

Level of Competency of Management Skills of Electronics Engineers of Selected Electronics Industries

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Abstract: Managers are critical part of a company's success. Good managers lead others and have the skills and ability appropriate for their positions. Managers should be competent and keep up with change in all areas and use some methods of change. One of the areas is management. Ninety six electronics engineers of selected electronics industries were given survey in order to determine the level of competency of management skills. This study is beneficial for designing the training program necessary to enhance competency and overcome the attributed challenges. The result of the study revealed that electronics engineers are most competent in problem solving skill but least competent in conflict management skill. The major challenge encountered by electronics engineers is about managing and confronting an employee performance and the minor challenge is about management renewal.

Keywords: competency, management skill, electronics engineers, electronics industries, engineering managers

1. Introduction

Effective management is one of the tools of a successful company. According to Michael Hoyle and Peter Newman [1], being a manager is not a modern role that depends on computers or degrees or technology. Their managerial experience is what makes them the best managers. In other words, what they managed is irrelevant; it was how they did it that was noteworthy. Some managers inspire, some motivate, and others fail to engage their employees. An effective manager takes responsibility for ensuring that each individual within his control succeeds and that the company achieves results. Therefore, an effective management requires high level of competence in management skills.

Managers keep up with the changing world and stay competitive by developing themselves and use some methods such as technological, managerial and people methods. By using education and training methods, companies can have managers with high performance. According to Whetten and Cameron [2], training the managers is somehow training the subordinates as well because good managers know that training subordinates is their responsibility. Managers need to be very competent to manage the job effectively.

To train the manager, the first thing to be done is to determine whether there is a need for training or not. The need can be determined by assessing the level of competence on management skills that the manager possesses and comparing with what he or she should possessed. If there is a difference, there is a need for training.

Engineering managers are confronted not just of technical challenge, but personal challenge as well.

The secret to being a good engineering manager is the ability to understand the priorities of different parties and communicate effectively between them to help everyone meet their goals. According to Codementor Blog [3], engineering managers are expected to lead and align engineering team with the company's vision, prioritize and delegate tasks to the team, develop, inspire, mentor, and evaluate the engineering team, create positive team culture, collaborate with cross-functional peers and leaders to deliver projects, improve engineering quality and efficiency, and hire qualified candidates to strengthen company and team. As for the technical aspect, an engineering manager implement best practices for development and design, drive technical roadmap and direction, provide technical guidance and coaching and prepare technical requirements and other design specifications.

Being an engineering manager means doing both the technical aspect while doing people-related work. Since the technical aspect has been mastered in the university, the people-management is something to be focused on. Training tries to let the engineering managers performs at their highest competence levels.

David Brady [4] mentioned in his article Imaging and Spectroscopy, that the need for continuous education is a challenge to engineers. Martin Brooke [5], Associate Professor at Duke University, mentioned that the need for continuous education have radically changed what engineers do. Engineers need to be prepared to learn new skills at any age and change what they usually do.

As Electronics Engineers perform the role of a manager, it is important that engineers constantly assess their careers. A role that is not well matched with the skills and interest will slow down the pace of growth of an

engineer. This may include the skills to adapt to new people, learning new skills and possibly a change in the management attitude. Adjusting can be a challenge, but it gives the engineers a chance to learn about an area they might never have known about and to enhance their skills.

Eric Baron, et.al. [6] mentioned that the effectiveness of a manager is defined by his ability to interact with other people. As a manager, the engineer needs to understand what drives his team to do the best that they can. In the book *Developing High-Performance Managers*, Daniel Kehoe [7] mentioned that managers are responsible for getting things done through other people.

This study will assess the level of competence of management skills of electronics engineers of selected electronics industries. The result of the study will serve as an input to the training program that may be developed to enhance the competency and overcome the attributed challenges to the work of electronics engineers as engineering managers.

2. Methodology

Research Design

The study made use of the descriptive-survey design. Descriptive-survey research uses surveys to gather data about varying subjects. This data aims to know the profile of the respondents, level of competency of electronics engineers on management skills and the challenges encountered by electronics engineers as engineering managers.

Respondents

The respondents of the study were the ninety six (96) electronics engineers of selected electronics industries.

Descriptive Rating and Interpretation

The total of the 1” answers will be the frequency for the given survey question. The Likert scale was used to determine the level of competency on management skills. Ranking is used to identify the highest and lowest rank of the challenges encountered by electronics engineers who are engineering managers.

Procedure

In conducting the study, the survey questionnaires were distributed to electronics engineers employed to selected government and private electronics industries with designated position of engineering managers. Responses were tabulated and analyzed.

3. Results

Table 1 Profile of the respondents by age and sex

Age	Sex		Total
	Male	Female	
20 to 25	23	7	30
26 to 30	21	9	30
31 to 35	15	2	17
36 to 40	4	3	7
41 to 45	5	0	5
46 to 50	4	0	4
51 to 55	1	0	1
56 to 60	1	1	2
61 and above	0	0	0

Table 2 Profile of the respondents according to type of company

Type of Company	No. of ECE Managers
Government	3
Private	93

Table 3 Profile of the respondents according to nature of company

Type of Company	No. of ECE Managers
Communications and/or Telecommunications	24
Information and Communications Technology	17
Electro-optics/photophysics /opto-electronics	2
Consumer and Industrial Electronics	19
Navigational and Military applications	1
Cable and Wireless television	2
Computers/ Networking	5
Medical Electronics	3
Semiconductor	8
Broadcasting	6
Electromagnetics	1
Cybernetics	0
Aerospace	0
Biometrics	4
Avionics	1
Transportation	2
Others	1

Table 4 Profile of the respondents according to years of working experience

Type of Company	No. of ECE Managers
5 years and below	25
6 to 10 years	50
11 to 15 years	10
16 to 20 years	3
21 to 25 years	4
26 to 30 years	4
31 years and above	0

Table 5 Level of Competency on Management Skills

Management Skill	Average of Responses
Stress Management	3.927
Conflict Management	3.896
Motivating	4.219
Coaching and counseling	4.105
Team Building	4.135
Organizing/ Coordinating	4.125

Communication	4.167
Problem Solving	4.240
Empowering/ Delegating	4.094

Table 6 Challenges Encountered on Management Skills

Challenge	Ranking
Managing and Confronting an Employee Performance	1
Making the Right Decision	2
Being the “New” Manager	7
Teaching Self-Management	5
Managing Attitudes	3
Managing Skills	9
Managing Around Forces Outside Your Control	4
Management Renewal	10
Achieving a Stretch Goal	8
Responding to a Crisis	6

4. Analysis

Table 1 shows that electronics engineers who are engineering managers in selected electronics industries vary in age and mainly in the age range of 20 to 45 years old. There are 74 male respondents or 77.083% and 22 female respondents or 22.917%.

High percentage of the respondents are employed in the private sector with 93/96 or 96.875% while the 3/96 or 3.125% are employed in the government agencies.

The survey result in Table 3 shows that high percentage of electronics engineers are serving as engineering managers in the communications and/or telecommunications company and as shown in Table 4 the high percentage belongs to electronics engineers with 6 to 10 years of working experience.

The level of competency on management skills in Table 5 reveals that the respondents are competent in the problem solving, motivating, communication, team building, organizing/coordinating, coaching and counseling, and empowering/delegating skills. Engineering managers are somewhat competent in stress management and conflict management skills. Electronics engineering managers are most competent in problem solving skill but least competent in conflict management skill.

In Table 6, the challenges encountered by engineering managers on management skills are ranked as: (1) managing and confronting an employee performance, (2) making the right decision, (3) managing attitudes, (4) managing around forces outside your control, (5) teaching self-management, (6) responding to a crisis, (7) being the “new” manager, (8) achieving a stretch goal, (9) managing skills, and (10) management renewal.

5. Discussion

The analysis of data shows that electronics engineers in selected electronic industries can do the role of both the engineer and the manager. They are equipped with management skills but of different level of competencies. Managers are leaders, project managers, and coaches. How the electronics engineer act as manager will set a tone to be praised or ignored by the subordinates. The technical or “hard” duties and the people-related or “soft” duties of an electronics engineer as manager establish and solidify relationships within and outside of the company. It is important that engineering managers have a strong foundation in their management career.

Electronics engineers are mostly challenged in managing and confronting an employee performance. They need to look for continuous improvement and innovation, identify underperformance, and deal with insubordination and tardiness. They are challenged in making the right decision as to hiring, terminating and employee and dealing with officials. They also manage attitudes which is the intangible of human performance that affect morale, wellness, and human relations. Managers must also adapt to forces outside his control while maintaining focus on the scope of their duties. Part of the challenge of teaching self-management is how the engineering managers help employees improve their basic work habit. Managers are also challenged to response

to a crisis where they need to change plans in response to changing conditions. They also deal with leadership transitions and achieving a stretch goal where they motivate people, remove roadblocks and focus their people on the things that are most important. With their technical background, the managers also manage the skill development, training and retention. Electronics engineering managers are least challenged on accountability and behavior modification when there is management renewal.

The result of the study reveals that there is a need for training of the electronics engineers as managers in selected electronics industries. Their management skills on empowering/delegating, stress management and conflict management must be enhanced. When these management skills are improved, the electronics engineers will be more confident in dealing with the challenges especially managing and confronting an employee performance, making the right decision, and managing attitudes, hence, all other challenges can easily be dealt with.

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