Construction projects Profit and KPI Analysis

Objective:

As a Construction Project Manager and Construction Technology Enthusiast, my primary objective in this analysis was to ascertain the profitability and key performance indicators (KPIs) for construction projects. My aim was to Automate & leverage these insights to facilitate informed decision-making and deepen the understanding of each project's financial dynamics. The motivation for this endeavor stemmed from the need to transition away from manual, time-consuming, and error-prone methods, which often led to delayed and inaccurate financial reports.

Data Sources and Methodology:

1.Project Financials:

- To assess project profitability accurately, I needed to analyze data pertaining to material costs, labor expenses, and total project budgets (SOV).
- The project budget data was sourced from Schedule of Values, which I obtained through two distinct approaches:
- For projects managed using Textura, I extracted the necessary data via the platform's administrator tools.
- For projects not incorporated into Textura, I meticulously compiled the required information into a manual Google Excel sheet (which will be periodically updated by the accounting team).

2.Labor Costs:

- At our company, tracking of labor hours was executed using the FingerCheck application. I utilized its API to retrieve the relevant data.
- API Documentation Reference: FingerCheck API Documentation - https://developer.fingercheck.com/api/help

3.Material Costs:

- Our company used QuickBooks desktop application for accounting, I downloaded the CSV file from QuickBooks.

4.Change Order Log:

- Established an internal Google Sheets log to record all pending change orders, based on inputs from project managers. This tool was crucial for projecting financial outcomes and was a key component of my analysis.

5.Data Integration and Analysis:

- After the data analysis, I utilized Power BI to create detailed visualizations, aiding in the interpretation and communication of the financial analysis. Python notebook will be run every week with new data to keep updated financial information.

Final project profit and KPI's visualization in power BI (snapshoot), a drop-down option is created in power BI where each project can be selected.

16416	39.9		
M&F Hours	Avg M&F Rate		
29834	36.2		$3,650,000
L Hours	Avg L Rate		Contract
46250	$37.6		$2,453,874
Total Hours	Ave Rate		Change Orders
$1,728,471	28.51%		$6,103,874
Labor Cost	Labor Cost (%)		New Contract
$1,754,701	28.94%		
Material Cost	Material Cost (%)		

99.34%
Project Completed

$6,063,366
Billed to date/completed

$606,337
Insurance (10% of work com...

$606,337
Overhead (10% of work com...

$311,125
Workmen comp (18% of labor)

$1,056,396.0
Profit

17.4%
Profit %

220170
Unpaid CO's

$1,276,566
Potential Profit in...

20.3%
Potential Profit in...

1:1.82
M vs L Ratio