Rapid Cost-reduction Approaches for SMEs

Alex Yap Yun Fung

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Alex Yap Yun Fung wrote this publication.

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PREFACE

The P-Insights, short for "Productivity Insights," is an extension of the Productivity Talk (P-Talk) series, which is a flagship program under the APO Secretariat's digital information initiative. Born out of both necessity and creativity under the prolonged COVID-19 pandemic, the interactive, livestreamed P-Talks bring practitioners, experts, policymakers, and ordinary citizens from all walks of life with a passion for productivity to share their experience, views, and practical tips on productivity improvement.

With speakers from every corner of the world, the P-Talks effectively convey productivity information to APO member countries and beyond. However, it was recognized that many of the P-Talk speakers had much more to offer beyond the 60-minute presentations and Q&A sessions that are the hallmarks of the series. To take full advantage of their broad knowledge and expertise, some were invited to elaborate on their P-Talks, resulting in this publication. It is hoped that the P-Insights will give readers a deeper understanding of the practices and applications of productivity as they are evolving during the pandemic and being adapted to meet different needs in the anticipated new normal.

INTRODUCTION

In the dynamic, ever-evolving landscape of the contemporary business world, SMEs hold a pivotal role in the global economy. These businesses, characterized by their resilience and adaptability, frequently encounter a substantial quandary: the imperative need to generate adequate profits to ensure their ongoing viability and expansion. The quest for profit maximization remains a persistent preoccupation for SME owners and managers.

In this unceasing pursuit of enhanced profitability through cost reduction, the conventional approaches of material flow cost accounting (MFCA) and value stream mapping (VSM) may exhibit certain constraints, primarily attributable to the distinct challenges that SMEs confront. These challenges encompass deficiencies in data availability, competencies, and resources. Consequently, a streamlined and expedited method for cost reduction has been introduced to address the unique circumstances in which SMEs operate. This rapid cost-reduction approach is designed to effectively navigate the specific challenges faced by SMEs in their journey toward cost reduction and resource optimization.

Challenges in Cost Reductions by SMEs

Currently, SMEs consistently grapple with the challenge of attaining adequate profits necessary for sustaining their businesses. Inquiries regarding methods to enhance SME profitability remain pervasive.

The primary strategies employed by most SMEs to augment their profits can be categorized into three straightforward approaches: elevating the prices of products and services; augmenting sales volume; or, alternatively, reducing operational expenses. Nevertheless, raising product/service prices and boosting sales may be susceptible to external market influences that are beyond the control of SMEs. In contrast, the reduction of operational costs is largely impervious to external factors, as it pertains to factors that can be managed internally.

Therefore reducing manufacturing or operational costs will be the strongest management incentive [1] and most practical, achievable strategy for businesses,

but for SMEs, this endeavor is not without its hurdles. The unique challenges SMEs face when attempting to reduce costs may include the following.

The Willingness Factor

For business owners and management, the desire to reduce costs is often evident. However, the willingness of other stakeholders, including suppliers and employees, to commit to cost-reduction efforts can vary. This raises questions about alignment within the organization and the importance of fostering a collective commitment to cost-saving measures.

The Know-how Challenge

Know-how and expertise are crucial for implementing cost-reduction strategies effectively. Unfortunately, many SMEs lack specialized personnel. In numerous cases, the roles of managers, supervisors, operators, quality control personnel, and others are shouldered by the same individuals. Moreover, data collection and analysis are often overlooked, leaving SMEs without the necessary insights to kickstart cost-reduction efforts.

Resource Limitations

One of the most significant challenges faced by SMEs in cost reduction is a lack of resources. Investments in automation, Industry 4.0 technologies, and data-driven solutions are often beyond the financial reach of smaller enterprises. This limitation restricts their ability to modernize operations and streamline processes.

Competency Gaps

Competency gaps further hinder SMEs' cost-cutting endeavors. These businesses frequently lack the specialized skills and knowledge required to implement advanced cost-reduction strategies. The absence of dedicated personnel with expertise in cost reduction and data analysis compounds this issue.

Overview of MFCA and VSM

In the realm of SMEs, the quest to reduce costs and enhance efficiency can be challenging, primarily due to resource limitations and a lack of data-driven

insights. However, there are powerful tools at their disposal that can provide a clear path toward cost reduction and process optimization. In this report, we explore the rapid cost-reduction approach modified from tools such as MFCA and VSM in helping SMEs visualize their resource flows, identify inefficiencies, and determine cost-reduction targets.

One of the key benefits of tools like MFCA and VSM is their ability to visualize the flow of resources within an organization. They allow SMEs to pinpoint specific areas or steps in their processes where efficiency may be lacking or where wastages are occurring. This visual representation is invaluable in determining where to begin the cost-reduction journey and setting cost-reduction goals.

MFCA

MFCA stands as a valuable management tool that empowers organizations to gain a deeper understanding of the potential environmental and financial consequences associated with their practices concerning material and energy utilization. MFCA is instrumental in helping organizations identify opportunities for simultaneous environmental and financial improvements by bringing about changes in these practices [2].

At its core, MFCA promotes heightened transparency in the realm of material and energy utilization by constructing a detailed material flow model. This model meticulously traces and quantifies the movement and stock of materials within an organization, with all measurements expressed in physical units. Energy is a versatile component in MFCA. It can be treated as a material itself or quantified separately. Any costs generated by, or associated with, the material flows and energy consumption are systematically quantified and linked to their respective sources.

MFCA's functionality extends to a critical focus on cost comparisons. It discerns the disparities between costs associated with products and costs linked to material losses. This includes expenses tied to aspects like waste, air emissions, and wastewater, providing an essential perspective for organizations to enhance their practices.

One prevalent challenge faced by organizations is the lack of comprehensive insights into the genuine costs of material losses, primarily due to difficulties in

extracting relevant data from conventional information, accounting systems, and environmental management platforms. However, MFCA serves as a transformative solution, making these critical data points readily available. This newfound accessibility opens doors to opportunities for reducing material use and minimizing material losses, ultimately leading to the improved and efficient utilization of materials and energy. Additionally, it contributes to the reduction of adverse environmental impacts and the associated financial burdens.

The versatility of MFCA is a remarkable aspect of its design. It is well suited for application across all industries that rely on materials and energy, be it in the extractive, manufacturing, service, or other sectors. What is more, MFCA can be effectively implemented by organizations of varying types and sizes, irrespective of whether they have existing environmental management systems in place. This adaptability extends to its use in both emerging economies and industrialized countries.

As one of the primary tools in the realm of environmental management accounting, MFCA was originally designed for utilization within a single facility or organization. Nevertheless, its utility and reach extend further. MFCA can seamlessly encompass multiple organizations within a supply chain. This extension serves as a collaborative means for these organizations to develop an integrated approach to achieve more efficient utilization of materials and energy collectively. SMEs with substantial material and energy consumption can employ MFCA to visualize resource flows, identify wastages, and pinpoint areas for cost reduction.

VSM

A value stream is the sequence of activities an organization undertakes to deliver on a customer request [3], which also refers to a lean management technique used in business and manufacturing to analyze, design, and improve the flow of materials and information required to bring a product or service to a customer. It provides a visual representation of the entire process from the beginning (usually the raw materials or initial customer request) to the end (delivery of the finished product or service to the customer).

VSM is defined by the American Society for Quality (ASQ) as a pencil-and-paper tool used in two stages. First, it follows a production path from beginning

to end and draws a visual representation of every process in the material and information flows. Second, it draws a future state map of how value should flow [4]. The primary goals of VSM are summarized below.

- Identify and eliminate waste: VSM helps organizations identify non-value-added activities, known as "waste" in lean principles, such as unnecessary delays, excess inventory, overproduction, and defects. Once identified, these inefficiencies can be targeted for improvement or elimination.

- Improve process flow: VSM highlights bottlenecks, delays, and other process-related issues, enabling organizations to redesign processes for smoother, more efficient flow.

- Enhance overall value delivery: By understanding the value stream and making improvements, businesses can enhance their ability to meet customer demands more quickly and with better quality.

For SMEs with lower resource utilization, VSM is effective in assessing process efficiency and uncovering opportunities for cost reduction and process improvement. Cost reduction for SMEs presents unique challenges stemming from resource limitations, competency gaps, and stakeholder alignment issues. By using tools like MFCA and VSM, SMEs can identify areas for improvement and embark on cost-reduction initiatives tailored to their specific needs and constraints. While these tools offer valuable insights, it is crucial to recognize that their successful application requires a holistic approach to cost reduction within the organization.

It is essential to clarify that while MFCA and VSM are valuable tools, their application does not guarantee immediate cost reduction. These tools serve as diagnostic aids, helping SMEs pinpoint areas for improvement. The actual cost reduction will depend on the strategies implemented following their assessment. For these tools to be most effective, having access to sufficient data is crucial. By constructing intricate diagrams, such as the Sankey diagram in MFCA applications, SMEs can gain a clear understanding of resource flow. This makes it easier to identify the precise areas that require cost-reduction initiatives.

However, the reality for many SMEs is a scarcity of resources and a deficit in data. In such cases, the question arises: Can new data be collected? Unfortunately, the answer is not always straightforward. Many SME employees may lack the expertise and competence required for comprehensive data collection and recording. This extends to data analysis, balancing, and other critical tasks.

The absence of data can be a major roadblock in SME cost-reduction efforts. Without a clear view of resource flow, it becomes challenging to identify areas for cost reduction accurately. This is where a modified approach becomes necessary.

A MODIFIED APPROACH

Recognizing the constraints faced by most SMEs, particularly in terms of data and skilled personnel, a modified approach is required. Traditional MFCA or VSM may not be feasible due to these limitations. However, SMEs can still harness the power of visual tools by adopting a simplified, pragmatic rapid cost-reduction approach that aligns with their capabilities and resources.

The rapid cost-reduction approach seamlessly integrates the fundamental principles of MFCA, encompassing a deep comprehension of material flow and energy consumption. It effectively bridges the realms of physical and financial data while also incorporating a pivotal element from VSM, the visual representation of each step within the material flow. Nevertheless, this expedited approach omits several distinctive features commonly associated with MFCA and VSM, including aspects like quantity centers, cost allocation, material balance, carryover cost mechanisms, lead time ladders, and information flow dynamics.

To represent the horizontal process flow, the rapid cost-reduction approach employs a simplified bar chart for estimating costs, vividly illustrating the allocation of resources such as labor, materials, electricity, chemicals, and more in monetary terms. Subsequently, it leverages the power of kaizen and the "5 whys" techniques to identify alternative solutions for areas of elevated expenditure. This streamlined approach, characterized by its simplicity and swiftness, is tailor-made to accommodate the unique circumstances faced by SMEs. By recognizing their inherent limitations and adopting this modified strategy, SMEs can harness valuable insights into their operational processes, embarking on a purposeful journey to curtail costs and heighten overall efficiency.

Case Study

In the annals of SMEs, there exists a remarkable success story of a wooden door manufacturer facing an uncertain future. With a workforce of 120 employees and a history of annual sales averaging around USD10 million, it was a quintessential SME. However, the arrival of the COVID-19 pandemic sent shockwaves through its operations, causing sales to plummet by nearly

60%. The domestic market dwindled, and exporting proved a futile endeavor due to uncompetitive pricing in overseas markets.

The Challenge

This dire situation prompted the company to embark on a mission to reduce costs, but it faced significant roadblocks. It lacked the competency for cost reduction, had no historical data, and had no clue about where to begin. The only certainty was the need to cut costs. This is where the transformative journey took off.

Export Dilemma

One avenue considered was exporting its products to international markets. However, it quickly realized that the company's prices were not competitive enough to make a dent in overseas markets. This predicament led to a critical question: How could it reduce costs and remain competitive?

Navigating Uncharted Territory

The company's quest for cost reduction was fraught with challenges. First, it had no prior experience or competency in cost-reduction efforts. This was uncharted territory for the entire organization. Second, it lacked data and insights into where to initiate cost-reduction measures. It had to rely on a single, yet crucial, idea: the need to reduce manufacturing costs.

Analyzing the Manufacturing Process

The heart of the cost-reduction journey began with a closer examination of the manufacturing process. The company noticed several characteristics that defined its operations.

- High raw material usage: The company operated with a high volume of raw materials, which presented opportunities for optimization.
- Manual processes: Unlike larger manufacturers, the company relied heavily on manual labor, as automation was beyond its resource constraints.
- Chemical usage and environmental concerns: The use of chemicals in the production process raised environmental concerns, adding an extra layer of complexity to cost reduction.

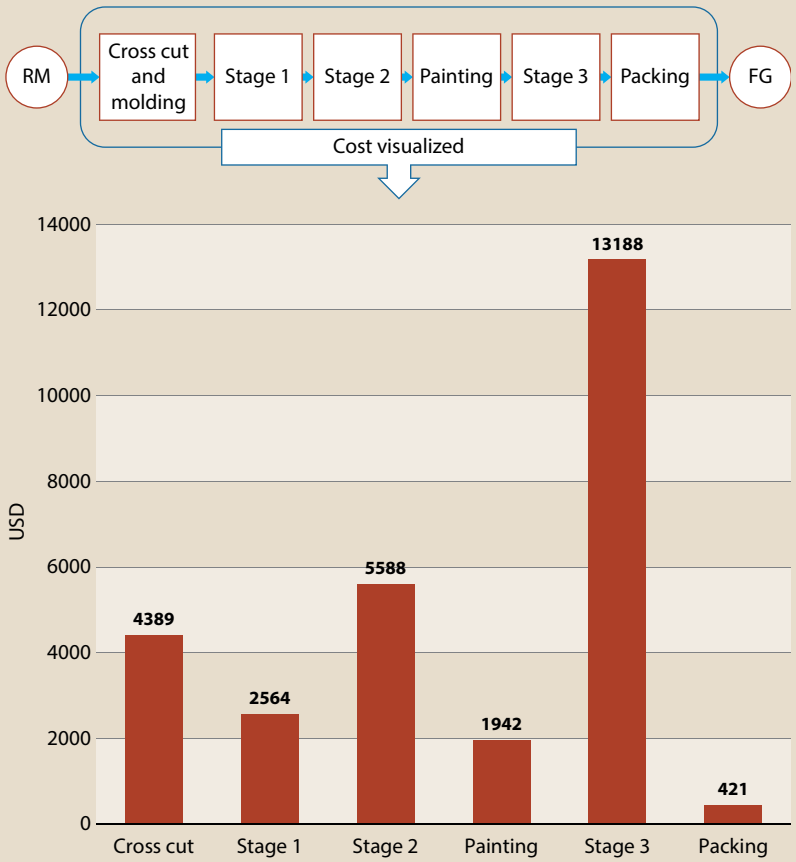
- Waste generation: Offcuts and resource wastage occurred along various stages of production.

Visualizing the Process

To gain a comprehensive understanding of its manufacturing process, the company began by mapping it out in a flowchart. This visual representation allowed it to track the journey of raw materials to the finished product, highlighting key stages such as cross-cutting, molding, assembly, and packaging (Figure 1).

FIGURE 1

VISUALIZING THE MANUFACTURING PROCESS.



Estimating Costs

Despite the lack of historical data, the company took a practical approach. It estimated costs by considering factors such as the number of workers involved in each process, the types and quantities of chemicals used, and other operational expenses. This estimation allowed it to generate a rudimentary bar chart showcasing the cost distribution across different manufacturing stages.

Visualizing the Problem

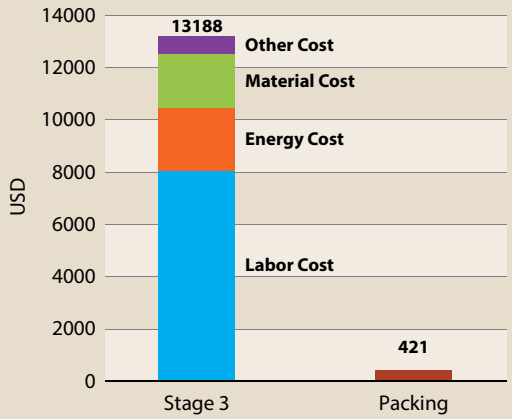
The first step in the endeavor was to create a bar chart that vividly displayed the distribution of costs across various manufacturing stages. Among these, one stage stood out with glaringly high costs: stage 3 (Figure 2).

The Stage 3 Dilemma

Intrigued by the exorbitant costs at stage 3, the company started asking questions. Why was the cost so high? What factors contributed to these high expenses?

FIGURE 2

STAGE 3 COSTS.



Analyzing the Costs

It was discovered that the costs at stage 3 encompassed labor, energy, materials, and additional expenses. The most significant contributor to these costs was labor, which accounted for a substantial portion. The reason behind this became evident upon closer examination.

FIGURE 3

EXAMPLE OF INCONSISTENCY IN WOOD QUALITY.

Quality Issues and Patching

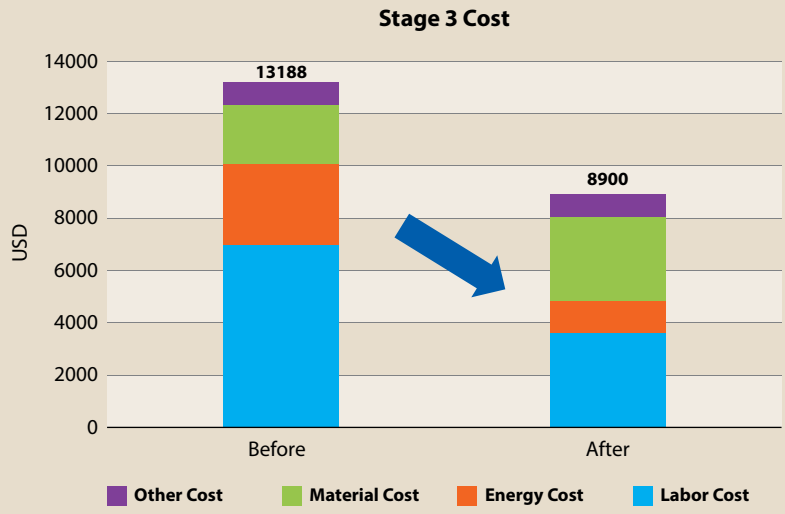
The company's raw material was wood, a natural resource that, unfortunately, exhibited inconsistent quality. The wood often had defects like wormholes, dents, and scratches (Figure 3). To rectify these flaws, a significant portion of labor was dedicated to patching jobs, when the quality of the wood was painstakingly repaired before moving to the next stage.

Seeking Alternatives

With this insight, the company explored alternatives. It inquired about the availability of higher-quality wood that could reduce or eliminate the need for extensive patching. Yes, such preprocessed wood was available, but it came at a higher cost. Despite the higher initial investment, it decided to give it a try (Figure 4).

FIGURE 4

STAGE 3 COSTS BEFORE AND AFTER THE CHANGE TO PREPROCESSED WOOD USE.

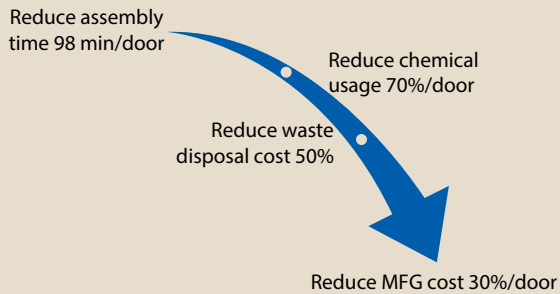


The Transformation

The results were remarkable. While the better-quality preprocessed wood incurred more upfront costs, it led to significant cost reductions in the long run. With fewer defects to address, the company reduced the usage of chemicals, labor, and power. This switch in the procurement strategy, from the cheapest option to one considering the overall effect, resulted in reduced overall costs.

FIGURE 5

THE IMPACT.



The Impact

The consequences of this transformation were astounding (Figure 5). Assembly time for each door was slashed by 98 minutes, chemical usage was reduced, and waste disposal costs were curtailed. In a short span, the company managed to reduce its manufacturing expenses by 30%. With the newfound cost efficiency, it could now offer products online and venture into overseas markets, endeavors previously deemed unattainable due to pricing constraints.

In conclusion, this SME's journey illustrates the power of visualization and strategic procurement in achieving cost reductions and ensuring business sustainability. By identifying inefficiencies and taking decisive action, SMEs can triumph over adversity and set their course toward a brighter, more competitive future.

The Initial Dilemma

The company then grappled with the issue of excess labor. It had an extra workforce at its disposal, which raised a crucial question: what to do with this surplus labor?

A Unique Offering

The innovative solution lay in offering onsite installation services, setting it apart from its competitors. By utilizing the excess manpower, it ventured into this new avenue of business.

The Results

The decision to provide installation services reaped rewards swiftly. In August, sales figures witnessed a remarkable 20% increase, signaling the success of the new venture. The company now had an additional, profitable service to offer, thanks to the extra workforce it had previously struggled to allocate effectively.

A Collaborative Effort

This project, completed within a mere two weeks, involved a small but dynamic team. Comprising the company's manager, a team member, and remote assistance, this tight-knit group worked tirelessly to bring about the transformation. Despite pandemic-related travel restrictions, the collaboration was seamless, emphasizing the adaptability and resilience of SMEs in times of adversity.

The Rapid Cost-reduction Approach

The methodology employed for this cost-reduction and expansion project was refreshingly straightforward. Rather than delving into intricate MFCA flow model processes, a quantity center, material balance, cost carryover, cost allocation, and detailed data analysis, the rapid cost-reduction approach opted for a simplified, three-step approach.

Step 1 was process flow visualization. The journey commenced by establishing a clear process flow. The company mapped out the steps involved, avoiding the need for complex diagrams or extensive data collection.

Step 2 comprised cost estimation. To avoid getting bogged down in precise cost allocation, the team estimated expenses for each step. While this might not satisfy the scrutiny of an accounting department, it served the primary goal of identifying areas where costs could be trimmed.

The final step was the most critical. Step 3 applied the "5-whys" techniques concerning each cost and began the cost-reduction process. This is where the company brainstormed alternative solutions and materials to bring down expenses.

Simplified rapid cost-reduction approaches for SMEs can be established within a short time to convince management of the potential monetary savings from the visualized monetary value of every single step of the processes. If costing information such as unit prices of resources is not available, estimations based on average market rates can be used, which also overcomes the typical challenge of costing information restrictions in most SMEs.

The essence of this approach lies in its speed and simplicity. SMEs often face resource constraints, a lack of extensive data, and an urgency to see results quickly. This uncomplicated three-step rapid cost-reduction approach allows them to visualize their operations, estimate costs, and then proceed with targeted cost-reduction efforts. In the grand scheme of business, this case study serves as a reminder that simplicity and visualization can be powerful tools for SMEs to overcome cost-related challenges, find innovative solutions, and emerge as more agile, competitive players in their respective industries.

CONCLUSION

In conclusion, the challenges faced by SMEs in reducing costs are significant, given their limitations in resources, expertise, and data. Nonetheless, the pursuit of cost reduction is vital for SMEs to ensure their sustainability and profitability. This report explored the concept of rapid cost-reduction approaches tailored to the unique circumstances of SMEs, offering an effective strategy to overcome their challenges.

SMEs are often confronted by constraints such as a lack of specialized personnel, limited access to comprehensive data, and the need for quick results. Traditional methods like MFCA and VSM, while powerful, may not always be feasible for SMEs due to these limitations. Therefore, a modified approach has been introduced, emphasizing simplicity, visualization, and adaptability.

The case study of a wooden door manufacturer illustrates how this modified approach can lead to significant cost reductions. By visually mapping the manufacturing process, estimating costs, and employing techniques like the 5 whys, the company identified a specific area for improvement and took decisive action. In doing so, it managed to reduce manufacturing expenses substantially, enabling it to compete in the global market, an achievement that initially seemed unattainable.

Furthermore, the case study highlights the adaptability and resilience of SMEs. In the face of adversity, the company was quick to innovate and find new opportunities for growth, such as offering installation services to utilize surplus labor. The collaborative effort of a small team underlines the ability of SMEs to adapt and thrive, even in challenging circumstances.

Rapid cost-reduction approaches for SMEs provide a pragmatic, accessible path to identify cost-saving opportunities, overcome resource limitations, and enhance competitiveness. These simplified techniques, such as process flow visualization, cost estimation, and the 5 whys, can be implemented relatively quickly and deliver tangible results. In the larger context of the business world, this case study serves as a reminder of the power of simplicity and visualization as tools to address cost-related challenges. SMEs can utilize these approaches to navigate uncharted territory, find innovative solutions, and emerge as more

agile, competitive players in their respective industries. Ultimately, the quest for cost reduction is not only achievable but also essential for the growth and sustainability of SMEs.

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LIST OF FIGURES

ABOUT THE AUTHOR

Alex Yap Yun Fung
Director
EcoLean Consultancy Sdn. Bhd.
Malaysia

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