

Strategy to Achieve Cost Leadership through Polymers Raw Material Cost Breakdown Analysis

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ABSTRACT

Purpose – This research explores the innovation strategy to achieve cost leadership through polymers raw material cost breakdown analysis at The OTO Company, a multinational manufacturing company. The goal is to identify, elaborate, implement, and evaluation the effectiveness of strategy to reach cost leadership in context of competitive advantage.

Methodology/approach – Using qualitative methods, data were collected by interviews with the employees, direct observation and other secondary sources.

Findings – The findings reveal that by implementing cost breakdown analysis and several supporting activities such as employee's competencies upgrading and A-B-S monomers components brainstorming give the positive impact and support the purchasing function to strengthen their bargaining power and negotiation strategy, also impact to cost reduction or company budget saving.

Novelty/value – The research suggests to do periodical checking of cost structure regarding environment or situation changing, also possibility for the conversion into automation to accelerate the cycle time of calculation.

Keywords: Cost Leadership, Cost Breakdown Analysis, ABS Polymers

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INTRODUCTION

The automotive manufacturing industry in Indonesia is one of the important sectors that contributes significantly to the country's economy. In the press release mentioned the growth of the automotive sector itself was above national economic growth, and from the production side, the utilization of the motor vehicle industry has increased 29% higher. Indonesia is the largest motor vehicle market in

ASEAN (Coordinating Ministry for Economic Affairs, 2011). Discussing about motorcycle industry in Indonesia, based on AISI data 2023 in average domestic market distribution of motorcycle itself is between 400.000 to 600.000 units per month. Meanwhile export market has 30.000 to 60.000 units of distribution in every month. THE OTO COMPANY is one of the biggest company of motorcycle manufacturing company in Indonesia and dominate the market either domestic and export. THE OTO COMPANY has goal as world class player in two wheels manufacturing industry by realizing consumer dreams, creating joy for consumers and contributing to society by creating mobility solutions for society with the best products and services. Innovation plays a crucial role in supporting and enhancing business strategy. It involves introducing new ideas. Competitive advantage of THE OTO COMPANY is essential for them because it allows them to stand out in a crowded marketplace and achieve long-term success. Cost leadership is one of strategies within competitive advantage where company aims to become the most competitive cost producer in its industry. It can help company making it more attractive to price-sensitive customers. Cost control as exacting control and thorough supervision over cost is critical. Also, it will be interconnected with access to low-cost inputs that key element of cost leadership by securing raw materials or labor at a lower fetched than competitors makes a difference fortify a taken a toll authority procedure. This may include arranging superior provider bargains, finding operations in districts with lower labor costs, or sourcing reasonable materials.

Polymers is one of raw materials that probably used in automotive industry. Polymers play a critical part in motorcycle fabricating due to their flexibility, light weight, strength, and durability. These materials have slowly supplanted metals and other conventional materials in different automotive components, making a difference to progress fuel proficiency, expectedly decrease generation costs, and improve adaptability. Acrylonitrile Butadiene Styrene (ABS) is one of polymers in THE OTO COMPANY for motorcycle parts. ABS is widely used in the manufacturing of motorcycle components due to its beneficial material properties. This material is a thermoplastic polymer known for its impact resistance, durability, and lightweight characteristics, making it ideal for various motorcycle parts. It provides excellent impact resistance and toughness. However, particular specification of material is required. It made this material can only be supplied by specific makers or producer and it is not easily available in the open market. Absolutely, this condition impact to company dependence and bargaining power. Meanwhile, ABS has big portion of usage in motorcycle components, that make this material is imperative to THE OTO COMPANY. Cost effectiveness as well as quality and supply stability of this material will always be THE OTO COMPANY primary concerns. Hence innovation strategy that is in line with the company's business direction is essential and needed to realize this then THE OTO COMPANY can get the most competitive price of ABS material impact to cost reduction without disquiet the quality and delivery.

LITERATURE REVIEW

Innovation is a process where ideas are born, the development of an update, and the introduction of a new product, process or service are introduced (Thornhill, 2006 in Suhaeni, 2018). In practice, an innovation must be able to produce benefits and bring improvements, not just in the form of new knowledge or methods that cannot be applied in practice (Handayani & Pendrian, 2023). Innovation can apply at that point positive impacts on firms' generation, market and financial performance within the long-term. Meanwhile the complexity of today's business competition is indivisible from the VUCA era (Volatility, Uncertainty, Complexity and Ambiguity). That is, the most innovative firms engage in a continual search for better products, services, and ways of doing things. They try to continuously upgrade their internal capabilities and other resources. Aggregate innovative capacity of a nation is derived from the collective innovative capacity of its firms. The more innovative firms a nation has, the stronger that nation's competitive advantage. Competitive advantage leads to company performance (Hao, 2000). According to Everett (2003) in Handayani and Pendrian (2023) innovation can provide several benefits including providing a place for an individual to express and channel creativity, increasing sales and profits which are of great value for the survival of the company, increasing the variety and quality of new products through innovation making the market more competitive, and improving the quality of life by overcoming many problems and needs that previously did not exist or

could not be met. Innovation will promote productivity of the company or organization (Wang et al., 2011).

Competitive advantage is gained when an organization or firm or company can develop and procure a set of attributes or executes actions that allow it to outperform its competitors (Wang, 2014). Competitive advantage will produce sustained superior performance of the company (Powell, 2001). According to Porter in Rumelt (2003), competitive advantage implies having low costs, differentiation advantage, or a successful focus strategy. Wang et al. (2011) also mentioned there are three strategies of competitive advantage. Those strategies are differentiation, cost leadership and differentiation focus. Cost is the significant factor of firm's competitive advantage.

Referred from Porter (1985) in Valipour et al. (2012), cost leadership firms need to control costs concisely, refrain from incurring too many expenses from innovation or marketing, and cut prices when selling their products. The purpose of cost leadership strategy is the company's low-cost products offers in an industry. The company or firm should have a broad scope serving multiple industry segments to gain a low cost advantage (Datta, 2010). This lowest price can be compared with the competitors, and potentially gaining a larger market share. Cost leadership is the overarching strategy that drives companies to become the lowest-cost producers, relying on effective cost reduction measures and ensuring cost effectiveness. In terms of cost leadership strategy, company must focus on cost effectiveness. Cost effectiveness is a critical component of cost leadership. It refers to achieve the best possible products for the lowest cost. On the other hand, cost reduction initiatives in each company will contribute to cost effectiveness. Cost reduction strategy can be vary depend on the company situation, business direction and global condition analysis, also its relation to SWOT (Strength, Weakness, Opportunity and Threat). Basically, this cost leadership will always be associated to procurement and purchasing function in each company. Their analytical and negotiation skills will be vital in order to support company cost leadership. The relationship between negotiation and analytical skills is crucial, as successful negotiations often require a strong ability to analyze information, situations, and outcomes. Analytical skills support strategic thinking during negotiations.

Cost breakdown structure (CBS) identifies all relevant cost categories in all project life cycle phases, and it classifies all kind of costs that involved in the goods, services or projects (Narvaez et al., 2020). A well-organized CBS is essential for cost control, budgeting, and cost reduction efforts. Basically, the key components of cost breakdown structure are direct costs, indirect costs, fixed costs, variable costs, one-time costs, contingency costs, research and development (R&D) costs, also marketing and sales costs. In terms of procurement and purchasing process, there is one model named Kraljic.

Kraljic model explains about the categorizes purchases or suppliers based on their level of risk and the potential impact on a company's profitability, allowing businesses to prioritize their resources and efforts. This model is important because it can help to support risk management, resource allocation, supplier management and cost efficiency. Garzon et al. (2019) suggested there are four categories on this model specifically strategic (high-profit impact, high-supply risk), bottleneck (low-profit impact, high-supply risk), leverage (high-profit impact, low supply risk), and noncritical (low-profit impact, low-supply risk). ABS that is one type of raw material for production falls into the strategic category. These are critical to the company's operations and profitability and are also difficult to source.

METHOD

This research was conducted with a qualitative approach. Qualitative research is data collection in a natural setting with the intention of interpreting the phenomena that occur, in which case researchers come directly to the field and observe and are involved intensively to find out in detail about what is

being observed (Anggito & Setiawan, 2018). In this research, an exploration of understanding and conducting in-depth mapping of based on current condition of cost competitiveness of ABS price in order to achieve cost leadership of the company that is the object of research is carried out. In this research, an intrinsic case study is carried out where the case study is to understand well a particular case, in this case regarding strategy to achieve cost leadership of THE OTO COMPANY.

The primary data in this study is information obtained directly regarding ABS material price and cost effectiveness on the procurement and purchasing function in THE OTO COMPANY, the data is gained from direct observation and interview to people those in charge of operations, reviewer and top approver of purchase order of raw material in THE OTO COMPANY. In addition to primary data, this research also uses secondary data as a data source. Secondary data is in the form of secondary data that has been documented, published and so on relating to the object of research.

Data collection will be carried out by in-depth interviews as the empathy phase of research and the way to capture the current condition and expected situation in line with business strategy of THE OTO COMPANY in terms of cost leadership. As for conducting interviews in this study, researchers will prepare a list of questions in order to capture as detailed information as possible on the conditions to be studied. The types of questions prepared for the interview process can be in the form of questions related to experience or behaviour, questions related to a value or opinion. It accompanied by a literature study that can support the process and as triangulation of research. Beside capturing the condition and problem, research will include strategy ideation, implementation and testing. Therefore, in the end of the research, strategy was generated, implemented and evaluated in correlation to ABS material cost effectiveness and reduction, also cost leadership. In total, this research was conducted since February 2023 until September 2024.

RESULT AND DISCUSSION

As mentioned in the method section above the data collection of this research is obtained from direct observation and interview sources of this research will be employees of THE OTO COMPANY those in charge of operations, reviewer and approver related to the cost aspect.

Innovation strategy

THE OTO COMPANY is one of manufacturing companies in Indonesian automotive industry. THE OTO COMPANY is also a pioneer of the motorcycle industry in Indonesia. To stay ahead, this company needs to be more agile and dynamic in innovating, with management support and innovative behavior from all employees. Innovation is one of company values as the culture in this company, that encourage employee to generate and implement innovation idea. Fostering innovation in many areas is the responsible of all employees in THE OTO COMPANY. This thing is in line with the holding company of THE OTO COMPANY strategy, that innovation must be done continuously to reach cost leadership of company in many aspects. Innovation can be done through collaborative efforts within and outside company. Innovation must be carried out to support transition acceleration and avoid “paranoid survives”, also concern in diversifying. Paranoid survives is the situation where the company in comfort trap and feels complacent with the current condition and its achievements. Innovation can be done in many sectors such as innovation product, process, and so on. According to Hult et al. (2004) in Wahyudi (2019) Superior innovation can help management achieve better performance. As a result, business continuity and sustainability can continue to run in line with company goals because it supports the ability to innovate.

Company Business Strategy and Competitive Advantage

As world class company, THE OTO COMPANY has 10 pillars as the focusses that always to be improved continuously. Those pillars are safety & health, cost deployment, focused improvement, autonomous activities, professional maintenance, quality control, logistic, early equipment

management, people development and environment. As objectives and goals to become strong market leader both in combustion and electric vehicle by leveraging local assets and unique competitiveness with up-to-date capabilities to achieve desired profitability & growth. Cost leadership, sustainability supply and flexible manufacturing can support THE OTO COMPANY to have competitive advantage in order to face the challenging business competition. Competitive advantage is unique attributes or capabilities of company to compete with competitors in business landscape.

Based on THE OTO's mother company business portfolio, its groups need to support sustainable development, particular in climate change for automotive field. Euro 4 is one requirement that considered and need to be fulfilled. Euro 4 is an emissions standard set by the European Union to reduce harmful pollutants emitted by vehicles, particularly nitrogen oxides (NO_x), carbon monoxide (CO), hydrocarbons (HC), and particulate matter (PM). This regulation aimed at reducing air pollution that potentially caused by vehicles. Meanwhile to follow up this matter will need extra cost that must be prepared by the company. In this case, THE OTO COMPANY has the same situation. This company must prepare special cost and do efficiency within company to reach cost leadership and maintain price stability in the market. The price must be stable, because this key element will give the huge impact to customer attraction. Not only the attraction, but also the market share will be influenced if price cannot be controlled, moreover become higher and higher.

Discussed about cost leadership, procurement and purchasing function really put high priority about it. This substantial attention must be supported by this function regarding their role and capacity to control the price and cost of goods and services that needed by company. According to AMS statement as one of management in this function that also has capacity to review and approve the price, he said *"The dynamics of motorcycle market needs in Indonesia are one of company's challenges as a motorcycle manufacturer that dominates Indonesia market. In addition, unpredictable & fluctuating global conditions require the company to be agile & ready for this. This is not an easy thing, where our company needs to set a strategy. The target of fulfilling the market with competitive prices and increasing profits every year requires all lines to make improvements in order to reduce unnecessary costs"*. In its production activities, company will spend some costs related this context, such as cost of material, labor, factory overhead, etc. This company must be able to maintain its dominant position in the market by providing the best products and services to the community as a market leader.

Talk more about this function, primarily procurement and purchasing at least has seven key responsibilities. Supplier management, where this function does selecting and managing their relationships with suppliers to ensure many critical points such as quality of goods and service and timely delivery. Inventory management also one of their responsibilities by ensuring the optimal level of inventory to meet with company needs while avoiding excess stock. Ensuring that all purchasing activities comply with legal, ethical and company policies is the proof that this function puts the attention to the compliance aspect of cooperation or partnership. Identifying and mitigating risks associated with the supply shortages, price fluctuations until quality issues. Strategic sourcing, negotiation and cost control are interconnecting each other in this function and can give the impact to cost competitiveness of goods and services. Identifying potential strategy of sourcing such as provision of new sources, improve supply chain efficiency and reduce cost however avoiding quality disturbance. Powerful negotiation also can be obtained by negotiation favorable terms, prices and condition for goods and services, that supported by comprehensive analysis. Last but not least, cost control meaning in this function is quite different with common. They are not only monitoring, instead they are controlling of purchasing budget, actual cost that shaped by negotiation result, and implementing several cost reduction initiatives without compromising on quality.

Raw Material Polymers as Strategic Category and its challenges

In manufacturing, raw materials refer to the basic, unprocessed substances or components that are used in the production of finished goods. These materials are extracted, harvested, or otherwise obtained from natural sources and then undergo various processes to be transformed into products. In the context of automotive industry, raw material can be metal such as aluminum and steel, then non-metal can be painting material that used for vehicles body coats, rubber and polymers. In principle polymers material that commonly used in motorcycle production include Acrylonitrile Butadiene Styrene (ABS) is a widely used thermoplastic polymer known for its strength, toughness, and impact resistance and Polypropylene (PP) which is a thermoplastic polymer made from the monomer propylene.

Generally, in one unit of motorcycle, ABS material will be used more than PP material. This type of material is usually used to produce body parts of motorcycle. As its name, ABS is a copolymer that made from three monomers. Acrylonitrile is monomer that provides chemical resistance and support heat stability of product. Butadiene can give impact to toughness and resistance. Styrene will offer rigidity and aesthetic appeal. The combination of these three components creates a material have unique properties that make it suitable for various and particular applications. This material falls into top important goods. Because this material is probably used more than 40% of total plastics or polymer materials in each motorcycle unit.

Based on observation result, ABS that can be used has special requirement. It means this material cannot be purchased in the common market, instead it will be specially produced by makers with certain formula to reach required performances that proven by several test. This is one reason why this material is unique. This material must go through a development phase before it can be used. In the context of supply perspective, regarding competency and capacity, makers or producers that can produced this material is very rare. ABS price is influenced by several global price data that price fluctuations beyond user control. ABS data is often used in singular global platforms because ABS is a widely traded and critical material in various industries, and its market dynamics are important for decision-making across the supply chain. In addition, it is difficult for makers to be open about the cost structure used. Those circumstances mentioned above are the challenges which are associated to bargaining power of negotiation and cost analysis process. Whereas ABS cost breakdown provisions refer to the detailed analysis and categorization of costs associated of all costs involved in producing this material while essential for budgeting, financial planning and spending cost accountability. It will influence cost leadership of materials. By capturing the real situation, at least the price gap of this material that must be spent can reach until 41% or equal up to IDR 8 Billion in a month in early 2022 and previous period. Meanwhile, ABS is purchased regularly every month. It will be contradictive with the company goals to have competitive advantage and achieve cost leadership as world class company.

Root cause analysis

As the summary of the challenges that have been explained above, a problem where the cost breakdown analysis is not optimal. Based on this problem that we gained from the actual condition, we try to observe more deeply for the causes that probably related to this problem. Root causes analysis is essential because it will allow us to address the underlying reasons behind problems or issues, rather than just treating the symptoms. A deeper understanding of the root cause improves the overall problem-solving process. Moreover, we believe by doing this analysis we can understand the root cause and ensures that all parties involved take responsibility for their roles in preventing future occurrences, fostering a culture of accountability and learning. Card (2016) suggested that why-why analysis is one technique of the most widely taught approach to get the root causes. This is in line with the literature from *The Art of Root Causes Analysis*, Vidyasagar (2016) explained the real problem is not the root causes and do not stop questioning unless we reach a process, policy, situation or anything else that seems to be a root cause.

In the context of this research, we observe and interconnect several factors such as man, method, machine and material. We can see there are several items has been identified as the root causes. According to this research, the employee skill of cost analysis, huge and vary data, limited some

information due to makers or supplier's policy, limited access of independent data and unavailable of calculation tools become the causes of the problem. This table below is the mapping of circumstances that we gained as the root cause of this problem.

Table 1: Root Causes Analysis

Problem	Factor	Why 1	Why 2	Why 3
The cost breakdown analysis for ABS material is not yet optimal	Man	Competency development of cost analysis is not optimal	Mastery of material price analysis competency is not yet evenly equal	The purchaser has not upgraded their material price analysis competency
				There is new manpower that has just joined
	Method	ABS cost analysis takes a long time	Purchaser constraints related to cost analysis methods are not easy	The purchaser has not upgraded their material price analysis competency
			Data analysis is done manually	Tools to help the analysis of ABS cost is not provided
			Huge data is needed to do the analysis	
			Cost structure differences of each material	Information sources are vary based on makers/ suppliers internal policy
			Some data depends on makers/ suppliers data	Limited access for independent data
	Machine	Tools to help the analysis of ABS cost is not provided		
		There is no global price database for the raw materials used in ABS		
	Material	The data submitted by each supplier is different.	Information sources are vary based on makers/ suppliers internal policy	
		The number of price components that must be checked		
		The composition of ABS raw material is not available		
		Global raw material ABS data trend is not available	Limited access for independent data	
		There is no standardization of ABS cost structure		

Source: Direct Observation and Interview at THE OTO COMPANY

Ideation of alternative strategy

The employee skill of cost analysis, huge and vary data, limited some information due to makers or supplier's policy, limited access of independent data and unavailable of calculation tools are the causes of the faced problem of this research. Regarding to this root causes, we look up to the chance, capability and capacity of the current situation. By using brainstorming and weighing method of particular criteria and parameters, we consider the ideations and making decision of the implementation. Brainstorming itself is the technique where this research team generate a wide ranges of ideas based on the phenomenon and causes in a free-flowing. It means there is not limitation of thinking with open environment of this. This collaborative process brings the diverse perspectives of ideation as the alternative solutions. It is benefit of using this brainstorming method. Weighing method is the method that used in order to help our decision making process to prioritize the multiple alternative solutions by assigning them with certain criteria and parameters. This table 2 below is our parameters and criteria that have been defined to consider the idea priority.

Table 2: The Criteria and Parameters of Weighing

Criteria	1	2	3	4	5
Importance	Very unimportant	Unimportant	Moderate	Important	Very Important
Level of difficulty	Very difficult	Difficult	Moderate	Easy	Very Easy
Cost	Very high cost	High cost	Mid cost	Low cost	No need cost
Feasibility	Not feasible	Slightly feasible	Neutral	Feasible	Very feasible

Source: Innovation team analysis

The definition of importance is how important the solution or idea is in relation to the company's business strategy direction. Level of difficulty is about the difficulty to execute this idea is connected to current condition, capacity, capability, opportunity, challenges, regulation and policy. As the name cost criteria explain about the potential total spent cost to execute the idea into reality until the problems are solved. The last is feasibility, the feasibility in this context is interconnected with the possibility to carry out the idea also by considering regulation and policy itself. Table 3 shown the ideation as the brainstorming results.

Table 3: The Ideation Weighing

Ideation	Importance	Level of difficulty	Cost	Feasibility	Total Weigh
Upgrading employee competency about manufacturing process, material knowledge and cost analysis	5	3	5	5	18
Brainstorming of ABS raw material composition	5	3	5	5	18
Cost breakdown analysis	5	3	5	5	18
Standardization of ABS material cost structure	5	2	5	5	17

Source: Innovation team analysis

Based on this analysis upgrading employee competency, brainstorming of ABS raw material composition are cost breakdown analysis are the priority that must be done. In this research those alternative solutions are chosen to be implemented as the strategies. However, according to our observation, basically those three alternatives will be interconnected each other. Meanwhile the main solution will boil down to cost breakdown analysis that supported by adequate competency of man power and ABS raw material composition information.

Implementation of Cost Breakdown Analysis

In this section, the implementation of cost breakdown analysis that expected can solve the problem about ABS material cost effectiveness will be explained. As the previous section, this strategy cannot be carried out independently. There are some actions that must be done before doing this cost analysis. The first one is upgrading competency as the basic skills of employee to do the analysis. Upgrading of competency is also form of knowledge management cycles implementation. Based on the activity plan of this function knowledge management is one of targets that must be carried out and achieved. It can be measured by the technical competency assessment of employees. Mentioned by Dalkir (2005) that from business perspectives, knowledge management is business activity with primary aspects those are treating the knowledge component of business activities that can be associated in strategy, policy and practice as an explicit and tacit knowledge. Knowledge management is a collaborative effort to create capture, organize, access, and use of intellectual assets (Grey, 1996). Meanwhile, in technology point of view, knowledge management is the concept under which information is turned into actionable knowledge and made available effortlessly in a usable form to the people who can apply it.

In this case, knowledge management aims to upgrade competency of employees and enhance the next analysis related to ABS material. In this research, based on the interview we determined knowledge focuses or the competencies that must be mastered by related employees. The interview results shown that there are three required competencies that can support cost breakdown analysis. The competencies are manufacturing process of polymers or plastic injection, material knowledge and cost analysis. In line with the purpose to upgrade the employee's competencies, then the target must be determined as the base of measurement. These parameters are stated in learning guide in the company. For manufacturing process, the parameters of measurement are employees can explain the global process of related manufacturing stages and type of all produced parts. Defining and elaborating quality standards also required for this competency. Different with previous competency, material knowledge requires the employees to explain the specification differences of each material and the factors that can influence quality of materials. Calculating and defining the cost structure of goods, services or projects are the requirement of the last competency named cost analysis. Globally, by design these knowledge management cycles are divided into 5 stages, those are knowledge creation, sharing, measuring, storage and utilizing. In supporting cost breakdown analysis, these competencies were created and shared to all employees in the purchasing function by collaborating with certain subject matter experts from other divisions. Post tests were conducted and tested to all employees in the same time at the end of knowledge sharing session. This post tests are the evidence of the measurement of each competency. Knowledge storage is conducted by using internal online platform. Utilizing refers to the effective application of acquired knowledge to make informed decisions, solve problems, improve processes, and achieve goals within a particular context, whether personal or company.

Observation and elaboration of ABS raw materials components are the essential activities to support the main strategy that found in this research. The challenge to carry out this thing is the raw material components and its formulation are strictly confidential to share from makers or suppliers. In this research brainstorming and one-on-one discussions are conducted between THE OTO COMPANY and each makers or suppliers. The objectives are gaining the actual raw materials composition of ABS. These activities are also supported by material data sheets of each material as the evidences.

As the information verification, material checking is also done by implementing particular test that is Fourier transform infrared (FTIR). Basically, flow process to carry out this test are sample preparation, FTIR testing, Graph analyzing and monomers calculation. Bhargava et al. (2003) said FTIR spectroscopy is a mature analytical technique employed to examine polymeric materials. With the coupling of an infrared interferometer to a microscope equipped with specialized detectors, FTIR spectroscopy has been employed widely to examine microscopic areas in polymers. It provides detailed information about the chemical bonds and molecular structure of substances. Molecules absorb infrared light at specific frequencies corresponding to the vibrations of their chemical bonds (stretching, bending, twisting, etc.). These vibrational modes are unique to each type of bond, making infrared spectroscopy a powerful method for molecular identification. The function and working principles of FTIR are infrared light interaction with molecules, broad spectrum analysis, Fourier transform, interferometer, also detector and data processing. FTIR spectroscopy is a powerful and versatile tool used to analyze and identify the molecular structure of materials. Its ability to provide detailed information about the functional groups and bonds within a sample, combined with its speed and non-destructive nature, makes it invaluable in many scientific and industrial applications. The Fourier transform function enables it to quickly process a broad range of infrared wavelengths, enhancing its effectiveness in real-world analyses.

After upgrading employee's competencies and getting ABS raw materials components, the main strategy which is cost breakdown analysis can be done. As the mentioned in the previous section, ABS cost breakdown provisions refer to the detailed analysis and categorization of costs associated of all costs involved in producing this material while essential for budgeting, financial planning and spending cost accountability. Those are the importance reasons of cost breakdown analysis. ABS price is influenced by several global price data that price fluctuations beyond user control. ABS data is often used in singular global platforms because ABS is a widely traded and critical material in various industries, and its market dynamics are important for decision-making across the supply chain. This innovation strategy was carried out with five required steps after the ABS raw material components have been found and determined. The first is gathering raw data of A-B-S monomers global price trend in certain period. The data must be downloaded periodic and regularly so that the standard deviation of data is not far. All data will be obtained in the form of daily data. So the next step that must be done is analyzing and calculating the daily data into monthly. Next, calculation of mixed A-B-S monomers price can be followed up. This thing is crucial because the price will be used as the base price of material and it will give the impact to all steps. Determining the cost structure is the essential step of cost breakdown analysis. Identifying cost components allows purchasing function to identify and categorize all cost elements associated with a project or product, such as labor, raw materials, overhead, and indirect costs. In this research, this step was accommodated by doing brainstorming cost structure with all makers or suppliers, checking the internal and external data information and finding from other references. In general, there are several items as the structure of this material such as base price, import delivery fee, custom clearance, warehousing, logistic, and so on. The safety factor is one of structures that must be considered in cost breakdown analysis. The safety factor is a critical concept used to ensure

that the estimated costs of ABS can absorb unexpected risks and uncertainties. It acts as a buffer against potential cost overruns, market fluctuations, and unforeseen complications. The method that used for this item is percentage addition as the calculation approach, commonly 5% to 20% depending on the complexity and associated risks in the period. This cost breakdown analysis is calculated by the officer and controlled by the section head as the negotiator of the price, before the price propose to the reviewers and the approvers. Detailed cost breakdowns provide insights that support informed decision making. As the buyer perspective, by understanding specific cost drivers can lead to better resource allocation, negotiation strategies, and final decision making. It plays a significant role in ensuring the successful execution achieving cost leadership goals.

Evaluation

Evaluation of this research will be divided into three parts. Evaluation of upgrading competency is proven by technical competency assessment (TCA). The TCA was conducted in every end of knowledge sharing event. As the target the TCA score minimum standard is 90 out of scale 100 for each knowledge focus. Based on the data, the average of TCA score reach more than 90. Manufacturing process reach score 94, material knowledge hits score 98, and TCA score of cost analysis is 96 of 100.

The typical composition of Acrylonitrile Butadiene Styrene (ABS) is a balanced blend of three monomers. In the process, it is not easy to carry out this action because all data is confidential. Meanwhile, it may conflict with supplier policies. A fair commitment and mutual trust needs to be carried out by all parties to protect property rights of each material. The composition of styrene is over than 50% (Ma, 2014), in other reference, Rutkowski et al (1986) explained Styrene can be between 65 to 75% and 24-35% for acrylonitrile. Different with acrylonitrile and styrene, butadiene percentages will be around 5% to 30%. In average, based on the implementation the percentages of A-B-S monomers are still in range of the literature above. Regarding to each material that produced by maker, every material has specific and different compositions. These differences are allowed as long as the material properties and performance can pass the requirement. The results of these requirements are validated by laboratory test.

By implementing cost breakdown analysis, it impacts to strengthen of the bargaining power in negotiation and cost realization. recorded in data, this innovation gives the gigantic impact gradually, from 41% of gap decreased to 20% in the first 6 months and reach to 2% in 2024. In total, this innovation gives the impact of cost reduction or company budget saving until IDR 45 Billion during the implementation and evaluation period. The A-B-S monomers price calculation and cost structure have been standardized in the company includes the flow process to do the calculation.

These ideations above are in line with the guide of the management of this function where *“We need to strengthen the employee competency and analytical thinking in supporting company cost leadership”*. In other said AMS also mentioned about the importance of the employee mentality. He said *“Not only agile, mental enablers is more that. This mentality is needed in this situation to ensure and help individuals perform effectively, remain engaged, and achieve success in their tasks. Mental enablers also foster a positive and productive work environment, leading to better outcomes for both individuals and company itself”*.

As the evaluation, the testimonial of the officer that attended the knowledge sharing and did all cost analysis action, they said that the action that aims upgrading employee competencies gives the impact to them, it enhances their understandings about manufacturing process, material knowledge and cost analysis. Next, they can do in-depth analysis and give the suggestion to their superior of the circumstances.

CONCLUSION

By doing cost breakdown analysis of ABS material can strengthen the bargaining power and formulate the negotiation strategy. It is effective give the good impact to cost leadership, because it helps contributing the cost reduction or company budget saving over than IDR 40 Billion. This innovation also can be implemented by several supporting actions in previous steps, such as employee's competencies upgrading and brainstorming of ABS raw material components. The standardizations of cost breakdown analysis and the flow process to the calculation are needed to ensure the human error in the future, due to this strategy is the breakthrough strategy that has not been generated and implemented before. It will be good if these initiatives are proposed and registered for the patent.

In the context of the talent development, this innovation also as the form of the mental enablers of the employee that helps to improve performance, which is employees who are mentally enabled can perform better under pressure and achieve their tasks with greater efficiency and effectiveness. Mental enablers such as creativity and open-mindedness lead to innovation and the ability to think outside the box, and give their perspectives and suggestions. Later on, mental enablers also help driving both team and company success, in this research context is cost leadership as company competitive advantage. However, the further continuous improvement is allowed according to environment or situation changing. Also this innovation can be re-built in the form of automation to accelerate the cycle time of calculation.

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