

A detailed, high-angle photograph of a steel mill's interior, showing a complex network of pipes, machinery, and structural beams. The image is tinted with a light green color.

# Steel Industry- Critical Factors For improving Productivity & Quality

# Purpose of Project and Tools

## Purpose of Project

- This work has proved the need of quality and productivity improvement by identifying critical factors affecting Q&P of *Nucor steel, NC, USA*
- We have pointed out the critical factors which affect the *Nucor steel* and implementing some quality tools to optimize these factors at very preliminary basis.
- This Project helps upgrading the system and makes it eligible through the process of beneficiation that will not only help industry to sustain fast growth, but the distinct advantage to compete in international market.

## Tools:

- Excel 2016
- Power Point 2016
- SPSS
- R

# Process Followed to identify the input and output Variables.



- Understand the business requirements
- Understand the Past history and Identify the input variables and find the critical factors to Improve the Productivity & Quality
- For finalize the CRITICAL factor variable, take the suggestions from Industrial experts and find out the influence variables (In & Out).
- Take the sample survey rating (1 to 5) in every department (i.e. 10% of Each department), to understand the insights of employees
  - 1 -No Importance
  - 2- Low Importance
  - 3- Medium Importance
  - 4- High Importance
  - 5-Very High Importance
- Based on the survey details. Prepare the sample rating matrix on each input & output variables
- Same process we followed to identify the output variables which is related to productivity and Quality and Company growth and Etc....
- Identify the Input & output factors relation

# Identified Input & Output Variables

- Identify 54 Variables for Input Influence Factors.
  - **EX:** Clear vision, mission, and Strategic direction by Top Management
    - Supplier relationship management.
    - Responsibility for continuous quality improvement by Top Management
    - Management's commitment for providing good work environment.
    - Legal, ethical, and societal responsibilities of organization to its key communities and Etc....
- Identified 36 Variables for Output influence Factors
  - **EX:** High productivity of People.
    - Customer's complaints or claims.
    - Low number of defects and errors.
    - Return on Investment ( RoI ).
    - Flexibility of operations / system.
    - Machine line down time.
    - Safety of employees and Etc....



# Data Understanding – In & Out Factor

- Survey rating matrix data is “Classification data” we can able to apply “Percentage and Count”.
- We perform the cross tabulations to understand the data insights.
- Perform the Association test (Kendal Chi-Square) to understand the Variables relations.
- D to the more variables, Understand the data insights is very cumbersome.
- We have performed PCA (Principal Component analysis) to reduce the variable.

# Predictive process & Designing

