine invoice and determine if it warranted substantial review.
Invoice Posting	Posting Time Outliers	Flags if the number of days between the invoice creation date and its last approval exceeds the target.	Identify and resolve any bottlenecks in the process.
Invoice Adjustment	Invoice Amount Adjusted w/o Approval	Flags if a bill's total amount decreased without approval.	Validate adjustment and/or recommend controls.
Monthly Statement	Invoices Past Due	Flags if an invoice is unpaid or if the invoice was paid past its due date.	Prioritize collection on unpaid invoices; investigate customers who paid late.
Customer Management	Customer-Employee Address Match	Flags if a customer and an employee in the system have the same address.	Investigate potential fraudulent activity.

Tableau Dashboards

The principal dashboard created in this project visualizes the AR process in three dynamic sections.

- The **Process section** shows key steps in the accounts receivable process. Find instructions and filters for analysis in the collapsible menu in the top right corner of the dashboard.
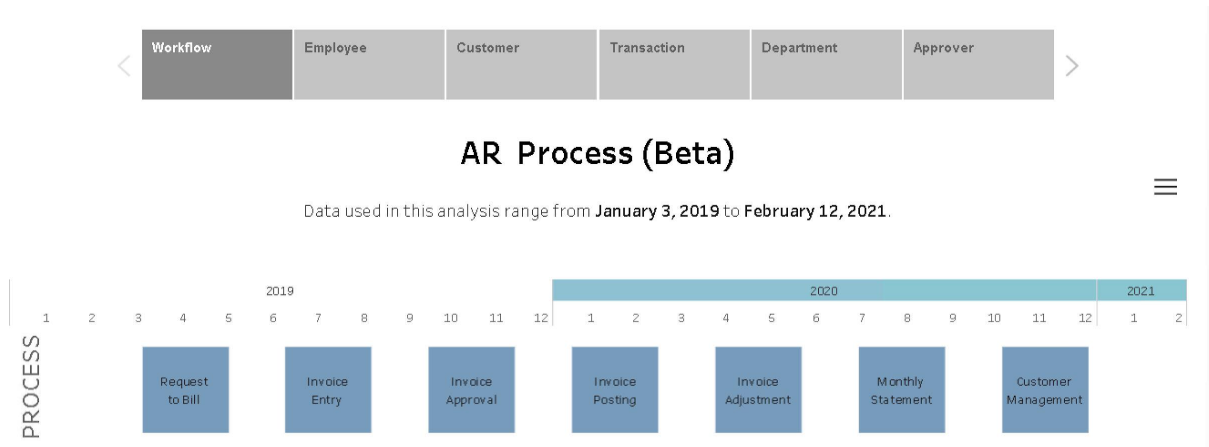
- The **Analytics section** shows each analytic directly below its related process step. Red shading indicates the level of risk and immediately orients the user upon data refresh.
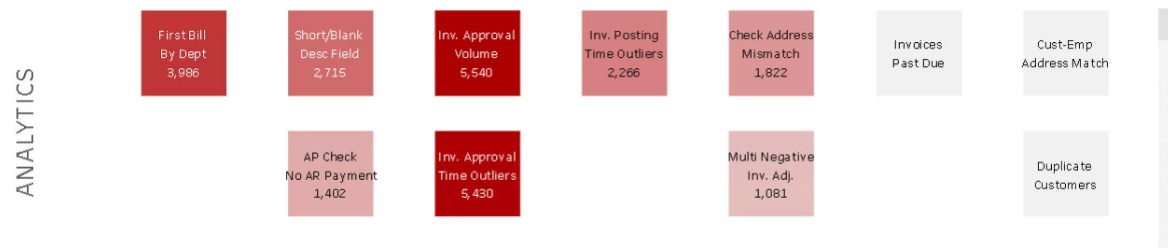

- The **Details section** provides transaction details, which allow the user to understand what conditions triggered the analytic to flag. Details are hidden until an analytic is selected.

| Transaction Num	Vendor Name	Date	Employee Name	Emp Dep	Admin Name	Admin Dep	Analytic Name	Level of Detail	Further Information
							Inv Quick Approval	This analytic flags at the detail lines.	Approval Seconds 0
									Approval Seconds 2
							Inv Quick Approval	This analytic flags at the detail lines.	Approval Seconds 0

Additional View: Trend Tooltip

When a user hovers over an analytic, a tooltip shows the monthly trend of flagged transactions.
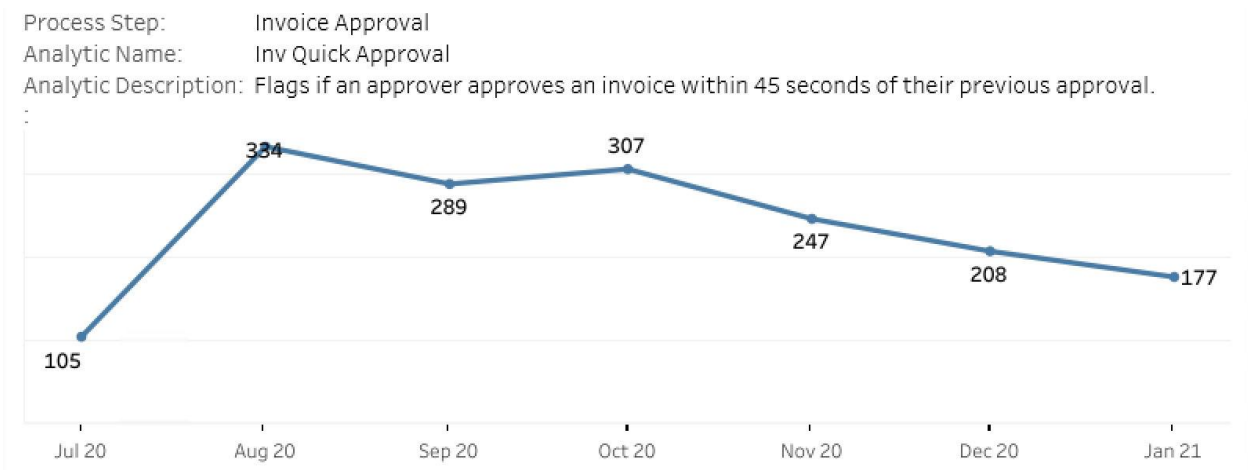
Risk Scorecards

A set of dashboards shows accumulated risk by Employee, Customer, Transaction, Department, and Approver. Below: The user can see which departments had high-risk transactions in a given period.
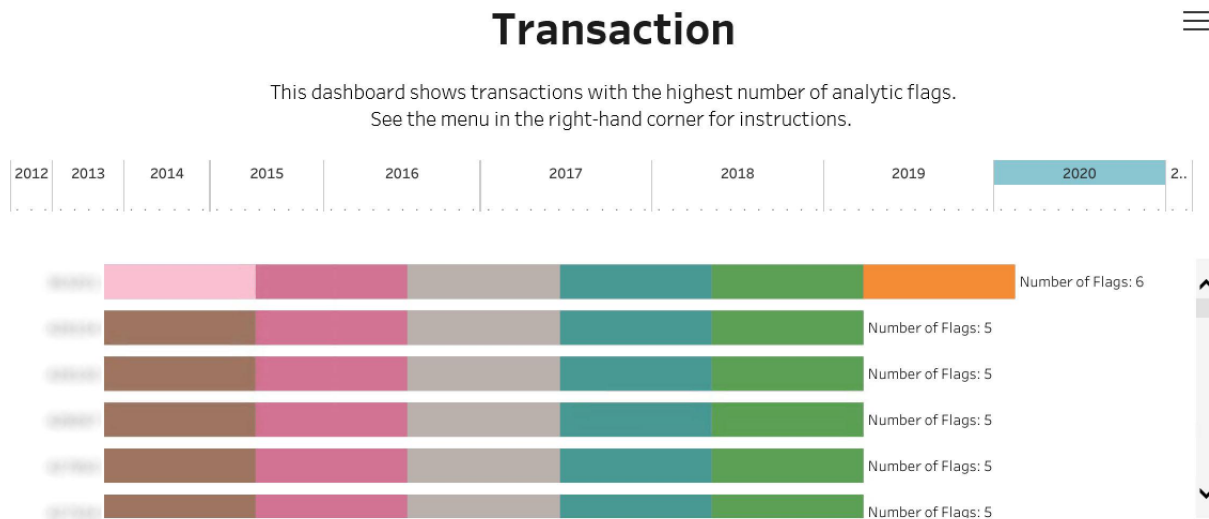
Users can further refine results using the filters available in the ☰ menu.

Transaction

This dashboard shows transactions with the highest number of analytic[s].
See the menu in the right-hand corner for instructions.

Use the filters below to view analytics that flag high-risk transactions or view results by individual analytics. Search for individual transactions by keyword.
Filter by the analytics you want to view.

Search by Transaction

Filter by Analytic
- ☑ (All)
- ☑ Checks Cut From AR
- ☑ Credit Memos
- ☑ Cust-Emp Address Match
- ☑ Duplicate Customers
- ☑ Duplicate Invoices
- ☑ First Bill By Dept

Similar to the Process Dashboard, hover over the analytics (colored bars) to view a tooltip.

Transaction Number: 363201
Analytic Name: Inv Adj Quick Approval
Analytic Description: Flags if an approver approves an invoice adjustment within 45 seconds of their previous approval.
Process Step: Invoice Adjustment
Employee Name:
Number of Flags: 1

Click any analytic to drill into the details of flagged transactions.

Transaction Num	Vendor Name	Date	Employee Name	Emp Dep	Admin Name	Admin Dep	Analytic Name	Level of Detail	Further Information
							Inv Adj Quick Approval	This analytic flags at the detail lines.	Approval Seconds 2

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