

## *Improvements to the Maintenance Manager Position*

*Luis I. Berríos Cintrón  
Master in Engineering Management  
Héctor J. Cruzado, PhD, PE  
Graduate School  
Polytechnic University of Puerto Rico*

---

**Abstract** — *This project intends to show improvements to the position of Maintenance Manager in a company dedicated to the sale of aggregates and concrete mix in the Bayamon area. A critical analysis of the company was carried out using analysis from the managerial point of view, applying self-assessment, presenting how the position is currently described and how it should perform. Recommendations are given such as using CMMS, applying Total Productive Maintenance (TPM) to measure the overall equipment efficiency (OEE) aimed at increasing availability and equipment efficiency, reducing downtime in workshops, having an efficient maintenance team, delegating, and motivating employees. Through these recommendations, the Maintenance Manager could better enforce the company's objectives such as minimizing breakdown, increasing equipment efficiency, improve productivity and obtaining savings, among other.*

**Keywords:** *Leadership, Organizing, Planning, CMMS, TPM, OEE, Self-Assessment, Efficiency*

### **INTRODUCTION**

Engineering Management has been a key profession that companies take into consideration to be successful. This project focuses on the position of Maintenance Manager, whose position requires working with different types of problems whether managerial, maintenance or repairs problems.

This case study takes place in a company dedicated to the sale of aggregates and concrete mix located in Bayamón, Puerto Rico. The company wanted to evaluate the position of Maintenance Manager to improve two managerial functions (organizing and leading) to comply with the Fleet Management in the company. Some of the initial concerns observed were:

- The Maintenance Manager did not have a degree in management and had no experience as a leader.
- The work teams were not efficient and organized.
- The personnel did not have training and needed motivation to perform the work efficiently.
- The communication in the company was disorganized and did not use the appropriate channels to achieve the objectives of the company.

These reasons led to carry out this project. The objective of this project is to provide recommendations for improving the performance of the Maintenance Manager position at the company. Improving the performance of the Maintenance Manager should help minimize equipment breakdowns, increase equipment efficiency, improve productivity, and obtain savings.

### **METHODOLOGY**

This project is based on the use of references [1] and [2] to evaluate the Maintenance Manager position. This position is evaluated in regard to the Organizing and Leadership functions through of the self-assessment found in [1]. Through this reference, the Maintenance Manager position is first evaluated based on the Organizing managerial function using the following self-assessments:

- Self-Assessment 7.1: Organizational preference
- Self -Assessment 8.1: Are you a Team Player?
- Self-Assessment 9.1: Career Development

Similarly, the position is then evaluated for the Leading function using the following self-assessments:

- Self-Assessment 10.1: Personality Profile

- Self-Assessment 10.2: MBTI Personality
- Self-Assessment 10.3: Job Satisfaction
- Self-Assessment 11.1: What motivate you?
- Self-Assessment 11.2: Acquired needs
- Self-Assessment 12.1: Trustworthiness
- Self-Assessment 12.2: Leadership behavior
- Self-Assessment 13.1: Listening skills

The results obtained from the self-assessments found in [1] were then applied to the Developing Interpersonal Skills evaluation found in [2] to provide recommendations to solve problems in the Organizing and Leadership functions.

## RESULTS

The self-assessments of reference [1] were used to evaluate the maintenance manager. In this section, the results are presented.

### Assessments of Organizing Functions

- *Self-Assessment 7.1* showed that the organizational preference of the maintenance manager is between organic (Contemporary) and mechanistic (Traditional) structures. The Contemporary "are bureaucratic and their approach is based on procedures and rules through strict control and with specialized jobs with decisions made by senior management ", while the Traditional has "a flexible approach with a minimal focus on procedures and rules, we broadly define the jobs and decisions to be made, they take at the lower levels" [1].
- *Self-Assessment 8.1* indicated that the maintenance manager worked more individually than in a group. "We have that in the groups there are two or more people working and where a leader makes decisions, while he is in the Team, they work in a reduced number of between 5 and 12 members who share the leadership" [1].
- *Self-Assessment 9.1* showed that the maintenance manager needed professional development, so the company's Human Resources Department should be in charge of offering guidance, training and development for

improvement of interpersonal, technical and decision-making skills.

### Assessments of Leading Functions

- *Self-Assessment 10.1* presented the dimension of the big five of the personality traits. Consciousness predominated with 29/35. In this group, the people "are responsible/reliable, hard-working, persistent, organized, consistent and achievement-oriented" [1].
- *Self-Assessment 10.2* indicated that the maintenance manager has one of the 16 personality types based on introvert, sensitive, thinking and judgment (ISTJ).
- *Self-evaluation 10.3* showed that the maintenance manager does not have a positive self-esteem in the personality. He likes to do the task he does, he is not compensated fairly, he does not have the opportunity to learn new things and get better jobs, he likes working with co-workers, and he doesn't believe in what the manager is doing well. In overall, he is not satisfied with the job.
- *Self-Assessment 11.1* indicated that the maintenance manager prefers the intrinsic motivating factors (work in itself, recognition, achievement, increased responsibility, growth and progress) over the extrinsic factors (salary, benefits, job security, working conditions, company policy and human relations).
- *Self-Assessment 11.2* indicated that the overwhelming need is power, where the maintenance manager could change his attitude to control situations, influence, compete and control people.
- *Self-Assessments 12.1, 12.2 and 12.3* indicated that the Maintenance manager perceives more Trust, while Trust perceives more Loyalty. In addition, Theory X predominates over Theory Y. Theory X is more autocratic, where the manager assumes that people do not like the job and that the worker performs at a high level. Meanwhile, Theory Y is more participatory,

where the manager assumes that people like to work [2].

- *Self-Assessment 13.1* indicated that the maintenance manager is a good listener.

## RECOMMENDATIONS

Reference [2] was applied to the results of the different self-assessments to develop recommendations. The recommendations according to each self-assessment are presented here.

- Self-Assessment 7.1: Recommendations were given on delegating.
  1. Determine what is going to be delegated and to whom will carry out the tasks
  2. Specify the range of discretion of the employees. Authority is being delegated to work on certain issues within certain parameters.
  3. The manager must allow the employee to participate in making decisions about how much authority is required to perform a job.
  4. Inform others about the delegation to find out who gave you the authority to delegate.
  5. Establish feedback channels to monitor employee performance.
- Self-Assessment 8.1: Recommendations were given on how to create effective teams.
  1. Establish a common purpose or establish a purpose or vision to which all members aspire.
  2. Assess the strengths and weaknesses of the team.
  3. Develop specific individual goals.
  4. Agree on a common approach to achieving the goals.
  5. Encourage acceptance of responsibility for both individual and team performance.
  6. Build mutual trust between members.
  7. Maintain an appropriate mix of skills and personalities of team members.
  8. Team leaders must ensure that their teams have both the training and the resources they need to achieve the objectives or goals of the company.
- Self-Assessment 9.1: It is recommended that the company and manager participate in the candidate recruitment process and should have knowledge on how to perform and conduct an interview for the selection of good candidates.
  1. Review the job description and job specifications.
  2. Prepare a structured set of questions that you want to ask all job applicants.
  3. Create a complete picture of the candidate in terms of what is represented on the resume or application.
  4. Open the interview by reassuring the applicant and giving him a brief preview of the topics to be discussed.
  5. Ask your questions and listen carefully to the candidate's responses.
  6. Close the interview by telling the applicant what will happen next.
  7. Write your assessment of the applicant while the interview is still fresh in your mind.
- Self-Assessment 11.1: Recommendations were given on how to motivate employees.
  1. The difference in employees must be recognized, whether in differences in needs, attitudes, or personalities.
  2. Match people with positions according to skills.
  3. Use goals where employees with strict and specific goals strive to achieve goals where that sometime are participatory goals.
  4. Make sure that goals are perceived as achievable.
  5. Individualize the rewards where we have this company must consider the difference in the needs of all employees.
  6. Company could offer key performance-based rewards, such as incentives such as salary increases and some promotion that could benefit the company to achieve the objectives.
- 9. Develop an effective team where you can learn to work and think in a team and to create a good team.

7. Could improve employee retention by offering rewards based on inputs of the same condition such as: level, experience, skill and effort, where we could have results with differences in salary or responsibilities.
  8. Do not ignore the money: this company could motivate the employee through money to retain the employee. The manager should consider money as a tool to motivate the employee through salary increases, bonuses and salary incentives.
- Self-Assessment 11.2: Recommendations were given on how to lead, how to acquire this power, and how to develop the ability to exercise power.
    1. Framing arguments in terms of organizational goals.
    2. Develop the correct image.
    3. Control your organization's resources.
    4. Make yourself seem indispensable.
    5. Be visible. Make your work visible to other employees so that they can see your achievements.
    6. Develop powerful allies.
    7. Avoid the member and keep distance from people whose status is questionable.
    8. Support your Manager: at this point we have that the Maintenance Manager must provide help to the Administrative Manager to be successful.
  - Self-Assessment 13.1: The manager should be a good communicator using the new advances in information systems technology to improve and solve problems using oral communication, non-verbal communication, and written communication. To be more effective in active listening:
    1. Make eye contact.
    2. Show affirmative nods and effective facial expressions.
    3. Avoid distracting actions or gestures.
    4. Ask questions.
    5. Paraphrase.
    6. Avoid interrupting the speaker.

7. Don't talk too much.
8. Make smooth transitions between the roles of speaker and listener.

## **CONCLUSIONS**

The intention of this project was to make improvements to the position of Maintenance Manager in an aggregate and ready-mix company. In this study, their strengths and weaknesses were observed through the Self-Assessment of Organizing and Leadership functions. Recommendations were made to help the maintenance manager communicate effectively, delegating, acquiring power, developing his career and creating effective teams. This in turn could help improve repair processes, parts purchasing, minimize equipment breakdowns, increase equipment efficiency, improve productivity, and obtain savings.

## **REFERENCES**

- [1] Lussier, Robert N.; Management Fundamentals Concepts, Applications, Skills Development, 7th edition: ISBN 13: 9781506303277, Sage (2017).
- [2] Robbins, Stephen P.; Coulter, Mary; Langton, Nancy; Fundamental of Management, 6th Canadian edition, Pearson.