



Optimization of Network Procurement Workflows and Automated Sourcing Reporting at Digi Telecommunications

¹Wan Muhammad Haiqal Shah Mohd Sariff, ^{2,*}Wan Khadijah Wan Sulaiman & ³Kelly Khaw Su Fang

¹Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia

²Digi Telecommunications Sdn Bhd, Lot 10, Jalan Delima 1/1, Subang Hi-Tech Industrial Park, 40000 Shah Alam, Selangor, Malaysia

¹2019406784@tudent.uitm.edu.my

²wankhadijah@uitm.edu.my

*Corresponding author

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ABSTRACT

This technical report details an operational and data management study conducted within the Procurement & Logistics department at Digi Telecommunications Sdn Bhd. Specifically attached to the Network and Business Solutions unit, the study focused on optimizing the sourcing workflows for the Operation and Maintenance (O&M) category and automating weekly Purchase Requests/Purchase Orders (PRPO) reporting. For the O&M category, the workflow involved rigorously verifying non-standard items (NSI) requested by stakeholders against official vendor pricebooks and evaluating multiple quotations for price benchmarking. Concurrently, the generation of the PRPO report was overhauled using data extracted from the Coupa database management system. Microsoft Excel was utilized to clean the data, apply logical formulas (such as DATEDIF() and SUMIFS()), and construct Pivot Tables to summarize pending approvals, active contract spending, and direct purchase frequencies. To enhance efficiency, Visual Basic for Applications (VBA) Macros were implemented and dynamically adjusted to automate the generation of these reports. The results demonstrated that the deployment of VBA Macros drastically reduced the report generation time from two hours to under thirty minutes. Ultimately, the integration of data analytics and workflow automation empowers the procurement team to strategically monitor active contracts, prioritize pending requests, and continuously optimize corporate sourcing activities.

Keywords: Coupa system, Microsoft Excel, Procurement, Purchase Order, VBA Macros.

INTRODUCTION

Digi Telecommunications Sdn Bhd has been a prominent network service provider in the Malaysian telecommunications industry for decades. Serving over 10 million customers, the company held the second-largest revenue share in the market (27%) by the end of 2021 and is listed on the Bursa Malaysia

Berhad stock exchange, with 49% ownership by the Telenor Group. Driven by the slogan "Freedom to Inspire the Next," the company cultivates a work culture based on four pillars: Always Explore, Create Together, Keep Promises, and Be Respectful. Following a massive merger with Celcom Axiata Bhd completed on November 30, 2022, the newly united brand, CelcomDigi, became the largest local listed company on Bursa Malaysia, serving approximately 20 million customers.

Within the Finance division of this organization operates the Procurement & Logistics department. This department governs almost all corporate sourcing activities, enforcing procurement policies, negotiating with vendors, managing purchase requests/orders (PR/PO), and handling business contracts. The Network and Business Solutions unit is a specific sub-section of this department that handles purchases falling under network commodities, such as RAN, Core, Transport, and Operation Support Systems.

This study focuses on two analytical and administrative tasks executed within this unit to ensure corporate spending achieves maximum value. The first task involved managing the Operation and Maintenance (O&M) category, requiring strict verification of non-standard items and rigorous price benchmarking. The second task centered on generating the weekly PRPO report using data from the Coupa database system, utilizing Microsoft Excel functions and VBA Macros to automate and streamline data presentation.

THE PROPOSED METHOD

Managing the Operation and Maintenance (O&M) Category

The O&M category involves 12 panel vendors contracted to supply equipment and services for maintaining technical sites across six regions in Malaysia. These vendors operate under agreements with fixed prices for standard line items compiled in a pricebook. When stakeholders require items covered by the pricebook, they raise a purchase request (PR) via the Coupa system, which generally does not require the responsible buyer's approval.

However, when stakeholders request specific services or equipment not listed in the pricebook—termed non-standard items (NSI)—a rigorous verification process is initiated. The responsible buyer must verify that the requested NSI cannot be matched to existing standard items. For price benchmarking, the stakeholder must submit at least three vendor quotations (Bill of Quantity or BOQ) for the NSI. The lowest quotation is recommended to the Head of Section (HOS) and Head of Procurement (HOP) for approval. Importantly, for "Direct Purchases" with a total order amount under RM 10,000, the responsible buyer's approval is bypassed entirely, regardless of NSI involvement (See Table 1).

Automating the PRPO Report

The weekly PRPO report provides a general overview of ongoing sourcing activities in the Coupa system. Data extraction and cleaning were performed in Microsoft Excel to address three key areas:

1. **Pending Approvals:** Data for PRs under the "requiring action" status was extracted. The DATEDIF() function was applied between the 'last updated date' and the TODAY() function to calculate the exact number of days a PR had been pending.
2. **Active Contracts Spend:** To analyze active contracts, the dataset was merged with PO line data. An 'Order Year' column was added, and the SUMIFS() function was implemented using

the contract number and order year as logical arguments to calculate total spending per supplier across 2020, 2021, and 2022.

3. **Free Text and Direct Purchases:** The IF() function was used to categorize purchases. Orders less or equal RM 10,000 were tagged as Direct Purchases. These were further split; if the 'Contract Number' column was blank, the PR was categorized as a "free text PR".

To automate this workflow, Excel VBA Macros were recorded while generating the pending buyer and active contract reports. Because the raw dataset size fluctuates weekly, the VBA code was manually altered to dynamically identify the last non-empty row, ensuring the macro runs flawlessly regardless of data volume.

Table 1

Summary of Responsible Buyer Involvement in PR Approval

Total Order Amount	NSI Involvement	Responsible Buyer Involvement
$\leq$ RM 10,000	No	No
	Yes	
$>$ RM 10,000	No	No
	Yes	Yes

EVALUATION AND RESULTS

Sourcing Operations Oversight

The rigorous verification of NSI requests ensured that corporate spending remained cost-effective through mandatory price benchmarking. Tracking these cases in the Sourcing Project Tracker provided the supervisor with clear visibility into the progress of each case. This process highlighted that effective communication with technical stakeholders and frequent vendor follow-ups are critical to preventing approval bottlenecks.

Efficiency via Data Automation The generation of Pivot Tables based on the cleaned Coupa data successfully provided actionable business intelligence. The pending buyer report allowed team members to monitor and prioritize overdue PRs. Furthermore, the active contracts summary accurately isolated major suppliers within the network category based on their net historical spend.

Most notably, the implementation of dynamic VBA Macros proved highly successful. By automating the repetitive data formatting and calculation steps, the time required to generate the weekly PRPO report was reduced drastically from two hours to under thirty minutes. This automation not only increased departmental efficiency but also ensured that the reporting framework could be easily handed over to future personnel.

CONCLUSION

The analytical and administrative tasks executed at Digi Telecommunications demonstrate the significant value of integrating basic data science skills into corporate procurement workflows. By leveraging Microsoft Excel functions (DATEDIF(), SUMIFS(), IF()) and Pivot Tables, raw data from the Coupa system was effectively transformed into comprehensive reports that monitor contract spending and pending approvals. Furthermore, modifying VBA Macros to automate these reports showcased how programmatic logic can drastically reduce processing time and optimize team productivity. Navigating the verification of non-standard items also emphasized the necessity of strong communicative and negotiation skills in managing complex vendor relationships. Overall, this study confirms that combining theoretical mathematical logic with practical software tools is essential for maintaining efficient, transparent, and cost-effective operations within a large-scale telecommunications enterprise.

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Conflict of Interest

The authors have no conflicts of interest to declare.

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