No. of Printed Pages : 8

MS-96

MANAGEMENT PROGRAMME

030081

Term-End Examination

June, 2014

MS-96 : TOTAL QUALITY MANAGEMENT

Time : 3 hours *Maximum Marks : 100*

(Weightage 70%)

Note : *(i) There are two Sections : **Section A** and **Section B***

*(ii) Attempt **any three** questions from **Section A**, which carries **20** marks each.*

*(iii) **Section B** is **compulsory** and carries **40** marks.*

SECTION - A

1. Discuss Juran's trilogy of quality and how it is used to reduce the cost of quality over time ?

2. Explain in brief the Plan-Do-Check-Act (PDCA) cycle with help of a relevant example.

3. Write short notes on :
   (a) Company Wide Quality Management (CWQM)
   (b) Discuss deployment of Strategic Quality Goals

4. What is ISO 9000 ? Discuss the detailed structure of ISO 9000 QMS standards with special emphasis on contractual standards.

5. What are the general requirements of 'The Award Process' ? Discuss each requirement in brief.

SECTION - B

6. Read the following case study and answer the questions given at the end.

Deployment of TQM in a mid - sized newspaper

Quality in the Total Quality Management (TQM) method is defined as customer delight. Customers are delighted when their needs are met or exceeded. The needs of the customer are :

- Product quality
- Delivery quality
- Service quality
- Cost value

Improving customer service was the focus of two projects within the deployment of TQM in a mid-sized newspaper in India.

Reducing Advertisement Processing Time

The newspaper closed its window for booking advertisements at 4 p.m. every day. However, many of the newspaper's advertisers expressed that they would be delighted if this limit could be extended to 5 p.m., as they were not able to send ad materials on time for the 4 p.m. deadline.

The TQM leaders formed a team consisting of representatives from each link in the ad-processing chain of work. The team attended a two - day quality - mindset program to expose them to the concepts of TQM and also to open their minds about experimenting with change.

Defining the Problem

In TQM, *problems* are defined as *Problem = Desire − Current status*. Therefore, in this case :

Problem = Desired closing time − Current closing time = 5 p.m. − 4 p.m. = 60 minutes

The 4 p.m. deadline had been instituted because :

- Deadline for sending the ad pages to the press was 6.30 p.m.
- Standard cycle time for processing ads into pages was 2.5 hours

Achieving a 5 p.m. ad closure deadline meant reducing the standard ad processing time by 40 percent, or one hour. To define the current state, the actual time spent preparing pages to go to press was collected over several days.

Defining the metric :

If $T = (page\ processing\ time - page\text{-}to\text{-}press\ deadline)$, then for 99.7 percent on-time delivery, or 3 sigma performance, the average $T + 3$ standard deviations of T should be less than 0.

Measure the current state :

The ad closing deadline could not be delayed by an hour without delaying the dispatch of the newspaper to press by an equivalent amount. Therefore, the current state was calculated by measuring the delay compared to a notional 5 : 30 p.m. dispatch time rather than the actual deadline of 6 : 30 p.m. Calculations showed that :

- Average $T = 72$ minutes
- Average $T + 3$ sigma of $T = 267$ minutes

The problem was defined : reduce 267 minutes to less than 0 minutes.

Analyzing the Problem

The team monitored the time spent on each activity of the ad process (Table 1).

Table 1 : Time Spent on Ad Process

Activity	Deadline
Ad receiving	4 p.m.
Dummy "dump"	4 : 30 p.m.
Pagination complete	6 : 30 p.m.

During the 4 to 4 : 30 p.m. period, ads received at the last minute were still being processed. At 4 : 30 p.m., material was dumped into the layout for *pagination*, meaning arrangement on the newspaper pages using software and manual corrections. To achieve the objective of a 5 p.m. ad content deadline, the pagination time had to be reduced.

Brainstorming why pagination took two hours produced three possible major reasons :

- Error correction
- Delayed receipt of ad material for a booked ad
- Last - minute updates from advertiser

All this work was carried out after the last ad was submitted. Team members suggested that if ads were released for pagination earlier, removing errors could begin simultaneously with the processing of the last ads in order to reduce cycle time. They agreed to give two early outputs at 3 : 30 and 4 p.m., before the final dump at 4 : 30 p.m.

Testing the Ideas

Table 2: Problems with New Process

Problem	Effect	Root Cause	Solution
Missing material removal	15 to 30 min.	Material delayed or not received	Only feed ads once all materials received
Error file found after last release	10 min.	Not checking pre dump	Check for errors pre-dump
Special placement instructions not followed	10 min.	Processing team not aware of special instructions	Give instructions as received
Distorted ads in PDF	15 min.	Ads not corrected before feeding	Correct before feeding, include in SOP
Ads inserted post pagination completion	20 min.	Ads accepted after deadline	Enforce deadline
Total time savings possible	70 to 85 min.		

The process was repeated four times (Table 3).

Table 3 : Further Process Observations			
Problem	**Effect**	**Root Cause**	**Solution**
Observation 2			
Repeating old practices			Reiterate SOPs
Scanning of materials delayed	45 min.		Agree on scan turnaround time
PDF conversion problem	15 min.	Programming problem	IT to resolve
Zip error file not scanned			Zip not required
Observation 3			
System failure at peak time	75 min.		Use back - up system
Observation 4			
Add - on section integration delayed	25 min.	Start integration in pre - dumps	Add to SOP

Checking the Results

Nine weeks of continuous implementation yielded dramatic improvement. Average processing time was reduced by an hour, from 72 minutes to 12 minutes. However, the level of variability, although 50 percent lower, was still unacceptable. Analysis of the variability showed that it was largely due to slip - ups in implementing the SOPs.

Standardizing Controls

The team used an x-bar control chart to monitor and improve performance regularly.

Gradually the performance improved. Two months after implementation, delivery time had progressed from 267 minutes late to 12 minutes early. The deadline for receiving ads could now be relaxed to 5 p.m., delighting the advertisers.

Reducing Customer Complaints

Management indicated that the number of credit notes given to advertisers was too high. Credit notes, issued to rectify errors made in sales invoices, were used to fend off considerable customer annoyance. But this system caused trouble for the paper. Besides increasing non - value - added work, credit notes sometimes resulted in financial loss because customers could use the credit toward ads that had already been booked as sales.

During the previous 12 months, the newspaper had received 80 credit notes per week. The team agreed to try to reduce that number by 50 percent in Phase 1.

Finding the Root Causes

About 200 credit notes were examined to determine why they had been issued. Categorization of the causes was charted in a Pareto.

Three causes constituted 84 percent of the problem :

- Wrong billing - 46 percent
- Wrong rate - 24 percent
- Wrong material used - 14 percent

Table 4 shows the root causes of a majority of the credits issued, determined using the 5 Whys method, and their corresponding countermeasures.

Table 4 : Explanation of Credit Causes and Countermeasures

1st Why ?	2nd Why ?	3rd Why ?	Countermeasure
Wrong billing	Unbilled charge picked up; Discount applied incorrectly to all ads in series	System bug	Removed
Wrong rate	Sales scheme not in sales card; Old scheme continues after updating of sales rate card; Scheme in rate card but not picked up by system	Sales cards not updated; Bill system does not pick up entry	SOP
Free ads billed	System does not pick up operator entry		Modify system to pick up operator's entry when prompted, rather than automatically taking billing information from the rate table.

The team tested the ideas, which resulted in an 80 percent reduction in credit notes, from 80 per week to 14 per week. The process was adopted in regular operation, and the results were documented and presented to senior management.

Questions :

1. How did use of TQM result in radical changes in the mindsets of the employee ? Discuss.
2. Explain how did the customer service - related projects helped to create a team environment.
3. Explain the concept of Pareto analysis with respect to the case.
4. Do you agree with the way the company found the root cause to the problem ? Justify.