

# Pharmaceutical Manufacturing KPI Dashboard (Power BI Case Study)

## Operational KPI Analysis Using Power BI

An interactive Power BI dashboard developed using pharmaceutical production data to monitor batch output, process time, yield, and process losses across stages, shifts, and products.

The solution helps production teams identify bottlenecks, reduce losses, and make faster, data-driven decisions.

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# Business Challenge

- Manual tracking of production KPIs
- No real-time visibility of losses
- Difficulty comparing stages and shifts
- Delay in management decisions

# Project Objective

- Build interactive production dashboard
- Monitor batch output and losses
- Track yield and process time
- Compare performance by stage and shift

# Dashboard KPIs

- Total batches produced
- Total input and final output
- Overall yield percentage
- Average process time per batch
- Total process loss
- Batches per day
- Average batch size

## Data Used

- Batch production records
- Stage-wise input and output quantities
- Process start and end times
- Shift and in-charge details
- Monthly production summaries
- SAP/ERP extracted production data

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|    | A          | B            | C            | D   | E           | F                | G               | H               | I                      | J                    | K                   | L                    | M             | N             | O |
|----|------------|--------------|--------------|---|-------------|------------------|-----------------|-----------------|------------------------|----------------------|---------------------|----------------------|---------------|---------------|---|
| 1  | Date       | Product Code | Batch Number | Product Name                                      | Stage       | Production Area  | Batch Size (Kg) | Avg Weight (mg) | Received Quantity (Kg) | Batch Start DateTime | Batch End DateTime  | Output Quantity (Kg) | Output (Lakh) | Incharge Name |   |
| 2  | 2023-05-20 | P1853        | B10002       | Amoxicillin 500 mg + Clavulanic Acid 125 mg Table | Dispensing  | Dispensing Area  | 308.38          | 500             | 308.38                 | 2023-05-20 06:57:00  | 2023-05-20 11:35:00 | 308.38               | 5.88          | Manoj Mehta   |   |
| 3  | 2023-05-20 | P1853        | B10002       | Amoxicillin 500 mg + Clavulanic Acid 125 mg Table | Granulation | Granulation Area | 308.38          | 500             | 308.38                 | 2023-05-20 12:33:00  | 2023-05-20 20:47:00 | 307.64               | 5.88          | Manoj Mehta   |   |
| 4  | 2023-05-20 | P1853        | B10002       | Amoxicillin 500 mg + Clavulanic Acid 125 mg Table | Compression | Compression Area | 308.38          | 500             | 307.64                 | 2023-05-20 21:59:00  | 2023-05-21 09:06:00 | 306.48               | 5.88          | Manoj Mehta   |   |
| 5  | 2023-05-20 | P1853        | B10002       | Amoxicillin 500 mg + Clavulanic Acid 125 mg Table | Coating     | Coating Area     | 308.38          | 500             | 306.48                 | 2023-05-21 09:56:00  | 2023-05-21 18:34:00 | 304.92               | 5.88          | Manoj Mehta   |   |
| 6  | 2023-07-19 | P9578        | B10113       | Azithromycin Tablets 250 mg                       | Dispensing  | Dispensing Area  | 215.24          | 700             | 215.24                 | 2023-07-19 11:27:00  | 2023-07-19 16:24:00 | 215.24               | 2.94          | Ravi Sharma   |   |
| 7  | 2023-07-19 | P9578        | B10113       | Azithromycin Tablets 250 mg                       | Granulation | Granulation Area | 215.24          | 700             | 215.24                 | 2023-07-19 17:12:00  | 2023-07-20 02:38:00 | 214.41               | 2.94          | Ravi Sharma   |   |
| 8  | 2023-07-19 | P9578        | B10113       | Azithromycin Tablets 250 mg                       | Compression | Compression Area | 215.24          | 700             | 214.41                 | 2023-07-20 03:18:00  | 2023-07-20 14:28:00 | 213.5                | 2.94          | Ravi Sharma   |   |
| 9  | 2023-07-19 | P9578        | B10113       | Azithromycin Tablets 250 mg                       | Coating     | Coating Area     | 215.24          | 700             | 213.5                  | 2023-07-20 15:21:00  | 2023-07-21 00:13:00 | 212.03               | 2.94          | Ravi Sharma   |   |
| 10 | 2023-10-11 | P4184        | B10124       | Paracetamol Tablets 500 mg                        | Dispensing  | Dispensing Area  | 324.38          | 650             | 324.38                 | 2023-10-11 07:43:00  | 2023-10-11 12:18:00 | 324.38               | 4.9           | Ravi Sharma   |   |
| 11 | 2023-10-11 | P4184        | B10124       | Paracetamol Tablets 500 mg                        | Granulation | Granulation Area | 324.38          | 650             | 324.38                 | 2023-10-11 13:27:00  | 2023-10-11 21:50:00 | 323.73               | 4.9           | Ravi Sharma   |   |
| 12 | 2023-10-11 | P4184        | B10124       | Paracetamol Tablets 500 mg                        | Compression | Compression Area | 324.38          | 650             | 323.73                 | 2023-10-11 22:22:00  | 2023-10-12 09:43:00 | 322.67               | 4.9           | Ravi Sharma   |   |
| 13 | 2023-10-11 | P4184        | B10124       | Paracetamol Tablets 500 mg                        | Coating     | Coating Area     | 324.38          | 650             | 322.67                 | 2023-10-12 10:14:00  | 2023-10-12 18:37:00 | 321.21               | 4.9           | Ravi Sharma   |   |
| 14 | 2023-01-04 | P2181        | B10136       | Azithromycin Tablets 250 mg                       | Dispensing  | Dispensing Area  | 161.04          | 500             | 161.04                 | 2023-01-04 08:41:00  | 2023-01-04 13:24:00 | 161.04               | 3.09          | Ravi Sharma   |   |
| 15 | 2023-01-04 | P2181        | B10136       | Azithromycin Tablets 250 mg                       | Granulation | Granulation Area | 161.04          | 500             | 161.04                 | 2023-01-04 14:23:00  | 2023-01-04 23:00:00 | 160.46               | 3.09          | Ravi Sharma   |   |
| 16 | 2023-01-04 | P2181        | B10136       | Azithromycin Tablets 250 mg                       | Compression | Compression Area | 161.04          | 500             | 160.46                 | 2023-01-04 23:31:00  | 2023-01-05 11:30:00 | 159.48               | 3.09          | Ravi Sharma   |   |
| 17 | 2023-01-04 | P2181        | B10136       | Azithromycin Tablets 250 mg                       | Coating     | Coating Area     | 161.04          | 500             | 159.48                 | 2023-01-05 12:20:00  | 2023-01-05 20:52:00 | 157.99               | 3.09          | Ravi Sharma   |   |
| 18 | 2023-06-21 | P2849        | B10232       | Azithromycin Tablets 250 mg                       | Dispensing  | Dispensing Area  | 128.67          | 650             | 128.67                 | 2023-06-21 10:40:00  | 2023-06-21 14:51:00 | 128.67               | 1.79          | Sandeep Rathi |   |
| 19 | 2023-06-21 | P2849        | B10232       | Azithromycin Tablets 250 mg                       | Granulation | Granulation Area | 128.67          | 650             | 128.67                 | 2023-06-21 15:42:00  | 2023-06-22 01:29:00 | 127.86               | 1.79          | Sandeep Rathi |   |
| 20 | 2023-06-21 | P2849        | B10232       | Azithromycin Tablets 250 mg                       | Compression | Compression Area | 128.67          | 650             | 127.86                 | 2023-06-22 02:23:00  | 2023-06-22 14:11:00 | 126.7                | 1.79          | Sandeep Rathi |   |
| 21 | 2023-06-21 | P2849        | B10232       | Azithromycin Tablets 250 mg                       | Coating     | Coating Area     | 128.67          | 650             | 126.7                  | 2023-06-22 15:07:00  | 2023-06-23 00:05:00 | 125.19               | 1.79          | Sandeep Rathi |   |
| 22 | 2023-02-10 | P6959        | B10259       | Pantoprazole Tablets 40 mg                        | Dispensing  | Dispensing Area  | 151.62          | 500             | 151.62                 | 2023-02-10 07:32:00  | 2023-02-10 12:13:00 | 151.62               | 3.13          | Pooja Verma   |   |
| 23 | 2023-02-10 | P6959        | B10259       | Pantoprazole Tablets 40 mg                        | Granulation | Granulation Area | 151.62          | 500             | 151.62                 | 2023-02-10 13:10:00  | 2023-02-10 22:09:00 | 151.11               | 3.13          | Pooja Verma   |   |
| 24 | 2023-02-10 | P6959        | B10259       | Pantoprazole Tablets 40 mg                        | Compression | Compression Area | 151.62          | 500             | 151.11                 | 2023-02-10 22:54:00  | 2023-02-11 10:08:00 | 150.17               | 3.13          | Pooja Verma   |   |
| 25 | 2023-02-10 | P6959        | B10259       | Pantoprazole Tablets 40 mg                        | Coating     | Coating Area     | 151.62          | 500             | 150.17                 | 2023-02-11 11:24:00  | 2023-02-11 20:14:00 | 148.67               | 3.13          | Pooja Verma   |   |
| 26 | 2023-05-10 | P5541        | B10428       | Azithromycin Tablets 250 mg                       | Dispensing  | Dispensing Area  | 131.99          | 700             | 131.99                 | 2023-05-10 11:26:00  | 2023-05-10 16:09:00 | 131.99               | 1.8           | Amit Kumar    |   |
| 27 | 2023-05-10 | P5541        | B10428       | Azithromycin Tablets 250 mg                       | Granulation | Granulation Area | 131.99          | 700             | 131.99                 | 2023-05-10 16:41:00  | 2023-05-11 02:21:00 | 131.39               | 1.8           | Amit Kumar    |   |
| 28 | 2023-05-10 | P5541        | B10428       | Azithromycin Tablets 250 mg                       | Compression | Compression Area | 131.99          | 700             | 131.39                 | 2023-05-11 03:41:00  | 2023-05-11 14:47:00 | 130.42               | 1.8           | Amit Kumar    |   |
| 29 | 2023-05-10 | P5541        | B10428       | Azithromycin Tablets 250 mg                       | Coating     | Coating Area     | 131.99          | 700             | 130.42                 | 2023-05-11 15:37:00  | 2023-05-11 23:45:00 | 128.87               | 1.8           | Amit Kumar    |   |
| 30 | 2023-06-02 | P1635        | B10466       | Azithromycin Tablets 250 mg                       | Dispensing  | Dispensing Area  | 341.44          | 700             | 341.44                 | 2023-06-02 09:04:00  | 2023-06-02 13:42:00 | 341.44               | 4.65          | Neha Singh    |   |
| 31 | 2023-06-02 | P1635        | B10466       | Azithromycin Tablets 250 mg                       | Granulation | Granulation Area | 341.44          | 700             | 341.44                 | 2023-06-02 14:29:00  | 2023-06-02 22:32:00 | 340.56               | 4.65          | Neha Singh    |   |
| 32 | 2023-06-02 | P1635        | B10466       | Azithromycin Tablets 250 mg                       | Compression | Compression Area | 341.44          | 700             | 340.56                 | 2023-06-02 23:26:00  | 2023-06-03 11:25:00 | 339.49               | 4.65          | Neha Singh    |   |
| 33 | 2023-06-02 | P1635        | B10466       | Azithromycin Tablets 250 mg                       | Coating     | Coating Area     | 341.44          | 700             | 339.49                 | 2023-06-03 12:08:00  | 2023-06-03 20:57:00 | 338.22               | 4.65          | Neha Singh    |   |
| 34 | 2023-06-18 | P8309        | B10565       | Azithromycin Tablets 250 mg                       | Dispensing  | Dispensing Area  | 287.19          | 700             | 287.19                 | 2023-06-18 07:40:00  | 2023-06-18 12:37:00 | 287.19               | 4.07          | Manoj Mehta   |   |
| 35 | 2023-06-18 | P8309        | B10565       | Azithromycin Tablets 250 mg                       | Granulation | Granulation Area | 287.19          | 700             | 287.19                 | 2023-06-18 13:15:00  | 2023-06-18 22:44:00 | 286.38               | 4.07          | Manoj Mehta   |   |
| 36 | 2023-06-18 | P8309        | B10565       | Azithromycin Tablets 250 mg                       | Compression | Compression Area | 287.19          | 700             | 286.38                 | 2023-06-18 23:15:00  | 2023-06-19 10:34:00 | 285.33               | 4.07          | Manoj Mehta   |   |
| 37 | 2023-06-18 | P8309        | B10565       | Azithromycin Tablets 250 mg                       | Coating     | Coating Area     | 287.19          | 700             | 285.33                 | 2023-06-19 11:31:00  | 2023-06-19 20:17:00 | 283.88               | 4.07          | Manoj Mehta   |   |
| 38 | 2023-11-08 | P5456        | B10738       | Paracetamol Tablets 500 mg                        | Dispensing  | Dispensing Area  | 494.13          | 700             | 494.13                 | 2023-11-08 11:50:00  | 2023-11-08 16:49:00 | 494.13               | 6.64          | Pooja Verma   |   |
| 39 | 2023-11-08 | P5456        | B10738       | Paracetamol Tablets 500 mg                        | Granulation | Granulation Area | 494.13          | 700             | 494.13                 | 2023-11-08 17:25:00  | 2023-11-09 02:08:00 | 493.29               | 6.64          | Pooja Verma   |   |

# Dashboard Overview – Production KPIs

997

Total Batches

301.52K

Total Input (Kg)

298.37K

Final Output (Kg)

8.38

Avg Process Time (hrs)

98.96

Overall Yield %

3.15K

Total Process Loss (Kg)

2.72

Batches per Day

301.39

Avg Batch Size (Kg)

2023

2024

Jan

Feb

Mar

Apr

May

Jun

Jul

Aug

Sep

Oct

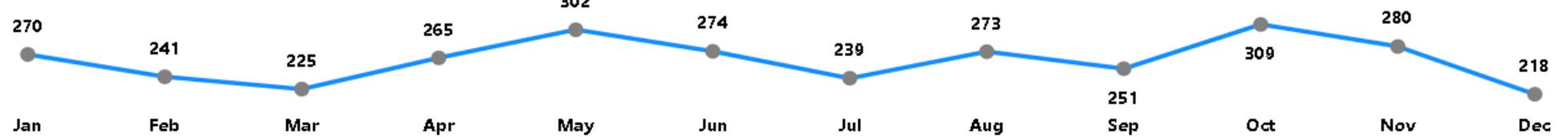
Nov

Dec

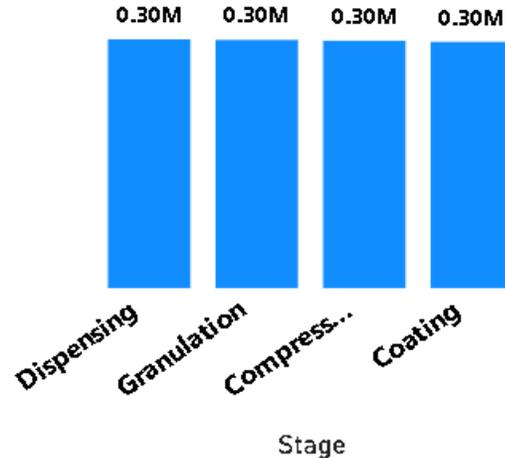
Monthly Output Trend (Kg)



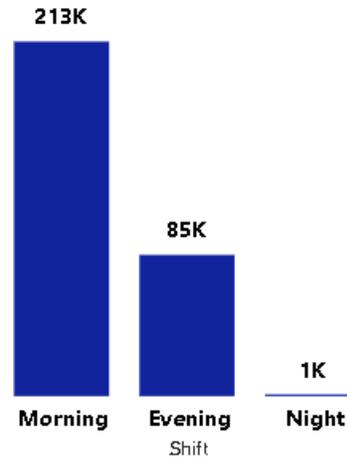
Monthly Process Loss (Kg)



Stage wise output



Shift wise output



Batches per Shift



# Stage Performance Analysis

2023

2024

Stage and product by shift

All

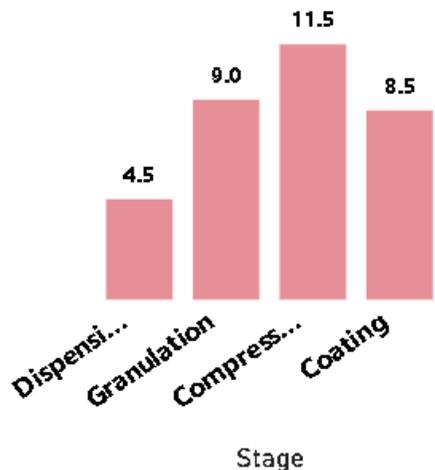
Incharge Name

All

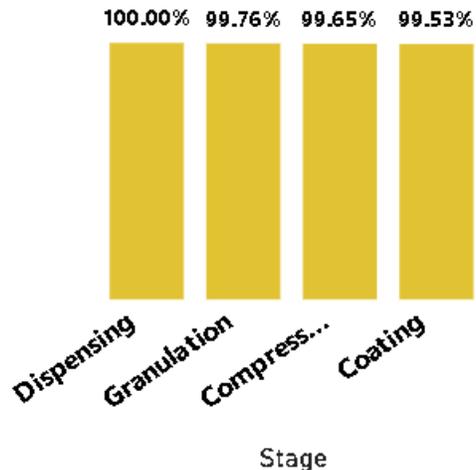
Year, Month

All

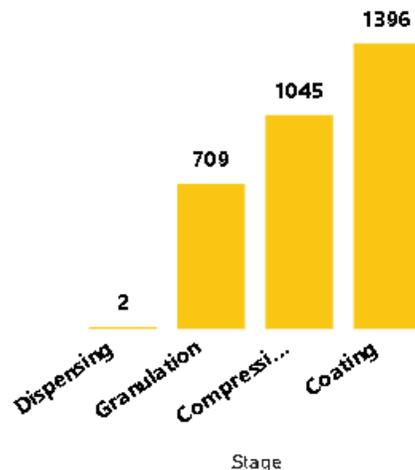
Avg Process Time by Stage (hrs)



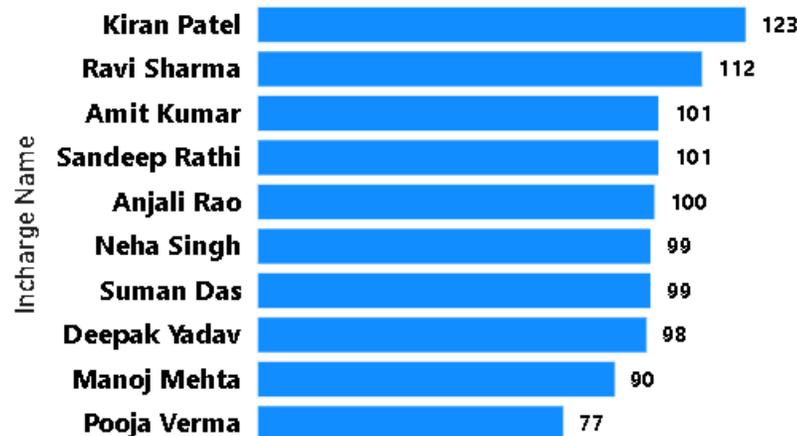
Yield % by Stage



Process Loss by Stage (kg)



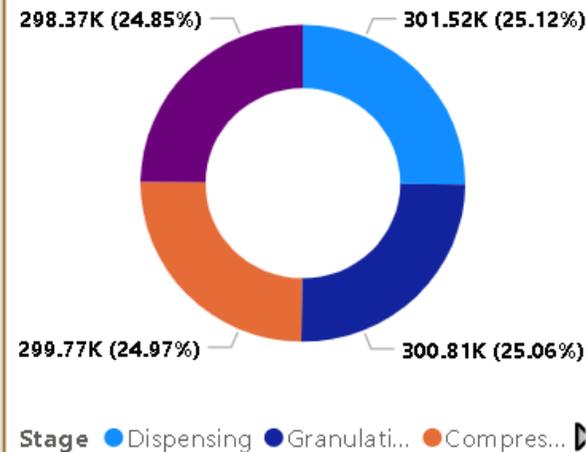
Batches by Incharge



Top Products by Process Loss



Output Contribution by Stage



# Key Insights

- Coating stage shows the highest process loss
- Compression stage has the longest processing time
- Morning shift delivers the highest output
- A few products contribute the majority of total loss

# Business Impact

- Faster production performance review
- Early detection of high-loss stages
- Better shift planning and scheduling
- Improved management decision-making

## Tools & Technologies Used

- Power BI
- Power Query
- DAX measures
- Data modeling
- Interactive dashboards
- KPI design & dashboard storytelling