

Scenario

A national retail chain is receiving frequent complaints from customers about delays in billing and long queues at checkout counters. The current manual billing process has been in place for years. Attempts to improve it by hiring more staff and rearranging counters have yielded only short-term benefits. After a strategic review, the company decides to design a new self-checkout kiosk system that automates billing and payment to handle peak-time rush efficiently and enhance customer satisfaction.

Questions:

Based on the scenario above,

1. Identify which Six Sigma methodology (DMAIC or DMADV) is best suited for this case. *(1 Mark)*
2. Justify your answer with appropriate reasoning. *(2 Marks)*
3. Explain how each phase of the selected methodology would be implemented for this project. *(3 Marks)*

Answer Key

1. Identification of Methodology – (1 Mark)

- **DMADV** is the appropriate methodology.

2. Justification – (2 Marks)

- The company is planning to **develop a completely new self-checkout kiosk system**, not just improve the existing manual billing process.
- **DMAIC** is used to improve existing processes, while **DMADV** is suitable for **designing new processes or products** from scratch.
- Since earlier improvements did not sustain results, a new system is required to meet customer expectations and performance goals.

3. Explanation of DMADV Phases – (3 Marks)

- **Define:** Set clear project objectives (e.g., **reducing queue time, increasing customer satisfaction**) and gather customer requirements.
- **Measure:** Collect data **on current billing time, customer waiting time, and transaction errors** to establish performance baselines.
- **Analyse:** Identify features required in the new system (e.g., **user-friendly interface, digital payment integration**) and study best practices.
- **Design:** Develop a detailed **prototype of the self-checkout kiosk system** including hardware, UI, and process flow.
- **Verify:** **Test the system in pilot stores, gather user feedback, and compare performance** with defined success criteria (e.g., time saved, error reduction).

Marking Rubric (Total: 6 Marks) :

- Q1: Correct methodology (DMADV) – 1 mark
- Q2: Logical and relevant justification – up to 2 marks
- Q3: Phase explanations – 1 mark each (total 3 marks)