

A report on
“Analysis of Bangladesh Plastic Industry Sales Data”
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Production Report Overview

This report presents the detailed production data for 29 different plastic manufacturing factories across various regions in Bangladesh. The data covers production activities, unit costs, machine efficiency, and downtime during the period of January to April 2024. Below is a breakdown of the key details and insights derived from the data.

Summary Table

Metric	Value / Range
Total Number of Factories	29
Product Types	Bottles, Containers, Packaging Film, Plastic Bags
Regions	Dhaka, Chittagong, Khulna, Sylhet
Average Units Produced	15,130
Average Unit Cost (BDT)	5.1
Total Production Cost (BDT)	2,232,420
Machine Efficiency (Range)	85% - 95%
Downtime (Range, Hours)	1.5 - 5

1. Factories and Locations

- **Number of Factories:** 29
- **Regions Covered:** Dhaka, Chittagong, Khulna, Sylhet
 - **Dhaka:** 8 factories producing primarily bottles.
 - **Chittagong:** 7 factories focusing on containers.
 - **Khulna:** 6 factories manufacturing packaging film.
 - **Sylhet:** 8 factories specializing in plastic bags.

Regional Insights:

- **Dhaka** is heavily focused on bottle production with Rahim Uddin and Shakib Hossain managing the top production lines.
- **Chittagong** shows a focus on container production with Arif Hasan and Rafiq Rahman overseeing the operations.
- **Khulna** is concentrated on producing packaging film under the supervision of Nusrat Jahan and Farhana Rahman.
- **Sylhet** specializes in plastic bags, with Ahsan Ali and Sarfaraz Ali managing multiple production lines.

2. Production Overview

Production by Product Type:

- **Bottles:** Produced across 8 factories, accounting for a significant portion of the total units produced (from 9,500 to 12,500 units per factory).
- **Containers:** Produced across 7 factories, with unit production ranging from 11,000 to 15,500.
- **Packaging Film:** Produced in 6 factories, with the highest production of 19,000 units in one factory.

Plastic Bags: Produced in 8 factories, with the largest production being 24,000 units.

Top Producers:

- **City Plastics (Sylhet):** Produced 22,000 plastic bags at a cost of BDT 83,600.
- **Shine Plastics (Khulna):** Produced 18,500 units of packaging film at a cost of BDT 92,500.
- **Pioneer Polymers (Chittagong):** Produced 15,500 containers at BDT 94,550.

3. Cost Analysis

- **Average Unit Cost:** BDT 5.1 per unit across all product types.
- **Cost Variation by Product Type:**
 - **Bottles:** Ranging from BDT 5.4 to 5.7 per unit.
 - **Containers:** Between BDT 6.0 and 6.2 per unit.
 - **Packaging Film:** From BDT 4.8 to 5.3 per unit.
 - **Plastic Bags:** The lowest average unit cost, ranging from BDT 3.5 to 3.8.

Highest Production Costs:

- **Pioneer Polymers (Chittagong)** incurred the highest production cost of BDT 94,550 for 15,500 units of containers.
- **Plastic World (Khulna)** incurred a cost of BDT 98,800 for 19,000 units of packaging film.

Lowest Production Costs:

- **Prime Plastics (Sylhet)** incurred a low production cost of BDT 70,000 for 20,000 units of plastic bags, indicating efficient production at a lower unit cost of BDT 3.5.
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4. Machine Efficiency and Downtime

Machine Efficiency:

- **Range:** 85% - 95%
- **Highest Efficiency:**
 - **ABC Plastics (Dhaka)** and **Apex Plastics (Dhaka)** operated at 95% machine efficiency while producing bottles.
- **Lowest Efficiency:**
 - **Future Polymers (Sylhet)** and **Golden Polymers (Sylhet)** exhibited the lowest machine efficiency at 85% and 86%, respectively, when producing plastic bags.

Downtime:

- **Range:** 1.5 - 5 hours
- **Lowest Downtime:**
 - **Global Plastics (Dhaka)** and **BD Plastics (Dhaka)** both had a downtime of 1.5 hours while producing bottles.
- **Highest Downtime:**
 - **Future Polymers (Sylhet)** and **Golden Polymers (Sylhet)** experienced 5 hours of downtime.

5. Key Insights and Observations

- **Efficiency vs. Cost:** Factories with higher machine efficiency tend to have slightly lower production costs. For example, factories like **ABC Plastics (Dhaka)**, with 95% efficiency, reported lower production costs compared to others with less efficiency.
- **Impact of Downtime:** Factories with higher downtime, such as **Future Polymers (Sylhet)** and **Golden Polymers (Sylhet)**, showed lower machine efficiency, which negatively impacts their overall productivity and cost management.
- **Product Type Cost Dynamics:**
 - **Plastic bags** generally have the lowest production cost per unit, while **containers** have the highest.
 - **Packaging film** strikes a balance between efficiency and cost, with stable production levels across multiple factories.

6. Question and answer

a.what are the total Production by Region?

Answer :

a. Total Production by Region

This pivot table shows the total number of units produced in each region.

Region	Total Units Produced
Dhaka	87,800
Chittagong	91,000
Khulna	105,000
Sylhet	128,500

Analysis:

- **Sylhet** leads in production with 128,500 units, mostly driven by the plastic bags manufacturing.
- **Khulna** comes next, largely producing packaging films.
- **Dhaka** focuses heavily on bottles, producing 87,800 units.
- **Chittagong** focuses on container production, with a total of 91,000 units.

b. What is the average unit cost for each product type?

b. Average Unit Cost for Each Product Type

This pivot table shows the average unit cost for each product type:

Product Type	Average Unit Cost (BDT)
Bottles	5.55
Containers	6.08
Packaging Film	5.03
Plastic Bags	3.63

Analysis:

- **Containers** have the highest average unit cost (BDT 6.08), reflecting the higher complexity and material cost involved.
- **Plastic Bags** are the cheapest to produce, with an average cost of BDT 3.63 per unit.
- **Packaging Film** falls in the middle at BDT 5.03, while **bottles** cost slightly more on average (BDT 5.55).

c. What is the total production cost incurred by each factory?

Answer :

c. Total Production Cost Incurred by Each Factory

This pivot table calculates the total production cost for each factory:

Factory Name	Total Production Cost (BDT)
ABC Plastics	55,000
Super Plastics	54,150
Global Plastics	58,800
Elite Polymers	75,000
United Plastics	86,400
Prime Plastics	70,000
Mega Plastics	68,200
BD Poly Products	75,000
City Plastics	83,600
Advance Plastics	82,350
Union Plastics	81,600
Future Polymers	82,800
Bengal Plastics	52,920
Prime Polymers	87,000
United Poly	91,000
Dynamic Plastics	77,700
Apex Plastics	63,250
Crystal Polymers	80,600

Shine Plastics	92,500
Golden Polymers	73,800
Plastico Ltd.	68,400
Top Polymers	84,000
Super Poly	87,450
Polymat Ltd.	78,750
BD Plastics	61,600
Pioneer Polymers	94,550
Plastic World	98,800
Dynamic Polymers	86,400
Global Poly Ltd.	67,500

Analysis:

- The factory with the **highest production cost** is **Plastic World (Khulna)**, incurring a total cost of **BDT 98,800**, due to the high volume of packaging film production.
- **Pioneer Polymers (Chittagong)** also has a high production cost of **BDT 94,550**, driven by container production.
- On the other end, **Bengal Plastics (Dhaka)** has the lowest total production cost at **BDT 52,920**, despite producing a similar number of units as other bottle manufacturers.

d. How does machine efficiency vary across different production lines?

Answer :

d. Machine Efficiency by Production Line

This pivot table analyzes how machine efficiency varies across different production lines:

Production Line Average Machine Efficiency (%)	
Line 1	93.5
Line 2	91.2
Line 3	88.6
Line 4	86.8

Analysis:

- **Line 1** (primarily producing bottles) has the highest average machine efficiency at **93.5%**. Factories using this line, like **ABC Plastics** and **Apex Plastics**, show consistently high efficiency.
 - **Line 2** (used for containers) shows a strong efficiency rate at **91.2%**.
 - **Line 3** (focused on packaging films) has an efficiency rate of **88.6%**, slightly lower than Line 1 and Line 2, but still above average.
 - **Line 4** (used for plastic bags) has the **lowest average efficiency** at **86.8%**, indicating potential areas for improvement.
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Conclusion

1. **Total Production by Region:** Sylhet leads with 128,500 units produced, with Dhaka being the smallest contributor at 87,800 units.
2. **Average Unit Cost by Product Type:** Containers are the most expensive to produce, while plastic bags are the least expensive.
3. **Total Production Cost by Factory:** **Plastic World (Khulna)** incurred the highest production cost, while **Bengal Plastics (Dhaka)** had the lowest.
4. **Machine Efficiency by Production Line:** **Line 1**, used for bottle production, operates with the highest efficiency, while **Line 4** shows the lowest efficiency, likely due to the nature of plastic bag production.

These insights can be used to identify areas for cost optimization, efficiency improvements, and better production planning across the factories.

7. Recommendations

- **Improvement in Downtime Management:** Factories should investigate the root causes of downtime, particularly in regions like Sylhet, to optimize production lines and reduce lost time.
 - **Focus on Efficiency:** Factories with lower efficiency, such as **Future Polymers** and **Golden Polymers**, could benefit from upgrading machinery or optimizing labor to improve machine efficiency.
 - **Cost Reduction:** Factories with high production costs, particularly those producing containers, should focus on optimizing material usage and reducing waste to decrease unit costs.
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8. Conclusion

The report highlights the key metrics of production, cost, efficiency, and downtime for various plastic product manufacturers. While some factories are performing optimally in terms of efficiency and cost, others need to focus on reducing downtime and improving machine utilization. Regions like Dhaka and Chittagong show consistent production and efficiency, whereas Sylhet faces challenges in terms of downtime and efficiency.

By addressing these issues, the factories can improve their overall productivity and profitability in the competitive plastics manufacturing market.