



Data Literacy Assessment and Project Milestone Automation at PETRONAS Dagangan Berhad

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ABSTRACT

This technical report presents an analytical and project management study conducted within the Commercial Analytics Division at PETRONAS Dagangan Berhad (PDB). The study focuses on three primary objectives: tracking project milestones via a centralized dashboard, automating follow-up communications, and assessing corporate data literacy. A CAD Nexus Hub Dashboard was developed using Microsoft Power BI to monitor real-time project progress, classifying milestone statuses into categories such as 'Completed,' 'Delaying,' and 'Future Task' using complex logical Excel formulas. To mitigate project delays, Microsoft Power Automate was utilized to construct a recurring workflow that automatically dispatched personalized email and Teams reminders to the respective Persons in Charge (PICs) of overdue tasks. Concurrently, a Data Literacy Persona Assessment (DLPA) was administered to 851 PDB staff members to evaluate their data capabilities. The DLPA analysis revealed a corporate maturity score of 2.8, placing the majority of employees in the "Discover" stage, slightly below the organizational target of 3.2. The findings demonstrate that integrating automated tracking tools with continuous data literacy initiatives significantly enhances operational efficiency, fosters accountability, and solidifies data-driven decision-making cultures within large-scale energy corporations.

Keywords: Data literacy, Microsoft Power Automate, Microsoft Power BI, PETRONAS Dagangan Berhad, Project management.

INTRODUCTION

PETRONAS, Malaysia's national oil and gas company established in 1974, plays a pivotal role in the global energy sector, exploring, producing, and delivering both hydrocarbon and renewable energy across over 100 countries. PETRONAS Dagangan Berhad (PDB), a subsidiary of PETRONAS, operates specifically within the downstream petroleum sector. PDB manages an extensive network of petrol stations across Malaysia and distributes a diverse range of products, including lubricants, aviation fuels, and liquefied petroleum gas (LPG).

Within PDB's organizational structure, the Commercial Analytics Division plays a crucial role in leveraging data to optimize operational efficiency and inform strategic decision-making. This division is structured into several specialized teams. Among these is the Analytics Adoption and Data Literacy Change Management team. This specific team is dedicated to embedding a culture of data literacy across the organization, ensuring that employees at all levels possess the necessary skills to interpret and utilize data effectively.

To support the division's goals, three key analytical and management tasks were executed. The first task involved developing the CAD Nexus Hub Dashboard to centralize project milestone tracking. The second task utilized Microsoft Power Automate to create an automated email reminder system targeting delayed project milestones. The final task involved conducting and analyzing the Data Literacy Persona Assessment (DLPA) to evaluate and improve the data maturity levels of PDB staff.

THE PROPOSED METHOD

Project Milestone Tracking and Dashboard Development

The initial process required manual data collection via Microsoft Excel, reaching out to each Person in Charge (PIC) to gather details regarding their specific project milestones, start dates, and deadlines. The status of each milestone was mathematically categorized into three main types—Completed, Delaying, and Future Task—using a complex, nested IF Excel formula (See Figure 1 and Table 1).

For instance, a milestone was flagged as a "Disciplinary Issue" if the current date exceeded the scheduled end date by more than 15 days plus a designated threshold period. The structured data was then integrated into Microsoft Power BI to create the interactive CAD Nexus Hub dashboard.

Automating Milestone Reminders via Power Automate

To ensure timely project updates without relying on manual follow-ups, an automated workflow was engineered using Microsoft Power Automate (See Figure 2). The flow was triggered on a recurring basis (every Monday and Thursday). It iterated through the milestone data table, checking the status of each task. If a milestone was flagged as "Task in Delay," the system automatically posted a reminder message to the PIC in a Microsoft Teams chat. Conversely, if the status escalated to "Task in Critical Delay" or "Disciplinary Issue," the system dispatched a formal email reminder via Outlook.

Data Literacy Persona Assessment (DLPA)

The DLPA was conducted via an online survey distributed to all PDB staff to evaluate the organization's data maturity (See Figure 3). The assessment was structured around three key pillars: Data Literacy Skills (can the employee work efficiently?), Data-Driven Decision Making (do they rely on facts?), and Data Dispersion (identifying disparities in data usage). Prior to launching the survey, a visual campaign involving over 20 data awareness posters was distributed to maximize staff engagement.

Table 1

Conditions for the Status Projects Milestones

Status	Condition
Completed On Time	Actual Comp. Date $\leq$ End Date
Delayed	Actual Comp. Date $>$ End Date
Critically Delayed	Actual Comp. Date $>$ End Date + $\langle$ Threshold Days $\rangle$
PIC Not Response	Start Date = NULL OR End Date = NULL
Task in Delay	TODAY() $>$ End Date
No Update From PIC	TODAY() $>$ End Date + 3 days AND Reason = NULL
Task In Critical Delay	TODAY() $>$ End Date + 7 days+ $\langle$ Threshold Days $\rangle$
Disciplinary Issue	TODAY() $>$ End Date + 15 days+ $\langle$ Threshold Days $\rangle$
Future Task	TODAY() $\leq$ End Date AND Actual Comp. Date = NULL

Figure 1

Status categorization

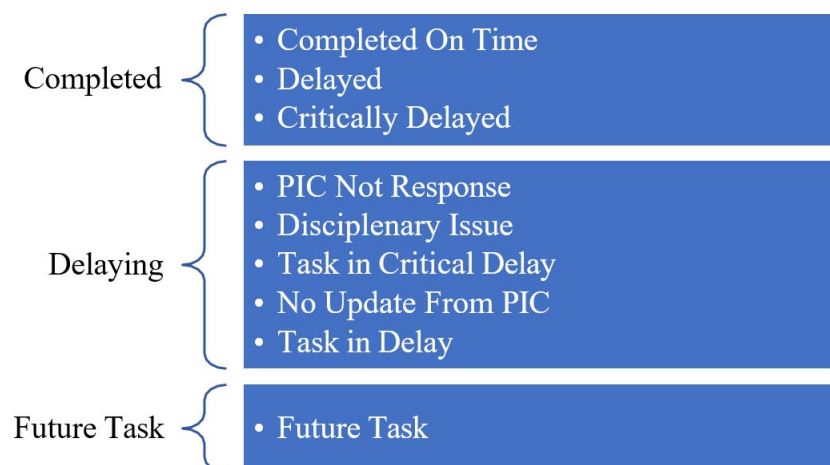


Figure 2

Workflow Microsoft Power Automate

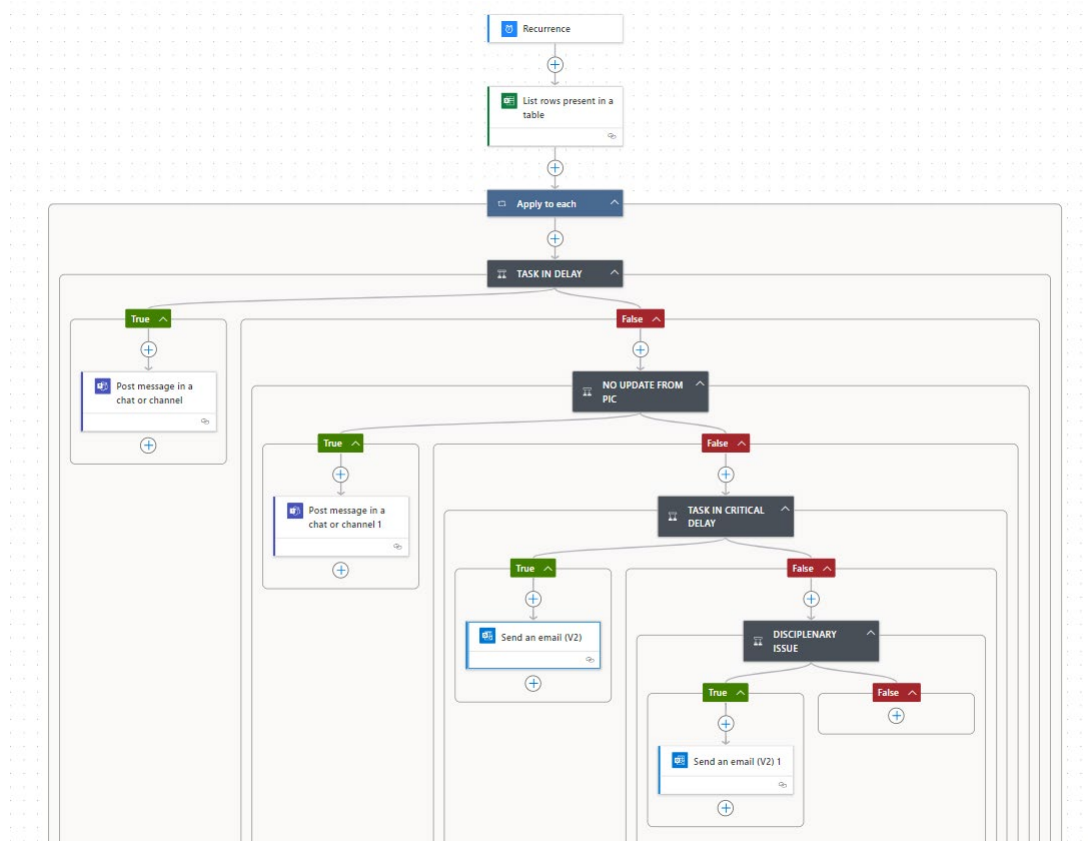
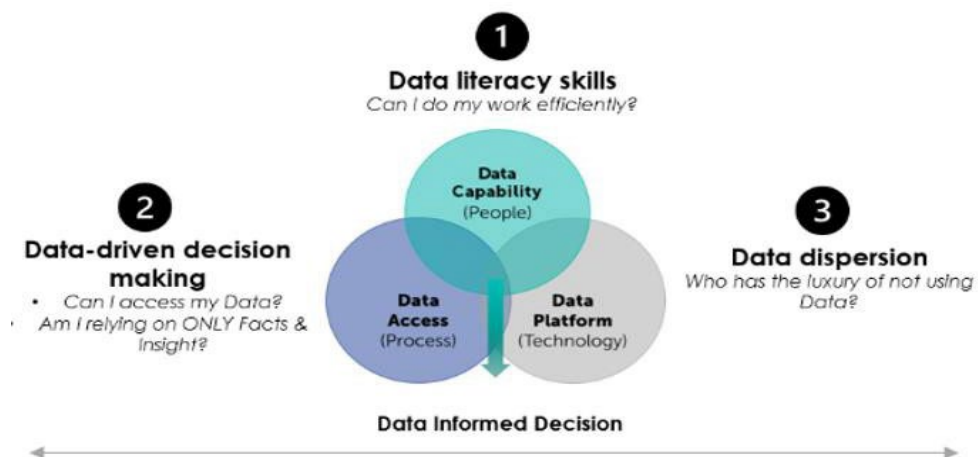


Figure 3

Pillars of Corporate Data Literacy



EVALUATION AND RESULTS

Efficiency in Project Monitoring

The CAD Nexus Hub dashboard successfully provided stakeholders with real-time visualizations of project timelines, budget expenditures, and milestone statuses across multiple departments (See Figure 4 and Figure 5). The user-friendly interface allowed project managers to quickly identify bottlenecks, such as the top 5 delayed milestones, facilitating proactive management interventions. Furthermore, the integration of Power Automate drastically reduced the administrative burden of chasing overdue tasks (See Figure 6 and Figure 7). The recurring, personalized alerts fostered a strong sense of accountability among the PICs, resulting in more timely and accurate progress reporting.

Data Literacy Maturity Findings

The DLPA survey achieved a high participation rate of 851 respondents, marking a 10% increase from the previous year (See Figure 8 and Figure 9). The analysis revealed an overall corporate persona rating of 2.8, which fell slightly below the organizational target of 3.2.

A detailed breakdown showed positive momentum: no staff members remained in the foundational "Wonder" stage (0-1.4). The majority, comprising 624 individuals, were categorized in the "Discover" stage (2.4-3.4), indicating that they are actively beginning to apply data in their decision-making processes, though full proficiency has yet to be reached. Additionally, 101 staff members achieved the "Mature" stage (>3.4). Breaking the score down by pillars, Data-Driven Decision Making scored highest at 3.08, while Data Literacy Skills lagged at 2.61, indicating a need for focused technical training.

Figure 4

Page 1 of CAD Nexus Hub Dashboard interfaces



Figure 5

Page 2 of CAD Nexus Hub Dashboard interfaces

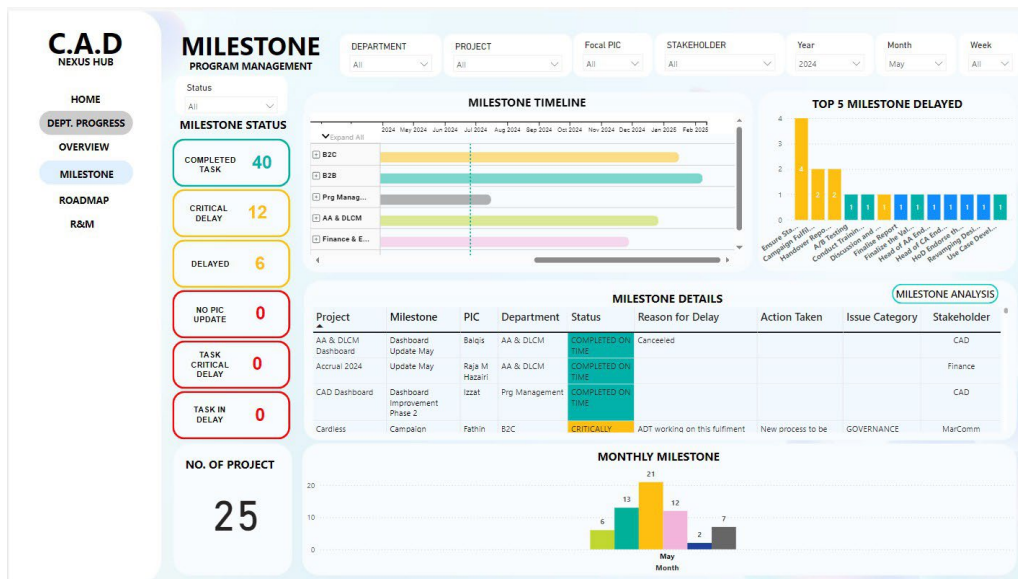


Figure 6

Examples of Reminders Sent via Microsoft Teams

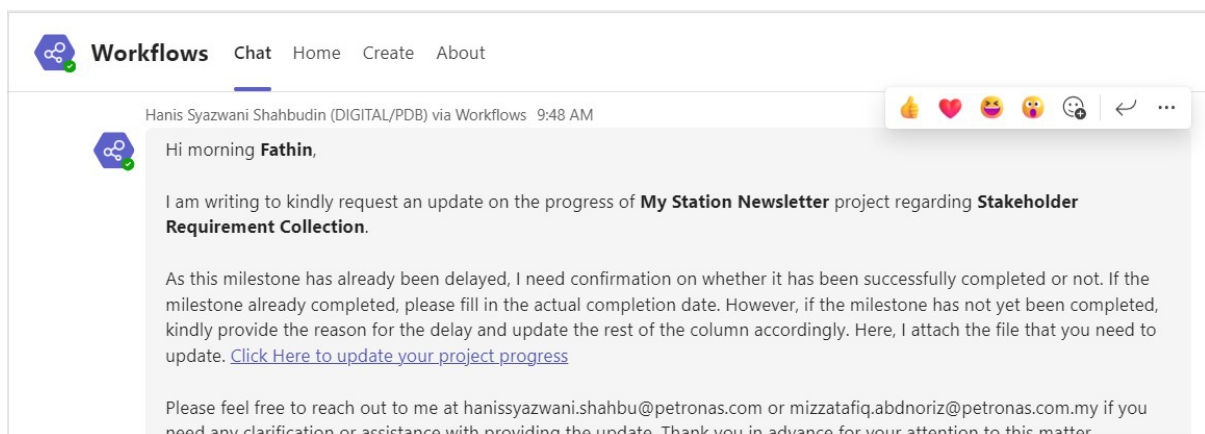


Figure 7

Examples of Reminders Sent via Email Outlook

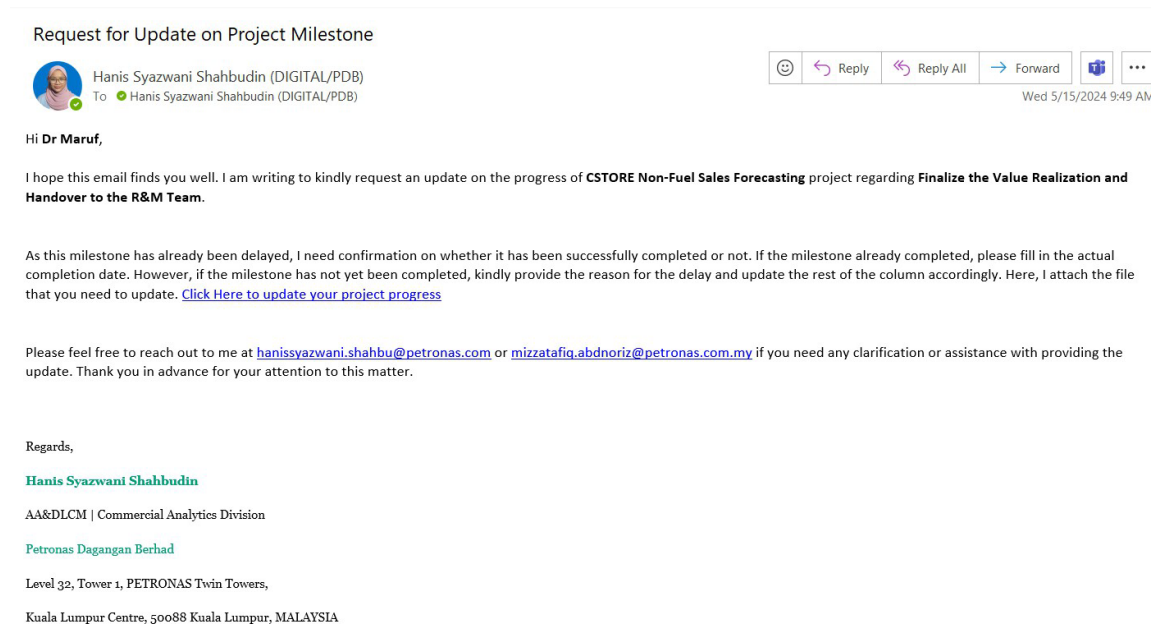


Figure 8

Data Literacy Persona Maturity Level framework



Figure 9

Overall Persona DLPA Rating for PDB



CONCLUSION

The technical and analytical tasks executed at PETRONAS Dagangan Berhad emphasize the critical intersection of project management automation and corporate data literacy. The development of the CAD Nexus Hub using Microsoft Power BI successfully transformed manual, fragmented milestone tracking into a centralized, transparent visual platform. Coupled with the Power Automate workflow, the division significantly minimized administrative delays and enhanced PIC accountability. Furthermore, the Data Literacy Persona Assessment provided quantifiable metrics regarding the workforce's analytical maturity. While the overall score of 2.8 indicates that the staff values data-driven strategies, there remains a targeted need to elevate basic data literacy skills. Moving forward, it is recommended that the organization utilizes these DLPA findings to tailor specialized training programs, pushing the workforce closer to the 3.2 target and cementing a fully mature, data-driven corporate culture.

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Conflict of Interest

The authors have no conflicts of interest to declare.

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