BY GROUP 10

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Dr. Bardhan's Low-Cost Glucometer

CASE STUDY

PRODUCT AND SUPPLY CHAIN STRATERGY

Product stratergy

1. customer centric design
2. Assemble to order strategy.
3. Key Performance Indicators (KPIs):Lead time reduction, Cost per unit, Quality assurance

Supply Chain stratergy

- push pull stratergy
    - Push: Raw material procurement and component sourcing based on forecasts.
    - Pull: Assembly and final packaging based on actual customer demand.

PRODUCT DESIGN PROCESS

IDEA GENERATION

The goal was to create a low-cost glucometer for rural and middle-class communities, ensuring affordable diabetes monitoring.

FEASIBILITY STUDY

With a clear concept, the team assessed feasibility by analyzing production costs, market demand, and technical challenges while defining key specs like accuracy, usability, and durability.

RAPID PROTOTYPING

With feasibility confirmed, the team rapidly prototyped various models, testing materials and designs. This iterative process refined the product while ensuring affordability.

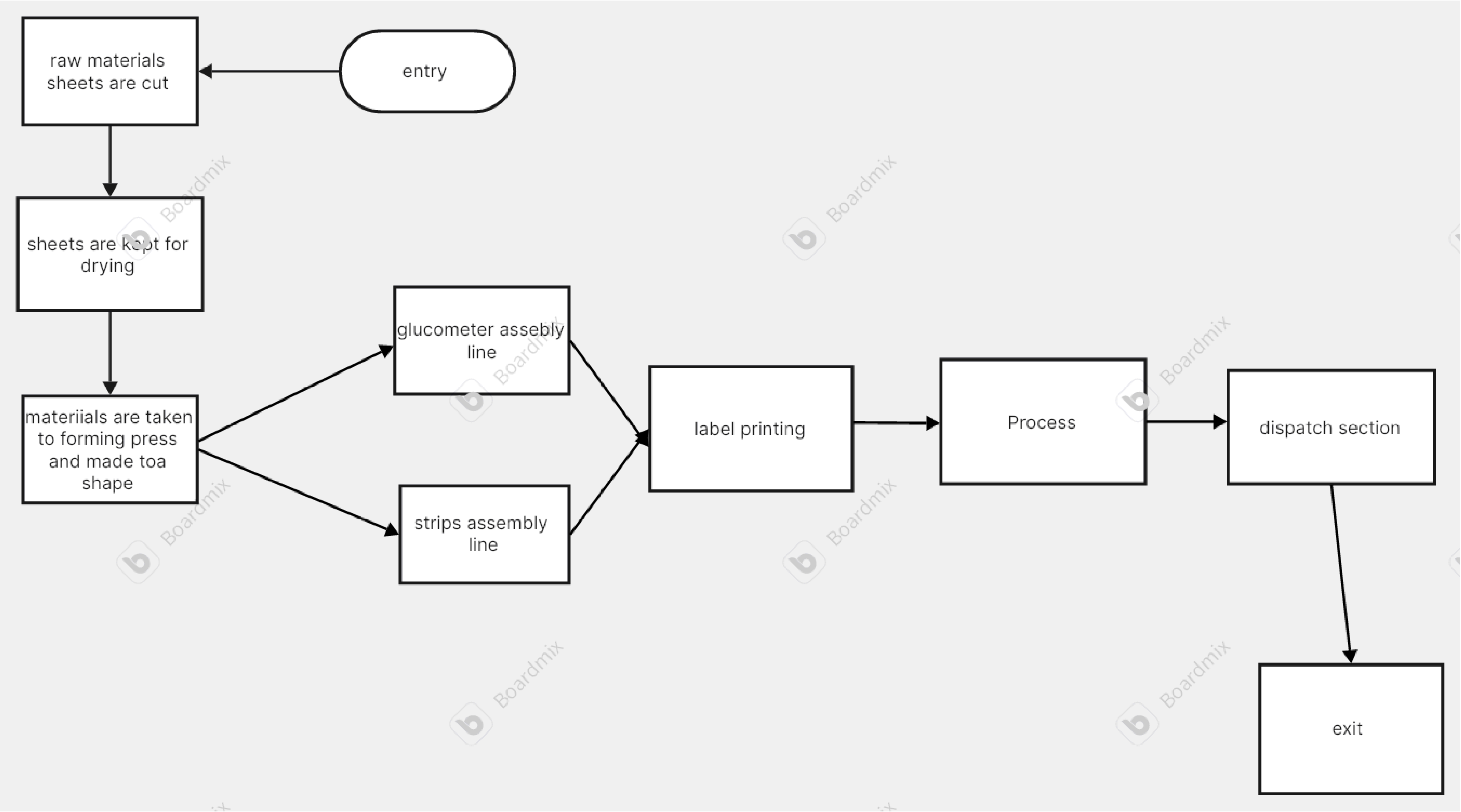
Pilot Run and Final Testing

After finalizing the prototype, a pilot production run tested units in-house and in rural areas. Feedback helped resolve issues and refine the final design.

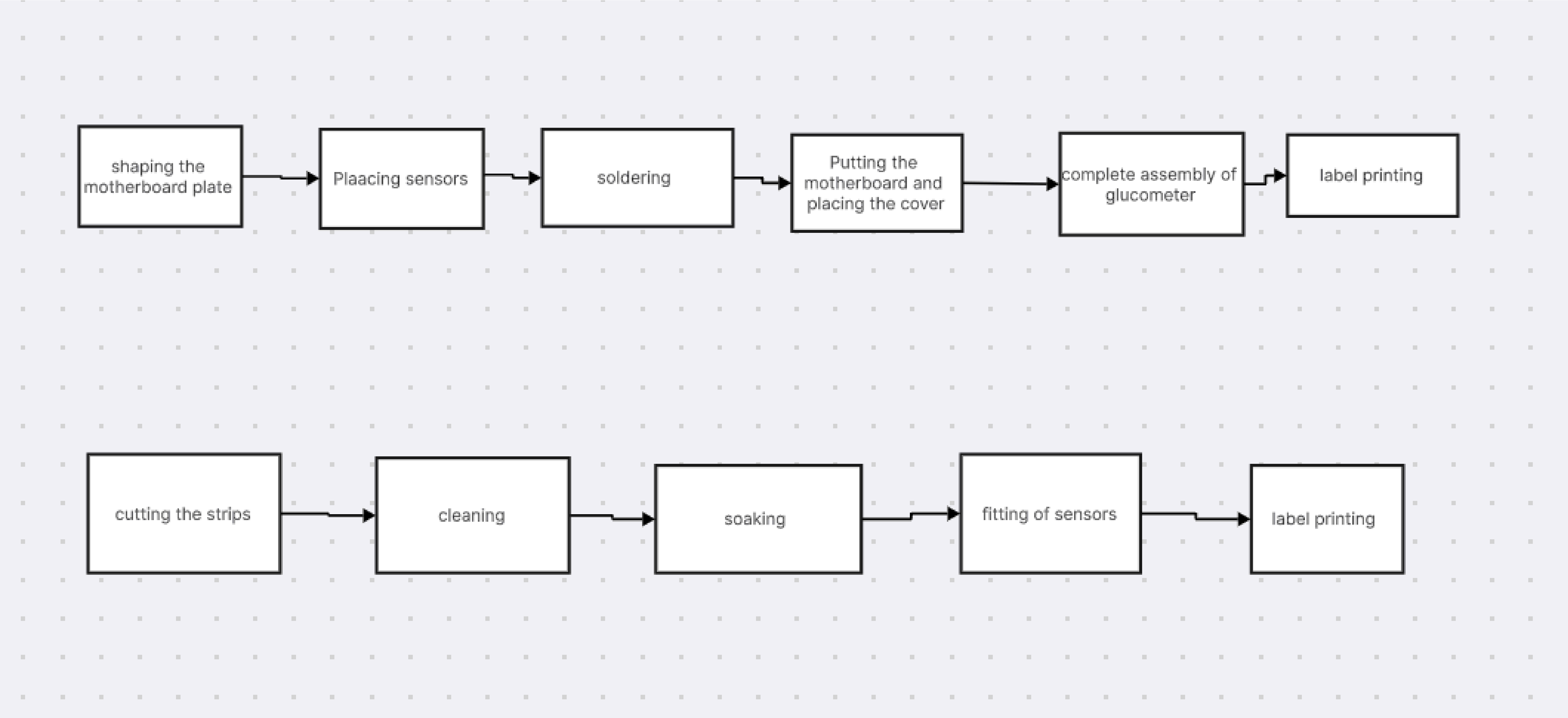
NEW PRODUCT LAUNCH

After passing all tests, the glucometer launched in February 2016, quickly gaining popularity for its affordability and user-friendly design.

CAPACITY LAYOUT



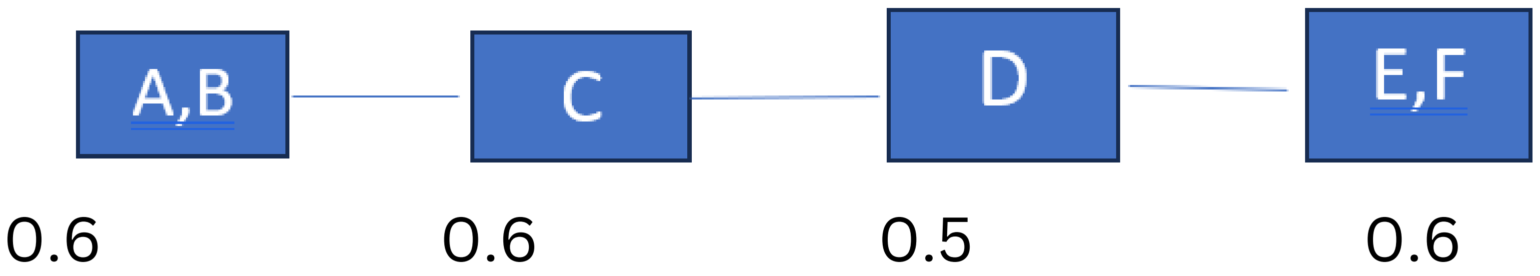
CAPACITY LAYOUT



ASSEMBLY LINE

GLUCOMETER

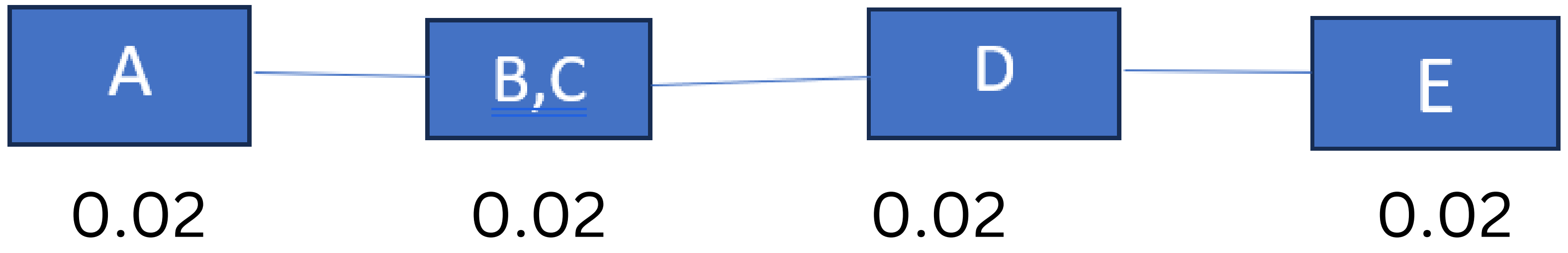
Layout for the Assembly line:



E(GLUCOMETER = 95.83%

STRIPS

Layout for the assembly line



E(STRIPS) =100%

FORECASTING MODEL

We used four forecasting methods—naive, average of past data, exponential smoothing, and linear trend—to evaluate accuracy. By analyzing the Mean Forecasting Error (MFE), we found that the linear trend method had the lowest MFE for both glucometers and strips, making it the most suitable approach for forecasting production in both assembly lines.

Mean Forecasting error (MFE)	30.07246377
Mean absolute error (MAE)	517.7536232
Mean squared error (MSE)	315214.372
Root Mean Squared error (RMSE)	561.4395533
Mean Percentage Error (MPE)	0.070145341
Mean Absolute Percentage Error (MA	3.276270386

linear trend for glucometer

Mean Forecasting error (MFE)	1202.898551
Mean absolute error (MAE)	20710.14493
Mean squared error (MSE)	504342995.2
Root Mean Squared error (RMSE)	22457.58213
Mean Percentage Error (MPE)	0.070145341
Mean Absolute Percentage Error (MA	3.276270386

linear trend for strips

IMPACT OF FORECASTING

the demand for glucometers varies between 14,500 and 17,500 units, as indicated by the Linear Trend Forecasting Method. Their current production capacity is 600 units per day, totaling 18,000 per month, while the forecasted demand is around 16,000 units monthly. This shows a clear excess capacity. Similarly, strip demand ranges from 58,000 to 68,000 units. They currently produce 24,000 strips daily, resulting in 720,000 units per month, while the forecasted demand is about 600,000 units. This again highlights excess capacity. Since demand is below production capacity, expansion isn’t needed. Instead, they can adjust production schedules for both glucometers and strips to align with forecasted demand, minimizing overproduction and inventory holding costs. By following the linear trend forecast, they can effectively cut down expenses and avoid excess stock.

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THANK YOU