



Analyzing company performance using the Balanced Scorecard method: A case study in an automotive spare parts manufacturing company

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ABSTRACT

Business competition in today's corporate landscape is fiercely competitive, demanding sustainable strategies for growth and success. This research endeavors to evaluate the performance of Nutech Pundi Arta, a spare parts manufacturer company, and offer recommendations derived from performance assessments to facilitate the company's advancement. The balanced scorecard serves as the comprehensive measurement framework, structured across four perspectives: financial, customer, internal business processes, and learning and growth. Data collection involved interviews, documentation review, and questionnaires administered to leaders, employees, and customers of Nutech Pundi Arta. The evaluation of Nutech Pundi Arta's performance, based on the Balanced Scorecard method from 2018 to 2020, reveals several noteworthy insights. When considering its business strategy, the company performs admirably, emphasizing the strategic objective attribute as the strongest. However, from a financial standpoint, the Net Profit Margin (NPM) ratio exhibits inefficiency, reflected in a decrease in NPM from 2019 to 2020, owing to escalated interest costs and a disproportionate rise in sales to profits. Conversely, the customer perspective reflects a highly favorable image, indicating positive customer sentiments toward the company. Evaluation from the internal business processes perspective yields a positive performance rating, while the learning and growth perspective highlights exceptional performance. To enhance Nutech Pundi Arta's overall performance, particularly in the financial domain, it is recommended to address the high interest costs and align sales growth with profit increment. Additionally, to ensure long-term development, a customer-centric approach along with continued emphasis on internal processes and learning and growth strategies is advised, affirming the company's commitment to prioritizing its strategic goals.

1. Introduction

The analysis of company performance using the Balanced Scorecard method at PT. Nuntech Pundi Arta serves as a strategic step for the company. In today's fiercely competitive business landscape, companies require a comprehensive overview of their performance over a defined period to assess their operational conditions. To compete and progress effectively, companies need sustainable business development strategies. Crucial to this development are both internal and external factors influencing the company's growth.

The impact of performance measurement significantly influences human resource activities both within and outside the organization [1, 2]. Nutech Pundi Arta, the subject of this research, operates in the industry offering cutting, assembly, and dies

manufacturing services for automotive parts and industrial needs such as mall cutting and mandrel production. Its product range includes trimming parts, assembly parts, and tolling. During April-October 2020, Nutech Pundi Arta experienced a negligible sales increase, averaging 1% per month. The product line comprised 4000 units of rear floor carpet, 6000 units of RR seat back board, 10,000 units of Right/Left and Right/Right cylinders, and 13,000 units of lid comp spare tires. This indicates a stagnation in the company's performance, contrary to the expected upward sales trend necessary for enhancing competitiveness.

Performance measurement has garnered significant attention in numerous developed countries, where national and international companies strive to remain at the forefront of creating a competitive environment [3]. The intensifying business competition has shifted the

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business paradigm from comparative advantage to competitive advantage, compelling every company to focus on efficiency in all business processes [4-6]. Companies seeking business success evaluate and adopt various strategic actions to perfect their attained results for sustained advantage [7]. According to Larry D. Stout as cited in Yuwono (2002) [8], performance measurement involves recording and evaluating activity implementation achievements toward fulfilling the mission through products, services, or processes. It assesses the progress in attaining organizational goals and objectives, supporting the organizational mission by evaluating the efficiency and effectiveness of organizational activities [9].

The balanced scorecard offers an approach that assesses financial and non-financial performance [10]. It aims to evaluate company performance and targets from four different perspectives [11]. Traditionally, measures were solely financial, involving tools like "Balanced Sheets," "Income Statements," or financial ratios such as liquidity, solvency, and profitability ratios [12-14]. The measurement outcomes are then translated into strategic mapping, an integral part of the Balanced Scorecard framework, delineating strategic steps for value creation. This approach can aid Nutech Pundi Arta in enhancing its condition in the upcoming years. The Balanced Scorecard's assessment of Nutech Pundi Arta's performance can offer recommendations for company improvement [8]. This study emphasizes a special focus on Nutech Pundi Arta's financial perspective, involving both manufacturing and service sectors, and aims to assist in determining long-term developmental strategies for the company.

2. Material and method

The data collection involved interviews, documentation techniques, and questionnaires administered to managers, employees, and customers of Nutech Pundi Arta. The techniques employed were as follows:

1. Interview Technique. This method involved posing direct questions about the company's status.
2. Documentation Engineering. This technique entailed recording existing company data.
3. Questionnaires. A set of written questions regarding the indicators in the Balanced Scorecard.

The population refers to the total number of subjects whose characteristics were estimated. It encompasses individuals with predetermined qualities and characteristics [5]. The study population was categorized into internal and external groups. Internally, it is comprised of managers, staff, and employees of Nutech Pundi Arta, totaling 183 individuals. Externally, it included nine companies that were customers of Nutech Pundi Arta. Sampling involves selecting part of the population elements to draw conclusions about the entire population [3]. The benefits of sampling include cost-effectiveness and quicker results. Sampling are derived from internal and external sampling.

Internal samples are from within the company, including managers, staff, and employees of Nutech Pundi Arta. With a population of 183 employees, the Slovin formula was used to determine the sample size for this study, given a 5% margin of error and a 95% confidence level. Using the Slovin formula, a sample size of 125 employees was determined. This sample comprised six managers, 16 staff members, and 103 employees, totaling 125 individuals.

External samples. These samples are from outside the company and represent the customers of Nutech Pundi Arta. Nutech Pundi Arta itself has nine customers.

The data analysis method to evaluate the performance of PT. Nutech Pundi Arta with the Balanced Scorecard involved the following steps:

- a) Create a Multiattribute Attitude Model with the formula $Ab = \sum_{i=1}^n Wi |li - Xi|$
 Ab = The overall attitude of the manager towards an object
 Wi = The average weight given by respondents to attribute i
 Li = Manager's average ideal value on attribute i
 Xi = Manager's average belief value on attribute i
 n = The number of attributes studied
- b) Determine Wi with the formula:

$$Wi = \frac{\text{The value of each attribute}}{\text{Number of attribute values}} \times 100\%$$
- c) Determine n by selecting the dominant attributes. Then given a value from one to n , where the next sequence is given a higher value than the next sequence of n , and so on.
- d) Determine the attitude scale in the form of a score with numbers 1 to 5, as can be seen in Table 1.
- e) Looking for ideal values and belief values
 Ideal value = score x absolute of the ideal respondent for each answer
 Belief value = score x absolute of each respondent's belief

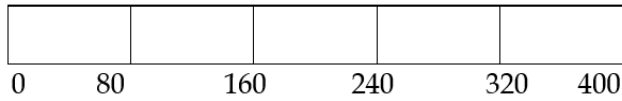
$$\text{Average ideal value} = \frac{\text{Total ideal value}}{\text{Ideal respondent}}$$

$$\text{The average belief value} = \frac{\text{The total value of beliefs}}{\text{Respondent beliefs}}$$

- f) Enter data in tables, then enter the formula with a likers scale proposed by [10]. (Attitude -1) x 100 = X, and the result is (5-1) x 100 = 400 This can be seen from the scale as shown in Fig. 1.
- g) In this case, there are three attributes to be examined, and the weight of each attribute is determined by summing up their respective orders of importance. The weightings are presented in Table 2. The interpretation of the attitude scale indicates that a smaller scale or positioning further to the left reflects an improvement in the business strategy. This suggests that managers are satisfied with the overall performance of the company. Conversely, a larger scale or positioning further to the right indicates a deterioration in the business strategy, signifying dissatisfaction among managers with the company's overall performance.

Table 1.
Results of data attitude scale score

No	Attitude Scale	Score
1	Very good, satisfied, and hopeful	5
2	Good, satisfied, and hopeful	4
3	Doubtful	3
4	Not good, dissatisfied, and not hopeful	2
5	Very unfavorable, dissatisfied, and hopeless	1



0 – 80 = Very good/ very satisfied
 80 – 160 = OK/ Satisfied
 160 – 240 = Doubtful
 240 – 320 = Not good / not satisfied
 320 – 400 =Very unfavorable/very dissatisfied

Figure 1. Likert scale

Table 2.
Attribute weight of interest ranking

Rating	Value	Weight
1	$3/6 \times 100\% = 50$	50
2	$2/6 \times 100\% = 33.33$	33
3	$1/6 \times 100\% = 16.67$	17

Table 3.
Results of validity testing

Questionnaire	n	Rtable	Validity
Business Strategy	16	0.4259	Valid
Manager	6	0.7293	Valid
Employee Satisfaction	103	0.163	Valid
Customer Satisfaction	9	0.5214	Valid

Table 4.
Results of reliability testing

Questionnaire	Cronbach's Alpha		Reliability
	Belief	Ideal	
Business Strategy	0.894	0.934	Reliable
Manager	0.981	0.980	Reliable
Employee Satisfaction	0.986	0.968	Reliable
Customer Satisfaction	0.950	0.959	Reliable

Table 5.
Results of data strategic business interest ranking

Attribute	Results	Rating
Strategy Goal Attributes	45	1
Strategy Formulation Attributes	35	2
Training Attributes	16	3

h) Interest Priority Analysis. This analysis determines the customer's preferred measures, reflecting the manager's attitude towards the company's activities. Respondents in this study were asked to assess the order of importance (priority). A value of 4 was

assigned to the first rank, 3 to the second rank, 2 to the third rank, and 1 to the fourth rank.

i) Results of The Balanced Scorecard Translated into the Strategy Map Model. The measurements from Nutech Pundi Arta's Balanced Scorecard encompass four perspectives: financial, customer, internal business processes, and learning and growth. To interpret these perspectives effectively, a strategic mapping technique is utilized. This translation process creates a Strategy Map Model based on the Balanced Scorecard results, outlining strategic steps for the company's development.

3. Results and discussions

This research was conducted over a period of 2 months, from February 15th to April 15th, 2021. Nutech Pundi Arta was selected as the research location due to its relevance to the study's problem and the ease of obtaining necessary data or information. The research's scope primarily revolves around addressing performance appraisal issues using the Balanced Scorecard as a performance measurement tool.

3.1. Statistical testing

The purpose of testing the research's validity is to assess each item in the research questionnaire. A valid measure ensures an efficient questionnaire that can effectively collect data regarding the research subject. The results of the questionnaire's validity test are presented in Table 3.

The correlation coefficients for validity, as depicted in the table above, were calculated using SPSS software. The validation coefficients for all research questionnaire items, acquired from the research sample parties, have met the validity criteria. These coefficients exceeded the minimum threshold, indicating the research indicators' effectiveness as a data collection tool to explore the research problems. This data can be processed to measure the dimensions of research indicators for each specific dimension.

The reliability test aims to ascertain whether the instrument used to gather primary data from research samples is reliable or unreliable. SPSS offers tools to measure reliability, notably the Cronbach alpha statistical test. A variable is considered reliable if the Cronbach alpha value is > 0.60 [13]. The reliability test results for the questionnaire are displayed in Table 4. The Cronbach's alpha values for all instruments range from 0.894, exceeding the 0.60 threshold. This reliability test ensures the consistency of the measurement results in the conceptual framework. Hence, it can be concluded that the data from all instrument items in the questionnaire are reliable and trustworthy.

3.2. Business strategy data processing

Upon analyzing the business strategy aspects of Nutech Pundi Arta, it is evident that the company's performance is notably strong.

Table 6.

The financial performance of 2018-2020

Year	NPM	ROI	ROE
2018	16.83	9.30	27.73
2019	12.90	6.76	21.06
2020	9.370	2.41	9.64

Table 7.

Results of price, time, and quality

Attribute	Results	Rating
Price Attribute	9	1
Time Attribute	3	3
Quality Attribute	6	2

Table 8.

Results of market share and customer

Attribute	Results	Rating
Market share	23	1
Customer Retention	11	3
Customer Acquisition	10	4
Customer Profitability	16	2

Table 9.

Results of innovation, operation, and after-sales service

Size	Results	Rating
Innovation Process	13	2
Operation Process	14	1
After-sales Service	9	3

The overall structural attitude can be calculated using the Multiattribute Attitude Model formula, indicating an excellent business strategy for Nutech Pundi Arta. The importance levels of attributes, arranged from the highest to the lowest values, are outlined in Table 5. The calculation of interest priorities underscores that the strategic objectives attribute plays the most influential role in determining the structural attitude of Nutech Pundi Arta. This signifies that managers prioritize corporate goals as the embodiment of the company's mission and strategy. Following the structural vision and mission, the formulation of subsequent strategies is considered equally important, succeeded by training. Based on the priority analysis results, this study concludes that the strategic objectives attribute stands as the highest priority for the structure of Nutech Pundi Arta, followed by strategy formulation and training.

3.3. Financial data processing

The Financial Perspective was analyzed using Net Profit Margin (NPM), Return on Investment (ROI), and Return on Equity (ROE), presented in Table 6. Based on the calculations, Nutech Pundi Arta's profitability appears to be ineffective. This is evident from the decline in ROE from 2018 to 2020 by 6.67% and 11.42%, primarily due to an increase in the company's capital while its net profit consistently decreased. Despite the

yearly increase in capital, the company's net profit continued to decline, indicating an imbalance between capital growth and profit. The ROI analysis indicates a consistent 40% decrease, disproportionate to the total assets issued by the company. Although the company issues substantial assets annually, the generated profits diminish. Additionally, the NPM ratio demonstrates an ineffective financial perspective, with the NPM percentage decreasing annually. The rising interest expense adversely impacts on the company's profits despite an increase in annual sales.

3.4. Consumer perspective data processing

Utilizing a questionnaire administered to customers and managers of Nutech Pundi Arta, this study assessed company performance from a customer perspective using the Multiattribute Attitude Model.

The analysis revealed that the most influential attribute shaping customer attitudes toward Nutech Pundi Arta's products is the price attribute. This indicates alignment between customer expectations and the conditions at Nutech Pundi Arta, illustrating the company's ability to satisfy its customers. Hence, Nutech Pundi Arta's performance from the customer's viewpoint is deemed good. Following the assessment of each attribute's importance as perceived by customers, the evaluation of product value based on these attributes was conducted, depicted in the order of importance in Table 7. The analysis concludes that customers prioritize the price attribute when utilizing Nutech Pundi Arta's products, followed by considerations for quality and timeliness. This indicates that customers highly value price competitiveness while not compromising on product quality.

3.5. Market share, customer retention, customer acquisition, and profitability

Through data processing, the overall view conveyed by managers depicts favorable attitudes towards the performance of Nutech Pundi Arta. This signifies that, from the customer's standpoint, the company's performance is already deemed satisfactory. The importance level, ranging from the attribute with the highest value to the lowest, is detailed in the assessment results presented in Table 8. As per the calculations, market share holds the top position. This signifies that, from the customer perspective, managers place the highest significance on market share as a pivotal metric.

3.6. Internal business perspective data processing

Upon data processing, the resulting overview of managerial attitudes towards the working conditions at Nutech Pundi Arta indicates satisfaction. This infers that, when assessed through the lens of Internal Business Processes, the company's performance is commendable. The assessment results, outlining the importance level from the attribute with the highest value to the lowest, are presented in Table 9.

Table 10.
Results of communication, award, and endorsement

Attribute	Results	Rating
Communication	296	1
Award	148	3
Endorsement	173	2

Table 11.
Results of employee, IS, and motivation

Size	Results	Rating
Employee Capability	12	2
Information System Capability	9	3
Motivation, empowerment and alignment	15	1

Table 12.
Results of business strategy

Perspective	Before	After	Information
Business Strategy	42.5	52.2	Very good

Table 13.
Summary of balance score card

Perspective	Before	After	Information
Financial	9.30%	2.41%	Not good
Internal Business	107.50	114.41	Good
Learning and Growth	101,75	103,36	Good
Customer	35	40	Very good

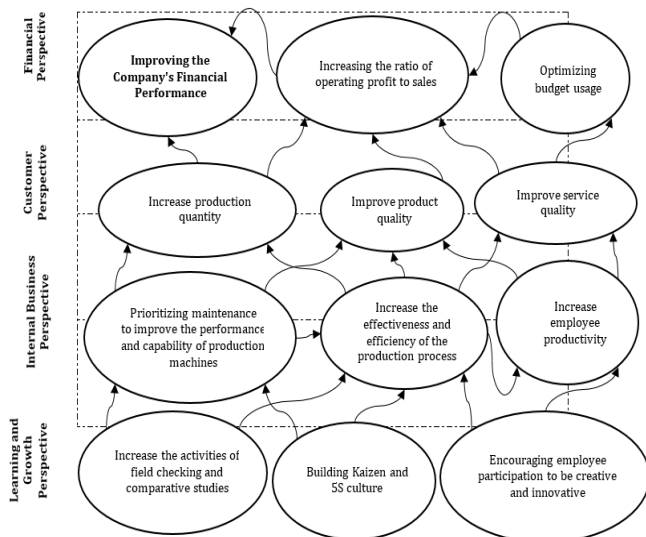


Figure 2. Strategy map

The calculations indicate that the operation process takes precedence. This signifies that, for managers, the operational process holds the utmost importance in ensuring customer satisfaction, followed by innovation processes and after-sales service.

3.7. Learning and growth perspective data processing

Upon analyzing the data, it's evident that employees hold a positive attitude towards the performance conditions at Nutech Pundi Arta, indicating alignment between their expectations and the current company

environment, leading to employee satisfaction. Consequently, the company can meet the expectations of its workforce. This suggests that Nutech Pundi Arta's performance, viewed from the growth and learning perspective, is favorable. The table displaying the importance levels, from the attribute with the highest value to the lowest, is depicted in Table 10.

The calculations reveal that communication holds the highest value at 296, followed by support and appreciation at 173 and 148, respectively. This underscores the paramount importance of effective communication in addressing and resolving issues within the company. Additionally, support and appreciation stand out as crucial factors contributing to employee satisfaction, signifying the company's acknowledgment of its employees' contributions.

3.8. Data processing employee and information system capability, motivation, empowerment, and alignment

Upon processing the data, the managerial perspective reflects a positive attitude towards the working conditions at Nutech Pundi Arta, indicating alignment with the company's performance. The assessment, displaying the level of importance from the attribute with the highest value to the lowest, is illustrated in Table 11. The calculations reveal that motivation, empowerment, and alignment secure the top rank with a value of 15. This highlights their significance as crucial measures for managers to gauge the level of employee contribution to the company.

3.9. Analysis

The analysis of the data processing results reveals that, based on the priority analysis conducted in this study, the strategic objective attribute stands as the top priority for Nutech Pundi Arta's structure, followed by the formulation of strategy and training, as presented in Table 12. Consequently, it can be inferred that Nutech Pundi Arta's business strategy, evaluated via the Balanced Scorecard, showcases commendable performance.

Further analysis based on the Balanced Scorecard using four perspectives—Financial, Internal Business, Growth and Learning, and Customer Perspective—is detailed in Table 13. The outcomes indicate that three perspectives—Customer Perspective, Internal Business Process Perspective, and Growth and Learning Perspective—are performing well. However, the Financial Perspective portrays inadequacy due to the ineffectiveness of the profit generated by Nutech Pundi Arta.

Following the performance measurement of Nutech Pundi Arta using the Balanced Scorecard, one perspective stands out as inadequate—the financial perspective—due to the inefficiency of the profit generated by Nutech Pundi Arta. To enhance this aspect, a strategic mapping approach is required to translate the Balanced Scorecard results, depicted in the Strategy Map Measurement in Fig. 2.

In summary, Nutech Pundi Arta's performance, evaluated through the Balanced Scorecard, presents a commendable business strategy. While three perspectives—the customer perspective, internal business process perspective, and growth and learning perspective—demonstrate strength, the financial perspective remains suboptimal due to the inefficacy of profit generation.

3.10. Managerial implications

The results obtained from measuring Nutech Pundi Arta's performance using the Balanced Scorecard will offer recommendations for enhancing the company's financial outlook. Additionally, it will aid in devising long-term development strategies from the perspectives of customers, internal business processes, and learning and growth. These recommendations emphasize a strong commitment to prioritizing the company's strategic goals.

4. Conclusions

This study aims to evaluate the performance of Nutech Pundi Arta from 2018 to 2020 using the balanced scorecard method. Nutech Pundi Arta's business strategy, based on the calculated results, shows high satisfaction, indicating its effectiveness. From the perspective of Net Profit Margin (NPM), the financial outlook appears ineffective. The NPM declined from 12.90% in 2019 to 9.37% in 2020, indicating a decrease in profitability due to high interest expenses relative to sales. Assessment from the Customer Perspective indicates good performance, as customers expressed very positive attitudes toward Nutech Pundi Arta. The Internal Business Process Perspective analysis reflects good performance. Similarly, the Growth and Learning Perspective shows good performance.

The Performance Balanced Scorecard for Nutech Pundi Arta in 2018–2020 highlights a very good business strategy and positive customer, internal business process, and growth and learning perspectives. However, the financial perspective is unsatisfactory due to ineffective profit generation. Potential initiatives for improvement involve optimizing asset utilization, increasing sales, improving the operating profit to sales ratio, and optimizing budget utilization.

Declaration statement

Moh. Mawan Arifin: **Conceptualization, Methodology, Supervision, Project Administration, Funding Acquisition.** Meilan Agustin: **Resources, Validation, Formal Analysis, Investigation.** Muhammad Farrel Fawwazi: **Data Curation, Validation, Writing Original Draft, Resources, and Software.**

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Data availability statement

The authors confirm that the data supporting the findings of this study are available within the article or its supplementary materials.

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