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APPLICATION OF OMAX AT UD. MEATBALL BIAWU FOR ANALYZE MEASUREMENT PRODUCTIVITY WORK

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Abstrak

UD. Bakso Biawu adalah perusahaan yang beroperasi di sektor manufaktur yang kegiatan utamanya adalah produksi operasional bahan makanan jadi berupa bakso. Tidak adanya pengukuran sistematis terhadap produktivitas perusahaan dan produktivitas tenaga kerja menyebabkan perusahaan tidak mampu memenuhi target produksi atau memaksimalkan kapasitas produksi. Oleh karena itu, UD. Bakso Biawu berupaya meningkatkan produktivitasnya dengan mengukur setiap kriteria produktivitas. Metode yang digunakan untuk melakukan pengukuran adalah metode Matriks Objektif (OMAX). Berdasarkan hasil penelitian, produktivitas terbaik terjadi pada Maret 2023, sebesar 727,86 karena output produksi yang tinggi yang melebihi kapasitas produksi, sehingga membutuhkan tenaga kerja tambahan. Dan tingkat produktivitas terburuk terjadi pada November 2022 sebesar 651,86 karena banyaknya cacat produksi sehingga perbaikan harus dilakukan dengan melakukan re-manufaktur.

Kata kunci: *Matriks Objektif, Metode OMAX, Performa, Produksi, Produktivitas.*

Abstract

UD. Meatball Biawu is a company operating in the manufacturing sector whose main work is operational production of finished food ingredients in the form of meatballs. The absence of systematic measurement of company productivity and labor productivity means the company is unable to meet production targets or maximize production capacity. Therefore UD. Meatball Biawu seeks to increase its productivity by measuring each productivity criterion. The method used to carry out measurements is the Objective Matrix (OMAX) method. Based on research results, the best productivity occurred in March 2023, amounting to 727.86 due to high production output which exceeded production capacity, requiring additional labor. And the worst productivity level occurred in November 2022 amounting to 651.86 due to the many production defects so repairs had to be made by re-manufacturing.

Keywords: *Objective Matrix, OMAX Method, Performance, Production, Productivity*

1. INTRODUCTION

UD. Bakso Biawu is one of group business together with the producer food that is form meatball with large scale located in Biawu Village. District Hulonthalangi. Gorontalo City, Gorontalo. This industry is one of producer food that is which meatballs are for material standard mainly that is made from base meat. Productivity work is also one of them is a very important factor and must be paid attention to by the company (Sitorus and Hidayat, 2023). Companies must always try improve and maximize productivity power it works. it's useful realize objectives that have been set and utilization source Power man in a way effective and efficient (Rangkuti, 2018).

Productivity is one of tool measuring for company in evaluate performance work achieved his employees (Sedarmayanti, 2017). Productivity at UD. Bakso Biawu experience decline productivity because its height product defects produced in November 2022 then productivity in March 2023 occurs enhancement productivity caused by overproduction capacity manpower so working hours increase. This matter of course can lower productivity manpower the more lots manpower so tend productivity the more increases and finally potential can increase output for company (Engel, 2017) .

This study aim for analyze measurement productivity using the OMAX Method in the UD. Bakso Biawu as part from sector micro and small. UD. Bakso Biawu own significant role in economy local and responding diverse market needs. Analysis productivity at the level not only important for continuity business them but also can give valuable insight related to the management strategy implemented in improve competitive advantage (Eliseo-Dantés et all, 2009). The OMAX method is used because this study requires the integration of various performance aspects, and this method can be adapted to the characteristics of UD Bakso Biawu. Moreover, it supports continuous improvement within the company (Ningrat and Hilman, 2018).

With understand needs and productivity UD 's existing work, this research aim for detail and analyze aspects key productivity using approach the OMAX Method (Setyadi, 2023). This research expected can give comprehensive picture about performance operational company, for repair facilitating identify potential areas, and provide contribution positive to development of effective management strategies (Mtau and Rahul, 2024).

Productivity employee is evaluation on efficiency a worker or group worker. In its truest sense, productivity is a key component that directly influences a company's profitability (Dutta, 2024). Productivity can evaluated in connection with one output employee in period time certain. Usually, productivity worker certain will assessed relative to the average performing employee work similar (Mahawati, 2021). Productivity can said as human mental attitude and its efforts to use reach more results good with use source power as effective maybe the end be measured with input used for reach optimal results (Gustarico and Putri, 2023).

Measurement done use method Objective Matrix (OMAX), with step determine criteria measuring, calculating mark ratio productivity, determination mark achievement first, determination mark performance standards, determination target value or target final, decisive mark weight productivity every ratio, calculation mark performance every ratio productivity, and calculating mark indicator performance and index productivity (Mahawati, 2021)

As done by Wibisono at PT. XYZ shows that necessary ratio improved its productivity is ratio 1 (defect results production/results production actual) and ratio 5 (results production actual/planned production), whereas ratios 3, 4, and 6 show tended value Good (Gustarico and Putri, 2023). Whereas based on research conducted by Maulana at PT. IT acquired the results obtained so company will give counseling on each employees at the time he did evaluation Work (Ningrum and Almahdy, 2017).

2. METHODS

This study carried out at UD. Bakso Biawu which is located in the District Hulonthalangi. Gorontalo City. Study This carried out in September 2023. Type of research used in this study is descriptive quantitative. Study descriptive quantitative is research that describes, examines, and explains something phenomenon with what data (numbers) exists without mean test something hypothesis certain (Maulidah and Utomo, 2023).

Data sources used is data from September 2022 until by August 2023. Data retrieved based on interview direct to owner and production information in UD. Bakso Biawu. Data obtained is :

1. Output Data Production Meatball
2. Working Hours Data Maximum

3. Data on Number of Workers
4. Data on Machine Damage/Month
5. Output Data Production Defects

After determine criteria based on the data obtained form criteria production, manpower, and machine. Following the criteria :

Criterion 1 is production output (Ratio 1)
Criterion 2 is work hours (Ratio 2)
Criterion 3 is total manpower (Ratio 3)
Criterion 4 is machine (Ratio 4)
Criterion 5 is defect product (Ratio 5)

Furthermore determine formula measurement from every criteria production, manpower, and machine.

$$Ratio\ 1 = \frac{\text{Total Production output}}{\text{Work hours}};\ Ratio\ 2 = \frac{\text{Total Defect product}}{\text{Total Production output}}$$

$$Ratio\ 3 = \frac{\text{Total Production output}}{\text{Total manpower}};\ Ratio\ 4 = \frac{\text{Total Production output}}{\text{Total machine work}}$$

$$Ratio\ 5 = \frac{\text{Broken machine hours}}{\text{Normal machine hours}}$$

The scale shared become three parts. namely :

a. Level 0 : the worst possible productivity value
b. Level 3: current productivity performance value.
c. Level 10 : productivity expected value until period certain.

Level 1 and 2 Ascension :

$$\frac{\text{Level } 3 - \text{Level } 0}{3 - 0}$$

Increase from level 4 to level 9:

$$\frac{\text{Level } 10 - \text{Level } 3}{10 - 3}$$

3. RESULT

On calculations This there are 5 criteria that are measured that is defect product, capacity production, working hours, normal machine hours, and materials standard. Data obtained from historical data company in September 2022 until February 2023. Input and output data can seen in Table 1.

Tabel 1. *Input* and *output data* period September 2022 – February 2023

Month	Criteria					Outputs
	1	2	3	4	5	
September	7	2400	1008	864	2352	4750
October	7	2400	1008	864	2328	4672
November	7	2400	1008	864	2280	4563
December	7	2400	1008	864	2376	4835
January	7	2400	1008	864	2400	5032
February	7	2400	1008	864	2328	4672
March	7	2400	1008	864	2400	5095
April	7	2400	1008	864	2340	4705
May	7	2400	1008	864	2352	4796
June	7	2400	1008	864	2280	4785
July	7	2400	1008	864	2280	4984
August	7	2400	1008	864	2352	4815

Source : UD. Meatball Biawu

Table 2. Calculation of averages and standards deviation

Month	Criteria				
	1	**2**	**3**	**4**	**5**
September	679	1.98	4.71	5.50	2.02
October	667.43	1.95	4.63	5.41	2.01
November	651.86	1.90	4.53	5.28	2.00
December	690.71	2.01	4.80	5.60	2.03
January	718.86	2.10	4.99	5.82	2.10
February	667.43	1.95	4.63	5.41	2.01
March	727.86	2.12	5.05	5.90	2.12
April	672.14	1.96	4.67	5.45	2.01
May	685.14	2.00	4.76	5.55	2.04
June	683.57	1.99	4.75	5.54	2.10
July	712.00	2.08	4.94	5.77	2.19
August	687.86	2.01	4.78	5.57	2.05
Total	**8243**	**24**	**57**	**67**	**25**
Average	**686.95**	**2.00**	**4.77**	**5.57**	**2.06**

Source : *Excel* Processed Data 2023

Table 3. Calculation of Upper Control Limit & Lower Control Limit

Component	Input 1	Input 2	Input 3	Input 4	Input 5
Standard Deviation σ	22,627	0.066	0.157	0.183	0.058
Average μ	686.95	2,004	4.77	5.57	2.06
Degree of Accuracy (DA)	0.0329	0.0329	0.0329	0.0329	0.03
Confidence Level (CL)	0.967	0.967	0.967	0.967	0.97
Control Limit (UCL)	709.58	2.07	4.93	5.75	2,114
Control Limit (LCL)	664.33	1.94	4.61	5.38	1,998

Objective matrix method model. it has 3 levels of reference points consisting of:

1) Value at score 0 indicate Lower Control Limit (LCL) which is the minimum productivity limit for each productivity criterion.
2) Value at score 3 indicate Productivity value that has been achieved.
   Value on score 3 indicate average value (μ) of each criterion measured for 12 months.
3) The value of a score of 10 indicate Upper Control Limit (UCL) which is the maximum productivity limit for each productivity criterion.

Table 4. Targets from every Criteria

Goal	Criteria				
	1	**2**	**3**	**4**	**5**
Standard Value (Score 3)	686.95	2,004	4.77	5.57	2.06
Expected Productivity Value (Score 10)	709.58	2.07	4.93	5.75	2,114
Productivity Value Lowest (Score 0)	664.33	1.94	4.61	5.38	1,998

Table 5. Objective Matrix (Productivity Value Standard)

Product Defects	Capacity Production	Working hours	Normal Engine Hours	Raw material	Productivity criteria
675	2.00	5	4.50	2.05	**Measured Performance**
709.58	2.07	4.93	5.75	2.14	**Expected Performance**
667.57	1.94	4.63	5.41	1,994	9
670.80	1.95	4.66	5.44	2,005	8
674.03	1.96	4.68	5.47	2,016	7
677.26	1.97	4.70	5.49	2,027	6
680.49	1.98	4.72	5.52	2,038	5
683.72	1.99	4.75	5.54	2,049	4
686.95	2	4.77	5.57	2.06	**Performance Based**
648.33	1.90	4.50	5.26	1,944	2
656.33	1.92	4.56	5.32	1,967	1
664.33	1.94	4.61	5.38	1.99	**Worst Performance**
7	3	3	6	4	**Score**
4	8	20	25	44	**Weight**
28	24	60	150	176	**Value**
		438			**CURRENT**
		300			**PREVIOUS**
		46.00%			**INDEX**

4. DISCUSSION

$$Index\ of\ performance = \frac{Productivity\ Indicator - Based\ performance}{Based\ performance} * 100\%$$

$$Index\ of\ performance = \frac{Productivity\ Indicator - 300}{300} * 100\%$$

$$Productivity\ Indicator = \Sigma\ value = 28 + 24 + 60 + 150 + 176 = 438$$

$$Index\ of\ performance = \frac{438 - 300}{300} * 100\% = 46\%$$

From method *Objective matrix* so obtained results from measurement productivity in the company, and steps furthermore that is with analyze from results have been be measured. With analyze results will give description in a way more detailed related condition productivity company during the period measurement doing.

Total productivity is productivity in a way the whole which each criteria multiplied with weight each of the criteria. Productivity that occurs in each the month there are ups and downs that are caused many factor. Following Figure 1 explains chart productivity in the period September 2022-August 2023.

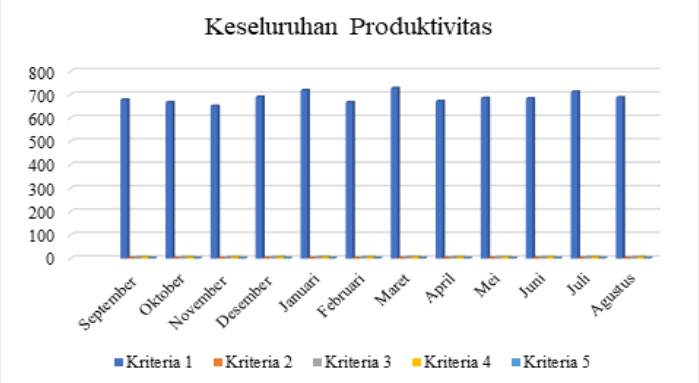

Figure 1. Graph Productivity (2023 Process Data)

From the graph above, the level of productivity obtained from calculations using the *Objective Matrix method* can be seen that the best productivity in the company occurred in March 2023, amounting to 727.86. And the lowest/worst productivity occurred in November 2022 at 651.86. The increase in productivity that occurred in March 2023 was due to the production being carried out quite a lot or the production output being large compared to the defective products produced and the quality of the work being good so that many customers were satisfied which had an impact on high productivity in March 2023.

5. CONCLUSION

Based on objective from study This that is For analyze measurement productivity using the OMAX method in the Meatball Trading Business (UD). Bakso Biawu. Research result show Productivity that occurs every month, there is an increase and there is also a decrease due to many factors. The best productivity occurred in March 2023 amounting to 727.86. The high level of productivity in March was caused by a large amount of production resulting in production that exceeded production capacity which of course required additional labor. The smallest or worst productivity level occurred in November 2022 at 651.86 due to the high level of production defects so that improvements had to be made by reproducing.

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