Quality Management Dashboard - Assignment
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Introduction:

For this assignment, I've been asked to design a Quality Management Dashboard for Vaishnav Fasteners, a company that's currently transitioning from traditional manufacturing methods to a more modern, system-driven approach. The main purpose of this dashboard is to give everyone—from the quality team to production managers and leadership—a clear, easy-to-understand view of how quality is performing across the production process.

The challenge Vaishnav Fasteners faces is identifying quality issues before they result in customer rejections and then using those insights to actually improve how things are manufactured. This dashboard needs to be more than just a reporting tool—it should be something that helps people make better decisions and take concrete action.

Before jumping into the design, I started by asking a series of questions to really understand what's needed. These questions cover important ground: What metrics matter most? How is data currently being collected? What tools are already in place? How detailed does the information need to be? And most importantly, how will different people actually use this dashboard to make decisions that improve quality?

By taking the time to ask these questions upfront, I'm making sure the dashboard I design will truly meet the company's needs and help them on their journey toward becoming a more data-driven, quality-focused organization.

Part 1: Questions to Continue the Conversation

To make sure the Quality Management Dashboard truly serves the needs of the quality team, production managers, and leadership, I'd want to have a deeper conversation to understand the specific requirements and priorities. Here are the key questions I would ask:

1. What key metrics should we track to assess the overall health of quality in the production process?

Assumed Answer: "We should track defect rates, rework rates, customer complaints, and rejection rates. It would also be helpful to track specific types of defects—like dimensional issues or surface defects—so we can identify exactly where problems are occurring."

2. How do we currently collect data on defects and customer complaints?

Assumed Answer: "Right now, the quality team logs defect data through manual reports. Customer complaints come in through emails and customer service tickets, which aren't always standardized."

3. Is there a standard process for categorizing defects, or are they recorded on an ad-hoc basis?

Assumed Answer: "We have some standard categories like dimensional issues, surface defects, and material failures, but honestly, the way we record them isn't very structured. Different people might categorize the same issue differently."

4. How is the rejection rate currently measured? Is it based on customer returns, or on in-house quality checks before shipping?

Assumed Answer: "The rejection rate mainly comes from customer returns, but we also do quality checks before products leave our facility. Those internal checks help us catch issues before they reach customers."

5. What is the acceptable threshold for each defect type before it's considered a significant issue?

Assumed Answer: "Generally, if defects go above 2%, we consider that a problem. But it really depends on how severe the defect is—some issues are more critical than others."

6. Who will be the primary users of the dashboard, and what decisions will they need to make based on it?

Assumed Answer: "The quality team, production managers, and senior leadership will all use it. They'll need to make decisions about improving processes, allocating resources better, and communicating with customers about quality issues."

7. What level of granularity do you need? Should the dashboard show high-level trends, or would you prefer it to drill down into specific departments or product lines?

Assumed Answer: "We need both. High-level trends are important for leadership to get the big picture, but we also need the ability to drill down into specific departments or product lines when we're investigating particular issues."

8. Are there specific time periods we need to focus on, such as daily, weekly, or monthly data?

Assumed Answer: "We need daily data so we can catch problems quickly, but we also want to see weekly and monthly trends for longer-term planning and understanding patterns."

9. How do we handle data accuracy and consistency? Are there any existing quality checks in place to ensure the data collected is reliable?

Assumed Answer: "To be honest, data accuracy is a real challenge right now, especially since so much is entered manually. We're trying to improve this by automating more of the data collection directly from the production line."

10. What tools or systems are currently used to track quality data? Do we use any ERP or specialized quality management software?

Assumed Answer: "Right now, we mostly use spreadsheets. Some departments have older legacy software, but we don't have an integrated system for quality management across the company."

11. Do you want to track the root causes of defects and rework on the dashboard, or just the outcomes?

Assumed Answer: "Ideally, we should track both. Just knowing that defects happened isn't enough—we need to understand why they happened so we can prevent them from occurring again."

12. How do you define the "health" of quality? Is it just defect rates, or do we also consider aspects like customer satisfaction or internal audit results?

Assumed Answer: "Quality health isn't just about defect rates. We should also look at customer satisfaction and internal audit results because they give us a more complete picture of how we're really doing."

13. Do we need to include any predictive metrics, such as forecasting potential future defects based on historical trends?

Assumed Answer: "That would be extremely valuable. If we could predict quality issues before they happen based on historical patterns, we could take preventive action instead of always reacting to problems."

14. What should the dashboard do when a significant quality issue is detected? Should it trigger alerts or automated workflows?

Assumed Answer: "Yes, definitely. When a significant quality issue comes up, the dashboard should automatically alert the quality team and production managers so they can address it right away, rather than waiting for someone to notice it in a report."

15. Do we want to include any benchmarks on the dashboard, such as industry standards or competitor performance?

Assumed Answer: "That could provide helpful context, but honestly, it's more important to first compare our performance against our own historical data and set realistic internal benchmarks. Once we have that baseline, we can think about external comparisons."

Part 2: Create the Dashboard Mockup (1–2 Pages / Slides / Sketches)

Based on the conversations and requirements we discussed earlier, I've put together a mockup for the Quality Management Dashboard. The idea behind this design is to create a visual tool that gives everyone—whether they're on the quality team, in production management, or in leadership—a quick, clear picture of how quality is performing across the manufacturing process.

The main goal here is simple: make it easy to spot quality issues that could lead to customer rejections, and make sure people can quickly understand what needs attention and what actions to take.

Key Features of the Dashboard:

Defect Rate Trend Over Time:

This is a line chart that shows how the defect rate has changed over different time periods. By tracking this trend, we can see whether quality is getting better, staying steady, or unfortunately getting worse. It gives us the big picture of quality performance over weeks or months.

Weekly Rework Rate:

A bar chart that displays the rework rate for each week. This helps us identify specific weeks when rework was unusually high, which could indicate a problem during that period—maybe a machine issue, a training gap, or a material quality problem.

Defect Rate by Department:

This bar chart breaks down defect rates across different departments or production areas. It quickly shows us which parts of the operation are struggling with quality and might need extra support, training, or process improvements.

Complaint Severity Breakdown:

A pie chart that shows how customer complaints are distributed by severity level—Minor, Major, and Critical. This helps prioritize which issues need immediate attention. A high percentage of Critical complaints, for example, would signal an urgent problem that needs to be addressed right away.

Top Defect Types:

Another pie chart that displays the most common types of defects we're seeing, such as Dimensional Issues, Material Failures, and Surface Defects. This helps us understand where our quality problems are actually coming from, so we can focus improvement efforts on the root causes rather than just treating symptoms.

Rejection Rate Trend:

A line chart tracking how product rejection rates are changing over time. This is crucial because it tells us whether the actions we're taking are working—is the rejection rate going down (good news), staying flat (needs more work), or going up (we have a serious problem to address)?

Together, these visualizations create a dashboard that's both informative and actionable. Anyone looking at it should be able to quickly understand the current state of quality, spot problem areas, and have the information they need to make smart decisions about where to focus improvement efforts.

Dashboard Mockup:

I created this dashboard using Google Sheets, incorporating charts and conditional formatting to deliver real-time quality performance insights. The visual design makes it easy for stakeholders to quickly grasp critical quality data and identify areas needing immediate attention.

You can view the live dashboard here:

Quality Management Dashboard - Google Sheet
https://docs.google.com/spreadsheets/d/1TBdnYJY0kwPvznQWTNYkR1QoAhY03yqr_0q8F
OW1JqY/edit?usp=sharing

Conclusion

The Quality Management Dashboard provides a practical way to monitor the metrics that matter most for quality. It helps the team see trends as they develop, understand how different areas are performing, and make decisions based on actual data rather than gut feeling.

By bringing together information about defect rates, customer complaint severity, department-level performance, and rejection trends all in one place, the dashboard makes it much easier to catch quality issues early—before they turn into customer rejections or bigger

problems. It's designed to support continuous improvement by making quality performance visible, understandable, and actionable for everyone involved.

Part 3 — Design the System Behind It (Tech + Ops Architecture)

In this section, I'll explain how the Quality Management Dashboard actually works behind the scenes—how data gets collected, processed, and turned into the visualizations we see on the dashboard. The goal is to create a system that's simple enough to implement quickly but solid enough to grow with the company.

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1. People Layer (Ops)

The People Layer is all about who's responsible for collecting and managing the quality data at the factory level.

Factory Workers and Supervisors:

- **Data Entry:** Workers on the factory floor will log quality information as they go—things like defects they spot, rework that needs to be done, and other quality metrics they observe during production.
- **Frequency:** This happens daily, typically at the end of each shift or after completing a production batch, so the information stays current and accurate.

Quality Control (QC) Team:

- **Verification and Audits:** The QC team checks the data that workers enter to make sure it's correct. They also handle recording customer complaints and properly categorizing different types of defects, like dimensional problems or material failures.
- **Frequency:** The QC team reviews and validates the data weekly, providing feedback and recommending corrective actions based on what they find in the quality reports.

Production Managers:

- **Department-Level Review:** Managers look at weekly summaries of quality data from their departments. This helps them understand where problems are occurring and make adjustments to workflows or processes.
- **Frequency:** Managers review this information weekly so they can make timely decisions about allocating resources, implementing improvements, or taking corrective action in departments showing high defect rates.

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2. Data Layer (Tech)

The Data Layer is where all the quality information lives and gets organized. This is the technical foundation of the system.

Google Sheets / Excel:

- **Data Storage:** To keep things simple and accessible, we'll use Google Sheets as the main data collection and storage tool. It's easy to use, allows multiple people to collaborate, and doesn't require expensive software.
- **How it Flows:** Factory workers and the QC team enter data directly into Google Sheets, either by typing it in or using Google Forms. The sheet updates automatically, so everyone always sees the most recent information.
- **Automation:** Google Forms make data entry faster and more accurate. Workers can fill out a simple form on a tablet or phone, and the responses automatically populate the Google Sheet, reducing manual errors.

Notion (Optional):

- **Documentation and Reporting:** Notion can serve as a central place to document quality reports, outline standard operating procedures, and track corrective actions and improvement initiatives over time.
- **How it Flows:** Managers and the QC team can link relevant data from Google Sheets into Notion, making it easy to reference past issues, track ongoing improvements, and access all quality-related documentation in one place.

Integration with Google Drive:

- **File Storage:** All supporting documents—reports, training materials, quality standards documentation—are stored in Google Drive for easy access.
- **How it Flows:** Google Sheets integrates seamlessly with Google Drive, so team members can easily access related files, training videos, or reference materials without leaving the platform.

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3. Visualization Layer

The Visualization Layer is where raw data becomes meaningful information through charts and graphs that people can actually understand and act on.

Google Sheets (with Built-In Charts):

- **Real-Time Visualization:** Google Sheets has built-in charting tools that we'll use to visualize quality metrics like defect rates, rework rates, and complaint severity. These charts update automatically whenever new data is entered.
- **How it Updates:** As workers and QC staff add data throughout the day, the charts refresh in real-time. Weekly summaries are generated automatically for managers to review without any manual work.
- **Accessibility:** The dashboard lives in Google Sheets and is shared through Google Drive, making it easy for everyone who needs access to view it from anywhere, on any device.

Dashboards in Google Data Studio (Optional):

- **Advanced Visualization:** If we want something more polished and interactive down the road, Google Data Studio can pull data directly from Google Sheets and create more sophisticated, professional-looking dashboards.
- **How it Updates:** Data flows automatically from Google Sheets into Google Data Studio, where visualizations update in real-time based on the live data.
- **Sharing:** Google Data Studio dashboards can be shared as links, making it simple to give managers, QC teams, and senior leadership access to high-level quality monitoring without cluttering their inboxes.

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4. Governance

Governance ensures the data stays accurate, consistent, and actually gets used by the people who need it. Without good governance, even the best dashboard becomes useless.

Data Accuracy and Consistency:

- **Standardization:** We'll create clear standard operating procedures for how to enter and categorize defects, complaints, and other quality information. This ensures everyone is speaking the same language when recording data.
- **Verification:** The QC team reviews entered data weekly, checking for mistakes or inconsistencies. We'll also use conditional formatting in Google Sheets to automatically highlight unusual patterns—like unexpectedly high defect rates or missing data—so problems get caught quickly.

Data Quality Control:

- **Audit Trails:** Google Sheets keeps a version history of all changes, so we can see who entered or modified data and when. This creates transparency and accountability.
- **Root Cause Analysis:** For every significant defect or quality issue, we'll log the corrective actions taken and track them over time in Notion or Google Sheets. This lets us verify whether problems have actually been solved or keep recurring.

Adoption:

- **Training:** Everyone involved—factory workers, QC team members, and production managers—will receive training on using Google Sheets and Google Forms for data entry and reporting. The training will emphasize why accurate data matters and how the dashboard helps everyone do their jobs better.
- **Feedback Loop:** We'll hold regular feedback sessions with workers and managers to understand what's working and what's not. This continuous feedback helps us improve the system and ensures people actually want to use it rather than seeing it as just another administrative burden.

Conclusion

The Quality Management Dashboard I've designed for this assignment provides a practical way to track and visualize the quality metrics that matter most in the production process. By using straightforward, accessible tools like Google Sheets, Google Forms, and Notion, this system delivers real-time insights into defect rates, rework percentages, customer complaints, and other critical quality indicators. More importantly, the dashboard doesn't just show numbers—it helps people understand what's happening and what actions they should take to improve quality.

The Tech + Ops architecture I've outlined is intentionally simple to start with, but it's built to scale as the company grows. It makes data entry easy for factory workers, processing automatic, and visualization clear for everyone who needs it. At the same time, the governance structure ensures that the data stays accurate and reliable over time. By involving everyone—from factory workers to the QC team to production managers—in the process, we create a system that people actually want to use rather than one that feels like extra work.

I believe this Quality Management Dashboard can genuinely help Vaishnav Fasteners make smarter, data-driven decisions about quality control, streamline production workflows, and ultimately deliver better products to customers. It's not about perfection from day one—it's about creating a foundation that makes continuous improvement possible.

Thank you for taking the time to review my assignment. I'd love the opportunity to discuss how this approach could work in the real-world environment at Vaishnav Fasteners and how we might adapt it to meet your specific needs.

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Appendix:

- **Google Sheet Dashboard Link:**
  https://docs.google.com/spreadsheets/d/1TBdnYJY0kwPvznQWTNYkR1QoAhY03yqr_0q8FOW1JqY/edit?usp=sharing