

ENTERPRISE PERFORMANCE MEASUREMENT ANALYSIS MODEL USING INTEGRATED PERFORMANCE MEASUREMENT SYSTEM (IPMS)

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Abstract

A manufacturing company producing crystal ice and block ice that prioritizes product quality and service quality. Located in the city of Bandung, the company's production is intended for the food and beverage industry to ice carving. In 2022 to 2023, there was a decline in sales from year to year at the XXX Ice Factory. This decline in sales indicates that the business is not growing, and the decline in productivity indicates that there are serious problems in it. In addition, as observed directly at PT XXX, there is an increase in increasingly competitive business competition in similar industries, especially in the current era. Therefore, every company must create and review the management of performance management that has been used in the sustainability of the company's business processes so that it can survive in the competitive market industry. In addition, PT XXX has never conducted a comprehensive performance measurement involving stakeholders. Factors that influence performance are based on several aspects that are indicators for measuring performance, namely human resources, work safety, finance, work facilities, Supplier Performance, and employee welfare. This company performance measurement assesses the company's performance in terms of financial and non-financial aspects. Company performance measurement using the Integrated Performance Measurement System (IPMS) method has 11 stakeholders in the company

Keyword : *Analytical Hierarchy Process (AHP) , Integrated Performance Measurement System (IPMS), Kinerja, Objective Matrix (OMAX), Performance*

INTRODUCTION

The modern business world faces many changes due to the complexity and turbulence of its business environment. Management must be able to adapt to each of these changes. Companies must be able to keep up with developments in terms of internal and external to survive in the business industry with tight competition (Arffien n.d.). As the business world becomes more complex, competition, production, supply chain, HR management, and marketing undergo major changes. With this phenomenon, companies must conduct performance evaluations to measure how well management uses available resources to run business processes (Dewi & Harjoyo, 2019) in (Nofia Sherli 2022). In addition, a company's ability to manage available resources so that it can reduce costs in dangerous situations or is hampered by internal parties can show how good its management is. In several previous studies, several researchers stated that they must design a supply chain network for efficient, effective and strategic production and distribution so that the supply chain network plays a key factor in increasing customer satisfaction ((N. K. Dewi et al. 2017). In this case, companies in managing the supply chain of raw materials and goods need to integrate the supply chain network (Nurlaela Kumala Dewi, Pradono, Miming Miharja 2018), Meanwhile, other research conducted shows that for successful company management, a systems approach is needed, which is a way of solving problems that begins with identifying a number of needs so that it can produce effective system operations (N. Dewi, Miharja, and Yudoko 2015).

In addition, a company's ability to manage available resources so that it can reduce costs in dangerous situations or is hampered by internal parties can show how good its management is. PT

XXX is one of the manufacturing companies producing crystal ice and block ice that prioritizes product quality and service quality. Located in the city of Bandung, the company's production results are intended for the food and beverage industry to ice carving. PT XXX views product quality as a very important aspect in order to achieve sales success and win the competition which is supported by good quality service to consumers. Several aspects of product quality and service quality that are emphasized in PT XXX's business activities are first, the ice block and crystal products produced are very clear. Second, providing special distribution vehicles for delivery, providing cool box and freezer facilities, and discounts for every purchase of a certain amount. PT. XXX in 2022 to 2023 experienced a decline in sales from year to year at the XXX Ice Factory. This decline in sales indicates that the business is not growing, and the decline in productivity indicates that there are serious problems in it. This can be attributed to falling prices, sales volume, marketing ability, products that are less in demand, and other factors. In addition, as directly observed by PT XXX, there is an increase in increasingly competitive business competition in similar industries, especially in the current era, which requires companies to gradually improve company performance. Therefore, every company must create and review the management of performance management that has been used in the sustainability of the business processes run by the company so that it can survive in the competitive market industry. In addition, PT XXX has never conducted a comprehensive performance measurement involving stakeholders.

METHOD

In this study, the Integrated Performance Measurement System method was used, and a weighting analysis was conducted using the Analytical Hierarchy Process method, determining the score using the Objective Matrix.

a. Integrated Performance Measurement System

IPMS is used to specifically identify what requirements are needed for the functions in company management that will be stated in the form of KPIs. IPMS uses random sampling, namely by selecting stakeholders who already understand the company's business activities. The IPMS model is divided into 4 levels, namely parent business, business unit, business process, business activity. In the implementation of IPMS, there are 7 stages, namely identifying stakeholders, identifying stakeholder needs, conducting comparative studies with competing companies, identifying the objectives of stakeholder needs, identifying Key Performance Indicators (KPIs), validating KPIs, and weighting KPIs with AHP.

1. Identification of the company's business level

In the IPMS method stage, there is an identification of 4 company levels, namely the business unit level is the head office of PT. XXX Bandung, the business unit level is the SP Bandung Unit, the business process level is internal and external stakeholders, the activity level is activities related to ice manufacturing at PT. XXX Bandung.

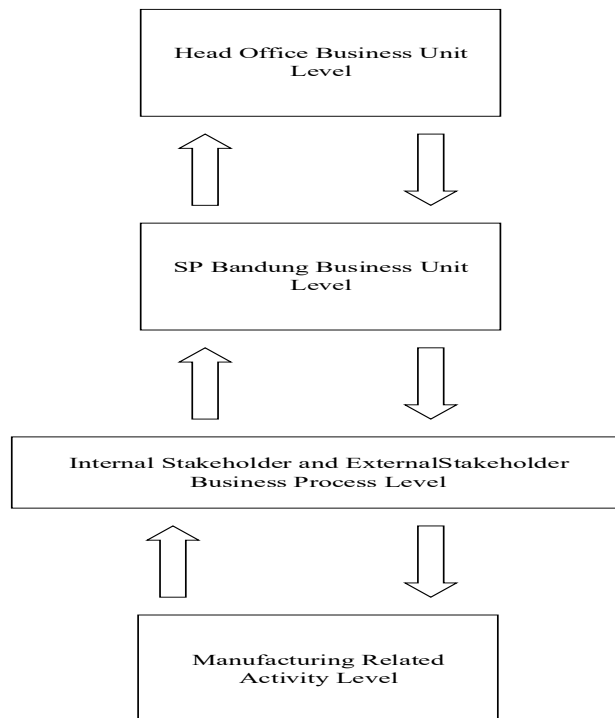


Figure 1 IPMS Model

The picture explains about

1. Identification of company stakeholders
This study includes 11 (eleven) identified stakeholders, namely Deputy, Unit Manager, Assistant General Manager & Finance, Human Resources Supervisor, General Supervisor & Procurement, Staff, Assistant Production Manager, Production Staff, Sales Assistant, Crystal Ice Sales Supervisor, Staff, Supplier, Consumers.
2. Identification of Stakeholder Needs
At this stage, stakeholder requirement identification is carried out by distributing stakeholder requirement questionnaires to respondents.
3. Identification of External Monitors
The next step is to identify the company's external monitor, with the aim of identifying the company's shortcomings and advantages in terms of the level of importance of the two companies. The benchmarking process is carried out on competing companies that have characteristics with the company being studied, namely PT. Bandung Ice (es Atlas). Identification is carried out using a questionnaire, respondents who fill out the questionnaire are people who know and are familiar with the company well
4. Objectives Identification
Objectives identification is carried out to place the objectives of the requirements and is arranged based on the identification of the needs of the company's stakeholders.
5. Key Performance Indicator Identification
After obtaining the objective requirements, based on the requirements that have been identified for each stakeholder and also from the results of benchmarking with competing companies.
6. Key Performance Indicator Validation
The Key Performance Indicator validation process is carried out on all KPIs that have been identified based on existing requirements. The validated KPIs can be used as performance measurement indicators for the es crystal division at PT. XXX

Bandung. A total of 27 Key Performance Indicators (KPIs) have passed the validation process carried out by the company, therefore the existing KPIs can be performance indicators for the es crystal division at PT. XXX Bandung as a whole.

Table 1 Objective Identification

Building good relationships with consumers , especially in the fast food sector	Product defects
Addition of work contracts with new consumers	Delays in delivery of goods by suppliers
The number of employee needs for each department is met	Optimization of procurement capacity
Recruitment process is carried out quickly	Socialization regarding occupational safety routinely
Employee competence	Scheduling for periodic maintenance of work facilities
Addition of large-scale machines to increase company revenue	Occupational safety aspects
Revenue growth rate	K3 equipment is met
Employee skills training	Accuracy of material quantity by suppliers
Number of promotions and work recognition from the company	Ongoing communication
Employee discipline level	accuracy of consumer order fulfillment
SOP implemented	Increase in regular consumers
Periodic renewal of production equipment	accuracy in delivery of goods
repairs to old machines as a backup	response to customer complaints
fulfillment of materials by suppliers	

7. Key Performance Indicator Weighting

The KPI weighting uses the Analytical Hierarchy Process (AHP) which will be given weighting to 11 expert respondents, namely Deputy, Unit Manager, Assistant General Manager & Finance, Human Resources Supervisor, General Supervisor & Procurement, Staff, Assistant Production Manager, Production Staff, Sales Assistant, Crystal Ice Sales Supervisor, Staff/Technician, Supplier, Consumer. The weighting in this study uses the AHP method.

b. Analytical Hierarchy Process

The Analytical Hierarchy Process (AHP) is used to weight the KPI. The Analytical Hierarchy Process (AHP) breaks down problems in a systematic framework of thinking so that they can be communicated to support effective decision making. The Analytical Hierarchy Process (AHP) can be used to process data from one selected respondent. However, in its implementation it is carried out by several experts for an alternative creative assessment (D. A. K. Wardhana and Prastawa

2017). The assessment weight used in group assessment is stated by finding the geometric mean of the assessment data that has been taken from all group members. The hierarchical structure of KPI is as follows.

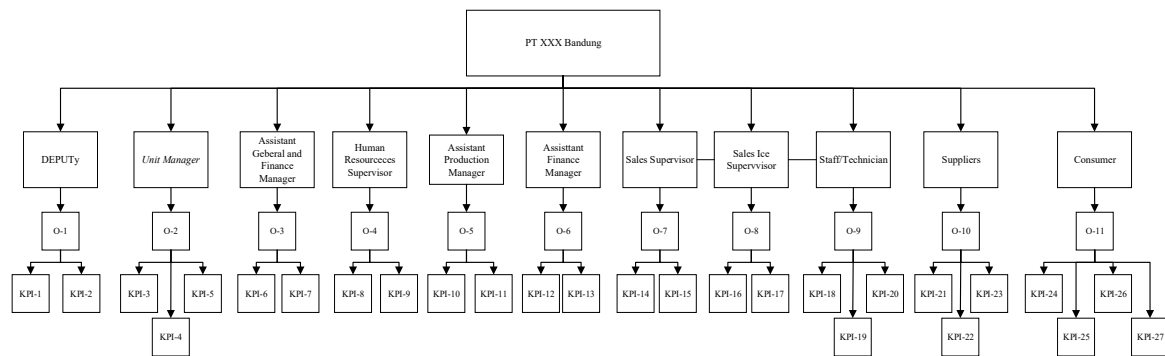


Figure 1 Company Performance Hierarchy

The following is an explanation of Figure 1 regarding O-1 to O-11 and KPI 1 to KPI 30:

O-1: Building trust and business expansion with business partners

O-2: Implementing an optimal recruitment system

O-3: Improving the company's financial performance

O-4: Developing effective career management

O-5: Creating a conducive work environment

O-6: Ensuring the quality of the production equipment used is well maintained

O-7: Ensuring supplier reliability

O-8: Ensuring fulfillment of production needs

O-9: Ensuring safety and work needs are met

O-10: Improving and maintaining relationships with suppliers

O-11: Improving and maintaining customer satisfaction

KPI 1: Building good relationships with consumers, especially in the fast food sector

KPI 2: Adding work contracts with new consumers

KPI 3: The number of employee needs for each department is met

KPI 4: The recruitment process is carried out quickly

KPI 5: Employee competence

KPI 6: Adding large-scale machines to increase company revenue

KPI 7: Revenue growth rate

KPI 8: Employee skills training

KPI 9: Number of promotions and work recognition from the company

KPI 10: Employee discipline level

KPI 11: Implemented SOP

KPI 12: Periodic renewal of production equipment

KPI 13: Repair of old machines as a backup

KPI 14: Fulfillment of materials by suppliers

KPI 15: Product defects

KPI 16: Delay in delivery of goods by suppliers

KPI 17: Optimization of procurement capacity

KPI 18: Routine socialization of work safety

KPI 19: Scheduling for periodic maintenance of work facilities

KPI 20: Occupational safety aspects

KPI 21: K3 equipment is fulfilled

KPI 22: Accuracy of material quantity by suppliers

KPI 23: Continuous communication

KPI 24: Accuracy of consumer order fulfillment
 KPI 25: Increase in regular consumers
 KPI 26: Accuracy in delivery of consumer goods
 KPI 27: Responsiveness to customer complaints

Table 2 Weighting results with AHP

No	Stakeholder	Criteria Name	Weight	Company Performance Needs	KPI Weight	Total KPI Weight	KPI Ratio Consistency	Information
1	Deputy	Building trust and business expansion with business partners	0.03	Building good relationships with consumers, especially in the fast food sector	0.19	0.0057	0.08	Consistent
				Addition of work contracts with new consumers	0.81	0.0243		
2	Unit Manager	Implementing an optimal recruitment system	0.03	The number of employee needs for each department is met	0.21	0.0063	0.00	Consistent
				The recruitment process is carried out quickly	0.12	0.0036		
				Employee Competence	0.67	0.0201		
3	Assistant General and Finance Manager	Improve the company's financial performance	0.02	Addition of large scale machines to increase company revenue	0.17	0.0034	0.07	Consistent
				Revenue Growth Rate	0.83	0.0166		
4	General and Inventory Supervisor	Developing effective career management	0.08	Skill training for employees	0.21	0.0168	0.00	Consistent
			0.08	Number of promotions and work recognition from the company	0.79	0.0632	0.00	Consistent
5	Human Resources Supervisor	Creating a conducive work environment	0.12	Employee discipline level	0.18	0.0216	0.00	Consistent
				SOP implemented	0.82	0.0984		
6	Assistant Production Manager	Ensure the quality of the production equipment used is well maintained	0.05	Regular updates of production tools	0.84	0.042	0.00	Consistent
					0.16	0.008		
7	Assistant Sales Manager	Ensuring supplier reliability	0.04	Material fulfillment by suppliers	0.15	0.006	0.00	Consistent
				Product defect	0.85	0.034		
8	Sales Supervisor	Ensuring fulfillment of	0.07	Delay in delivery of goods by supplier	0.81	0.0567	0.00	Consistent

		production needs		Capacity Optimization of procurement	0.19	0.0133		
9	Staff Technician /	Ensuring safety and work needs are met	0.21	Routine socialization regarding work safety	0.41	0.0861	0.09	Consistent
				Scheduling for periodic maintenance of work facilities	0.30	0.063		
				Occupational safety aspects	0.18	0.0378		
				K3 equipment is fulfilled	0.11	0.0231		
10	Supplier	Improve supplier relationships	0.17	Accuracy of material quantity by supplier	0.17	0.0289	0.03	Consistent
				Continuous communication	0.70	0.119		
11	Consumer	Increase and maintain customer satisfaction	0.19	Accuracy of customer order fulfillment	0.41	0.0779	0.08	Consistent
				Increase in regular consumers	0.30	0.057		
			0.19	Accuracy in delivery of goods	0.18	0.0342	0.08	Consistent
					0.11	0.0209		

Based on the weighting table using Microsoft Excel above, the largest criteria weight is obtained by Ensuring safety and work needs are met, which is 0.21, then the smallest criteria weight is Improving the company's financial performance, which is with a weight of 0.02. While the largest KPI weight is obtained by the KPI Timeliness of delivery, which is 0.85, then the smallest KPI weight is the KPI K3 Equipment is met and the KPI Responsive to customer complaints, which is with the same weight of 0.11. Based on the criteria, sub-criteria KPIs that have been weighted, the weight for the total KPI must be calculated using the formula below.

$$\text{Total KPI Weight} = \text{Objective Weight} \times \text{KPI Weight} \dots\dots\dots (1)$$

Overall KPI, the consistency ratio obtained is below 0.10. This means that the assessment obtained between the criteria, sub-criteria of the Key Performance Indicator (KPI) is consistent or the CR value <0.10.

c. Objective Matrix

The Objective Matrix is used to determine the score for each indicator. This measurement model is unique because it combines work group performance criteria into a matrix. Each performance criterion has a specific feedback menu and is weighted based on its level of importance to the productivity sales objective. A single score for the work group is the final result of this review. The Objective Matrix (OMALX) is a measurement system in which all company staff members are assessed, feedback, and report their unit's performance. Each of these KPIs will be used as a reference for calculations using OMAX. Next is to complete the matrix cells in OMAX which will be combined with the traffic light system method, where for categories level 0 to level 3 are marked

in red which means performance has not been achieved, levels 4 to level 7 are marked yellow which means meeting the target so that performance is achieved but still requires supervision and levels 8 to level 10 are marked green which means performance has been achieved. The research data used as a reference for previous data, the lowest data, current condition data and target data are collected based on company data and interviews with each stakeholder who understands the company's performance. The data collected is based on data from January 2022 - December 2023.

RESULT AND DISCUSSION

With the growing development of Industry 4.0 (I4.0) and digital transformation are considered as important topics on the agenda of stakeholders in society, academics, researchers, practitioners and policy makers. These digital, intelligent and networked systems are embedded in different global/local contexts, which include society, organizations and people (Garrido, Muniz, and Batista Ribeiro 2024). Therefore, company management needs to carry out supply chain performance effectiveness, companies need to be evaluated to see the achievement of company performance against predetermined targets such as measuring performance, to determine the company's position in business competition (Prasetya et al., 2019) in (I. K. Y. Wardhana, Jufriyanto, and Rizqi 2023) and are expected to improve performance after evaluation (Putri & Handayani, 2015) in (Febryansyah and Baldah 2022). In several previous studies, one of them is the SCOR analysis method, which is a method created by the Supply Chain Council to assess and compare all Supply Chain performance activities (Bolstorff and Rosenbaum 2011). The SCOR model can describe activities in operations management, and allows for benchmarking against other supply chains as a facility in communication with other stakeholders, by measuring the achievement of supply chain performance (Khairani et al. 2023). In other studies that are often conducted, measuring existing company performance (key performance indicators) using the Balanced Scorecard Method, which consists of four measurement perspectives, namely: financial perspective, customer perspective, internal business process perspective and growth and learning perspective. (Irayanti Adriant 2018). Research emphasizing quality management has been conducted so that the quality of performance can be in accordance with what is expected in the underlying research to improve output quality through operational control. This concept has been known in the production sector, but in further developments, the concept of quality management has also been applied to other sectors, such as the service sector (Gaffar et al. 2024).

Based on the research results, 27 indicators were obtained as references for performance measurement. Overall, the assessment obtained between the criteria, sub-criteria of Key Performance Indicator (KPI) is consistent or CR value <0.10 . which can be interpreted that all criteria and sub-criteria, and KPI are consistent. Performance measurement uses the objective matrix (OMAX) method and classification using the Traffic Light System method. The meaning of the color classification in the Traffic Light System for the red color means that performance has not been achieved, the yellow color means that it meets the target so that performance is achieved but still requires supervision and the green color means that performance has been achieved. The results of performance measurement at PT. XXX there are KPIs with 2 green KPIs which means that the target has been achieved, 14 KPIs with yellow colors which means that the target has not been achieved, and there are 11 red KPIs which means that it is still far from the target. The following is a table of the results of company performance measurement using the IPMS method.

Table 3 The results of company performance measurement using the IPMS Method

Key Performance Indicator	
Addition of large scale machines to increase company revenue	Accuracy of material quantity by supplier
Amount of timely payments	Continuous communication
Skill training for employees	Increase in regular consumers
Building good relationships with consumers, especially in the fast food sector	Accuracy in delivery of goods
Addition of work contracts with new consumers	Respond to customer complaints
The number of employee needs for each department is met	The recruitment process is carried out quickly
Employee Competence	Revenue Growth Rate
Number of promotions and work recognition from the company	Regular updates of production tools
Employee discipline level	Material fulfillment by suppliers
SOP implemented	Product defect
Delay in delivery of goods by supplier	Routine socialization regarding work safety
Capacity Optimization of procurement	Scheduling for periodic maintenance of work facilities
Occupational safety aspects	Accuracy of customer order fulfillment
K3 equipment is fulfilled	

CONCLUSION

company performance results, it can be concluded. Factors that influence performance are based on several aspects that are indicators to measure performance, namely human resources, work safety, finance, work facilities, Supplier Performance, and employee welfare. This company performance measurement assesses the company's performance in terms of financial and non-financial. Company performance measurement using the Integrated Performance Measurement System (IPMS) method has 11 stakeholders in the company.

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