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Abstract

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.

Introduction

This project focuses on the position of Maintenance Manager, This position work with problems 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. The objective of this project is to provide recommendations for improving the performance of the Maintenance Manager position at the company that should help minimize equipment breakdowns, increase equipment efficiency, productivity, and obtain savings among others.

Background

This proposed type project is based on the use of references [1] and [2] to evaluate the Maintenance Manager position. In this review is presented the study of the Organizing and leadership functions through of the Self-assessment found in [1]. Through of this study we can observe how was the Maintenance Manager when he worked based in the Organizing managerial function and using the Self-Assessments such as: Organizational preference Self-Assessment 7.1, Self -Assessment 8.1 Are you a Team Player?, Career Development Self-Assessment 9.1. Equally, also, we could evaluate the Self-Assessment for the Leading function such as: Personality Profile Self-Assessment 10.1, MBTI Personality Self- Assessment 10.2 & Job Satisfaction Self- Assessment 10.3. What motivate you? Self-Assessment 11.1 & Acquired needs Self-Assessment 11.2, Trustworthiness Self-Assessment 12.1 & Leadership behavior Self-Assessment 12.2, finally, listening skills Self-Assessment 13.1.. With the results obtained in Self Assessment found in [1] we will apply the Developing Interpersonal Skills found in [2] to provide recommendations to solve problem in the Organizing function such as Delegating, Creating Effective Teams and Interviewing. In the same way we could use the Developing Interpersonal Skills of [2] to provide recommendations to solve problems in the Leading function such as: Acquiring Power, Maximizing Employee effort and Active Listening. Also, this review show how various companies have solved problems similar to this project by teaching methods and tools that can be used to meet the goal. According to this literature review, we found several sources of information found in the virtual library of the EBSCO in UPPR database which present important points related to the topics: . What programs in the market can the Maintenance Manager use? . How a Maintenance Manager could reduce Downtime?, How the Maintenance Manager could motivate employees?, How to have a good Maintenance Team? and 5. How the Maintenance Manager could increase the Efficiency of the equipment?.

Problem

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

Methodology

Data was acquired through a Self-Assessment for Organizing function [1]. The performance of the Maintenance Manager was evaluated when he worked through the Organizing and Leadership managerial function. According to the results obtained, the Developing Interpersonal Skills function [2] was used to provide recommendations to solve problem in the Organizing and Leadership functions.



Results and Discussion

- **Self-Assessment 7.1** where shows that the organizational preference of the maintenance position is between organic (Contemporary) and mechanistic (Traditional), "contemporary they are bureaucratic and their approach is based on procedures and rules through strict control and with specialized jobs with decisions made by senior management "[1] while in the traditional one we have" 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** the result indicate that the Maintenance Manager position 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** the result shows that the maintenance manager position needs professional development which company should offer guidance, training and development to improve interpersonal technical skills and decision-making.
- **Self-evaluation 10.1** presents the dimension of the big five of the personality where Consciousness predominates with 29/35, in this group are people who "are responsible / reliable, hard-working, persistent, organized, consistent and achievement-oriented "[1].
- **Self-assessment 10.2 where** indicates that the maintenance manager has one of the 16 personality types based on introvert, sensitive, thinking and judgment, that is, ISTJ.



- **Self-evaluation 10.3** shows that the maintenance manager does not have a positive self-esteem, is not compensated fairly and, haven't opportunity to learn new things.
- **Self-Assessment 11.1** that indicate that the Maintenance Manager prefers the "intrinsic" Motivating Factor as work in itself, recognition, achievement, increased responsibility, growth and progress over the "extrinsic" maintenance factor such as salary, benefits, job security, working conditions, company policy and human relations.
- **Self-Assessment 11.2** indicated that overwhelming need is the power where the Maintenance Manager could change his attitude to control situations, influence, he could need to compete and control people.
- **Self Assessment 12.1, 12.2 and 12.3** indicated Maintenance manager perceives more Trust while Trust perceives more Loyalty. Self-Assessment 12.3 predominates "Theory X over Theory Y, where we have that 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 while Theory Y is more participatory where the manager assumes that people like to work and it is not necessary to close. "[2]. Finally, we have the result of Listening
- **Self-Assessment 13.1** which indicate that the maintenance manager is a good listener but in the limit.

Recommendations

- determine what is going to be delegated and to whom
- 2. Specify the range of discretion of the employees
- 3. More participation in making decisions
- 4. Inform others
- 5. Establish feedback channels
- Recommendations were given to create effective teams[2]: 1. Establish a common purpose or vision 2. Assess the strengths and weaknesses. 3. Develop goals. 4. Agree on a common approach to achieving the goals. 5. Encourage acceptance of responsibility 6. Build mutual trust between members., 7. Maintain an appropriate mix of skills and personalities 8. Assure teams have both the training and the resources 9. develop an effective team
- Recommendation were given to be an effective interviewer[2]: 1. Review the job description and job specifications. 2. Prepare a structured set of questions. 3. Create a complete picture of the candidate 4. Ask your questions and listen carefully 5. Close telling the applicant what will happen next. 7. Write your assessment
- Recommendation were given to Motivate the employee [2] : 1. The difference in employees must be recognized(needs, attitudes or personalities), 2. Match people according to skills, 3. Use goals ; 4. Make sure that goals are perceived as achievable, 5. Individualize the rewards according to the difference in the needs of all employees., 6. Offer key performance-based rewards, such as incentives such as salary increases and some promotion that benefit 7. improve employee retention by offering rewards based level, experience, skill and effort, where we could have results with differences in salary or responsibilities; 8. Do not ignore the money
- Recommendation were given to Acquire this power developing the Empowerment [2]: 1. Framing arguments in terms of goals. 2. Develop the correct image. 3. Control your organization's resources. 4. Make yourself seem indispensable. "

Recommendations

- 5. Be visible.. 6. Develop powerful allies: 7 Avoid the member and keep distance from people whose status is questionable 8. Support your Manager:
- Recommendation were given to be a good communicator using the new advances in information systems technology such as Annex 13-6 Message Transmission Channel [1] to improve and solve problems using: Oral Communication: face-to-face conversations, meetings, presentations, telephone conversations, voicemail messages"; Non-verbal communications: "Stage, body language, facial expression, vocal quality, gestures, posture, posters-image" and Written communication: "Email / text, notes, letters, reports, faxes, bullet-point, posters-words, newsletter "[1]. Recommendation were given to be more effective in active listening [2]: 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

Future Work

Alternative from Ryder's company to repairing fleets of, Prevention via PMs and use of CMMS to improve profitability, could work efficiently with tire problems. We could apply ECM telematic and SRM to know engine conditions and causes of failures" [4].

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.
3. Gelinas, Tom; (2013) Managing can minimize downtime, source: Fleet management; OCT (2013), Vol. 39, Issue 10, p54-58; Database: Business search ultimate, ISSN 0708-9635.