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Proposed Design of Performance Management System in Automotive Part Manufacturing Industry: A Knowledge-Based Approach (Case Study PT MM)

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Abstrak. The automotive manufacturing industry in Indonesia plays an important role in driving national industrial growth, with vehicle production exceeding one million units annually and the automotive industry itself contributing 7.63% to GDP and employing around 1.5 million people. PT Mawar Manufaktur (PT MM), as a manufacturer and supplier of automotive components, plays a significant role within this ecosystem. However, amid the intensifying competition in the automotive industry, PT MM faces challenges in enhancing its competitiveness. The current performance management system remains fragmented and primarily focuses on financial and core operational aspects. This study proposes a redesigned Performance Management System (PMS) using the Knowledge-Based Performance Management System (KBPMS) framework. This performance management system combines strategic alignment, interdepartmental integration, and the inclusion of key performance indicators (KPIs) consisting of financial and non-financial indicators. The new PMS is expected to enhance the company's flexibility and competitiveness. The research methodology includes a combination of qualitative and quantitative techniques, such as interviews, literature reviews, external and internal analyses, and the application of the Analytic Hierarchy Process (AHP). The outcome of this study is a comprehensive PMS tailored to the strategic needs and operational context of PT MM. This enables the company to adapt to industry developments, particularly the growing relevance of electric vehicles (EVs), and to sustain long-term growth.

Keywords: Performance Management System, automotive industry, KPIs, KBPMS, strategic alignment, AHP

INTRODUCTION

Indonesia's automotive industry has shown significant growth, especially with the push toward vehicle production aimed at exports to countries like Australia, Japan, and Africa (Sekretariat Kabinet Republik Indonesia, 2022). In 2023, the industry employed approximately 1.5 million workers and was supported by 26 manufacturing companies across the country. That same year, the transportation sector—including automotive—contributed 7.63% to national GDP, outpacing the overall industrial growth rate. Automotive production reached 1.3

million units in 2023, increasing from 1.2 million units in 2022 (Waluyo, 2024). Although the global automotive spare parts market is projected to grow from USD 400 billion in 2023 to USD 550 billion by 2028, Indonesia has yet to become a major player. China leads the market with a 34% share. In comparison, Indonesia exported only 326,000 units, trailing far behind the key players (The Association of Indonesia Automotive Industries (Gaikindo), 2024). This gap signals the need for improvement in competitiveness and innovation.

PT Mawar Manufaktur (MM), a metal-based automotive parts manufacturer established in 2005 in Karawang, uses a Make-to-Order (MTO) production system to supply parts (body panels, fuel tanks, structural components) to leading manufacturers like Toyota, Honda, and Hyundai. In 2023, PT MM contributed 852,099 units to the national total production, accounting for 83% of the annual 1,028,751 units (PT MM, 2024).

Despite its role in supporting *TKDN* components, PT MM's revenue dropped by 15%, from IDR 1.43 trillion in 2023 to IDR 1.25 trillion in 2024, due to macroeconomic uncertainty, political factors, and inaccurate client forecasts. Additionally, its current Performance Management System (PMS) remains fragmented and overly focused on production output. Within the manufacturing industry, business processes can generally be grouped into two categories: (1) core operational processes such as strategy, marketing, supply chain, and service delivery, and (2) support functions like HR, IT, finance, risk management, and compliance (APQC, 2024). Many companies still rely on traditional Performance Management Systems (PMS) that focus mainly on financial results or employee appraisals, which do not fully support strategic goals (Wibisono, 2006; Aguinis, 2014). A more effective PMS should measure both financial and non-financial indicators and reflect the company's values, culture, and long-term direction (Wibisono, 2014).

Selecting the right Key Performance Indicators (KPIs) and ensuring they remain relevant are top challenges for performance and process management professionals. This highlights the importance of aligning performance metrics with business strategy (APQC, 2024).

The existing PMS is poorly integrated across departments, limiting the company's ability to respond to the rapid transition in the automotive sector. This study addresses the need for a more integrated, strategic, and forward-looking PMS. The goal is to design a system that is aligned with PT MM's vision and the evolving industry dynamics. The proposed framework emphasizes cross-functional integration, strategic alignment, and the inclusion of non-financial performance indicators to further support long-term competitiveness.

Performance Management Systems (PMS) are vital processes for recognizing, evaluating, and improving organization and individual performance, ensuring alignment with organizational strategic objectives. Aguinis (2014) highlights their multifaceted purposes, including strategic goal achievement, administrative decision support, informational clarity for employees, developmental guidance, organizational maintenance through workforce planning, and documentational data collection. Various PMS models, such as SMART, Performance Measurement Questionnaire, Balanced Scorecard (BSC), Knowledge-Based Performance Management System (KBPMS), Performance Prism, and the Malcolm Baldrige National Quality Awards (MBNQA) framework, are implemented by companies (Wibisono,

2006).

PMS approaches can be categorized into traditional methods (financial metrics), modern approaches (shareholder value creation), and comprehensive, strategy-driven methods emphasizing non-financial indicators (Striteska, 2012). Indeed, non-financial measures like quality and responsiveness are increasingly recognized for their relevance, especially at operational levels (Wibisono, 2014). A notable gap exists in manufacturing industry studies, which have predominantly focused on cost analysis, often neglecting broader economic sustainability impacts (Ahmad & Wong, 2018).

Several established frameworks guide PMS development. The Balanced Scorecard (BSC) translates vision and strategy into a balanced set of performance measures across four perspectives: financial, customer, internal business processes, and innovation and learning (Kaplan & Norton, 1992). The Performance Prism offers a holistic framework focusing on satisfying stakeholder needs and wants and aligning them with requisite strategies, processes, and capabilities (Neely, Adams, & Kennerley, 2002). The Malcolm Baldrige National Quality Award (MBNQA) criteria promote performance excellence across seven areas: leadership, strategy, customers, measurement/analysis/knowledge management, workforce, operations, and results (American Society for Quality, 2025; Cazzell & Ulmer, 2009). The Knowledge-Based Performance Management System (KBPMS) integrates strategic and operational views, utilizing GAP Analysis and Analytical Hierarchy Process (AHP) for prioritizing improvements, and emphasizes the need for contextual adaptation of global PMS models like BSC and MBNQA to local business cultures (Wibisono, 2014; Wibisono & Khan, 2010).

Developing and refining PMS often involves comprehensive situational analysis. External environmental factors can be assessed using PESTLE analysis (Rastogi & Dr. Trivedi, 2016), while industry competitiveness is often evaluated through Porter's Five Forces (The Institute for Strategy and Competitiveness, 2025). Internal capabilities and resources are identified using frameworks like VRIO analysis (Valuable, Rare, Inimitable, Organized) (Rothaermel, 2017) and Value Chain Analysis (Stobierski, 2020). The synthesis of these internal and external factors through SWOT analysis, often extended to a TOWS matrix, informs strategic action planning (Weihrich, 1982; Gorener, Toker, & Ulucay, 2012). For decision-making within PMS design, such as prioritizing criteria, the Analytical Hierarchy Process (AHP) provides a structured method for pairwise comparisons to derive relative importance (Saaty & Vargas, 2012; Gorener, Toker, & Ulucay, 2012).

MATERIALS AND METHODS

This research aims to develop an improved and suitable Performance Management System (PMS), including Key Performance Indicators (KPIs), for PT MM to enhance company competitiveness. The study was initiated by an analysis of PT MM's existing business issues, revealing an insufficient PMS for defining and analyzing performance against strategic objectives.

Data Collection Method

Primary data were gathered through in-depth interviews with PT MM stakeholders. These

interviews aimed to: (1) analyze the company's internal and external environments; (2) validate the existing PMS and identify necessary performance variables; and (3) provide input for the *Analytical Hierarchy Process* (AHP) by determining priorities among performance variables.

Secondary data collection involved: (1) analysis of company reports and existing PMS/KPI documentation to support internal/external analysis and gap identification; (2) review of relevant government regulations to understand compliance requirements; and (3) study of local and international industry standards to inform benchmarking and performance improvement initiatives.

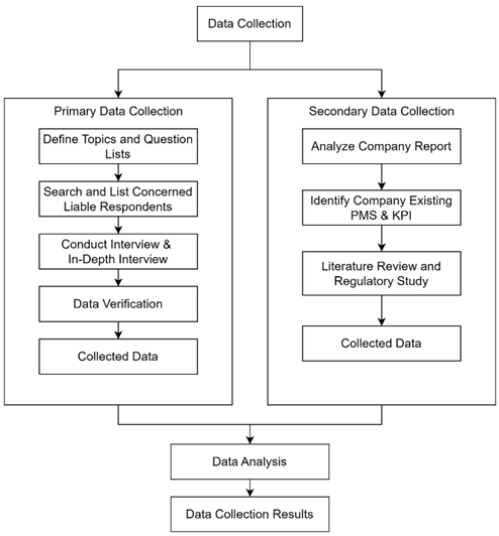

Figure 1 Data Collection Method

Data Analysis Method

The data analysis method began with the synthesis of primary and secondary data. A gap analysis was conducted to identify discrepancies between PT MM's current and desired PMS. Qualitative analysis, using content and thematic approaches, explored business operations and motivations for improvement. Benchmarking against industry competitors was performed to identify opportunities for enhancing company effectiveness, efficiency, and regulatory compliance. KPI selection was guided by organizational vision, mission, and objectives, adhering to *SMART* (Specific, Measurable, Achievable, Relevant, Time-bound) criteria and incorporating industry best practices. The *Analytical Hierarchy Process* (AHP) was employed to conduct pairwise comparisons, thereby weighing and prioritizing performance perspectives and variables based on input from PT MM's top management.

The selected PMS framework was then used to integrate the chosen KPIs into company operations and strategic processes. The newly designed PMS underwent stakeholder validation to ensure alignment with company goals and expectations, with adjustments made as necessary. Finally, a structured implementation plan was developed, outlining resource allocation, stakeholder training, and timelines.

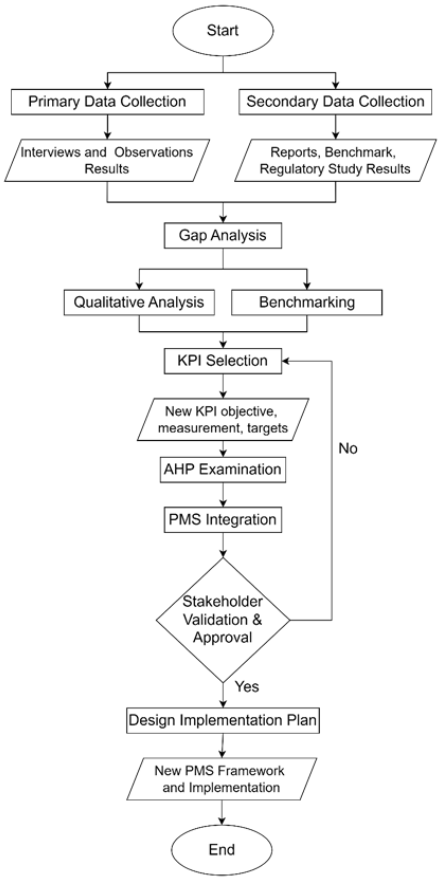

Figure 2 Data Analysis Method

Performance Management System Framework Selection

PT MM's vision is to be a first-choice automotive parts manufacturer, yet its current PMS, primarily based on production and sales, inadequately measures overall objectives. After comparing several PMS frameworks, including the *Balanced Scorecard* (BSC), *Malcolm Baldrige National Quality Awards* (MBNQA), *Performance Prism*, and *Knowledge-Based Performance Management System* (KBPMS), KBPMS was selected.

Table 1 Performance Management System Comparison

Evaluation Factors	Balanced Scorecard (BSC)	Malcolm Baldridge National Quality Awards (MBNQA)	Performance Prism	Knowledge-Based Performance Management System (KBPMS)
Procedure to design PMS	Stated explicitly	Stated explicitly	General overview	Stated explicitly through Knowledge-Based
Design of PMS (e.g. framework, example, suggestion)	Explicit examples from empirical companies' data	Framework and examples	Framework and distinct model	framework, models, examples and details of measurable indicators

Evaluation Factors	Balanced Scorecard (BSC)	Malcolm Baldridge National Quality Awards (MBNQA)	Performance Prism	Knowledge-Based Performance Management System (KBPMS)
Levels/perspectives	4 perspectives	7 perspectives	5 perspectives	3 perspectives and 9 sub-perspectives
Formulation of suggested performance variables	formulation on variables implemented by certain company	Qualitative questions	Detailed formulation on each variable	Detailed formulation on each variable
Consideration of current PMS implemented by company	No	Yes in 1 perspective	No	Yes
Purpose to be implemented in	All types of industry	All types of industry	All types of industry	All types of industry
Number of performance variables suggested	Grouped in 4 big perspectives, each perspective could consist of several variables depending on company managed	More than 300 through answer the questions	More than 200 individual performance variables	More than 200 variables
Reasons for choosing variables	Stated explicitly on each perspectives frame	Asking in detailed questions	Stated explicitly for each variable	Stated explicitly for each perspective
Knowledge-based approach	No	No	No	Yes – a key aspect
Supported by software	No	No	No	Under development
Benchmarking process	The procedures of benchmarking are discussed conceptually, but the standards are not provided for each performance variable	Portrait in the graph in perspective 7	Benchmarking procedures are not discussed explicitly, some performance standard provided	Benchmarking procedures are discussed clearly, some examples of benchmarking on indicators
Linkage among variables of different management level	Established in the frame of perspectives provided	Linkage among perspectives not variables	Established distinctly	Clearly distinguished, recommended to use factor analysis and correlation (AHP)
Method of judgement linkage and improvement priorities	Not provided	Not provided	Not provided	Recommended to use correlation analysis or AHP or Gap analysis
Improvement recommendations	Stated explicitly in the examples	Conducted through	Stated implicitly in each variable	Clearly stated in each

Evaluation Factors	Balanced Scorecard (BSC)	Malcolm Baldridge National Quality Awards (MBNQA)	Performance Prism	Knowledge-Based Performance Management System (KBPMS)
	provided (empirical data)	visiting mechanism	suggested to be measured	measurement variable and knowledge based that is built

Source: (Wibisono, 2016)

KBPMS was chosen due to several advantages relevant to PT MM: (1) its robust knowledge-based approach; (2) its provision of a structured, implementable methodology focusing on process and performance outcomes; (3) its emphasis on involving all stakeholders; (4) its integration of a benchmarking process to improve competitiveness; and (5) its suitability for the Indonesian manufacturing context, fostering transparency and continuous improvement.

RESULTS AND DISCUSSION

Result

This chapter presents the results derived from applying the Knowledge-Based Performance Management System (KBPMS) framework to design an improved PMS for PT MM. The KBPMS methodology, encompassing stages from foundational guidelines to system design and implementation planning, guided the analysis.

KBPMS Framework Application

Table 2 KBPMS Perspectives

Perspectives	Aspects
Organizational output	Financial
	Non-Financial
Internal Process	Innovation
	Operation process
	Marketing
	After sales service
Resource Capability	Human resources
	Technology resources
	Organization resources

The selected KBPMS framework structures performance into three primary perspectives: Organizational Output, Internal Process, and Resource Capability, each further divided into specific aspects. The development followed the KBPMS stages: Principal Guidelines (Stage 0), Basic Information (Stage 1), PMS Design (Stage 2), and Implementation Plan (Stage 3).

Stage 0: Principal Guidelines

Foundational principles for the PMS development were established, emphasizing partnership, empowerment, integrated performance improvement, and team independence.

Key rules included simplicity (KISS-Keep it Stupid Simple), long-term orientation, time-based metrics, continuous improvement focus, and a quantitative approach.

Stage 1: Basic Information

1. External Analysis

The PESTLE analysis identified key external factors. **Political** factors included TKDN regulations and local labor regulations. **Economic** analysis highlighted GDP stability and the rise of Electric Vehicles (EVs), declining ICE (Internal Combustion Engine) sales and BI rate fluctuations. **Sociocultural** trends showed growing EV/hybrid adoption and brand preferences favoring availability. **Technological** advancements like Industry 4.0/5.0 and AI presented opportunities for efficiency, alongside cybersecurity concerns. **Legal** aspects focused on SNI, IATF 16949, ISO 45001 compliance, and emerging carbon tax regulations. **Environmental** factors underscored the importance of ISO 14001, waste management, energy conservation, and global ESG reporting standards. Porter's Five Forces analysis indicated:

a. **Bargaining Power of Suppliers**: Moderate to high, due to dependence on specialized technology and limited local sourcing for certain materials.
b. **Bargaining Power of Buyers**: High, driven by stringent OEM standards and competition.
c. **Threat of New Entrants**: Moderate, due to high entry costs and TKDN policies, but with potential from SMEs in the EV sector and OEM JVs.
d. **Threat of New Substitutes**: Low to medium, as core material needs remain relatively stable despite EV development.
e. **Competitive Rivalry**: High, with strong domestic players (especially ATPM JVs) and foreign competitors with advanced technology.

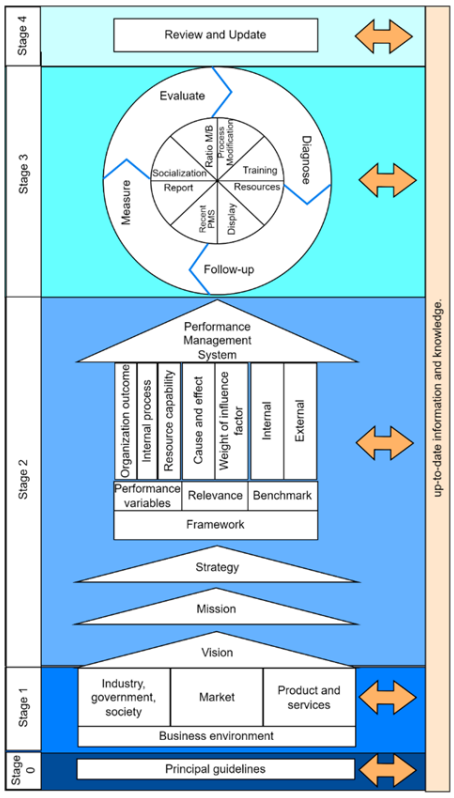

Figure 3 KBPMS Framework

2. Internal Analysis

The VRIO analysis identified key resources and capabilities. Competitive advantages included high-precision machinery, expertise in tool making and metal stamping, strong partnerships with major OEMs, and adherence to certified quality standards (IATF16949, ISO14001, ISO45001). Areas like R&D and integrated services were identified as having temporary competitive advantage or competitive parity, indicating potential for further development.

Table 3 VRIO Analysis

Resource/Capability	Valuable	Rare	Inimitable	Organized	Competitive Implication
Resource					
Financial resources from PT MM's holding	√				Competitive Parity
Human resources (experience, skill, knowledge)	√				Competitive Parity
Supporting facilities (plant, office)	√				Competitive Parity
Technology resources (machinery, IT, integration)	√				Competitive Parity
Equipped with high-precision machinery for production	√	√	√	√	Competitive Advantage
Capabilities					
Expert in tool making and metal stamping	√	√	√	√	Competitive Advantage
Gain partnership with big manufacturers/ OEM	√	√	√	√	Competitive Advantage
Fulfill Certified quality standards (IATF16949, ISO14001, ISO45001)	√	√	√	√	Competitive Advantage
Conduct R&D and market research	√				Competitive Parity
Accommodate integrated services	√	√			Temporary Competitive Advantage
Production process automation	√	√	√	√	Competitive Advantage

Value Chain Analysis highlighted strengths in inbound logistics (proximity to suppliers/clients), operations (end-to-end production), outbound logistics (integrated delivery), B2B marketing (targeting major OEMs, TKDN fulfilment), after-sales service (technical support), firm infrastructure (financial backing, certifications, lean manufacturing), human resource management (training, skilled recruitment), technology development (collaborative R&D, digitalization investment), and procurement (strong supplier relationships).

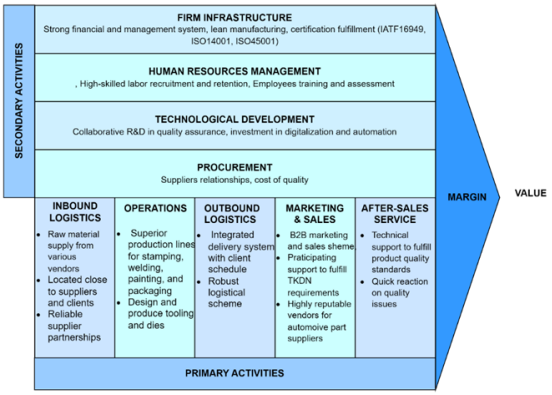

Figure 4 Value Chain Analysis

3. SWOT – TOWS Analysis

Strengths, Weaknesses, Opportunities, and Threats were consolidated. The TOWS matrix was then developed to formulate strategic actions. Key S-O strategies included leveraging capabilities for EV market entry and TKDN programs and adopting automation for Industry 4.0/5.0. W-O strategies focused on HR training for new technologies and diversifying into non-automotive sectors. S-T strategies aimed at strengthening digitalization for compliance and diversifying products to mitigate ICE decline. W-T strategies included process audits for quality and developing local supply chains.

Table 4 PT MM Strength and Weakness

	STRENGTH		WEAKNESS
S 1	Equipped with high precision machining (compatible for high tensile with 16-line big press and 2 lines of blanking, and 3 machines hydraulic for dies maintenance)	W 1	High burr production quality (45% of initial mass pro)
S 2	Has end to end capabilities (tool making-stamping-welding-painting-packaging)	W 2	PDCA in Hi-tens product accuracy is still above target (>15x; target 8x)
S 3	Gain partnership with big manufacturers/ OEM (10 big OEM brands)	W 3	High breakdown time (60,813 minutes; target 0 minutes) and Time-consuming maintenance (9982 minutes; target 3850 minutes)
S 4	Fulfil Certified quality standards (IATF16949, ISO14001, ISO45001)	W 4	HR gap in Adoption of new Technology related to digitalization (not fully implemented by employees - affects efficiency)
S 5	Diverse Product Portfolio (body product and tooling product)	W 5	High dependency on clients from existing ICE automotive industry
S 6	The factory location is strategic and close to the client company (approx. radius 100km)	W 6	Automation of production systems (digitalization) is not fully utilized
S 7	Has a machine with a tonnage of 3000 tons (only ASI in Indonesia)	W 7	Lack of local suppliers that supply specific materials for production requirements (10% parts from overseas supplier)
S 8	Strong collaboration with PT MM group in the production of small, medium, and large stamping parts, as well as plastic parts, and energy-related parts such as		

	STRENGTH	WEAKNESS
	batteries and solar panels.	
S9	The welding process already utilizes robots with a ratio of 70%	
S10	Already using the ERP information system (G5) for the ordering system to invoicing	

Table 5 PT MM Opportunities and Threat

	OPPORTUNITIES		THREAT
O1	TKDN regulations governing minimum 25% local content in automotive products in Indonesia	T1	Relaxation of import regulations
O2	Increase in GDP (5%) and decrease in BI (5.75%) rate correlate to increase in consumer purchasing power	T2	Carbon tax implementation
O3	Increase in EV (increase 153%) and Hybrid Vehicle (increase 5%) sales	T3	Environmental regulation implementation
O4	Application of Industry 4.0; 5.0; and AI in the manufacturing industry	T4	Decline in ICE (internal combustion engine) vehicle demand
O5	Government incentives on EV and hybrid vehicle sales (Tax exemption)	T5	Labor regulation in Karawang
O6	Foreign investment for in-house technology development	T6	Regulation (KKNI-Indonesian National Qualification Framework in automotive sector) workforce
O7	Increased demand for electric motor production (sales increase of 447% in 2024)	T7	SNI & ESG compliance requirements
O8	Emergence of customers in new market segments (non-automotive); including heavy equipment	T8	Client trust dropped because deliveries were late due to line stoppages caused by a lack of staff capabilities.

Table 6 PT MM TOWS Matrix

	S-O
SO1	Leverage end-to-end capabilities & global certifications to attract investors in TKDN program & EV industry. (S2, S4, S5, S8 - O1, O3, O7)
SO2	Encourage the adoption of automation in order to synergize with Industry 4.0/5.0 and AI. (S9, S10 - O4, O6)
SO3	Utilize large tonnage machines & strategic locations to become an EV OEM supplier. (S1, S3, S6, S7 - O3, O5, O7)
SO4	Expand portfolio into EV & hybrid and non-automotive products. (S1, S2, S3, S4, S5, S7, S8, S9, S10 - O2, O6, O7, O8)

	W-O
WO1	Conduct regular HR training programs, especially in order to adopt new technology & digitalization. (W4, W6 - O4)
WO2	Transformation of the maintenance process by utilizing digital systems. Toward predictive maintenance. (W3 - O4)
WO3	Reduce dependence on the automotive industry by penetrating the EV, infrastructure, energy industries. (W5 - O3, O5, O7, O8)
WO4	Utilize government incentives to obtain investment/funding for technology development. (W7 - O5, O6 O8)
WO5	Conduct quality improvement by improving existing technologies (W1, W2, W3, W6 - O4, O6)
	S-T
ST1	Strengthen digitalization, training, and certification system in order to meet SNI, ESG, and regulatory compliance. (S4, S9, S10 – T1, T2, T3, T5, T6, T7)
ST2	Conduct product diversification by developing products into non-automotive sectors (energy, heavy equipment, defense). (S1, S2, S3, S4, S5, S7, S8, S9, S10 - T4)
ST3	Leverage certified quality standards, strategic factory location, and strong group collaboration to meet regulations and compliance requirements. (S4, S6, S8 - T3, T5, T6, T7)
ST4	Utilize and improve the digital system to increase the production efficiency. (S10 - T8)
	W-T
WT1	Process audit to reduce defect rate and meet quality regulations. (W1,W2 - T6, T7, T8)
WT2	Strengthening local supply chains through the development of local suppliers to substitute imported materials. Including local supplier training and long-term cooperation. (W5, W7 - T2, T3, T4, T8)
WT3	Diversification of customer base into non-ICE sectors such as electric vehicles (EVs) and new energy components. This is to reduce dependence on ICE clients and deal with the downward trend in ICE demand. (W5 - T4)
WT4	Utilize lean manufacturing for energy & cost efficiency. W1, W2, W3 - T8
WT5	Build and implement a workforce development roadmap to improve employee competencies for production, automation, and digitalization. W4, W6 – T5, T6, T8

Stage 2: Performance Management System Design

1. Vision, Mission, and Strategy Alignment

PT MM's vision ("Strive to be the first-choice automotive parts manufacturing company and the best partner to be with by fostering cooperation, continuous improvement, and innovation") and mission (focused on high-quality production, safe environment, effective management, people development for operational excellence, sustainability, and profitability) were analyzed. These, along with the TOWS matrix outputs, informed the development of

strategies aligned with the three KBPMS perspectives. Key strategies included expanding into EV/non-automotive markets (Organizational Output), developing R&D and digitalization (Internal Process), and investing in employee development and advanced manufacturing technologies (Resource Capability).

Table 7 Company Strategy

Perspective	Aspect	Strategy
Organizational output	Financial	Expand market share and improve profitability by expanding into EV and non-automotive market
	Non-Financial	Build strategic partnerships and Improve stakeholders' satisfaction to strengthen brand reputation through operational excellence
Internal Process	Innovation	Develop R&D capabilities including automation, digitalization, and predictive maintenance to achieve industry 4.0
	Operation process	Implement lean manufacturing and continuous improvement to achieve energy efficiency and optimize production activities
	Marketing	Enhance marketing efforts in emerging markets such as EV, hybrid, and non-automotive sectors
	After sales service	Strengthen after-sales service to enhance customer retention and satisfaction
Resource Capability	Human resources	Invest in employee development utilizing workforce roadmap and conduct regular training including skill development, leadership training, safety program, digitalization, and automation
	Technology resources	Invest in technology adaptation and adopt advanced manufacturing technologies (industry 4.0) to improve quality and flexibility
	Organization resources	Build strong, effective, and efficient organizational management by harmonizing skills, work ethic, and wellbeing to support sustainability.

2. Performance Perspectives and Indicators

New performance indicators were formulated for each KBPMS perspective, encompassing financial and non-financial measures. Financially, it reflects profitability and business growth. Non-financially, it highlights PT MM's commitment to sustainability and stakeholder expectations. In internal process, focuses on innovation and operational efficiency. This perspective ensures PT MM's processes are optimized for productivity, sustainability, and compliance with environmental regulations. In resource capability, it evaluates the strength of human, technological, and organizational resources to support innovation, operational success, and readiness for Industry 4.0.

Table 8 Performance Perspectives and Indicators

PERSPECTIVE	SUB-PERSPECTIVE	INDICATOR
Organizational output	Financial	Profitability ratio
		Business growth
	Non-Financial	Customer satisfaction rate
		Customer retention
		Supplier satisfaction rate
		Community involvement
		Employee satisfaction rate
		Regulatory Compliance
Internal Process	Innovation	Idea Generation & Conversion
		R&D Initiatives
	Operation process	Quality control
		Delivery
		Safety
		Energy and Raw Material(s) Resource Efficiency
		Cost reduction
		Occupational Health and Safety
	Marketing	Sales Force Productivity
		Lead Generation
	After sales service	Customer Service
		Service availability
Resource Capability	Human resources	Employee Qualification
		Employee productivity
		Skills Coverage
		Employee Development
		Employee turnover
	Technology resources	Equipment Breakdowns
		Maintenance
		Technology Implementation
		Technology age
	Organization resources	Leadership
		SOP
		Teamwork and Collaboration Effectiveness

3. Analytical Hierarchy Process (AHP) Results

AHP was used to determine the relative weights of criteria and sub-criteria within each perspective.

Table 9 Performance Indicators AHP Results

Perspective	Weight	Sub-Perspective	Weight	Indicator	Weight	Cumulative Weight
Organizational output	1	Financial	0,5	Profitability ratio	0,75	0,375
				Business growth	0,25	0,125
		Non-Financial	0,5	Customer satisfaction rate	0,35	0,175
				Customer retention	0,149	0,074
				Supplier satisfaction rate	0,024	0,012

Perspective	Weight	Sub-Perspective	Weight	Indicator	Weight	Cumulative Weight
				Community involvement	0,046	0,023
				Employee satisfaction rate	0,253	0,126
				Regulatory Compliance	0,179	0,089
Internal Process	1	Innovation	0,313	Idea Generation & Conversion	0,1	0,031
				R&D Initiatives	0,9	0,281
		Operation process	0,258	Quality control	0,159	0,041
				Delivery	0,104	0,026
				Safety	0,392	0,101
				Energy and Raw Material(s) Resource Efficiency	0,068	0,017
				Cost reduction	0,08	0,020
				Occupational Health and Safety	0,198	0,051
		Marketing	0,37	Sales Force Productivity	0,833	0,308
				Lead Generation	0,167	0,061
		After sales service	0,059	Customer Service	0,875	0,288
				Service availability	0,125	0,007
Resource Capability	1	Human resources	0,33	Employee Qualification	0,136	0,044
				Employee productivity	0,235	0,077
				Skills Coverage	0,221	0,072
				Employee Development	0,308	0,101
				Employee turnover	0,1	0,033
		Technology resources	0,33	Equipment Breakdowns	0,172	0,056
				Maintenance	0,098	0,032
				Technology Implementation	0,664	0,219
				Technology age	0,066	0,021
		Organization resources	0,33	Leadership	0,327	0,107
				SOP	0,413	0,136
				Teamwork and Collaboration Effectiveness	0,26	0,085

a. Organizational Output: Financial and non-financial criteria received equal weight (0.5 each). Within Financial, Profitability Ratio (0.75) was prioritized over Business Growth

(0.25). Within Non-Financial, Customer Satisfaction (0.35), Employee Satisfaction (0.253), and Regulatory Compliance (0.179) were the top three.

b. Internal Process: Marketing (0.37) was the highest-weighted criterion, followed by Innovation (0.313), Operation Process (0.258), and After Sales Service (0.059). Key sub-criteria priorities included R&D Initiative (0.9 within Innovation), Safety (0.392 within Operation Process), Sales Force Productivity (0.833 within Marketing), and Customer Service (0.875 within After Sales Service).

c. Resource Capability: Human Resources, Technology Resources, and Organization Resources were weighted equally (0.33 each). Key sub-criteria priorities were Employee Development (0.308 within Human Resources), Technology Implementation (0.664 within Technology Resources), and SOP (0.413 within Organization Resources).

4. Benchmarking

Benchmarking was conducted against direct domestic competitors (ATPM and non-ATPM groups) and global companies.

Table 10 Benchmarking between direct competitors

Benchmarking Object	PT MM	ATPM GROUP			NON-ATPM GROUP		
		IPPI *(Inti Pantja Press)*	FTI *(Fuji Tech Indonesia)*	NTC *(Nusa Toyotetsu)*	MAJ *(Mekar Armada Jaya)*	MES *(Metindo Era Sakti)*	DPM *(Dharma Poli Metal)*
Status Ownership	Local	Local	JV Fuji Technica	JV Toyoda Iron	Local	Local	Local
Annual Capacity	10.1 Mio Stroke	9.7 Mio Stroke	4.3 Mio Stroke	9.1 Mio Stroke	5 Mio Stroke	3.2 Mio Stroke	3.7 Mio Stroke
Certification	3 certificate	1 certificate	2 certificate	2 certificate	N/A	3 certificate	2 Certificate
Customers	10 brands	4 brands	5 brands	2 brands	3 brands	9 brands	5 brands

Direct Competitors: ATPM group companies showed advantages in customer acquisition and technology transfer. Non-ATPM competitors demonstrated strengths in international quality standards and ESG reporting.

Table 11 Benchmarking between global companies

Benchmarking Object	Indonesia (PT MM)	Canada (Magna International)	Spain (Gestamp)	Japan (Aisin)	South Korea (Hyundai Mobis)
Sales	$79.9 million	$42.8 billion	$13.26 billion	$33.32 billion	$27.09 billion
COGS	$71.37 million	$37 billion	-	-	$23.23 billion
After-tax operating profit	$2.8 million	$1.8 billion	$447 million (before tax)	$1.24 billion	$1.70 billion
Energy consumption (renewable)	-	-	-	-	696,000 GJ
Energy consumption (total)		20,243,182 GJ	6,917,665 GJ	28,233,650 GJ	12,546,000 GJ
Health and safety	0 accident and 0 near	-	Total 867; fatal: 0	Serious accidents:	1 fatal injury; 203 cases

Benchmarking Object	Indonesia (PT MM)	Canada (Magna International)	Spain (Gestamp)	Japan (Aisin)	South Korea (Hyundai Mobis)
	miss			0	
Certifications	3 certificate	3 certificate	4 certificate	6 certificate	8 License
Products	Chassis & Body, Fuel Tank, tooling	Seating, body & chassis, electronics, powertrain	Chassis, body, mechanisms	Body chassis & safety systems	Autonomous driving, steering, safety, chassis.
Training	5 hrs/employee	7.5 hrs/employee	28 hrs/employee	-	37.1 hrs/employee
Innovation and R&D expenses	-	$75.5 million	-	$1.53 billion	$1.18 billion

Global Companies: Magna International (Canada) served as a benchmark for revenue and product diversification. Gestamp (Spain) was a reference for metal component manufacturing, Industry 4.0, and sustainability. Aisin (Japan) was a benchmark for R&D and innovation.

Stage 3: Implementation Plan

The implementation plan focused on measure, evaluate, diagnose, and follow-up actions. Key components included:

1. Addressing Current PMS: Recognizing the limitations of the existing financially focused and unintegrated system.
2. PMS Reporting: Defining reporting structures tailored to top management, middle management, and operational levels, with a preference for digital, real-time platforms.
3. Socialization Plan: Emphasizing intensive and sustained communication across all organizational levels.
4. Cost-Benefit Analysis: Highlighting the need to evaluate the value added by the KBPMS implementation.
5. Employee Training: Prioritizing training in PMS Core Training, Digital Transformation & Automation, and Quality Excellence.
6. Resource Allocation: Assigning responsibilities and ensuring necessary resources, including computerized systems for efficiency.
7. PMS Dashboard: Proposing a visual dashboard for integrated, real-time performance monitoring across the three KBPMS perspectives, using color-coding for target achievement.
8. Schedule Plan: A six-month phased rollout plan, covering all KBPMS stages from foundation to refreshment.

This structured approach, from strategic analysis to detailed indicator development and implementation planning, provides PT MM with a comprehensive and actionable new Performance Management System.

Discussion

The new PMS design can bring about changes for PT MM in evaluating its performance. By integrating corporate and operational strategies, this system can improve accountability, continuous improvement, and innovation. Importantly, this system can improve integration across departments, creating integrated and comprehensive performance indicators that were previously unavailable.

By leveraging the KBPMS framework, PT MM can ensure that the PMS aligns with the company's strategic values, business model, and stakeholder expectations. The inclusion of benchmarking mechanisms within the system provides a clear framework for comparing PT MM's performance against industry standards and global best practices.

This PMS proposal is future-oriented, providing input for PT MM to transition to emerging markets such as electric vehicles and other products more effectively and respond to evolving environmental regulations. By shifting the focus from mere output volume to value creation, customer-centricity, and adaptability, PT MM is expected to maintain its position in the rapidly evolving market.

This study also demonstrates the results of the Analytic Hierarchy Process (AHP) in systematically prioritizing each perspective and indicator. This approach transforms subjective management insights into measurable decisions, thereby promoting transparency and consensus in decision-making.

The implementation of KBPMS enables PT MM to transition from a reactive approach to a proactive performance management model aligned with strategy. Forward-looking assessments and continuous improvement can be conducted. Furthermore, the integration of PESTLE analysis and Porter's Five Forces can ensure that PMS remains responsive to macro environmental factors and competitive pressures. In a structured implementation phase, it can enhance stakeholder engagement, cross-departmental collaboration, and capacity development, which form the foundation for sustainable long-term growth.

CONCLUSIONS

PT MM's current Performance Management System (PMS) remains functional but inadequate for supporting the company's ambitions in a rapidly evolving industrial landscape, prompting the development of a new *Knowledge-Based Performance Management System* (KBPMS) that strategically integrates both financial and non-financial KPIs aligned with the company's vision and long-term objectives. This comprehensive system addresses existing departmental performance gaps, enhances decision-making capabilities, and bolsters PT MM's competitiveness while incorporating unique Indonesian manufacturing contexts and mechanisms for continuous improvement. More than just a performance upgrade, the KBPMS framework positions PT MM as a potential leader in innovation, customer value, and sustainability within Indonesia's automotive parts sector, enabling data-driven decisions, improved stakeholder engagement, and enhanced capacity to navigate regulatory changes, capitalize on electric vehicle opportunities, and drive sustainable organizational growth in domestic and international markets.

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