RIPHAH INTERNATIONAL UNIVERSITY

Faculty of Computing

Business Process Re-Engineering

Semester Project

Semester: Fall 2023 **Max Marks:** 12

Submission Date: Dec 23, 2023 **Submission Time:** 11:00 PM

Instructors: Mr. Uzair Rasheed

1. Project Idea: Waste(s) Reduction/Elimination in ABC manufacturing Company

Background: On the very first visit to ABC Company manufacturing auto parts, there were many surprises, which were not affecting the operating management. The people walk day-in and day-out on the shop floor and are still unaware of the problems which remain hidden and are a cost to the company. The aisles were full of trolleys loaded with WIP and further every nook and corner was having no. of trays filled with WIP. Also, many of the trays didn't carry the material identification including the quantities lying therein. This did represent the waste which was generated by the principle of inventory management like 'First in last out' i.e. inventory getting dumped one above the other. This type of planning attitude must provide for obsolescence and scrap. This further reveals that there was good amount of overproduction which is again type of waste that is producing more than the requirement. The principles of 5S have been used to identify, analyse and evaluate the existing manufacturing system. The fact regarding over production has been established as per production data: planned v/s actual. A total of 21 models were identified for overproduction and this is 10% of the existing models. The period understudy is from Jul'2011 to Dec'2011 and model wise-month wise planned v/s actual production data of these 21 models is as per Table 1 and graphically presented in Figure1.

Table 1 Production Data: Planned v/s Actual

Model No.	Jul'11		Aug'11		Sep'11		Oct'11		Nov'11		Dec'11	
	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual
3220		1560	1740	1296	84		84	236			3050	3360
3247	150	150										648
3289	4192	4872	2000	2769	4520	6334					1000	1152
3316	1100	680			150		650	528	6			948
3601		4050	200	975		3750	6250	7512	5800	5600	4200	4055
3711	6124	6286	7428	7650	8278	5198	9000	11402	8598	9740	1858	2824
3728	8820	7554	13266	14511	8795	9120	6675	7840	5680	7416	4714	5414
3900	4522	4160	5000	4416	7234	5328	9306	11481	4325	4848	2627	4018
4315	270	3780	1600	1331	270	420						552
4321	1000	920	2000	1950			600				500	1368
6124			200	144	56		56	192			48	192
6132			300	216	84	60	24				84	476
6133	1000	1830	2040	2796	8		8					
6138	180	220	200		200	192	8	192				
6143	2300	2380	920	1055	565	619	546	635	1200	1055	745	857
6213	5000	4770		1798			12300	13099			7200	11668
6226	5000	3921		2220	11114	20147	16167	16595	15500	21560	2200	2789
6229	959	1077		220							1200	1093
6241	3140	4470	8170	8210	7460	7780	5080	8280	1850	3206	3244	3636
6268	500	248	270	543								
6288									2080	4704		648
Grand Total	**44257**	**52928**	**45334**	**52100**	**48818**	**58948**	**66754**	**77992**	**45039**	**58129**	**32670**	**45698**

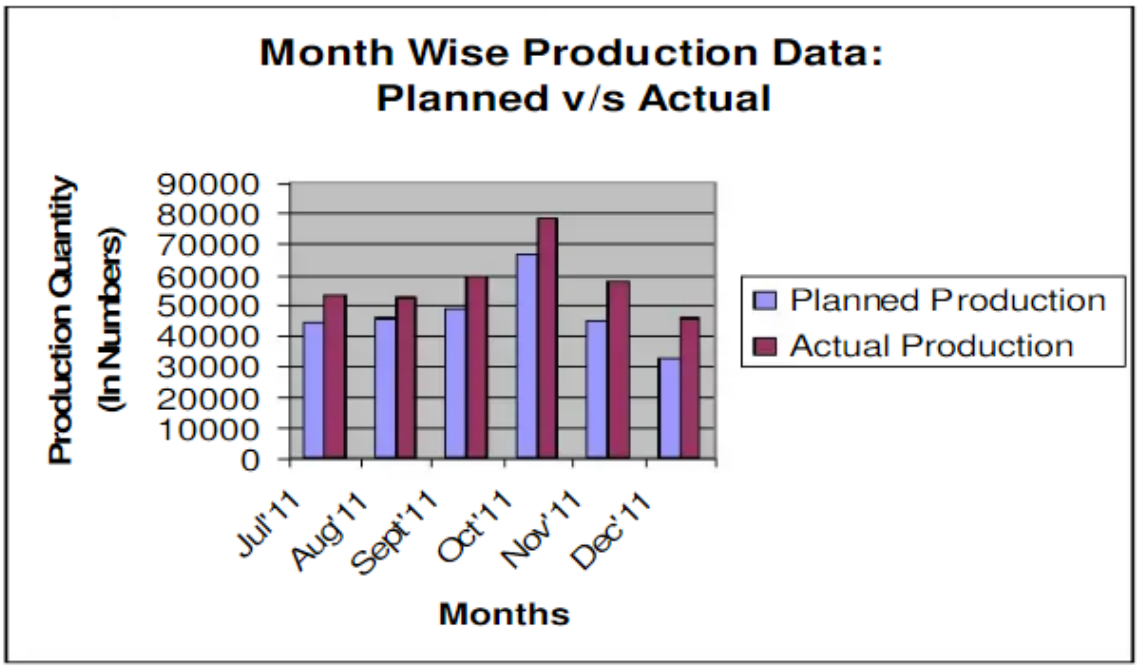

Figure 1 Planned v/s Actual Production

Instructions

- As per your knowledge of the 8 wastes defined in lean, find out all the possible reasons of this situation and identify which wastes are causing this situation.
- After identifying the right waste (s) causing this situation, define a strategy of lean eliminating or reducing the waste.
- Choose appropriate lean tools for reduction/elimination of the waste.
- Implement the strategy with the help of lean tools.
- Show the results of production after implementation of strategy.
- Interpret your results.

The above was a scenario about Lean, The next two scenarios are about Six Sigma.

2. Project Idea: Cycle Time Reduction in Order Processing for XYZ E-commerce Company

Background: XYZ E-commerce Company, a growing online retail business, has identified challenges in the order processing department leading to extended cycle times. The current process involves order receipt, verification, picking, packing, and shipping. The company aims to streamline this process to reduce cycle times, enhance customer satisfaction, and meet the increasing demand.

- Implement DMAIC
- Use the Quality tools of Six Sigma i.e. Pareto Chart
- Use the metrics of Six Sigma i.e. DPMO
- Implement all the steps defined in the Scenario
- Show Initial status of the company and improved status of the company after implementing Six Sigma

Show the difference/comparison of initial and improved processes.

Scenario:

1. **Process Mapping:**
   - Begin by mapping the entire order processing workflow, starting from the moment an order is placed until it is shipped.
   - Identify each step involved, including order verification, inventory check, picking items, packing, and shipping.
2. **Identify Areas of Waste or Inefficiency:**

- Analyze the process map to identify bottlenecks or delays.
- Collect data on order processing times, error rates, and customer complaints to pinpoint inefficiencies.

3. **Propose Improvements:**
   - Implement changes such as:
   - Introduction of an automated order verification system to reduce manual efforts.
   - Optimization of warehouse layout for quicker access to frequently ordered items.
   - Implementation of a real-time tracking system for order status visibility.
4. **Data Collection and Analysis:**
   - Collect data on order processing times before and after implementing changes.
   - Use statistical tools like control charts to analyze variations in cycle times.
5. **Root Cause Analysis:**
   - If variations persist, conduct a root cause analysis using the Fishbone Diagram or 5 Whys.
   - Identify issues such as delays in communication between departments or insufficient inventory levels.
6. **Implement Changes Based on Data Analysis:**
   - Roll out refined changes based on the data analysis and root cause identification.
   - Conduct training sessions for staff to ensure smooth transition and understanding of updated
7. **Monitor and Evaluate:**
   - Continuously monitor the order processing cycle time after implementation.

Expected Outcomes:

- 20% reduction in overall order processing cycle time.
- Decreased error rates in order fulfillment.

3. Project Idea: Defect Reduction in Automobiles Manufacturing Company's Assembly Line

Background: XYZ Manufacturing Company specializes in producing electronic components. The assembly line has been facing challenges with defects, leading to increased rework and customer complaints. The company aims to reduce defects in the assembly process using Six Sigma Yellow Belt methodologies.

- Implement DMAIC
- Use the Quality tools of Six Sigma i.e. Pareto Chart
- Use the metrics of Six Sigma i.e. DPMO
- Implement all the steps defined in the Scenario
- Show Initial status of the company and improved status of the company after implementing Six Sigma
- Show the difference/comparison of initial and improved processes.

Scenario:

1. **Define the Process:**
   - Title: Defect Reduction in Electronic Component Assembly.
   - Scope: Focus on the assembly process, from component integration to final product testing.

2. **Process Mapping:**
    - Create a comprehensive process map outlining each step in the assembly process.
    - Identify critical stages, quality checkpoints, and areas prone to defects.
3. **Identify Areas of Waste or Inefficiency:**
    - Utilize the process map to identify stages where defects commonly occur.
    - Collect data on defect rates, rework time, and customer complaints.
4. **Propose Improvements:**
    - Implement changes such as:
        - Enhanced training for assembly line workers on quality standards.
        - Introduction of automated inspection systems to detect defects early.
        - Revision of component storage methods to prevent damage.
5. **Data Collection and Analysis:**
    - Collect data on defect rates before and after implementing changes.
    - Use statistical tools like Pareto charts to identify the most frequent types of defects.
6. **Root Cause Analysis:**
    - If variations persist, conduct a root cause analysis using tools like the Fishbone Diagram or 5 Whys.
    - Identify root causes such as inadequate training, equipment malfunctions, or inconsistent material quality.
7. **Implement Changes Based on Data Analysis:**
    - Implement refined changes based on the data analysis and root cause identification.
    - Monitor the assembly line closely to ensure new practices are followed consistently.
8. **Monitor and Evaluate:**
    - Continuously monitor defect rates after implementation.

Expected Outcomes:

- 30% reduction in overall defect rates.
- Decreased rework time.
- Enhanced product quality leading to fewer returns.

Submission Guidelines:

- Submit a well-organized handwritten scanned document in PDF format on Moellim in due time.
- Similar attempts will be considered as cheating and will be marked zero.
- Late submissions are not acceptable.
- Only one person of the group should submit their project.
- Rename the file with group number i.e. “Group1 5-1”.
- Clearly show all calculations and provide explanations for each step.
- Support improvement strategies with logical reasoning and potential benefits.
- Use appropriate headings and subheadings for clarity.

Evaluation Criteria:

- Accuracy and depth of calculations such as results of tools implementation, results of metrics.
- Precision and correctness in presenting results.
- Feasibility and effectiveness of proposed efficiency improvement strategies.
- Thoughtful interpretation of calculations and their implications.
- Quality of presentation and adherence to submission guidelines.