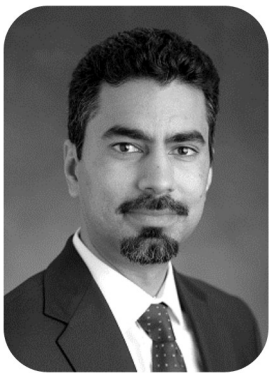
Reimagining Procurement: Standardized vs Differentiated Services

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Topic Areas: Procurement, Process Improvement

Summary: The project was sponsored by a leading firm in the wellness market who aimed to reimagine their procurement process. Our research focused on re-engineering this process to optimize performance metrics related to efficiency, effectiveness and experience. We demonstrate that our sponsor company can reduce the amount of time and effort spent on non-strategic transactions by employing technology and reallocating resources.



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KEY INSIGHTS

1. **Our sponsor company was spending the most time and effort in the procurement operations of their least critical suppliers.**
2. **Improvements can be made in the cycle time and the number of activities for a transaction by applying technology to the procurement process and having a single owner for each transaction end-to-end.**
3. **Reallocating resources from the least important suppliers to strategic procurement activities can create significant value for the company.**

Introduction

Our sponsor company is a leader in the wellness market, with a vision to improve access and affordability, and create healthier communities.

The procurement division at our sponsor company is divided into three operating divisions: Global Services, Business Units, and Corporate. Global Services handles tactical functions related to purchasing, while Business Unit focuses on sourcing goods and services within specific categories. Corporate procurement serves as the Center of Excellence, standardizing processes and providing expertise.

To further enhance their procurement processes, corporate procurement has partnered with MIT to improve the experience, efficiency, and effectiveness metrics of their operations. They aimed to identify and eliminate inefficiencies and seek an objective outside perspective to drive further improvements.

Our capstone sought to understand what improvements can be made to the three E's of value by re-engineering the procurement process. Additionally, we determined if there is a disconnect between the treatment of suppliers in strategic planning and their execution phase.

Our research approach involved analyzing transaction-level data to identify trends in performance metrics for different supplier segments. We utilized Value Stream Mapping and process mining techniques to gain insights into the procurement process and identify inefficiencies

Finally, we re-engineered the procurement process to remove inefficiencies using technology solutions and recommended principal metrics to measure success, leading to cost savings and improved resource allocation.

Overall, our capstone proposes a way to optimize the procurement process, align resources with strategic goals, and enhance the sponsor company's efficiency and effectiveness in meeting consumer health needs.

Methodology

To investigate the treatment of supplier segments, we conducted qualitative interviews with process owners across Request2Pay, Sourcing, and Contracting at our sponsor company. We used transaction-level procurement data using process mining to evaluate metrics within the process. We created summary statistics for cycle time and the number of activities to analyze transaction behavior across different supplier segments.

We performed Value Stream Mapping to gain an understanding of the end-to-end procurement process and identify value-adding steps. During this process, we identified manual and redundant steps and used a report called Wait Time to quantify idle time in specific process steps.

To address the identified inefficiencies in the procurement process, we employed Process Re-engineering. We questioned manual steps, roles, and available technology to re-imagine and compress the process.

We extracted and prepared the data filtered from a process mining tool. We removed outliers and created box plots to compare cycle time and the number of activities for different supplier segments. We also conducted correlation analysis to understand the relationship between these metrics.

We created a process map and identified non-value-adding tasks. The Wait Time data provided valuable insights into the time spent at each step.

Results and Analysis

We began by analyzing the cycle time and number of activities for transactions across different supplier segments, as shown in Table 1.

Table 1

Cycle Time and Number of Activities across Different Supplier Segments

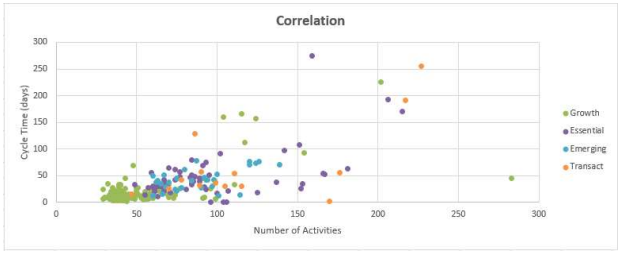
Segment	Growth	Essential	Emerging	Transact
# of cases	194	60	30	14
# of suppliers	2	6	1	6
CT (days) [Avg]	18	70	43	68
CT (day) [Median]	10	39	42	39
CT (day) [Lower Range]	2	1	13	2
CT (day) [Upper Range]	28	107	78	128
Standard Deviation (days)	27	92	20	73
# of activities [Avg]	48	107	88	120
# of activities [Median]	39	86	86	102
# of activities [Lower Range]	29	49	60	47
# of activities [Upper Range]	66	186	139	227
Standard Deviation (#)	28	71	22	55

We visualized the metrics for each supplier segment and showed that transact suppliers had higher numbers of activities and cycle times.

The correlation analysis in Figure 1 revealed a strong positive relationship between cycle time and the number of activities.

Figure 1

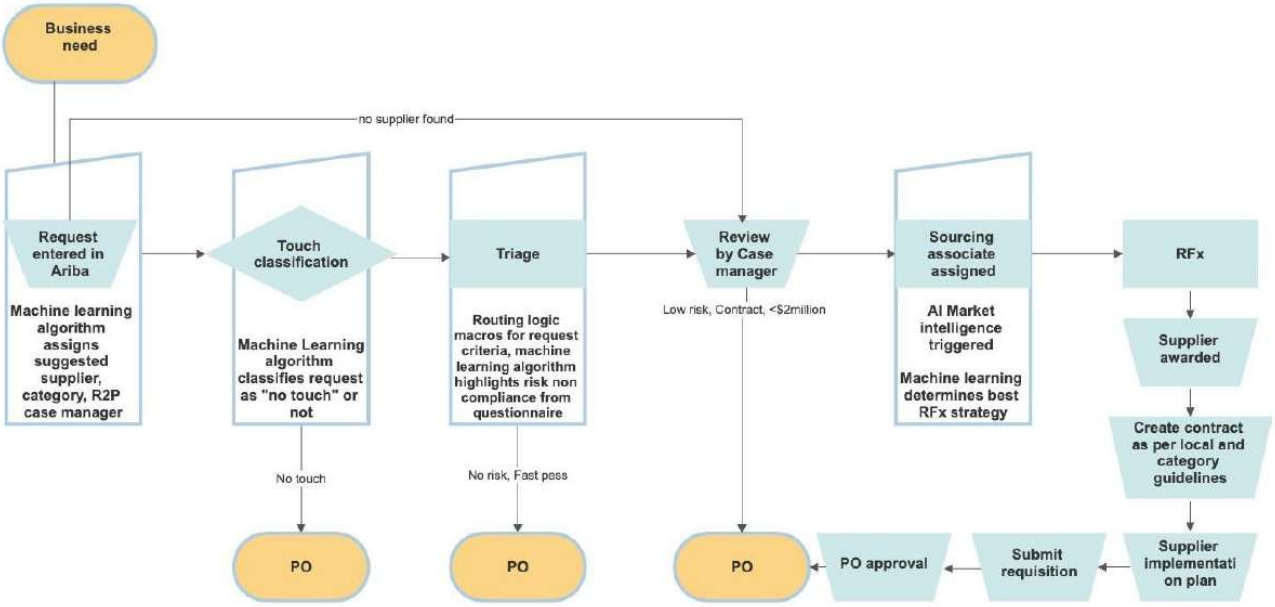
Correlation Plot



We then performed Value Stream Mapping and Process Mining to identify and rectify process inefficiencies. The Value Stream Map highlighted manual steps and showed that most transactions took different paths through the procurement process. Process Mining identified common administrative steps, including re-labeling steps, which added significant idle time. These re-labeling steps accounted for 2.5% of the total cycle time for transactions within our category.

Based on our findings, we re-engineered the procurement process flow, as shown in Figure 2, to reduce cycle time and the number of activities. The re-engineered process relied on machine learning algorithms and technology to automate manual administrative tasks. R2P associates would act as case managers and are equipped with dashboards to monitor transaction metrics. Compensation is tied to the achievement of these metrics. The role of sourcing associates changes, and the organization is flattened to reduce stakeholders and information loss.

Figure 2
Re-engineered Process



Discussion

In our results, we observed that the "transact" segment of suppliers had the highest effort and longest cycle times, indicating inefficiencies in the procurement process. We found a significant positive correlation between cycle time and the number of activities, suggesting that increased process complexity leads to longer processing times. These metrics speak to the efficiency and effectiveness aspects of the three E's of value.

During the Value Stream Mapping, we were surprised by the number of manual steps and the reliance on checking previous results. We believe that the sponsor company's technical resources could help automate many parts of the process, especially those steps dictated by the category card to determine the buying strategy. The process flow generated by Process Mining and the Wait Time report further revealed inefficiencies, with a significant amount of time lost to manual tasks that could be eliminated.

To address these inefficiencies, we conducted process re-engineering to create a streamlined procurement process focused on the customer's needs, namely the internal requester. We introduced principal metrics to evaluate the success of the entire process, incentivizing quick and accurate request handling. Ownership of the entire process by a single individual would reduce information loss and errors. Simplifying the hierarchal global sourcing teams and enabling individuals to handle any request within their category would also enhance efficiency.

Technologies such as Machine Learning, routing logic macros, and artificial intelligence played a vital role in the re-engineered process flow.

However, implementing these technologies has drawbacks, such as the need for quality training data, the limited time horizon in the available data, and resource-intensive implementation. As a transitional solution, we recommend considering robotic process automation (RPA) before fully committing to machine learning and AI.

Conclusions

In this project, we addressed questions related to supplier treatment and process inefficiencies in procurement. We analyzed purchase request transactions and Process Mining data to compare performance metrics across different supplier segments. Our findings revealed that the company was allocating a disproportionate amount of time and resources to less important suppliers. By improving the procurement process, we could free up these resources for more strategic tasks.

To address inefficiencies, we conducted process re-engineering and designed a new process flow centered around meeting the needs of the requestors. This involved breaking away from siloed tasks and enabling seamless process flow across the organization. We recommended implementing

machine learning and AI solutions to facilitate this transformation.

Implementing the re-engineered process would require careful planning, and we suggested piloting it with one category, establishing KPIs to measure success, and evaluating the results with management. KPIs such as cycle time, number of activities, and net promoter score (NPS) could be used to measure efficiency, effectiveness, and user satisfaction.

However, our work had limitations. We had limited data availability, which constrained the scope of our analysis to one business category and a specific type of procurement transaction. We were unable to measure the experience metric due to data limitations. Additionally, our understanding of the procurement process relied on interviews, which introduced personal biases and experiences.

Future opportunities lie in expanding our research, such as analyzing the direct material procurement process, evaluating alternate supplier segmentation using clustering analysis, and further exploring the potential of machine learning and AI algorithms. Exploring additional metrics and data using process mining can provide further insights to improve the three E's of value.