

## CONTROLLING TECHNIQUES IN ENGINEERING MANAGEMENT

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### ABSTRACT

People are responsible for directing their efforts aimed for helping organizational goal achievement in business management, for which managers are playing the effective role. When an engineer occupies that place means it will be more effective than an ordinary manager i.e. an “Engineer Manager” is more effective than others for any management circles because he applies his engineering knowledge as and when required. The management wants to perform any type of operations by their officials at any time. The managers exercises the functions like planning, organizing, directing and controlling for fulfilling their duties. The engineering management is expected to express its efficiency, perfection in technology, achieving quality, total accuracy in quality and standard in their technical field. Presently, this paper is going to speak about the “The controlling techniques adopted by Electrical and Electronic Engineers as Managers in Engineering Management”.

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**Key Words:** controlling techniques, service ethics, emotional intelligence

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### 1. INTRODUCTION

Controlling is the process of analyzing actual operations and seeing that actual performance is guided towards expected performance. Comparing operating results with plans and taking corrective action when results deviate from plans

Definition “ The managerial function of controlling is the measurement and correction of the performance of activities of subordinates in order to Under general direction, plans, organizes, control, make sure that enterprise objectives and the plans devised to attain them are being accomplished.

coordinates, and reviews the work of professional, technical, and administrative staff performing programs and activities of the Public Works Department; manages the effective use of the City's engineering resources to improve organizational productivity and customer service provides highly complex and responsible support to the City Engineer in areas of expertise and performance related work as required. We then need to build our

managerial experience and gain the knowledge and skills to enable us to carry out the needed efficiency of the role effectively.

Successful performance of the work requires an extensive professional background as well as skill in controlling and coordinating departmental work.

People-focused technical professional engineers who provides technical direction and business guidance to the engineering team with the help of controlling techniques.

### 2.OBJECTIVE OF THE STUDY

Objective of this title is to tell you that managers have responsibilities, engineer manager will have still more and comparably the electrical and electronic engineer managers should have ultimate responsibility in the society because “ as the entire public are their customers” said by Er.R.Panneerselvam, Guest speaker of Rapce-13 at KVCET. Hence at this stage we should make him to apply his entire skill and knowledge at

one's duty and services that is to make an engineer manager to be more duty conscious. He should prove that he should follow a complete service ethics qualities while performing his area of work. Hence, a person in Engineering Management must adopt all controlling techniques to get the required results.

### 3.CONTROLLING

#### 3.1.Nature & Purpose of Control

Control is an essential function of management  
Control is an ongoing process  
Control is forward – working because past cannot be controlled  
Control involves measurement  
The essence of control is action  
Control is an integrated system

#### 3.2.Elements of Control Planning

- Information Feedback
- Delegation of Authority
- Remedial action

#### 3.3.Control Process

Fixation of Standard  
Measurement of Performance  
Comparing performance with standards  
Finding out deviations  
Correction of Deviations

#### 3.4.Problems in the Control Process

- Magnitude of Change
- Time rate of Change
- Erroneous standard
- Workers Resistance
- Communication Problems

#### 3.5.Characteristic of an ideal Control system

- Suitable
- Flexible
- Economical
- Simple
- Objective

- Prompt
- Forward looking
- Suggestive
- Strategic point control
- Motivational

#### 3.6.Techniques of Managerial Control

##### Traditional Techniques

Personal Observation ( For E.g. A Factory manager goes around the plant, observes the performance of Employees and Machines)

- Good Organization Structure
- Unity of Plans
- Statistical Control Reports
- Budgetary control
- Profit & loss control
- External audit Control
- Overall Control criteria ( BEP Analysis)
- Return on Investment Control
- Management Audit
- Responsibility accounting

#### 3.7.Controlling Techniques of Management

MBO - Management by Objective

MBE - Management by Expectation

MBP - Management by Participation implies the mental and emotional involvement of employees, share holders, investors, consumers and other stake holders in the decision making process.

#### 3.8.Importance of controlling

- Policy verification
- Adjustments in operation
- Psychological pressure
- Coordination
- Employee morale
- Efficiency and Effectiveness

### 3.9.Limitations of controlling

- Controlling is expensive
- Controlling is time consuming
- Human behavior cannot be measured
- There is no account for Employee morale
- It cannot consider the external factors like

- technological changes,
- political factors,
- social changes,
- government procedures etc.

### 4.RESPONSIBILITIES IN ENGINEER MANAGEMENT

Build and Hire a professional Systems Engineering organization. Build the engineering structure to scale and grow with the strategy of the company.

Work jointly with the sales organization to create a territory plan utilizing feedback and adding own knowledge of local market demand. Create a technical resource plan by vertical and technology. Collaborate with Sales VP to prioritize and target team opportunities; Understand mechanisms for building team capacity and improving team performance. Align resources to deliver on commitments. Lead team to technical account strategies that align to customer business requirements and goals; assign resources appropriately Monitor and approve requests for customer-focused pre-sales and post sales resources.

Assist in determining domain/solution-focused resources and understanding and developing requests for these resources Provide timely and appropriate feedback that focuses on those

things that will make the biggest difference in performance; reinforces efforts and progress Track and report team metrics for a given opportunity Understanding how to make money selling Professional services is a must!

Advanced understanding of internetworking industry trends, including new products and solutions. Advanced understanding of competitive product and solution landscape and can articulate trade-offs between various competitive products Excellent knowledge in Routing, Switching, Unified Communications, Security and Wireless Develop team members' capabilities in support of individual career goals and team objectives Understand basics of managing technical people and the associated process of running a business Understand the value of best practices and apply best practices and other tools to drive business results. Communicate a clear vision and strategy for the account that inspires and empowers the team to execute within a common framework Able to get things done without direct line authority; able to exercise personal influence, resolve conflict, and bring about required behaviors

Translate High Point's vision for the future into a compelling value proposition for the team .Build the capabilities needed to deliver on the team's short and long term goal, including identification and development of a strong pipeline of the best talent from both internal and external candidate pools .Clearly and succinctly convey information and ideas, including expert executive communication and presentation skills.

### 5. CONTROLLING TECHNIQUES USED IN ENGINEERING MANAGEMENT

#### 5.1.Target:

Target is the initial tool helps for controlling the entire show of engineering management. Setting the target is based on estimated forecast which will help the connected person to manage the show without any difficulty.

### 5.2. MIS

Management information systems like periodical reports, records, check lists, HRIS, PERT, CPM etc., will give the real status on day to day work life becomes another controlling tool in engineering management.

### 5.3. Re-planning

MIS will highlight the unfinished areas which can be rectified by re-planning, re-organizing and re-directing the same issue to get more perfection is the required area in engineering management controlling technique. This is a flexible technique often makes to redo the exercise.

### 5.4. Decision Making

Re-planning is a situational requirement leads to take decision based on management point of view. The decision making is a required cognitive controlling technique which helps the professionals to attain their goal at the earliest.

### 5.5. Work Life Balance

Next controlling tool is the work life balance which helps the professional to control by 24/7, hours coverage. (i.e., round the clock coverage.) technique applicable in managing the work.

### 5.6. Emotional Intelligence

Emotional Intelligence is a new tool in HRM is required to curtail the anger management among the employee and colleagues of any institution. These are some of the controlling techniques used for getting the expected performance in engineering management .

These are interconnected in many aspects will focus the real picture every now and then.

### 5.7. Service Ethics:

Ethics should be important to engineering management. So, an engineer should make ethical decisions when confronted with a moral dilemma.

### 5.8 Engineering Code of Ethics

The professional organizations have addressed the complexity of moral issues in their fields by developing codes of ethics Professional codes of ethics consist primarily of principles of responsibility that delineate how to promote the public good. The code of ethics in Engineering management does the following

- Shared Standards
- Positive Support to Act Ethically
- Guidance Concerning Obligations
- Motivation
- Education
- Deterrence and Discipline
- Professional Image

## 6. SAFETY MEASURES USED FOR CONTROLLING LN ENGINEERING MANAGEMENT

Apart from the profession the professionals in engineering management are human beings has to safe guard their health. Hence, following safety measures are used for controlling them from risk in place of safety.

- Using helmet
- Using glasses
- Using ear covers
- Using hand gosses
- Using knee boot



- Using over hauling
- Using shock proof jackets etc.

## 7. ADVANTAGES IN ENGINEERING MANAGEMENT

\*Extensive and proven track record in design for manufacturing and design for assembly

\*Extensive and proven track record in sourcing manufacturing vendors

\*Successful experience will increase manufacture will reduce the cost of manufacturing.

\*Extensive experience dealing and interacting with a range of manufacturers and factories in India and abroad.

\*Extensive and proven track record in solving a multitude of problems in manufacturing operations

\*Experience establishing quality assurance practices

\*Excellence in quality and clarity of thinking and an equally excellent ability to communicate that thinking and through process to others.

• Ability to “think on own feet” and be able to flexibly adapt to the changing needs constantly.

## 8. LIMITATIONS IN ENGINEERING MANAGEMENT

A engineer can say “yes” to everything as per engineering ethics but in case of their training they are trained especially for technical point of view (well versed in technical knowledge) and they will never be better than a person who get trained especially for management area also.

An engineer can resolve the issues related to all aspects in their profession as an engineer only and will be difficult in managing part, unless otherwise when they have appropriate experience and knowledge about their needed area.

An engineer should be ready to receive a suggestion of every least labor with a humble mind and has to understand their problems will take time and they will be in a difficult situation to find proper solution soon.

The risk related to the job should be analyzed fully and it has to be awarded to the corresponding labor if it has to be done the manager should have much knowledge about the job.

To resolve the problems the theoretical knowledge will not be helpful in all cases but generally engineers have more theoretical knowledge when compared to engineering management personnel.

In case of a dispute in the organization, an engineer manager may need a legal person for consultancy to resolve the issue.

Moreover he is a human being he has to look after himself but this seems to be lacking when he is in service.

## 9. SUGGESTIONS

The engineering management expects the personnel to keep control on the CONFIDENTIAL INFORMATION COMING TO THEM IN A MOST CONFIDENTIAL WAY in the course of their assignments, projects, research and duties entrusted to them.

Privileged information that is available only on the basis of special privilege to the technical person has to be handled carefully while exercising the controlling techniques.

Sometimes, a new knowledge established that can be legally protected has to be maintained as “top secret” will be disclosed to

him on faith. Hence, it is expected that when using the above controlling techniques the person has to attach importance to such area without disclosing to others.

Engineering Management has to focus on three moral considerations that is respect for autonomy, respect for promises and regard for public well-being. Top most essential thing is to eradicate conflict and disputes in the work spot whenever they apply the controlling techniques. Get a Certification: EMCI (Engineering Management Certification International) is a Tool to Measure Engineering Management Competency

#### 10.FINDINGS

Engineer Managers Are Expected To Try For Life Time.

\*He Should Work As Fast As A Lightning Whenever There Is Emergency.

\*Face Any Situation Boldly.

\*He Should Be Ready To Adjust And Alert Always.

\*Practice Not To Say “No” Practice.

\*Their Engineer ship Is Their Prime God.

#### 11.Conclusion

The main aspect in engineering management is to keep the standard and quality of work to their corresponding organization. Safety and profit oriented decision can be made by them as they know well about the need, efficiency, and technical expertise qualities, such reflections are expected by the present society. The engineering management could not say “no”, because the society will expect from them to find solution to any situation and the public wants only “Yes” as an answer, in such occasion they have to make use of the said controlling techniques to satisfy the society.

#### REFERENCES

[1] Engineer as a manager” by MICHEAL COUIN.

Mike Martin and Roland Schinzinger, “Ethics in Engineering”, McGraw Hill, New York (2005).

[2]Mamoria C.B. and Sathish Mamoria, “Dynamics of Industrial Relations” Himalaya Publishing House, New Delhi, 2007.

[3]“Purchasing Principles of Management” by Peter Baily, David Farmer, David Jessop and Davide Jones

[4] Principles of Management “by Henri Fayol “The Principles of Scientific Management “ by F.W.Taylor

[5]Stephen P. Bobbins, Organisational Behaviour, Prentice Hall, 1997.[www.mayoclinic.org/healthy-living/.../anger-management/art-20045434](http://www.mayoclinic.org/healthy-living/.../anger-management/art-20045434)

#### Website and internet

[1] Google