



Work Method and SLA Performance in Procurement and Contract Operations: Evidence from Indonesia's Upstream Oil and Gas Industry

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Abstract

Background: Following organizational restructuring, Procurement and Contract Management (PCM) functions across Subholding entities in Indonesia's upstream oil and gas sector show variation in Service Level Agreement (SLA) achievement linked to differences in work method, personnel allocation, and coordination practices; external factors such as regulatory requirements and digital system transformation may further shape these outcomes.

Objective: This study analyzes SLA performance variation across Subholding entities and examines how work method, personnel allocation, and coordination influence procurement and contract management performance, extending operations-management literature on work specialization beyond single-sector confirmation toward context-specific evidence from a regulated, project-based industry.

Methods: Using a convergent parallel mixed-method design (Creswell & Plano Clark, 2018), quantitative data from six Subholding entities (2024) were analyzed together with qualitative data from interviews and FGDs; the two strands were collected concurrently and merged during interpretation to provide complementary explanatory depth.

Results: Split work methods achieved 45% faster SLA completion than end-to-end methods. Contract Assignment Ratio showed a weak negative but statistically insignificant correlation with SLA Compliance (Pearson $r = -0.251$, $p = 0.631$; $n = 6$), indicating limited statistical power from only six regional observations and suggesting that process coordination, execution quality, and capability differences, rather than personnel volume alone, more strongly explain SLA variation.

Conclusion: Split work methods improve SLA performance through role specialization and coordination, while personnel allocation alone does not determine outcomes. Findings offer practical guidance for procurement governance, SLA monitoring, and capability development; generalization beyond a single industrial sector and a small regional sample remains limited.

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INTRODUCTION

In today's competitive business environment, organizations continuously strive to enhance efficiency and service delivery through structured performance indicators such as SLA (Engel et al., 2022; Lee & Ben-Natan, 2002). A well-defined SLA supports service management by clarifying responsibilities, strengthening communication, and establishing measurable performance expectations between related parties (Goo et al., 2009). Structured performance measurement enables organizations to monitor operational outcomes, identify improvement

priorities, and support more effective decision-making (Nudurupati et al., 2024; Sutjahyani et al., 2025; Yaghoobi & Haddadi, 2016).

Previous studies emphasize the importance of structured performance measurement in procurement and service operations (Giannakis, 2007; Jääskeläinen, 2018). Procurement performance evaluation should consider governance, process effectiveness, human resource capability, and organizational aspects Sutawijaya (2026), while process timeliness is an important indicator to identify procurement delays and operational performance gaps (Ottou et al., 2024).

Despite this body of work, existing procurement studies have largely examined governance, timeliness, or value-creation dimensions at an inter-organizational or public-sector level, with limited attention to how intra-organizational work-method configuration, specifically end-to-end versus split-handling arrangements, affects SLA performance within a single, tightly regulated, project-based industry such as upstream oil and gas. This study addresses that gap by providing empirical, entity-level evidence on how work method and personnel allocation jointly shape SLA outcomes, thereby extending operations management theory beyond generic confirmation toward a context-specific contribution.

Following recent organizational restructuring, the Subholding is responsible for overseeing operational activities across its subsidiary companies within Indonesia's upstream oil and gas industry. The organization consists of five (5) regional entities managing eleven (11) operational zones, where each entity operates its own Procurement and Contract Management (PCM) function with dedicated personnel and operational practices.

According to Thai (2005), public procurement must satisfy requirements for goods, works, systems, and services in a timely and cost-effective manner. Effective procurement management contributes to organizational performance by improving procurement practices and supporting broader value creation beyond transactional activities (Lindfors et al., 2025).

Preliminary organizational data indicate variations in Procurement and Contract Management (PCM) performance across the five regional entities. Although overall SLA achievement at the Subholding level remains relatively high, performance is not uniform across regions, particularly in procurement activities. Some regions consistently achieve organizational targets, whereas others experience performance gaps despite operating under the same Subholding governance structure. These variations indicate potential differences in operational arrangements, workload distribution, personnel allocation, and work-method configuration across entities, providing an empirical basis for examining the factors associated with SLA performance.

Prior to the organizational restructuring, procurement and contract activities across the Subholding entities were generally managed through an end-to-end approach, where a single procurement team handled the process from tender initiation until contract issuance. Following the restructuring, business process was redesigned by separating procurement and contract management responsibilities into different teams, resulting in a split-handling approach intended to improve specialization, governance, and process control.

This design choice can be theoretically grounded in coordination and specialization principles: separating procurement and contract administration into distinct roles increases task specialization and accountability, but simultaneously raises coordination requirements between the two functions. Whether split-handling improves or impairs SLA performance is therefore expected to depend on the strength of the coordination mechanisms accompanying the separation of roles, an expectation examined empirically in the Results and Discussion sections.

However, during operational implementation, several entities experienced increasing work volume and recurring challenges in achieving SLA targets, particularly for procurement and contract completion. To maintain operational continuity and improve processing efficiency, some entities reverted to the previous end-to-end approach for selected contracts. Previously, this variation in work methods had not been formally documented or consolidated at the Subholding level, and management recently became aware that both end-to-end and split-handling practices were being implemented simultaneously across different entities.

Therefore, this study aims to evaluate SLA performance variations across Subholding entities, assess the relationship between personnel allocation and SLA achievement, and explore operational as well as capability enhancement initiatives that may improve procurement and contract management performance.

The scope of this research is limited to the analysis of SLA performance within Procurement and Contract Management (PCM) functions at the Subholding and subsidiary levels. Since the subsidiaries are organized into five regional entities overseeing eleven operational zones, the analysis is conducted at the regional level. The study focuses on quantitative data related to contract volume, processing time, and SLA achievement, supported by qualitative insights from interviews and FGDs. The scope does not extend to operational functions outside procurement and contracting activities. The data utilized represents the complete dataset available for all subsidiaries. Certain operational datasets remain confidential and are therefore not disclosed in full. However, the summarized analyses and statistical outputs adequately represent the research findings.

METHOD

This study employed quantitative and qualitative approaches to evaluate procurement and contract SLA performance, personnel allocation, work methods, and related operational challenges across Subholding entities. Following Saunders (2007), who emphasizes that good research design reduces the possibility of inaccurate conclusions, the principle of this design is to evaluate how variations in personnel allocation and work methods (end-to-end vs split) influence SLA outcomes. In an end-to-end arrangement, one analyst is responsible for both procurement and contract administration. In a split arrangement, different analysts handle procurement and contract stages separately. By comparing SLA achievement across these two models, the study aims to identify managerial implications regarding business process, work volume distribution, organizational efficiency, and coordination effectiveness.

Specifically, this study follows a convergent parallel mixed-method design (Creswell & Plano Clark, 2018), in which quantitative SLA, personnel, and work-method data and qualitative interview/FGD data are collected during the same period, analyzed separately, and then merged during interpretation so that the qualitative findings explain and contextualize the quantitative patterns rather than being treated as a sequential follow-up. This design was selected because the study aims to understand SLA outcomes (quantitative) and the operational reasons behind them (qualitative) concurrently, rather than to develop or test an instrument.

This research used both primary and secondary data sources to ensure a comprehensive analysis:

Primary Data

Primary data consisted of SLA and personnel information collected from PCM functions across Subholding entities, including annual contract volumes, personnel allocation, and work methods (end-to-end or split). Semi-structured interviews and FGDs were also conducted with management and representatives from Procurement, Contract Management, Method, Performance, Demand Planning, Logistics, and System functions to identify operational bottlenecks, coordination and governance issues, capability gaps, and improvement opportunities.

Participants were purposively selected from function heads, assistant managers, and senior analysts with at least one year of direct involvement in procurement or contract processes. Twenty participants attended two FGD sessions, supplemented by interviews with Subholding-level management. Data validity was strengthened through triangulation of SLA/Personnel Form data, SAP and Smart by GEP system records, and interview/FGD findings, followed by verification with relevant function representatives.

Secondary Data

Secondary data were collected from Subholding's internal databases, systems, and documents, including: 1) Procurement and contract process reports extracted from SAP system, which provide documented process cycle times. 2) Monthly reports from Smart by GEP system, which provide information related to procurement and contract analyst assignments. 3) Internal procurement guidelines, PTK 007 (PTK-007, 2023) for cost recovery PSCs and A7-001 (A7-001, 2024) for gross split PSCs, provide the regulatory benchmarks for SLA compliance.

Quantitative data were analyzed descriptively (frequencies, averages, and percentage comparisons of SLA achievement by work method and region) using Microsoft Excel pivot analysis. To examine the relationship between Contract Assignment Ratio and SLA Compliance, a

Shapiro-Wilk normality test was first performed given the small sample size ($n = 6$ regional entities), followed by Pearson correlation analysis; Spearman correlation was additionally computed as a robustness check because the small n limits the statistical power of parametric testing (Field, 2018). This limited sample size, corresponding to the six regional entities under Subholding, is acknowledged as a methodological constraint that reduces the generalizability of the correlation results and is discussed further in the Limitations subsection. Qualitative data from interviews and FGDs were analyzed using thematic analysis: transcripts were coded manually to identify recurring operational themes (coordination gaps, capability gaps, system-process misalignment), which were then triangulated against the quantitative SLA and personnel findings to validate and explain the statistical patterns.

RESULTS AND DISCUSSION

Results

This section examines root cause analysis, statistical process control, SLA performance by work method, regional profile, personnel analysis, and contract assignment ratio analysis.

Root Cause Analysis

Root cause analysis was conducted to identify the underlying operational factors contributing to SLA performance variations. Interviews were carried out with Assistant Manager Procurement (AM), Senior Manager Procurement & Planning (SM), and Vice President of Supply Chain Management (VP).

To further enrich the interview findings from cross-functional perspective, multiple FGDs were subsequently conducted regarding development of Organizational Work Procedures also alignment between business process and analyst data recorded in GEP system.

After completion of interviews and FGD sessions, a Fishbone Diagram was created to examine various potential problem area and qualitative coding in Table 1 were identified for a deeper analysis.

Table 1
Qualitative Coding

Coding Groups	Codes	Occurences
Process Issue	Incomplete User Documents	3
	Clarification Cycle	3
	Extended Routing & Approval Duration	4
	Procurement – CM Handover	6
	Contract Administration Standardization	3
People Issue	Personnel Capacity Constraints	6
	Analyst Capability	5
Operational Issue	Work Method Variations	4
System Issue	Quota Restrictions	5
Improvement Suggestion	Alignment of Work Method Implementation	4
	Early CM Involvement	3
	System Role Segregation	3
	Training & Knowledge Sharing	2

Based on coding results, the most dominant problems are Personnel Capacity Constraints & Procurement – CM Handover, are mapped into Current Reality Tree (CRT) to logically identify root causes, as illustrated in Figure 7.

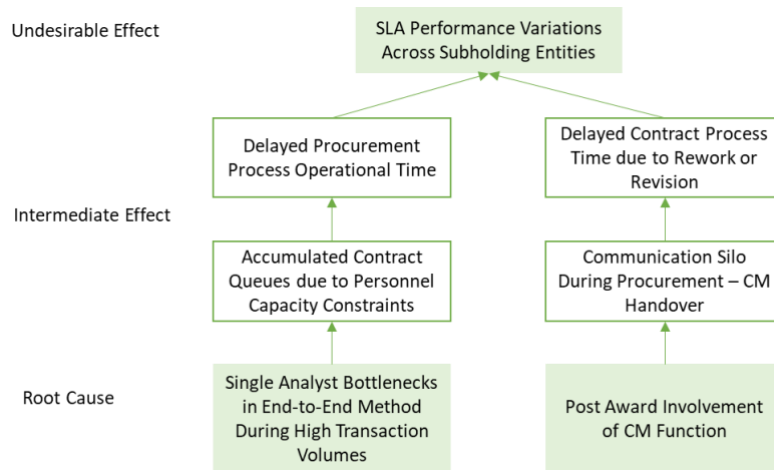


Figure 1. Current Reality Tree

Statistical Process Control

Business issues are presented at regional level to illustrate differences in SLA performance across entities. However, SPC was conducted at Subholding level to evaluate overall process variation within each SLA category.

Consecutive procurement and contract transactions were grouped into rational subgroups of five observations. A subgroup size of five was selected following the recommendations of Montgomery (2009), who states that subgroup sizes between two and ten observations, particularly four to five observations, provide reliable estimates of process average and within-subgroup variation. Similarly, Rachman (2013) recommends subgroup sizes between two and twelve observations, with four to five observations commonly applied for $\bar{X}$ -R charts.

The data were analyzed at the transaction level. Monthly aggregation was not adopted because the number of procurement and contract transactions varied across months, resulting in different subgroup sizes. Since $\bar{X}$ -R control charts require a constant subgroup size, consecutive procurement and contract transactions were considered more appropriate.

Goods Procurement

The operational performance of Goods Procurement was evaluated using $\bar{X}$ and R control charts, as presented in Figure 8. The initial $\bar{X}$ Chart shows several subgroup means exceeding the Upper Control Limit (UCL), with the highest value reaching approximately 133 working days. This indicates the presence of considerable variation in procurement lead time during the observation period. Similarly, the initial R Chart identified 11 observations outside the control limits, suggesting that both process average and within-subgroup variation were not statistically stable.

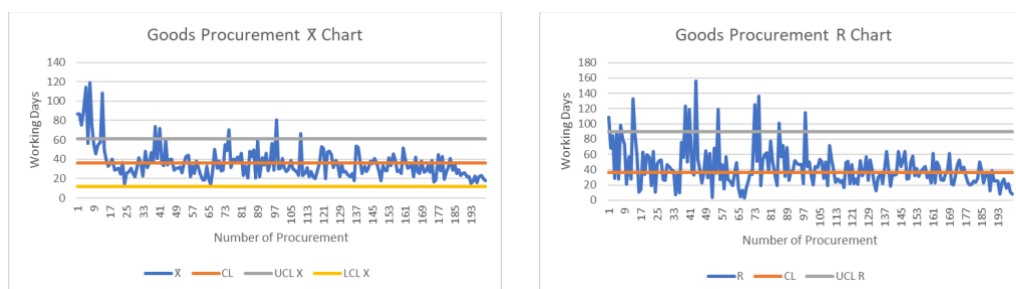


Figure 2. Goods Procurement $\bar{X}$ and R Charts

An iterative revision process was then performed by temporarily excluding out of control observations for recalculating the control limits until all remaining observations fell within the control limits, as illustrated in Figure 9.

Iteration 1 (4 data out of control)

Iteration 2 (1 data out of control)

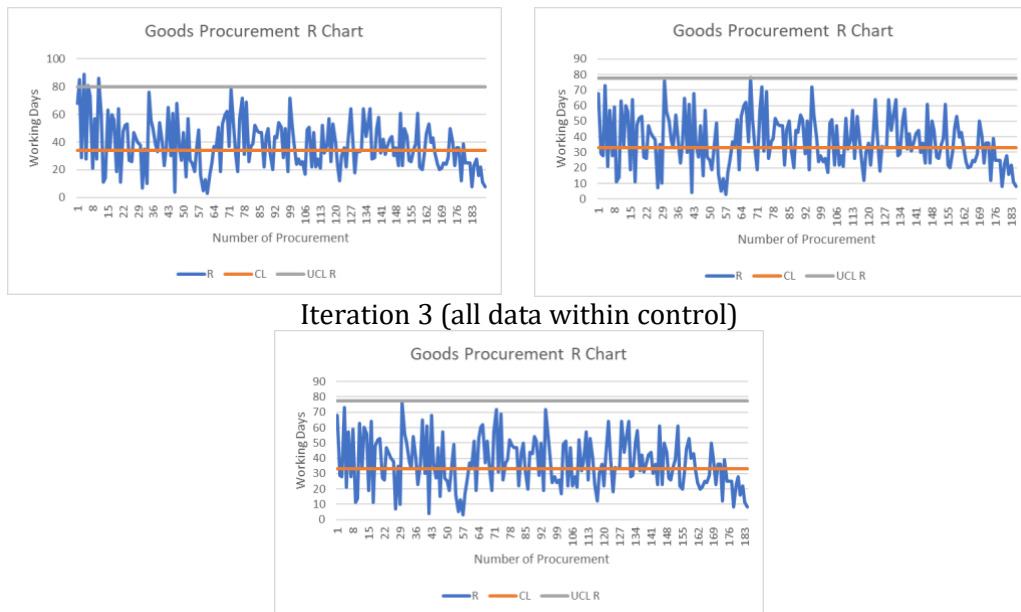


Figure 3. Revised Goods Procurement R Chart

Following the iterative revision, the R Chart indicates that within subgroup variation is statistically stable. Since the $\bar{X}$ control limits were recalculated using the revised average range ($\bar{R}$), the revised $\bar{X}$ Chart was subsequently evaluated. As shown in Figure 10, several subgroups means remain outside the control limits. This indicates that although within-subgroup variation has been stabilized, variation in process average still exists. These findings provide basis for subsequent qualitative analyses to identify operational factors contributing to SLA variation.

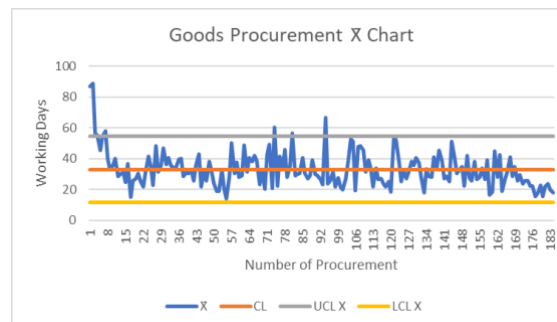


Figure 4. Revised Goods Procurement $\bar{X}$ Chart

Services Procurement Gross Split

Figure 11 illustrates the $\bar{X}$ and R control charts for services procurement GS category. The $\bar{X}$ Chart indicates a relatively high average processing time, with a center line (CL) of approximately 50 working days. Several subgroups means exceed the upper control limit, particularly during the earlier transactions. Similarly, the initial R Chart identified 5 observations outside the control limits.

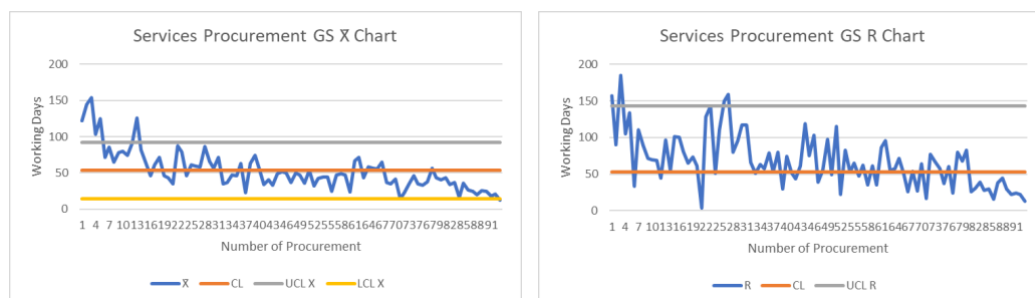


Figure 5. Services Procurement GS $\bar{X}$ and R Charts

An iterative revision process was then performed, as illustrated in Figure 12.

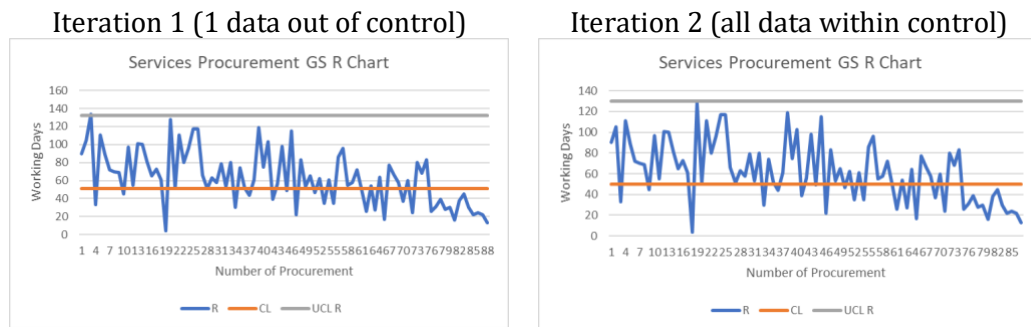


Figure 6. Revised Services Procurement GS R Chart

Following the iterative revision, the R Chart indicates that within subgroup variation is statistically stable. However, as shown in revised $\bar{X}$ Chart in Figure 13, several subgroup means remain outside the upper and lower control limits, indicating that variation in process average still exists. The revised $\bar{X}$ Chart also shows that subgroup means generally decline over the observation period. This pattern suggests that process performance gradually improved over the observation period.

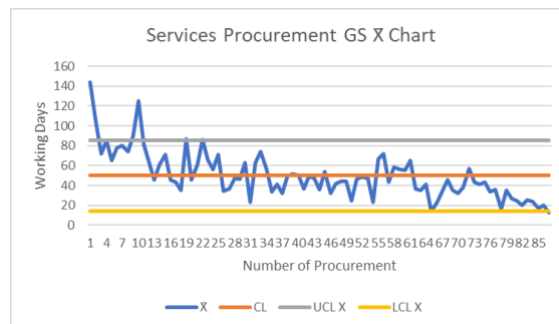


Figure 7. Revised Services Procurement GS $\bar{X}$ Chart

Services Procurement Cost Recovery

Services procurement CR Charts are presented in Figure 14. The initial $\bar{X}$ Chart indicates several subgroups means exceeding the upper control limit, with one subgroup reaching approximately 109 working days. Similarly, the initial R Chart identified 4 observations outside the control limits, indicating that within-subgroup variation was not statistically stable.

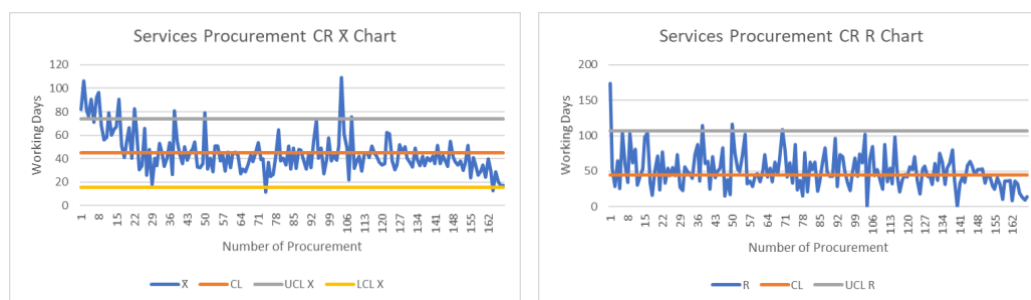


Figure 8. Services Procurement CR $\bar{X}$ and R Charts

An iterative revision process was then performed, as illustrated in Figure 15.

Iteration 1 (3 data out of control)

Iteration 2 (2 data out of control)

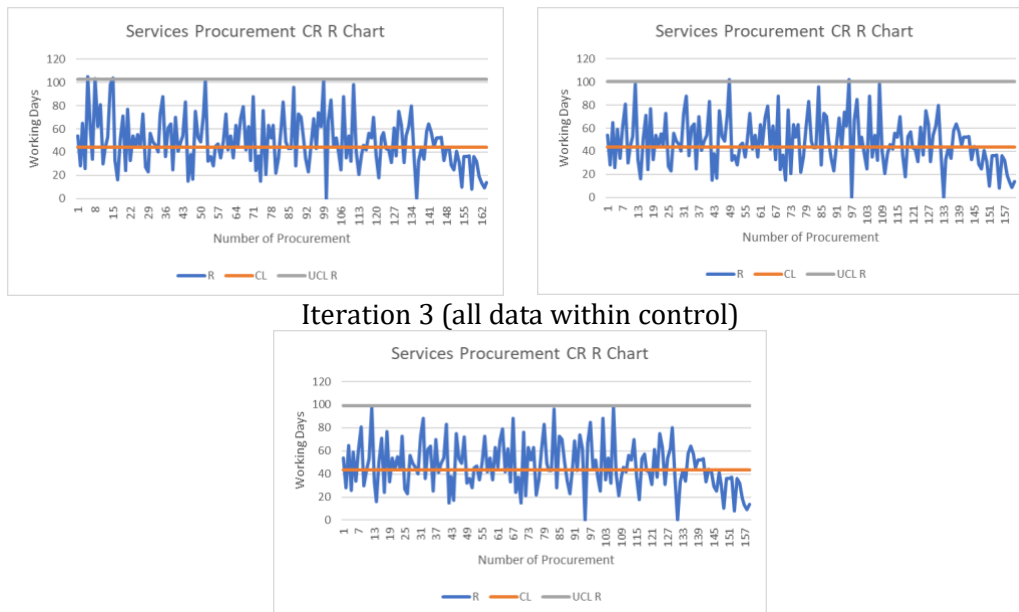


Figure 9. Revised Services Procurement CR R Chart

Following the iterative revision, the R Chart indicates that within subgroup variation is statistically stable. However, as shown in revised $\bar{X}$ Chart in Figure IV.11, several subgroups means remain outside the upper and lower control limits, indicating that variation in process average still exists.

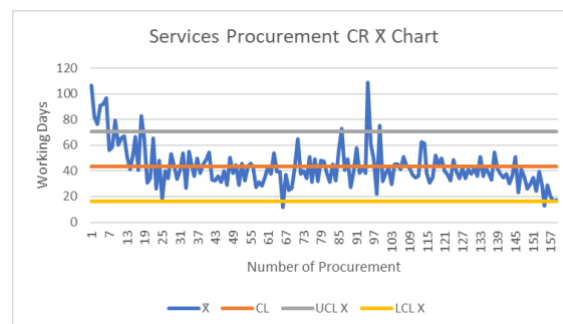


Figure 10. Revised Services Procurement CR $\bar{X}$ Chart

Contract

The Contract process has a relatively efficient contract execution as it has the fastest average with a center line of about 8 working days. But the R Chart in Figure 17 had 34 observations exceeding the control limits.

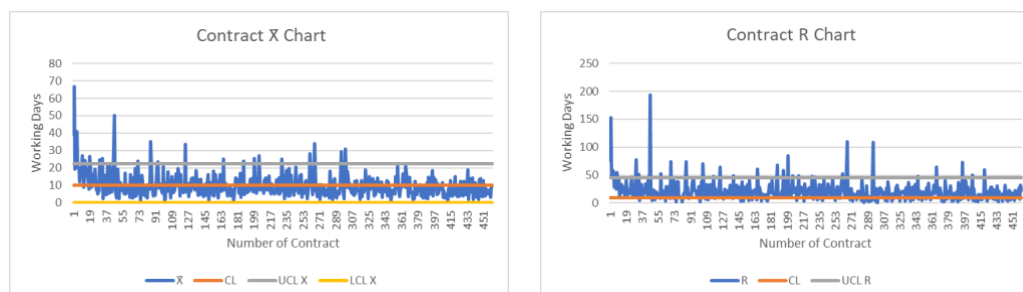


Figure 11. Contract $\bar{X}$ and R Charts

An iterative revision process was then performed, as illustrated in Figure 18.

Iteration 1 (21 data out of control)

Iteration 2 (7 data out of control)

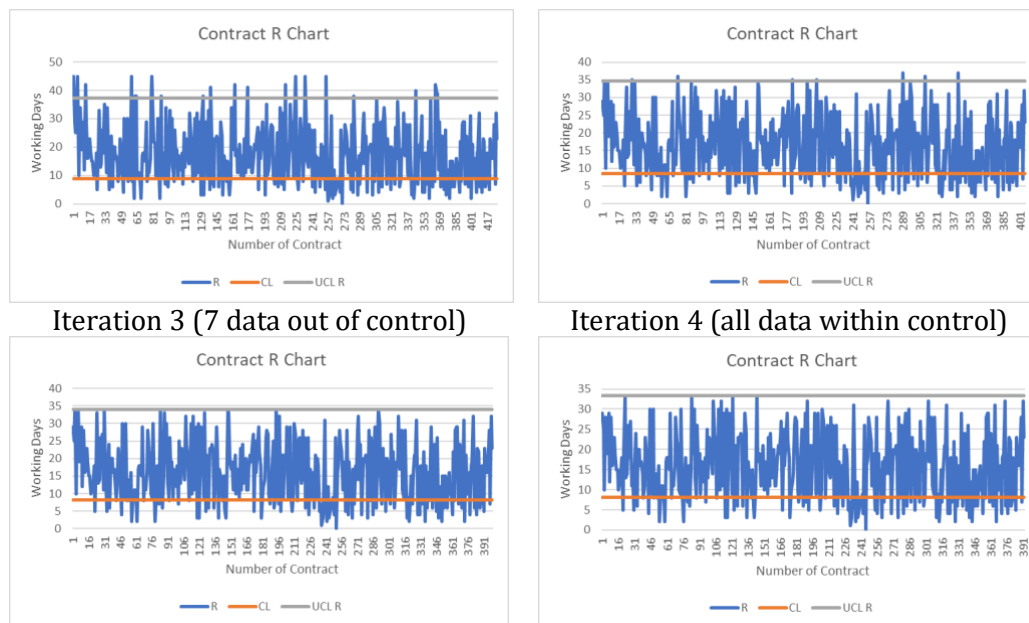


Figure 12. Revised Contract R Chart

Following the iterative revision, the R Chart indicates that within subgroup variation is statistically stable. However, as shown in revised $\bar{X}$ Chart in Figure 19, several subgroups means remain outside the control limits. This indicates that variation in process average still exists.

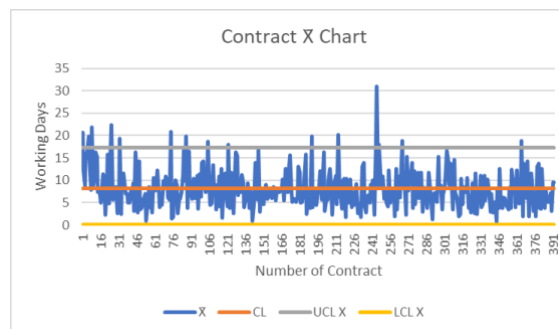


Figure 13. Revised Contract $\bar{X}$ Chart

Across all four SLA categories, the iterative revision successfully established statistically stable R Charts, indicating that within-subgroup variation was under control. However, the revised $\bar{X}$ Charts consistently showed several subgroups means outside the control limits, suggesting that variation in process averages remained across procurement and contract activities. These findings indicate that while short-term process variation can be stabilized, longer-term variation associated with operational execution still exists. Therefore, subsequent qualitative analyses were conducted to identify the operational factors contributing to these process variations.

SLA Performance by Work Method

To analyze how different work methods relate to SLA variability, this study compares procurement and contract SLA performance between entities applying end-to-end and split work methods, as detailed in Table 2.

Table 2

SLA Procurement & Contract

SLA Proc & Contract		
Row Labels	Count of No	Average of Total SLA
End to End	413	71
Split	1896	49

Grand Total	2309	53
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From a volume perspective, the split method is more widely implemented across Subholding entities by 82%, reflecting current business process design and organizational policies related to segregation of duties, role specialization, and stronger control mechanisms.

However, from a performance perspective, the findings reveal that the split method recorded an average total SLA of 49 days, compared to 71 days for the end-to-end method. This shows that split method performs approximately 45% faster than end-to-end approach.

This finding is consistent with Operations Management theory proposed by Slack and Brandon-Jones (2022), which suggests that specialization and effective process design can improve operational speed and efficiency by allowing personnel to focus on specific activities and develop deeper expertise. This finding also aligned with shared service principles, where standardization, role specialization, and resource optimization can improve operational efficiency (Suterisno & Munir, 2021).

Regional Profile

Table 3 and Figure 20 present the SLA performance across Subholding and regional entities, including a comparison between end-to-end and split work methods. At Subholding level, the average SLA is recorded at 51 days, with split method (46 days) slightly faster than end-to-end method (53 days) for services contracts. This pattern is in line with the overall finding that the split method generally delivers shorter processing time.

At Regional level, the results show differences across entities. With an average of 68 days of SLA, Regional A has the slowest average SLA. There are two main reasons for this operational obstacle. First, from a work volume point of view, the Regional A has many service contracts (397 cases) than goods contracts (167 cases) in which longer lead times are required. Second, Regional A was newly integrated into the Subholding structure during the analysis period. The transition required adjustment in business processes, system implementation, and coordination mechanisms, which are considered to be major factors that affect SLA.

Regional B shows relatively strong performance, with an average SLA of 43 days. Most transactions in this region are processed using split method, which may contribute to more stable execution.

Regional C and Regional D show different patterns compared to other entities. In these regions, end-to-end method recorded faster SLA completion times (in Regional C 37 days for goods contract, in Regional D 41 days for goods contract and 60 days for services contract) compared to split method. However, the number of end-to-end transactions is relatively limited compared to split transactions. Therefore, end-to-end results may not fully represent the overall operational pattern.

The longer completion time observed in split method may be influenced by higher transaction volume and operational complexity. Regional C has the highest number of contracts among Regional A, B, and C. While Regional D has the highest number of contracts among Subholding, Regional D, and Regional E.

Table 3
Regional Profile

Row Labels	Count of No	Average of Total SLA
Subholding	61	51
Goods	2	83
End to End	2	83
Services	59	50
End to End	30	53
Split	29	46
Regional A	564	68
Goods	167	66
End to End	140	70

Row Labels	Count of No	Average of Total SLA
Split	27	46
Services	397	69
End to End	139	94
Split	258	56
Regional B	665	43
Goods	347	38
End to End	26	52
Split	321	37
Services	318	48
End to End	2	57
Split	316	48
Regional C	856	50
Goods	459	43
End to End	23	37
Split	436	43
Services	397	57
End to End	5	57
Split	392	57
Regional D	134	61
Goods	26	42
End to End	5	41
Split	21	43
Services	108	65
End to End	16	60
Split	92	66
Regional E	29	29
Goods	2	17
End to End	2	17
Services	27	30
End to End	22	32
Split	5	23
Grand Total	2309	53

Regional E records the fastest SLA at 29 days among all regions. However, the number of transactions is relatively small, which makes the results may not reflect the overall performance.

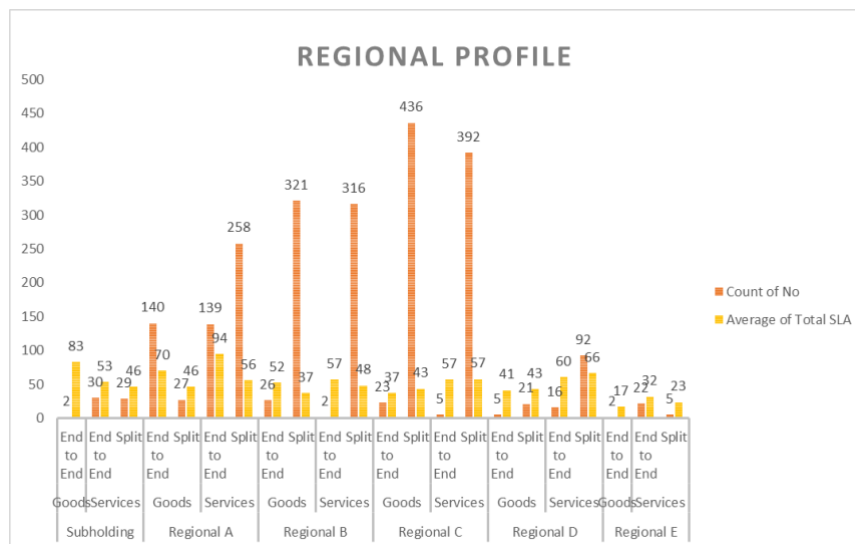


Figure 14. Regional Profile Chart

Although the split method generally shows better performance, the results are not consistent across all entities. This means that work method is not the only factor, and other factors such as capability of personnel, coordination, experience, and work volume distribution also play an important role.

Personnel Analysis

In addition to SLA performance, an assessment is conducted of how personnel are distributed among various entities.

Total Personnel

Table 4 and Figure 21 present the distribution of procurement and contract personnel across all Subholding entities.

Table 4

Total Personnel

Total Personnel	
Row Labels	Count of No
Subholding	9
Regional A	77
Regional B	59
Regional C	93
Regional D	27
Regional E	9
Grand Total	274

The data shows that the total number of personnel across all entities is 274 employees. Regional C has the largest number of personnel with 93 employees (34%), reflecting its relatively larger operational scope and higher procurement activities.

However, the findings also show that larger number of personnel does not always result in better SLA performance. For example, Regional A has the second-highest number of personnel but previously recorded the highest average SLA cycle time. This suggests that personnel effectiveness cannot be assessed solely based on headcount.

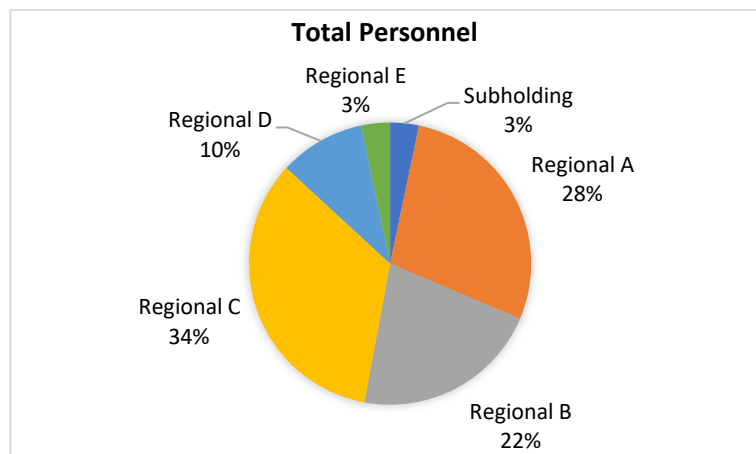


Figure 15. Total Personnel Chart

Position Distribution

Figure 22 shows that out of a total of 274 personnel, the majority are assigned to Procurement roles, accounting for 184 employees (67%). This is followed by Contract Management (CM) with 64 employees (23%).

At the managerial level, 13 employees (5%) serve as Assistant Manager Procurement & CM, where both functions are managed under a single leadership role. Meanwhile, only 9 employees (3%) are assigned specifically as Assistant Manager Procurement, and 4 employees (2%) as Assistant Manager CM.

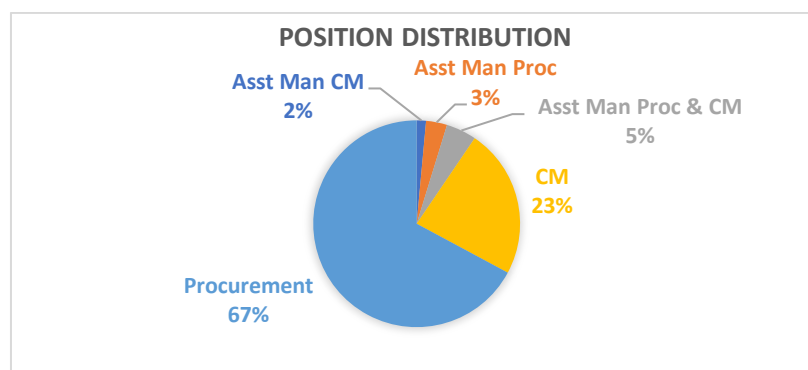


Figure 16. Position Distribution Chart

This distribution shows that entities place greater manpower allocation within procurement than contract management. While this may be aligned with higher load during procurement activities, it may also create bottlenecks during contract preparation if contract management resources are not sufficient to handle increasing contract volume.

In addition, the presence of both combined and separated Assistant Manager structures reflects differences in organizational design across entities. Some entities manage procurement and contract functions under one leadership role, while others separate these responsibilities. This structural variation may influence coordination efficiency and decision-making speed.

Personnel Demography

The personnel within each entity based on organizational roles is shown in Figure 23. Regional C has the largest workforce, consisting of 59 Procurement personnel, 28 CM personnel, and 6 Assistant Managers.

Regional B consists of 59 personnel, with 39 Procurement personnel, 14 CM personnel, and 6 Assistant Managers. This region shows a relatively balanced workforce composition and maintains relatively strong SLA performance.

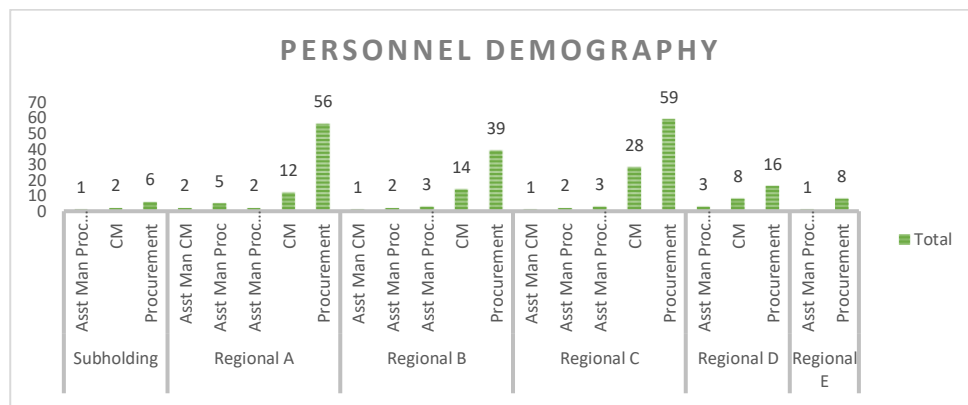


Figure 17. Personnel Demography Chart

A notable structural difference can be seen in Regions A, B, and C, where the roles of Assistant Manager Procurement and Assistant Manager CM are separated. This suggests a more segmented organizational structure, where procurement and contract functions operate under different leadership roles and may require additional coordination between functions.

In contrast, Regional D, Regional E, and Subholding primarily apply a combined leadership structure through Assistant Manager Procurement & CM, where both functions are managed under the same leadership role. This structure may support faster coordination and decision-making due to fewer managerial handovers.

Personnel Composition

The personnel composition based on employment status also analyzed to depict the complete picture of work environment in procurement and contract. Table 5 and Figure 24 present the proportion of organic and non-organic personnel.

Table 5

Personnel Composition

Personnel Composition	
Row Labels	Count of No
Non Organic	130
Organic	144
Grand Total	274

The data shows that out of a total of 274 personnel, 144 employees (53%) are classified as organic personnel, while 130 employees (47%) are non-organic personnel. However, high reliance on non-organic personnel may create challenges when experienced employees leave the organization, as their knowledge and experience may not be fully transferred. This can affect continuity and capability development, especially for complex procurement and contract activities that require a strong understanding of internal procedures, compliance requirements, and company policies.

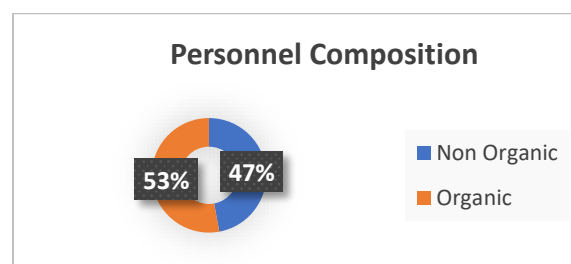


Figure 18. Personnel Composition Chart

Contract Assignment Ratio Analysis

To support the quantitative validation of root cause Personnel Capacity Constraints, this study examines the relationship between personnel capacity and SLA compliance across all six

entities. The indicator used is Contract Assignment Ratio, which measures total contracts divided by total personnel in each region, as shown in Table 6.

Table 6

Contract Assignment Ratio

No	Region	Total Contracts	Total Personnel	Contract Assignment Ratio	SLA Compliance
1	Subholding	61	9	7	94%
2	Regional A	564	77	7	86%
3	Regional B	666	59	11	96%
4	Regional C	870	93	9	95%
5	Regional D	134	27	5	97%
6	Regional E	29	9	3	99%

Regional B has the highest contract assignment ratio at 11 contracts per personnel, yet it maintained high SLA compliance of 96%. Meanwhile, Regional A, which has lower contract assignment ratio of 7 contracts per personnel, should logically exhibit higher SLA compliance, instead recorded lowest SLA compliance at 86%.

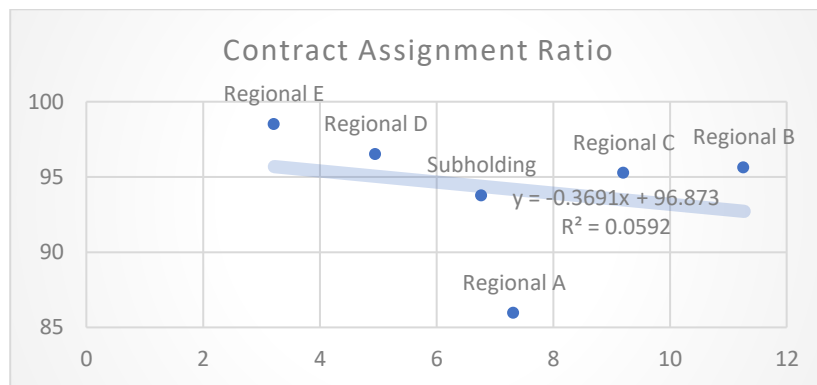


Figure 19. Contract Assignment Ratio Scatter Plot

To visually illustrate this pattern, Figure 25 displays the scatter plot mapping Contract Assignment Ratio against SLA Compliance. The equation of the linear trendline is $y = -0.3691x + 96.873$ with a coefficient of determination (R^2) of 0.0592.

The coefficient of x is -0.3691 , which means that if contract assignment ratio (additional assignment to one personnel) increases by 1 unit, the SLA compliance rate is expected to decrease by 0.37%. This proves that increase in assignment ratio does not drastically reduce SLA compliance.

Furthermore, the very low R^2 value indicates only 5.92% of the variation in SLA compliance is influenced by the Contract Assignment Ratio. This statistically implies that approximately 94.08% of the variance is driven by other operational factors outside the headcount.

The data reveals that entities with higher assignment ratio do not exhibit lower SLA compliance. Instead, the root cause analysis synthesizes that Personnel Capacity Constraints are highly driven by the variations in work methods.

Operational Analysis Discussion

This section analyzes the operational dimensions by linking the quantitative analysis with root causes and feedback gathered from interviews and FGDs.

Process Analysis

Based on the coding results, the issues selected for further analysis consist of root causes and other dominant issues, which include Personnel Capacity Constraints, Procurement-CM Handover, Quota Restrictions, and Analyst Capability. These main issues were validated through interviews and FGD, specifically focusing on areas where improvement suggestions were actively

developed. These identified issues were grouped into process improvement areas, as summarized in Table IV.12.

Table 7.

Issues in PCM

Process Improvement Area	Identified Issue	Responsible Function
Work Method Implementation	Personnel Capacity Constraints that emerge due to the implementation of end-to-end work method, directly impacting work distribution, coordination patterns, and execution speed.	Procurement & Contract Management
Procurement – CM Handover	Additional coordination requirements and information transfer during transition from winner appointment to contract issuance, which may create additional review and alignment activities.	Procurement, Contract Management & Method Function
System Role Segregation	Quota Restrictions that cause operational obstacles in persona access and differences between system records.	Procurement, Contract Management, System & Method Function
Capability Development	Limitations in Analyst Capability arising from differences in competency levels, operational experience, and understanding of process.	Procurement, Contract Management & Training Function

PDCA Analysis

From continuous improvement perspective, the identified issues were analyzed using Plan–Do–Check–Act (PDCA) framework. The PDCA framework provides a structured approach for evaluating and improving processes through four iterative stages: planning, implementation, performance evaluation, and improvement actions (Moen & Norman, 2010), as shown in Table 8.

Table 8

PDCA Table

PDCA Stage	Findings
Plan	Procurement and contract processes have established SLA targets based on applicable guidelines (PTK-007 and A7-001) and organizational procedures. Personnel planning and organizational restructuring have also been implemented, including introduction of split work method intended to improve specialization and control.
Do	The operational challenges were observed, including incomplete procurement requests, multiple rounds of clarifications, contract revisions, approval delays, and Procurement–Contract Management coordination challenges. In addition, significant differences in contract volume and implementation of work method were observed across entities.
Check	SLA performance is monitored through periodic report using SAP data. However, prior to this study, information regarding operational work method implementation across entities was not available at Subholding level. Therefore, this study was conducted to develop a comprehensive profile of each entity by combining SLA performance, contract volume, and operational work method implementation. The analysis revealed variations in implementation of work method across entities, and management became aware of these differences through the findings of this study.
Act	The results of this study provide management with greater visibility into

PDCA Stage	Findings
	SLA performance variations, operational bottlenecks, and implementation of work method between entities. These results provide continued support for the improvement programs, including alignment of work method implementation, better system governance, and capability development.

To examine process-related factors that contribute to SLA performance, the following section will discuss each of Process Improvement Areas identified.

Work Method Implementation

The findings from the coding analysis show that the problem of Personnel Capacity Constraints is the root cause of operational delays, in end-to-end process arrangements. In end-to-end configuration, one analyst is responsible for multiple transactional steps, forming single analyst bottlenecks.

On the other hand, the split work method mitigates this risk by having specified roles. This distinction is confirmed empirically in this study, where the split work method is shown to attain 45% higher SLA achievement than end-to-end arrangement. The possible implication of this discovery is that the specialization of a role may increase the efficiency of a process, if there are good coordination procedures and well-defined roles.

Procurement – CM Handover

This section examines the coordination of transition phase between different teams. Post-Award Involvement of CM Function is the second root cause that is related to delayed handover. If split work method is implemented, then a formal handover is an inevitable part of the process.

Ownership changes often lead to departmental communication silos, while contract analyst only gets involved after the winner appointment is finalized, without background knowledge regarding the tender process. It is a knowledge gap which causes the analyst to review the document from the beginning, often resulting in document reworks or revisions.

System Role Segregation

During the FGD, one problem that was highlighted is the limitation of the system and the segregation of the roles. Both the procurement and contract activities are planned on a split basis, but it was observed that in some instances the same analyst dealing with the procurement and contract activities through the system. The investigation shows that although a particular analyst was associated with the transaction, this result may simply reflect a common practice where personnel share system login access.

System access was previously limited due to Quota Restrictions until 2025. Sometimes, accounts must be temporarily re-assigned or shared with other analysts to accommodate system access for a new employee. Therefore, the analyst name that was entered in the system was not always the actual analysts who were doing the work.

In 2025, management began to solve this problem by rolling out stricter role-segregation rules and expanding quota. User Roles have been segregated into Buyer, Procurement, and Contract Management to enhance the internal control. The Buyer persona can have access to the other groups, while the remaining groups operate exclusively within their respective modules. This change delivers not only an increased system access, but also increased transparency and system accountability.

In addition to this, Management highlighted that standardized roles are important for maintaining structural harmony. This allows user access to be synchronized with formal organizational requirements as well as with the execution of the actual workflow in all subsidiaries.

Capability Development

The interviews data show that the differences in performance can also be attributed to the capability of personnel to work with high complexity tenders, assess the tenders thoroughly, and ensure smooth interaction between functional groups. Entities have different operational

execution quality due to variability in Analyst Capability and communication practices. This resulted to the consideration of capability development programmes as significant areas of improvement to enhance SLA performance.

Sustainable SLA improvements are not only about optimizing operational processes but continuous capability building and organizational alignment. Therefore, it is important to ensure personnel competence, effective communication, and standardization to achieve more stable procurement and contracting performance of Subholding entities.

Business Solution

To enhance procurement and contract SLA performance, this study proposes improvement strategy, as detailed below.

Work Method Implementation Initiative

From Operations Management perspective, operational performance can be improved through effective process design, appropriate allocation of responsibilities, and coordination between related activities (Slack & Brandon-Jones, 2022). The analysis shows that split work methods between Procurement and Contract Management functions generally achieved better SLA performance compared to end-to-end arrangements. Consequently, the study supports strengthening alignment of split work method implementation to enhance role clarity, process efficiency, and stronger control mechanisms.

This initiative is based on semi-structured interviews, FGD, and quantitative data analysis, and addresses directly the root cause of Personnel Capacity Constraints. The workload can be optimized to be more balanced using split work method, reducing capacity constraints, and enabling analysts to work in their expertise in order to achieve maximum overall SLA compliance.

Procurement – CM Handover Initiative

In line with process coordination principles in Operations Management, improving integration between related activities is important to reduce process delays and improve workflow continuity (Slack & Brandon-Jones, 2022). While the implementation of split work method serves as the first solution, the analysis reveals that there are communication silos between departments.

To mitigate this issue, based on interviews and FGD, this study proposes earlier involvement of Contract Management (CM) team at tender result stage. This bridges the communication gap during handover process and addresses the second root cause of Post Award Involvement of CM Function.

CONCLUSION

This study found that procurement and contract SLA performance varies across Subholding entities due to differences in operational execution, coordination, work methods, and organizational capabilities. Split-handling arrangements achieved approximately 45% faster SLA completion than end-to-end methods, indicating that role specialization supported by effective coordination is a more actionable performance lever than personnel volume alone, as the Contract Assignment Ratio showed a negative but statistically insignificant relationship with SLA compliance. Sustainable SLA improvement therefore requires streamlined processes, reduced approval delays, stronger Procurement–Contract Management coordination, standardized roles and system governance, and continuous capability development. The study contributes to operations-management and procurement-governance literature by demonstrating the importance of work-method design in a regulated, project-based upstream oil and gas context. However, its single-organization setting, small regional sample ($n = 6$), confidential data constraints, and limited consideration of external factors restrict generalizability. Future research should use larger cross-organizational and longitudinal samples and incorporate regulatory change, digital maturity, and organizational culture to further validate these findings.

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AUTHOR CONTRIBUTION STATEMENT

Rida Elfreda Agustiana contributed to conceptualization, methodology development, data collection, data analysis, investigation, visualization, and manuscript preparation. Akbar Adhi Utama contributed to theoretical framework, research supervision, validation, manuscript review, and editing. All authors have reviewed and approved the final version of the manuscript.

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