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Production Efficiency Strategy Strategy in Orca Powergear: A Kepner Tregoe Decision Making Analysis

Muhammad Faris Ghiyats Bungaran[1*], Valid Hasyimi[2]
[1]Institut Teknologi Bandung, Bandung, Indonesia, 29124442@mahasiswa.itb.ac.id
[2]Institut Teknologi Bandung, Bandung, Indonesia, valid_hasyimi@sbm-itb.ac.id

*Corresponding Author**:** 29124442@mahasiswa.itb.ac.id[1]

Abstract: Orca Powergear, a motorcycle apparel manufacturer in Bandung, Indonesia, faces a persistent production efficiency problem where customer orders across four product lines consistently exceed available monthly production capacity. This study investigates the root cause and identifies the most appropriate strategy to resolve it. Three analytical frameworks are applied sequentially. Herzberg's Two-Factor Theory, administered through a 14-question Likert scale questionnaire to all 27 sewing team members, validates the presence of a workforce motivation problem. The Kepner-Tregoe Framework traces the root cause through a Focus Group Discussion and the Five-Whys technique. The Analytic Hierarchy Process evaluates three strategic alternatives against four decision criteria using pairwise comparison judgments from four subject matter experts. Results reveal active dissatisfaction with the fixed monthly salary system, with salary fairness and payroll policy clarity scoring means of 1.74 and 2.11 in the Disagree range. The root cause is identified as the absence of a human resource system linking worker effort to financial reward. The Analytic Hierarchy Process identifies the pay-per-item-sewed payroll system as the leading strategy with a Normals score of 70.46%. The study concludes that this payroll transition is the most appropriate and feasible strategy for closing the production efficiency gap at Orca Powergear.

Keywords: production efficiency, workforce motivation, Herzberg Two-Factor Theory, Kepner-Tregoe framework, Analytic Hierarchy Process.

INTRODUCTION

The sports apparel industry has grown at a sustained pace globally, and the motorcycle apparel segment represents a particularly dynamic sub-market. Valued at approximately USD 13.98 billion in 2024, this segment is projected to exceed USD 28.01 billion by 2034 at a compound annual growth rate of 7.2 percent (Zion Market Research, 2025). Indonesia occupies a significant position within this trajectory. Operating one of the largest motorcycle markets in the world, the country is projected to grow at 4 to 5 percent annually through the remainder of the decade, driven by the widespread use of motorcycles as personal transport and by an expanding middle-class consumer base (Inabike, 2023). This growth creates both opportunities

and operational pressures for local manufacturers who must scale production capacity alongside rising demand.

Orca Powergear is one such manufacturer. Based in Bandung, West Java, the company produces racewear, jackets, polo shirts, and pants through an in-house sewing operation staffed by 27 workers. A review of internal order and production data over a nine-month observation period reveals a clear and escalating structural imbalance. Fixed monthly production capacities stand at 840 units for pants, 168 sets for racewear, 756 units for polo shirts, and 441 units for jackets. Against these benchmarks, orders consistently exceeded capacity from June onward, reaching 1,185 pants units, 206 racewear sets, 884 polo shirt units, and 537 jacket units by November. This pattern does not reflect seasonal fluctuation. It is a sustained structural gap between market demand and sewing team output that grows as order volumes increase.

Problems of this nature require more than incremental operational adjustments. They call for structured strategic analysis, because the appropriate response depends critically on identifying the correct root cause. Research in multi-criteria decision making consistently shows that structured analytical approaches outperform intuitive judgment when managers must evaluate alternatives across competing objectives (Fattoruso, 2022; Jamwal et al., 2021; Obaidat & Mumani, 2025). Simon (1955) demonstrated that managers operating under bounded rationality tend toward satisficing rather than optimal solutions, and that the quality of decision-making is improved when structured processes constrain the search space. Kepner and Tregoe (1981) added that the integrity of any strategic intervention depends on its correspondence to the actual root cause rather than to the most visible symptom. A capacity gap can arise from workforce quantity, performance, incentive design, process structure, or some combination of these, and diagnosing the true cause requires evidence and systematic analysis.

The Analytic Hierarchy Process (AHP), introduced by Saaty (1980) and demonstrated across organizational decision contexts by Wind and Saaty (1980) and Saaty (1990), offers one such structured approach for ranking strategic alternatives against multiple weighted criteria. Applied alongside diagnostic tools from Herzberg's Two-Factor Theory and the Kepner-Tregoe framework, AHP has proven effective in management research settings where qualitative judgment must be translated into quantifiable priorities (Ishizaka & Labib, 2011). This study applies all three frameworks sequentially to address the production efficiency challenge at Orca Powergear. The research addresses three questions: how Orca Powergear currently manages its production capacity relative to market demand; what root causes limit production efficiency within the sewing team; and which strategy represents the most appropriate and feasible response to those root causes.

METHODS

This study uses a sequential multi-method research design in which each analytical stage provides the necessary input for the stage that follows. Four data collection methods are applied, each matched to a specific phase of the analytical framework.

The first method is a structured questionnaire based on Herzberg's Two-Factor Theory (Herzberg et al., 1959). Studies applying this framework across different organizational populations have consistently found that salary structure is among the most diagnostically important hygiene factors affecting workforce satisfaction (Dartey-Baah & Amoako, 2011). The instrument used here contains 14 items in two sections. Section A covers seven hygiene factor items: salary fairness, payroll policy clarity, working conditions, job security, supervision quality, collegial relationships, and equal treatment. Section B covers seven motivator factor items: achievement, recognition, meaningful work, personal responsibility, advancement opportunities, skill development, and team pride. All items use a five-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree) (Likert, 1932). Since the sewing team

constitutes a small and fully identifiable population, the census approach is applied to all 27 members, eliminating sampling error from the findings (Sugiyono, 2019). Item means are classified using a three-category interval scale: Disagree (1.00 to 2.33), Neutral (2.34 to 3.67), and Agree (3.68 to 5.00).

The second method is a Focus Group Discussion conducted with the Owner and Operations Manager of Orca Powergear. Two FGD sessions are held. The first supports the Kepner-Tregoe Situation Appraisal, in which participants identify and assess organizational concerns across the timing, trend, and impact dimensions defined by Kepner and Tregoe (1981). The second FGD session establishes the decision criteria and strategic alternatives for AHP analysis. Both sessions are semi-structured, using predetermined question areas while allowing organic discussion to surface concerns not anticipated in the question design.

The third method is a Kepner-Tregoe Problem Analysis Worksheet, completed through observation and follow-up clarification with the Production Supervisor. The worksheet structures the prioritized concern across four specification dimensions: What, Where, When, and Extent. IS and IS NOT conditions are specified for each dimension, distinctions between them are identified, and possible causes are generated. The cause best explaining all IS observations while accounting for the IS NOT conditions is identified as most probable, which then anchors the Five-Whys iterative questioning sequence (Kepner & Tregoe, 1981).

The fourth method is a Pairwise Comparison Questionnaire administered individually to four subject matter experts: the Owner, the Operations Manager, the Production Supervisor, and a sewing team representative. Each respondent evaluates criteria against each other and alternatives against each other under each criterion, using the nine-point Saaty scale (Saaty, 1980). Individual judgments are aggregated using the geometric mean method, which preserves the reciprocal properties of AHP matrices under group aggregation (Aczél & Saaty, 1983; Forman & Peniwati, 1998). Results are computed and verified using SuperDecisions software (Saaty, 2003). All Consistency Ratios must fall below 0.10 before any matrix results are accepted (Saaty, 1980, 2008). The highest-ranked alternative is then analyzed through a Kepner-Tregoe Potential Problem Analysis, which identifies implementation risks and develops preventive and contingent responses for each.

RESULTS AND DISCUSSION

Kepner-Tregoe Situation Appraisal

The Situation Appraisal FGD identified three organizational concerns at Orca Powergear. Table 1 presents the timing, trend, impact, and process assignment for each.

Table 1. Kepner-Tregoe Situation Appraisal Results

Concern	Timing	Trend	Impact	Priority & KT Process
Human resource constraint	Medium (3–6 months)	High	High	High / Problem Analysis
Production inefficiency	Medium (3–6 months)	Medium	Medium	Medium / Problem Analysis
Demand exceeds capacity	High (0–3 months)	High	Medium	High / Decision Analysis

Source: Focus Group Discussion, Owner and Operations Manager (2026)

The human resource constraint received a High overall priority and was routed to Problem Analysis, because workers are present and production is occurring but output consistently falls below expected levels. This is a deviation with an unknown cause, which is the precise condition that Kepner and Tregoe (1981) define as requiring Problem Analysis rather than an immediate move to Decision Analysis. The demand-capacity gap was assigned

to Decision Analysis because its presence is empirically documented and the task is to select a strategic response rather than diagnose an unknown cause. Crucially, both participants confirmed that workforce size was not a concern, eliminating the most common instinctive response to a capacity problem and directing the subsequent analysis toward performance-related factors.

Herzberg's Two-Factor Theory Findings

The questionnaire was completed by all 27 sewing team members. Tables 2 and 3 present the results for Section A hygiene factors and Section B motivator factors respectively.

Table 2. Section A: Hygiene Factor Mean Scores

Code	Statement	Mean	Category
A1	My current monthly salary is fair for the work I do every day	1.74	Disagree
A2	The company payroll policy is clear and easy to understand	2.11	Disagree
A3	My work area is comfortable and safe	3.41	Neutral
A4	I feel secure and not worried about losing my job at this company	3.19	Neutral
A5	My supervisor leads the team fairly and treats employees well	3.15	Neutral
A6	I have a good relationship with my fellow sewing team members	3.37	Neutral
A7	The company treats all sewing team employees fairly and equally	3.07	Neutral
	Section A Overall Average	2.86	Neutral

Source: Questionnaire data, n = 27 (2026)

The results in Section A split clearly along the salary items versus the remaining hygiene conditions. Items A1 and A2, measuring salary fairness and payroll policy clarity, recorded means of 1.74 and 2.11 respectively, both in active dissatisfaction territory. The remaining five items covering working conditions, job security, supervision, collegial relationships, and equal treatment all fell within the Neutral range between 3.07 and 3.41. The section average of 2.86 places the overall hygiene condition at Neutral, but this aggregate reading would obscure the specific and diagnostically important dissatisfaction concentrated in the compensation items. Herzberg et al. (1959) demonstrated that targeted low-scoring hygiene items carry significance disproportionate to their contribution to section averages, because a single source of active dissatisfaction can undermine the employee's entire relationship with their working environment regardless of how adequate other conditions are.

Table 3. Section B: Motivator Factor Mean Scores

Code	Statement	Mean	Category
B1	My sewing work gives me a genuine sense of personal achievement	2.30	Disagree
B2	When I perform well, the company recognizes and appreciates my work	1.89	Disagree
B3	My daily work feels meaningful, not just a repetitive routine	2.04	Disagree
B4	I feel personally responsible for the quality of every item I produce	1.96	Disagree
B5	There are clear opportunities for me to grow or advance at this company	1.85	Disagree

B6	Working at Orca Powergear helps me develop my sewing skills over time	1.70	Disagree
B7	I feel proud to be part of this sewing team	2.41	Neutral
	Section B Overall Average	2.02	Disagree

Source: Questionnaire data, n = 27 (2026)

Section B results were uniformly concerning. Six of the seven motivator items recorded means in the Disagree range. The lowest scores belong to skill development at 1.70 and recognition at 1.89. Achievement scored 2.30, responsibility 1.96, meaningful work 2.04, and advancement opportunities 1.85. Team pride was the single exception at 2.41, sitting at the floor of the Neutral range. The section average of 2.02 confirms that intrinsic motivation is effectively absent from the team's daily work experience. Reading the two sections together through Herzberg's framework, the sewing team occupies a condition that combines active hygiene dissatisfaction with a complete absence of motivators. This is not simply the neutral state that Herzberg et al. (1959) described as the risk organizations overlook. It is a compound condition of dissatisfaction and disengagement operating simultaneously.

Root Cause Diagnosis

The KT Problem Analysis applied IS and IS NOT specifications across the What, Where, When, and Extent dimensions of the human resource constraint. The output gap was found to occur specifically in the sewing stage and not in the cutting or finishing operations, both of which met their throughput targets. The gap intensified during higher-demand months from June onward rather than remaining constant, and it was distributed non-uniformly across individual workers within the same team and working environment, with some approaching expected daily output targets while others fell significantly short under identical conditions.

Three possible causes were developed and tested against the IS and IS NOT specifications. The cause that best explained all IS observations while accounting for the IS NOT conditions was the absence of a mechanism linking individual output to individual financial reward. This cause explains why the gap grows with demand rather than remaining flat, because rising demand increases the difference between what maximum effort could produce and what the fixed system incentivizes. It also explains the non-uniform distribution across workers, because individuals make different discretionary effort choices when there is no financial consequence to producing less.

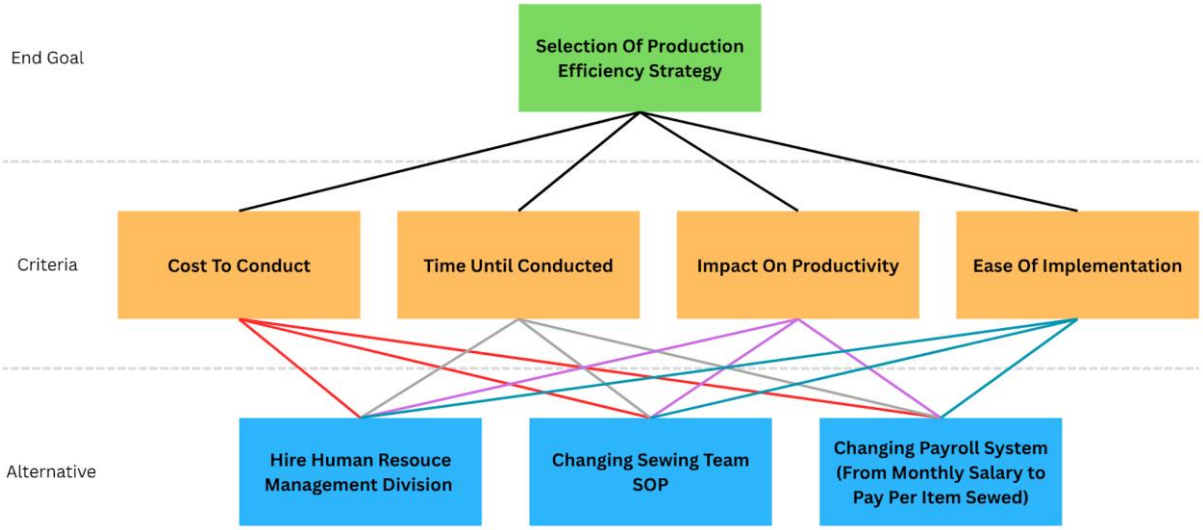
The Five-Whys sequence confirmed this at the structural level. Production output falls below capacity because workers do not produce at their full potential. They do not produce at full potential because their motivation is not consistently maintained. Motivation is not maintained because no system connects individual performance to individual financial reward. No such system exists because the company has not built a human resource management structure that aligns worker effort with financial outcome under varying demand conditions. The root cause is stated as the absence of a structured human resource management system that maintains worker motivation, monitors individual performance, and creates a direct and measurable link between individual effort and individual reward.

Analytic Hierarchy Process Analysis

A second FGD established three strategic alternatives directly relevant to the root cause: changing the payroll system from fixed monthly salary to a pay-per-item-sewed arrangement; revising the sewing team Standard Operating Procedure; and hiring a Human Resource Management Division. Four evaluation criteria were selected: Ease of Implementation, Impact

on Productivity, Time Until Conducted, and Cost to Conduct. Table 4 presents the criteria priority weights.

Figure 1. AHP Hierarchy Structure



Source: Authors' elaboration based on Saaty (1980)

Figure 1 illustrates the three-level decision hierarchy applied in this study. The overall goal sits at the apex, the four evaluation criteria occupy the second level, and the three strategic alternatives are positioned at the third level. Each alternative is connected to every criterion, meaning all three are evaluated across all four criteria simultaneously before the global priority scores are computed.

Table 4. AHP Criteria Priority Weights

Criterion	Priority Weight	Rank
Ease of Implementation	51.43%	1st
Impact on Productivity	26.57%	2nd
Time Until Conducted	14.99%	3rd
Cost to Conduct	7%	4th

Source: Pairwise comparison questionnaire, n = 4 SMEs (2026). CR = 0.0106

Ease of Implementation received 51.43 percent of the total decision weight, reflecting consistent judgment among all four SMEs that practical feasibility is the primary determinant of a strategy's real-world value for a company of Orca Powergear's size. Impact on Productivity followed at 26.57 percent, recognizing that a solution which does not generate measurable output improvement serves no strategic purpose regardless of how easily it is adopted. Time Until Conducted at 14.99 percent reflects the urgency identified in the Situation Appraisal, and Cost to Conduct at 7 percent reflects the view that cost differences among the three alternatives are secondary to feasibility and impact considerations. The CR of 0.0106 confirms logical coherence across all judgments. Table 5 presents the global priority synthesis from SuperDecisions.

Table 5. SuperDecisions Global Priority Results

Alternative	Normals	Ideals	Rank
Changing Payroll System (Pay Per Item Sewed)	0.704647 (70.46%)	1.000000	1st

Changing Sewing Team SOP	0.214290 (21.43%)	0.304110	2nd
Hiring HR Management Division	0.081064 (8.11%)	0.115041	3rd

Source: SuperDecisions software synthesis (2026)

The Payroll System change received a Normals score of 70.46 percent and an Ideals score of 1.000, establishing it as the dominant alternative by a substantial margin. The SOP change performed at approximately 30 percent of the payroll change's level on the Ideals scale, and the HR Division alternative at approximately 11 percent. This outcome is consistent across all four evaluation criteria and across all four independent respondents, which reinforces its robustness beyond what any single comparison or single evaluator could confirm.

The theoretical coherence of this result deserves careful attention. Herzberg et al. (1959) classified salary as a hygiene factor, and this classification is correct for a fixed monthly salary structure precisely because fixed pay is decoupled from individual performance. No matter how hard a worker produces on a given day, their compensation at month's end remains identical. Under this arrangement, pay cannot serve as a source of achievement, recognition, or personal responsibility in the sense Herzberg described, because those motivator properties require a visible and direct correspondence between individual effort and individual outcome. A piece-rate compensation system removes that decoupling. When a worker's daily earnings are calculated from the number of quality items they complete, the financial outcome of each shift becomes a concrete and specific measure of their own effort. The experience of producing more and earning more carries the structure of achievement; the financial differentiation between high and low output days carries the structure of recognition. Locke (1968) showed that specific and measurable performance outcomes serve as powerful motivational anchors, which is precisely what piece-rate counting creates in the context of sewing production.

Lazear (2000) provided empirical validation of this mechanism at Safelite Glass Corporation, where piece-rate adoption generated approximately 44 percent productivity gains, with roughly half attributable to the achievement and recognition effects of performance-linked pay rather than to the direct financial incentive alone. Shearer (2004) replicated this finding in a controlled field experiment, observing sustained productivity improvements under piece-rate compensation that persisted beyond the initial adjustment period. Ryan and Deci (2000) noted that extrinsic rewards do not necessarily undermine intrinsic motivation when they are structured to support individual autonomy and competence, which is precisely the case when piece-rate pay rewards skilled, self-directed output rather than simple task completion. The piece-rate payroll system is therefore the only alternative among the three evaluated that addresses both the hygiene dissatisfaction identified in Section A and the motivator deficit documented in Section B simultaneously, rather than treating only one dimension of the Herzberg findings.

Potential Problem Analysis and Implementation Plan

The Kepner-Tregoe Potential Problem Analysis identified five implementation risks for the recommended payroll transition. Table 6 summarizes each risk with its preventive and contingent actions.

Table 6. KT Potential Problem Analysis: Pay-Per-Item Implementation Risks

Potential Risk	Preventive Action	Contingent Action
Decline in product quality	Supervisor quality sign-off required before items are added to daily count	Deduct rejected items from worker tally; require corrective session before resuming

Worker resistance during transition	Pre-launch briefing with projected earnings simulations under the new system	Temporary minimum earnings floor for the first three months of full implementation
Income drop during low-order periods	Guaranteed minimum daily workload allocation per worker in production planning	Activate partial standby payment when verified downtime falls below daily threshold
Disputes over item counting accuracy	Dual-count system: worker and supervisor independently verify and sign off per shift	24-hour dispute resolution procedure managed by Operations Manager
Exit of experienced workers	Tiered piece-rate structure assigning higher rates per item to advanced skill levels	Urgent retention interviews with at-risk senior workers; explore supplementary allowances

Source: KT PPA analysis based on observation findings (2026)

Quality decline carries the highest risk score, because piece-rate incentives may lead workers to sacrifice accuracy for speed. Supervisor quality sign-off before items are added to a worker's daily tally is the primary control for this risk, ensuring that compensation corresponds to acceptable output rather than total output. Worker resistance and income instability are both addressed through a pre-launch earnings simulation briefing that gives workers concrete projections of their expected income at different performance levels, combined with a temporary minimum earnings floor for the first three months of full implementation. This floor is not permanent; it functions as a bridge while workers adapt to the new compensation structure.

The exit of experienced workers carries the lowest likelihood but the highest possible impact, because the productivity gains the AHP projected depend on retaining the team's most skilled sewers. A tiered piece-rate structure that assigns higher per-item rates to workers at advanced skill and seniority levels is the structural mechanism that makes the system equitable for high performers and reduces their financial incentive to leave. The implementation plan spans six months across five phases: system design and policy formulation in Month 1; worker briefing and supervisor training in Months 1 to 2; a parallel trial run in Months 2 to 3 where piece-rate tracking operates alongside the existing salary without financial consequence; full system launch with the minimum earnings floor in Months 3 to 5; and monitoring, evaluation, and adjustment in Months 4 to 6.

CONCLUSION

Orca Powergear's production efficiency problem is structural. Orders across all four product lines have exceeded fixed monthly production capacity consistently throughout the observation period, with the gap worsening specifically as demand increased from June onward. The persistence and direction of this pattern, intensifying with demand rather than remaining flat, rules out fluctuation and points toward a systemic performance constraint within the sewing operation itself.

The Kepner-Tregoe Problem Analysis and Five-Whys technique establish that the root cause is the absence of a structured human resource management system linking individual worker effort to individual financial reward. This finding is grounded in the Herzberg Two-Factor Theory analysis, which documents active salary dissatisfaction among all 27 sewing team members, with salary fairness scoring 1.74 and payroll policy clarity scoring 2.11, alongside an almost complete absence of motivators with a Section B average of 2.02. These two findings together confirm a workforce that is both actively dissatisfied and intrinsically disengaged.

The AHP analysis, conducted with four subject matter experts across four decision criteria, identifies the pay-per-item-sewed payroll system as the most appropriate strategic

response, with a Normals score of 70.46 percent and an Ideals score of 1.000. This result is robust across all four criteria and all four independent respondents. The payroll change addresses both the hygiene dissatisfaction in Section A and the motivator deficit in Section B, making it the only evaluated alternative that engages the full scope of the workforce motivation problem.

The Potential Problem Analysis confirms that implementation is feasible but requires proactive management of five specific risks, with quality control and experienced worker retention being the most critical. The six-month, five-phase implementation plan provides a structured path for managing these risks before the system reaches full financial operation. This study is limited to a single company case over a nine-month observation period, which constrains the generalizability of its findings to other contexts. Future research should track actual productivity outcomes over 12 to 24 months following implementation to test the AHP-projected gains empirically, and could extend the same analytical framework to other functional teams or to comparable manufacturers in the Indonesian garment sector.

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