



PERFORMANCE ANALYSIS OF TOY COMPANIES USING BALANCED SCORECARD METHOD INTEGRATED WITH OMAX AND TLS (Case Study: PT. X)

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ABSTRACT

PT. X is a company engaged in the toy industry. Located in Surabaya, this company has the vision to become a quality and professional toy manufacturer. Along with the increasingly intense competition in the industrial world, every company must compete to improve its performance evenly. So far, the performance measurement conducted by PT. X only tends to financial measures, so other factors receive less attention. It will impact delays in the process of achieving the vision set by the company. Against the background of these problems, it is necessary to conduct a thorough performance appraisal using the balanced scorecard method integrated with the factual matrix (OMAX). PT.X Performance Evaluation Results using the balanced scorecard method weighted 16 key performance indicators (KPI) with the Objective Matrix (OMAX). 4 KPIs belong to the green category, which means that they have exceeded the target, 7 KPIs belonged to the yellow category, which means that it needs to be improved so the performance can be improved according to the targets expected by the company, and 5 KPIs belonging to the red category which means it needs special attention to get it immediately corrective action.

Keywords: Balanced scorecard, Performance Analysis, OMAX

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1. INTRODUCTION

Company performance is the result obtained from the company's operating activities. Good company performance is an important requirement so that the company can survive in the competition. PT. X is a limited liability company engaged in the toy industry by producing various products for baby equipment and toys such as strollers, baby walkers, baby cars, tricycles, and many more. PT. X has the vision to become a quality and professional toy manufacturer in Indonesia. However, the performance measurement that has been carried out so far tends to be financial measurement, so it appears that the performance of other factors that are less evaluated, such as the customer perspective, internal business processes as well as the learning and growth perspective. Due to the performance of PT. X in the financial sector indicates an increase in achievement because it causes the vision and mission to only be a slogan without the support of accurate preparation. Meanwhile, company growth requires a more complex evaluation.

Performance measurement is an important factor that is often overlooked in an organization. Performance measurement is a mechanism, a sequence that will guide the organization in implementing its strategy in the growth and development of the organization. to implement an appropriate performance mechanism, an organization should evaluate a performance measurement system (Koesomowijoyo, 2017). There are 4 key factors in the performance measurement system, namely:

1. Setting plans and goals
2. Developing appropriate actions
3. Reporting and formal
4. Utilization of information

With performance measurement, an assessment will be made of the success or failure of the implementation of activities/programs that have been carried out following the goals and objectives that have been implemented (Wuwungan et al., 2019).

The Balanced Scorecard (BSC) is a strategy evaluation and control technique. BSC can also be defined as a measuring tool for the success of an organization by connecting several performance measurement techniques that cover four perspectives, namely, finance, customer business internal process, learning and growth (Sirajuddin et al., 2021). With the balanced

scorecard, industry goals are not only stated in financial terms but also in how companies create value for their current and future customers, and how an industry must develop its internal capabilities including investment in people and systems. Services and procedures needed to improve future performance. With a balanced scorecard, financial and non-financial performance measures become part of the information system for all employees and all levels of the organization (Puspitasari, 2021).

Analytical Hierarchy Process (AHP) is a method presented by Thomas L. Saaty which has been widely used to solve various problems for research and business purposes. In applying the AHP, considerations are quoted by comparing in pairs the alternatives to be selected using a pairwise comparison questionnaire where the importance weight assessment involves expert respondents who understand the goals and objectives of the industry with the following importance level scale (Sudewo et al., 2020) :

- Equally important (1): two elements contribute equally to the objective
- Moderate importance (3): Experience and judgment favor one factor slightly to moderately over another.
- Significant (5): One factor is strongly or essentially favored over another by experience and judgment.
- Very strongly important (7): A factor is strongly preferred over another, and its dominance is demonstrated in practice.
- Extremely important (9): the evidence of favoring one factor over another is of the highest degree possible of an affirmation
- 2,4,6,8 is a midpoint between the two considerations above.

AHP is a technique used in making decisions on complex issues such as planning, identifying alternatives, prioritizing, selecting policies, allocating resources, identifying needs, forecasting needs, planning, performance, optimization, and more objective or subjective resolution of variance (Masitha and Anjar, 2018).

The OMAX method is the method used in this study. OMAX is a performance evaluation procedure using achievement indicators and a weighting procedure to obtain a total productivity index. The OMAX measurement model groups productivity criteria into a form

that is aligned and connected using a measurement scale of 0 – 10 (Effendy, 2021). The increased value for each level in the OMAX table starts from level 0 to level 10, so there are 11 levels for each criterion. Level 0 is the lowest level or lowest level, level 3 is the baseline or initial value for the first measurement, and level 10 is the highest level of performance measurement. The value of each level of increase is used as a benchmark for the estimates obtained as a result of obtaining each level of calculation.

The Traffic Light System is a symbol shown for categorization if the value of a performance evaluation indicator requires whether or not improvement is required (Peryoga, 2018). The green color indicates that the productivity criteria have exceeded the productivity target achieved on a scale of 8-10, the yellow color indicates that the productivity value has not been reached on a scale of 4-7, and the criterion red indicates that the level of productivity achievement has not been achieved on a scale between 0 to 3 (Sirait, 2020). The color group scale makes it easy for an industry to assess company performance that is following the target or that does not reach the target (Putri and Surjasa, 2018).

Performance measurement using traditional performance measurement methods is more inefficient in the current economic era because it only measures financial dimensions, does not fulfilling non-financial conditions, and cause and effect not focusing on company sustainability (Kholmi, 2019). In this study, the balanced scorecard method was used to evaluate the performance of PT. X is studied from four perspectives. Based on this Balanced Scorecard measurement system, it is very important to look at other aspects to achieve balance in performance measurement. The Analytical Hierarchy Process (AHP) will also be used for weighting. In addition, the objective matrix (OMAX) method is also used. The results of the analysis of the balanced scorecard assessment then look for achievement scores or performance score systems for PT. X uses the objective matrix (OMAX) to assess product performance and to provide performance position information in the form of color zones using the traffic light system (TLS).

2. METHODS

This study aims to determine the performance of PT. X, a company engaged in the toy industry, uses the balanced scorecard method, which is integrated with OMAX and TLS. Primary data was obtained from direct observation at work, interviews with competent employees, and distribution questionnaires. Meanwhile, secondary data was obtained from company documents in the form of company performance data for 2020 and 2021.

The problem-solving steps in this research are carried out as follows:

1. Identify the Key Performance Indicators (KPI).
2. Weighting the KPI using Analytical Hierarchy Process (AHP) to determine the most influential KPI. The consistency test uses the formula from the Consistency Index (CI) and Consistency Ratio (CR) :

$$CI = \frac{\lambda_{\max} - n}{n-1} \quad (1)$$

Notes :

$\lambda_{\max}$: Eigenvalue maximum

n : The number of items being compared

$$CR = CI / RI \quad (2)$$

Notes :

CI : Consistency Index

RI : Random indeks

3. Scoring system using Objective Matrix (OMAX) and Traffic Light System (TLS)

3. FINDINGS AND DISCUSSION

In this study, the required data was obtained from the questionnaire of five employees of PT. X had filled it out. The preparation of a performance appraisal questionnaire consists of 4 perspectives: finance, customer, internal business process, learning and growth. This questionnaire is prepared for weighting key performance indicators (KPI) in the form of a pairwise comparison questionnaire.

3.1. Identification of KPI

The Balanced Scorecard is divided into four basic management processes based on the model. From the four fundamental management can be identified key performance indicators, as shown in the following table:

Table 1. KPIs from Each Perspective

Perspective	KPI	KPI Code
Finance (P1)	ROE (Return on equity)	(KPI-1)
	ROA (Return on assets)	(KPI-2)
	The profit margin on sales	(KPI-3)
	ROI (Return on Investment)	(KPI-4)
Customer (P2)	Customer retention	(KPI-5)
	Number of new customers	(KPI-6)
	Number of complains	(KPI-7)
Business Internal Process (P3)	Number of new product	(KPI-8)
	On-time delivery	(KPI-9)
	Number of new machine usage	(KPI-10)
	Product rejection (not according to Quality Control)	(KPI-11)
	Work accident	(KPI-12)
Learning and Growth (P4)	Employee productivity	(KPI-13)
	Number of training programs	(KPI-14)
	Employee retention	(KPI-15)
	Employee turnover	(KPI-16)

3.2. Weighting Using AHP

Weighting is based on a research questionnaire that assesses the level of importance of each perspective and each KPI perspective indicator. In this study, weighting was carried out using the Analytical Hierarchy Process (AHP). The weight values (P1, P2, P3, P4) are obtained from the value of each box divided by the sum of all values from similar columns. Furthermore, to get the weight value, add up each value from identical rows and divide it by the number of perspectives calculated.

Before the weights of all variables are declared valid, a consistency test is first carried out to check the assessment's consistency. Suppose the value of the consistency ratio (CR) exceeds 10% ($CR > 10\%$). In that case, the evaluation is repeated until a good consistency level is obtained, namely $CR < 10\%$, the evaluation is considered valid to find the eign factor by multiplying the weight matrix with the data matrix.

3.2.1. Each Perspective

The table below will show the calculation to get the λ max value for each perspective.

Table 2. λ Max Value for Each Perspective

BSC Perspective Code	Weight (X)	Eigen (Y)	(Y/X)	λ Max
P1	0,4192	1,8160	4,3323	
P2	0,2722	1,1748	4,3156	$16,9038/4 = 4,2260$
P3	0,1804	0,7434	4,1201	
P4	0,1282	0,5301	4,1358	
Total			16,9038	

After the λ max value is obtained, then the Consistency Index (CI) can be determined using the following formula:

$$CI = (\lambda \max - n) / (n-1)$$

$$CI = (4,2260 - 4) / (4-1)$$

$$CI = 0,0753$$

Based on the Random Index value, the RI value is 0,9. So, the Consistency Ratio (CR) is obtained by using the following formula:

$$CR = CI / RI$$

$$CR = 0,0753 / 0,9$$

$$CR = 0,0837$$

If $CR < 0.1$, the matrix is considered a consistent matrix because $CR = 0.0837 < 0.1$. Then the matrix is consistent.

3.2.2. Finance Perspective

The table below will show the calculation to get the λ max value for the finance perspective.

Table 3. λ Max Value for The Finance Perspective

BSC Perspective Code	Weight (X)	Eigen (Y)	(Y/X)	λ Max
KPI-1	0,2908	1,1836	4,0697	
KPI-2	0,3661	1,4874	4,0631	$16,2436/4 = 4,0609$
KPI-3	0,1706	0,6894	4,0419	
KPI-4	0,1725	0,7020	4,0689	
Total			16,2436	

After the λ max value is obtained, then the Consistency Index (CI) can be determined using the following formula:

$$CI = (\lambda \max - n) / (n-1)$$

$$CI = (4,0609 - 4) / (4-1)$$

$$CI = 0,0203$$

Based on the Random Index value, the RI value is 0,9. So, the Consistency Ratio (CR) is obtained by using the following formula:

$$CR = CI / RI$$

$$CR = 0,0203 / 0,9$$

$$CR = 0,0226$$

If $CR < 0.1$, the matrix is considered a consistent matrix because $CR = 0,0226 < 0.1$. Then the matrix is consistent.

3.2.3. Customer Perspective

The table below will show the calculation to get the λ max value for the customer perspective.

Table 4. λ Max Value for The Customer Perspective

BSC Perspective Code	Weight (X)	Eigen (Y)	(Y/X)	λ Max
KPI-5	0,6467	1,9627	3,0352	$9,0544/3 = 3,0181$
KPI-6	0,1913	0,5761	3,0110	
KPI-7	0,1620	0,4874	3,0082	
Total			9,0544	

After the λ max value is obtained, then the Consistency Index (CI) can be determined using the following formula:

$$CI = (\lambda \text{ max} - n) / (n-1)$$

$$CI = (3,0181 - 3) / (3-1)$$

$$CI = 0,0091$$

Based on the Random Index value, the RI value is 0,58. So, the Consistency Ratio (CR) is obtained by using the following formula:

$$CR = CI / RI$$

$$CR = 0,0091 / 0,58$$

$$CR = 0,0156$$

If $CR < 0.1$, the matrix is considered a consistent matrix because $CR = 0,0156 < 0.1$. Then the matrix is consistent.

3.2.4. Business Internal Process Perspective

The table below will show the calculation to get the λ max value for the business internal process perspective.

Table 5. λ Max Value for The Business Internal Process Perspective

BSC Perspective Code	Weight (X)	Eigen (Y)	(Y/X)	λ Max
KPI-8	0,3961	2,0908	5,2784	$26,1213/5 = 5,2243$
KPI-9	0,2035	1,0845	5,3305	
KPI-10	0,1452	0,7563	5,2086	
KPI-11	0,1304	0,6696	5,1341	
KPI-12	0,1248	0,6453	5,1696	
Total			26,1213	

After the λ max value is obtained, then the Consistency Index (CI) can be determined using the following formula:

$$CI = (\lambda \text{ max} - n) / (n-1)$$

$$CI = (5,2243 - 5) / (5-1)$$

$$CI = 0,0561$$

Based on the Random Index value, the RI value is 1,12. So, the Consistency Ratio (CR) is obtained by using the following formula:

$$CR = CI / RI$$

$$CR = 0,0561 / 1,12$$

$$CR = 0,0226$$

If $CR < 0.1$, the matrix is considered a consistent matrix because $CR = 0,0226 < 0.1$. Then the matrix is consistent.

3.2.5. Learning and Growth Perspective

The table below will show the calculation to get the λ max value for the learning and growth perspective

Table 6. λ Max Value for The Learning and Growth Perspective

BSC Perspective Code	Weight (X)	Eigen (Y)	(Y/X)	λ Max
KPI-13	0,5070	2,2257	4,3901	$16,9726/4 = 4,2431$
KPI-14	0,2494	1,0901	4,3714	
KPI-15	0,1574	0,6443	4,0927	
KPI-16	0,0862	0,3551	4,1184	
Total			16,9726	

After the λ max value is obtained, then the Consistency Index (CI) can be determined using the following formula:

$$CI = (\lambda \text{ max} - n) / (n-1)$$

$$CI = (4,2431 - 4) / (4-1)$$

$$CI = 0,081$$

Based on the Random Index value, the RI value is 0,9. So, the Consistency Ratio (CR) is obtained by using the following formula:

$$CR = CI / RI$$

$$CR = 0,081 / 0,9$$

$$CR = 0,0901$$

If $CR < 0.1$, the matrix is considered a consistent matrix because $CR = 0,0901 < 0.1$. Then the matrix is consistent.

3.3. Scoring system using Objective Matrix (OMAX) and Traffic Light System (TLS)

3.3.1. Achievement of Performance Results

Based on the weighting results, then a scoring system is formed. This scoring system uses the Objective Matrix or what we usually call OMAX. OMAX equates the value scale from 0 to 10 of each performance measurement indicator, so that performance results can be achieved against the parameter values in PT.X as shown in Table 7 below.

Table 7. Measurement Data for Each KPI

KPI Code	Key Performance Indicators (KPI)	Unit	Achievement		Target	
			2021 Semester I	2021 Semester II	10	0
Financial Perspective						
KPI-1	ROE	%	2,45	2,69	3	2
KPI-2	ROA	%	1,78	1,87	2	1,5
KPI-3	Profit margin on sales	%	7,42	7,7	7,8	7,2
KPI-4	ROI	%	24,9	26,93	28	24
Customer Perspective						
KPI-5	Customer Retention	%	95	96,7	100	95
KPI-6	Number of new customer	Retailer	3	2	3	1
KPI-7	Number of complains	Case	2	2	0	3
Business Internal Process Perspective						
KPI-8	Number of new product	Type	2	1	2	0
KPI-9	On Time Delivery	%	95	98	100	95
KPI-10	Number of new machine usage	Type	1	2	2	0
KPI-11	Product rejection (not according to Quality Control)	%	1750	1200	100	200
KPI-12	Work accident	Case	1	2	0	3
Learning and Growth Perspective						
KPI-13	Employee Productivity	%	8,69	9,31	10	5
KPI-14	Number of training programs	Activity	2	3	4	1
KPI-15	Employee Retention	%	95,53	97,2	100	93
KPI-16	Employee turnover	%	7,3	9,57	5	10

3.3.2 Scoring System

The OMAX method in Table 7 has rules for calculations in it. Analyses are carried out using scores. The score consists of a range of scores from 0 to 10, along with the explanation:

- Score 0, the lowest condition determined based on the achievement target score 0 / pessimistic value
- Score 10, the highest condition determined based on realistic targets or estimates. Score 10 / optimistic value
- Score 1,2, done by calculating the interpolation between Score 0 and 3
- Scores 4,5,6,7,8,9, the same as Scores 1,2, only the interpolation calculation is between Scores 3 and 10

Example for KPI 1:

- Value Optimistic (level 10) (O) : 3
- Value Pessimistics (level 0) (P): 2
- Realization of The Previous Semester (RT): 2,45
- Realization of Performance (RP): 2,69
- For the interval between levels 10 and 3 : $(O-RT)/(10-3) = (3-2,45)/7 = 0.0786$
- For the interval between level 3 and 0 : $(RT-P)/(3-0) = (2,45-2)/3 = 0.15$

Then calculate the value of each level as follows:

- Level 10 = 3
- Level 9 = $3 - (0.0786) = 2.92$
- Level 8 = $2.92 - (0.0786) = 2.84$
- Level 7 = $2.84 - (0.0786) = 2.76$
- Level 6 = $2.76 - (0.0786) = 2.69$
- Level 5 = $2.69 - (0.0786) = 2.61$
- Level 4 = $2.61 - (0.0786) = 2.53$
- Level 3 = $2.53 - (0.0786) = 2.45$
- Level 2 = $2.45 - (0.15) = 2.3$
- Level 1 = $2.3 - (0.15) = 2.15$
- Level 0 = $2.15 - (0.15) = 2$

3.3.3 TLS

Based on the scoring system using the OMAX method, the classification is obtained as in the tables below.

Table 8. KPIs are included in the green category.

KPI Code	KPI
KPI-3	Profit margin on sales
KPI-4	ROI
KPI-10	Number of new machine usage
KPI-11	Product reject (not according to Quality Control)

Table 9. KPIs are included in the yellow category.

KPI Code	KPI
KPI-1	ROE
KPI-2	ROA
KPI-5	Customer Retention
KPI-9	On-Time Delivery
KPI-13	Employee Productivity
KPI-14	Number of training programs
KPI-15	Employee Retention

Table 10. KPIs are included in the red category.

KPI Code	KPI
KPI-6	Number of new customers
KPI-7	Number of complains
KPI-8	Number of new product
KPI-12	Work accident
KPI-16	Employee turnover

3.3.4 Performance Index Results

After calculating the scoring system for each KPI, it is then calculating the total performance or performance index from the scoring system calculated using the level, weight, value, and weight of each perspective.

Table 11. The Total Performance Index Indicator of PT.X

Perspective Weight (A)	KPI Weight (B)	Score (C)	Performance Index (A*B*C)
Finance (0,42) (P1)	KPI – 1 (0,29)	6	0,7308
	KPI – 2 (0,37)	6	1,9324
	KPI – 3 (0,17)	8	0,5712
	KPI – 4 (0,17)	8	0,5712
Customer (0,27) (P2)	KPI – 5 (0,65)	5	0,8775
	KPI – 6 (0,19)	2	0,1026
	KPI – 7 (0,16)	3	0,1296
Business Internal Process (0,18) (P3)	KPI – 8 (0,40)	2	0,144
	KPI – 9 (0,20)	7	0,252
	KPI – 10 (0,14)	10	0,27
	KPI – 11 (0,13)	8	0,1872
Learning and Growth (0,13) (P4)	KPI – 12 (0,12)	1	0,0216
	KPI – 13 (0,50)	6	0,39
	KPI – 14 (0,25)	7	0,1248
	KPI – 15 (0,16)	6	0,1456
Total	KPI – 16 (0,09)	5	0,0585
			5,5441

4. CONCLUSION AND SUGGESTION

Based on the results of data processing from this study, the conclusions obtained are:

1. Based on the results of performance measurement using the balanced scorecard method integrated with the AHP method, a weighting value is obtained for each perspective, the financial perspective gets a weight of 0.42, the customer perspective gets

0.27, the internal business process perspective gets 0.18, and the growth and learning perspective get 0.13. For each KPI from the financial perspective, KPI - 1 (0.29), KPI - 2 (0.37), KPI - 3 (0.17), KPI - 4 (0.17); each KPI from the perspective of internal business processes obtained KPI - 5 (0.65), KPI - 6 (0.19), KPI - 7 (0.16); each KPI with an internal business process perspective obtained KPI – 8 (0.40), KPI – 9 (0.20), KPI – 10 (0.14), KPI – 11 (0.13), KPI – 12 (0.12); each KPI for growth and learning perspectives obtained KPI - 13 (0.50), KPI - 14 (0.25), KPI - 15 (0.16), KPI - 16 (0.09).

2. Based on the results of the scoring system using the OMAX method and the traffic light system, it was found that there were 4 KPIs included in the green group scale, which means that the KPI has exceeded the target so that its performance is feasible to maintain. 7 KPIs are included in the yellow group scale, which means that these KPIs need to be improved to improve performance and follow the goals desired by the company. 5 KPIs are in the red category, which means that these KPIs require special attention to be given corrective action.
3. The total result's index is 5.5441, which is included in the yellow category. This incident indicates that the company's performance still needs to meet the targetted an evaluation needs to be carried out. Especially the KPIs that fall into the yellow category and their

Based on the results of the study, several things can be suggested:

1. In this study, it is hoped that an evaluation of the company can be carried out so that it can improve company performance
2. Evaluation should be carried out periodically and also to avoid problems that can occur later, which can cause a decrease in company performance
3. The balanced scorecard method integrated with AHP and OMAX can be an alternative for evaluating company performance because it has various advantages

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