

## Chapter 2: theory review of related literature

### 2.1 Organizational behavior:

#### 2.1.1 Introduction

Organizational behavior is a term related to the study of individual and group dynamics in an organizational setting, as well as the nature of the organizations themselves. Whenever people interact in organizations, many factors come into play. The subject of Organizational Studies attempts to understand and model these factors. This subject is becoming more important as people with diverse backgrounds and cultural values have to work together effectively and efficiently. OB seeks to emphasize the understanding of behavior in organizations so as to develop competencies in foreseeing how people are likely to behave. This knowledge may then help in controlling those behaviors that are not befitting the objectives of the organizations. Factors like objectivity, reliability and sustainability are important while selecting the methods for this purpose. Questionnaire, interview, simulation and survey are generally used to elicit responses of individuals located in different types of organizations. To a large extent their personalities affect the nature of their responses.

#### 2.1.2 Personality and Organization

As understanding personality is crucial for knowing behavior of an individual in an organization, we will discuss in this section of the unit the interface between personality and organization.

Personality refers to some qualities, characteristics skills and competencies of individuals along with certain other traits like grooming and attitude.

Personality means very specific patterns of behavior of an individual in a defined situation. But there are certain uniform characteristics which always emerge in a person on the basis of which certain inferences can be drawn. Examples could be dominant or submissive nature, aggressiveness or politeness. Personality consists of organization of feelings, thoughts, cognitions and visible behavior. However certain patterns of behavior are not visible and are known only after proper testing. Let us therefore discuss how to measure personality.

##### 2.1.2.1 Measuring Personality

Since personality of an individual plays a crucial role in shaping an organization, several methods have been evolved to measure personality. By and large three methods of assessment are being used.

These are Personality Inventories, Projective Tests and Assessment Centre.

Let us now briefly discuss each method. **Personality Inventories** As a widely used method of measuring personality, it consists of several statements related with a specific dimension of personality and individuals are asked to indicate their degree of agreement or disagreement. This is usually done by asking both negatively and positively worded statements on selected common themes.

- **Projective Tests**

This test is conducted to investigate more difficult and sophisticated aspects of an individual's personality. The assumption is that some of the dormant fantasies, feelings, hopes and aspirations can be measured to assess a personality.

The test consists of ten pictures; one-half being the same as other half. These are ambiguous, unstructured inkblots and the individuals are asked to indicate what they see in these pictures. Another projective method is the thematic appreciation. Morgan and Murray (1935) developed this test. It consists of twenty pictures, each of which represents a social setting. These pictures provide relatively defined situations and the individual is asked to write a story of what might be happening in that social situation.

- **Assessment Centre**

This test consists of a variety of methods used to evaluate the personality of employees in organizations. It may consist of situational tests, management problems, in-basket exercises, business plan presentations, letter and memo writing etc. It is followed by developing behavior categories to assess the performance on the key result areas. The dimensions assessed are personality characteristics such as sensitivity to others, career ambition, integrity, independence etc

Most organizational behavior strategies are eventually meant to optimally utilize the capabilities of individuals and groups towards achievement of organizational objectives. The performance of an individual is a function of his or her ability and willingness or desire to use one's ability to achieve certain goals. However, it is important that staff is adequately motivated to fulfill these objectives.

Once a manager is able to understand the traits of personality of an individual worker, she or he can use different methods of motivation. Let us discuss the point of work motivation.

### **2.1.2.2 Work Motivation**

Motivation is a process that starts with physiological or psychological urge or need. It activates a behavior or a drive that is aimed at a goal or incentive. All individuals have a number of basic needs which can be thought as outlets that channel and regulate the flow

of potential energy from the reservoir. Most individuals have, within a given socio-cultural system, a similar set of motives or energy outlets; but differ greatly in the relative strength or readiness of various motives and actualization of motives depends on specific situations in which a person finds himself or herself.

### **2.1.2.3 Motivation: Improving Factors**

There are several ways in which motivation level of employees can be augmented and improved. Some of these factors are described as under:

Job Enrichment:

- Jobs must be redesigned to provide opportunities for achievement, recognition, responsibility and growth. It comprises of variety in work contents, greater use of skills and opportunity for growth by providing employee with a complete unit of work and increased authority.
- Flex Time:

The concept of flexi time is designed to provide employees some control on their work schedule. Entire work time is divided into “core time” and “flexi time”. During core time, all employees are compulsorily present while during flexi time they are free to choose their own timings.

- Empowerment:

Empowerment essentially means providing authority to employees in their area of operation for resolving their work related problems without seeking approval from above.

- Quality Circles:

Quality circles are semi-autonomous work groups which meet regularly to discuss and solve problems related to their specific area which aims at improving working conditions and self-development.

- Employees Stock Ownership Plan:

It has become a major tool in retaining and motivating employees in business organizations. It is an organization’s established benefit plan in which employees are offered company stock as part of their benefit package. It makes employees work harder as it directly affects the performance of the company and the value of their stock also raises.

Work motivation and job satisfaction are closely linked with the overall performance of workers and subsequent rewards. A well-motivated employee is likely to feel more satisfied and vice versa. Hence it is essential to understand the relationship between these concepts so as to apply them in the day to day management of adult learning centers for better performance.

### 2.1.3 Job Satisfaction and Reward Management

Job satisfaction can be defined as an individual's overall attitude towards his or her job. It is a positive state resulting from the appraisal of one's job or job experience. It is regarded both as a general attitude as well as satisfaction with specific dimensions of the job such as pay, the work itself, promotion opportunities, supervision, co-workers etc. The degree of satisfaction may vary with how well outcomes fulfill or exceed expectations.

There are various theories of job satisfaction. The human relations movement suggested that real satisfaction with job could only be provided by allowing individuals enough responsibility and freedom to enable them to grow mentally while physical/economic school emphasized the role of the physical arrangement of work, physical working conditions and pay. In recent years, the attitude of job satisfaction has come to be linked with broader approach to improve the job design, work organization and quality of life.

- **Measuring Job Satisfaction, its Determinants and Consequences**

Measuring job satisfaction has been a challenging process to managers.

Several techniques have been developed over the years which are used extensively and are of great importance for practitioners. For instance individuals are made to recall some of the important and critical incidents which have caused satisfaction or dissatisfaction to them and conclusions are drawn from such exercises. In another method a small group of employees are brought together and encouraged to openly share their feeling regarding their job. In group environment people feel free to talk about various things. Researchers have identified several factors leading to job satisfaction which are broadly divided into two categories, namely, Organizational Factors and Individual Determinants.

#### **Organizational Factors**

- **Reward System:**

The organizational reward system has been found to be related to job satisfaction. This pertains to how fairly pay benefits and promotions are distributed.

- **nature of Work:**

The nature of work contributes heavily. The factors such as flexibility, freedom and discretion available in the performance of one's job bring a lot of job satisfaction.

- **Supervisory Behaviors:**

Satisfaction tends to be higher when employees believe that their supervisor is competent and considerate.



- Working Conditions:

Overall working conditions in an organization have a direct bearing on the level of satisfaction. Comfort, salary, challenge and resource availability are main components of working conditions. (T.Ashraf 2006 Organizational Behavior)

## **2.1.4. Organization's Human Recourse**

The human element as represented by the construction workforce is the main catalyst/determinant variable of construction efficiency and productivity. ” (Awad S. Hassan 2012)

“Human resource is the most precious resource that you can ever get, that resource you unable to own by money”.

Professional Human resource is very crucial for any business. So finding them, managing them, motivating them and holding them are key responsibilities of HR.

As a leader, you need to interact with your followers, peers, seniors, and others; whose support you need in order to accomplish your goals. To gain their support, you must be able to understand and motivate them. To understand and motivate people, you must know human nature. Human nature is the common qualities of all human beings. People behave according to certain principles of human nature.

HR should be every single company's engine of growth. What could possibly be more important in a company than who gets hired, developed, promoted, or moved out of the door? After all, business is in a game to make profit and, as with all games, the team that puts the best people on the field and gets them playing together as a team wins and makes adequate money to breed more success, give salary increases to their players and to become famous.

### **2.1.4.1 Basic Principles & theories:**

Human resources is a term used to describe the individuals who make up the workforce of an organization, although it is also applied in labor economics to, for example, business sectors or even whole nations. This function title is often abbreviated to the initials "HR".

There is so many theories appeared to control and improve the workforce such as:

- **Maslow's Hierarchy of Needs**

Unlike others researchers in the earlier days of psychology, Abraham Maslow's based his theory of human needs on creative people who used all their talents, potential, and capabilities (Bootzin, Loftus, Zajonc, Hall, 1983). His methodology differed from most other psychological researchers at the time in that these researchers mainly observed mentally unhealthy people.

Maslow felt that **human needs** were arranged in a hierarchical order that could be divided into two major groups: basic needs and met needs (higher order needs)

These needs are normally listed in a hierarchical order in the form of a pyramid to show that the basic needs (bottom ones) must be met before the higher order needs:

- Physiological — food, water, shelter, sex.
- Safety — feels free from immediate danger.
- Belongingness and love — belong to a group, close friends to confide with.
- Esteem — feeling of moving up in world, recognition, few doubts about self.
- Self-actualization — knows exactly who you are, where you are going, and what you want to accomplish. A state of well-being.

Maslow posited that people want and are forever striving to meet various goals. Because the lower level needs are more immediate and urgent, then they come

- **McGregor's Theory X and Theory Y**

Douglas McGregor (1957) developed a philosophical view of humankind with his Theory X and Theory Y — two opposing perceptions about how people view human behavior at work and organizational life. McGregor felt that organizations and the managers within them followed either one or the other approach:

- **Theory X**

- People have an inherent dislike for work and will avoid it whenever possible.
    - People must be coerced, controlled, directed, or threatened with punishment in order to get them to achieve the organizational objectives.
    - People prefer to be directed, do not want responsibility, and have little or no ambition.

- People seek security above all else.

In an organization with Theory X assumptions, management's role is to coerce and control employees.

- **TheoryY**

- Work is as natural as play and rest.
- People will exercise self-direction if they are committed to the objectives (they are NOT lazy).
- Commitment to objectives is a function of the rewards associated with their achievement.
- People learn to accept and seek responsibility.
- Creativity, ingenuity, and imagination are widely distributed among the population. People are capable of using these abilities to solve an organizational problem.

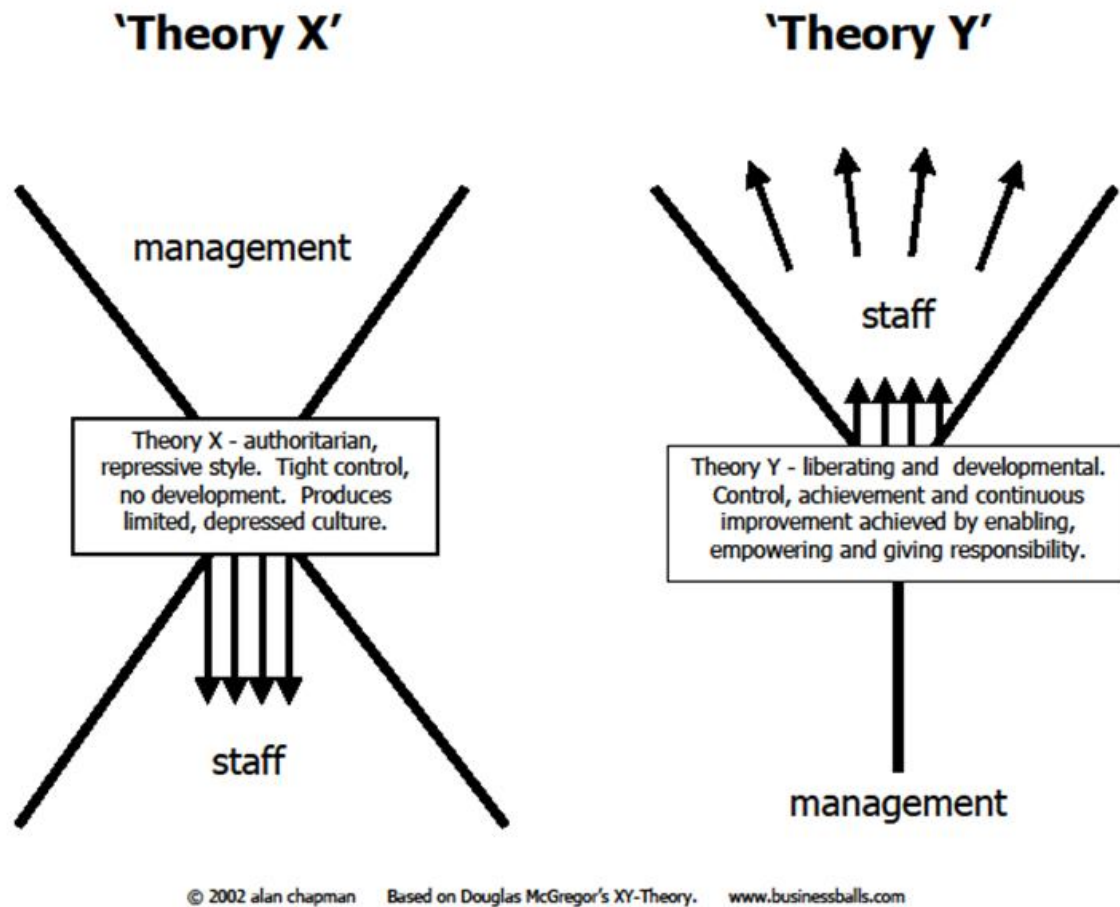


Fig (2.1) Theory X & Theory Y (source Alan Chapman 2002)

## • Herzberg's Hygiene and Motivational Factors

Frederick Herzberg was considered one of the most influential management consultants and professors of the modern postwar era. Herzberg was probably best known for his challenging thinking on work and motivation. He was considered both an icon and legend among visionaries such as Abraham Maslow, Peter Drucker, and Douglas MacGregor.

Herzberg (1966) is best known for his list of factors that are based on Maslow's Hierarchy of Needs, except his version is more closely related to the working environment:

### - HYGIENE OR DISSATISFIERS:

- Working conditions
- Policies and administrative practices

- Salary and Benefits
- Supervision
- Status
- Job security
- Co-workers
- Personal life

- **MOTIVATORS OR SATISFIERS:**

- Recognition
- Achievement
- Advancement
- Growth
- Responsibility
- Job challenge

### Herzberg's Hygiene and Motivational Factors

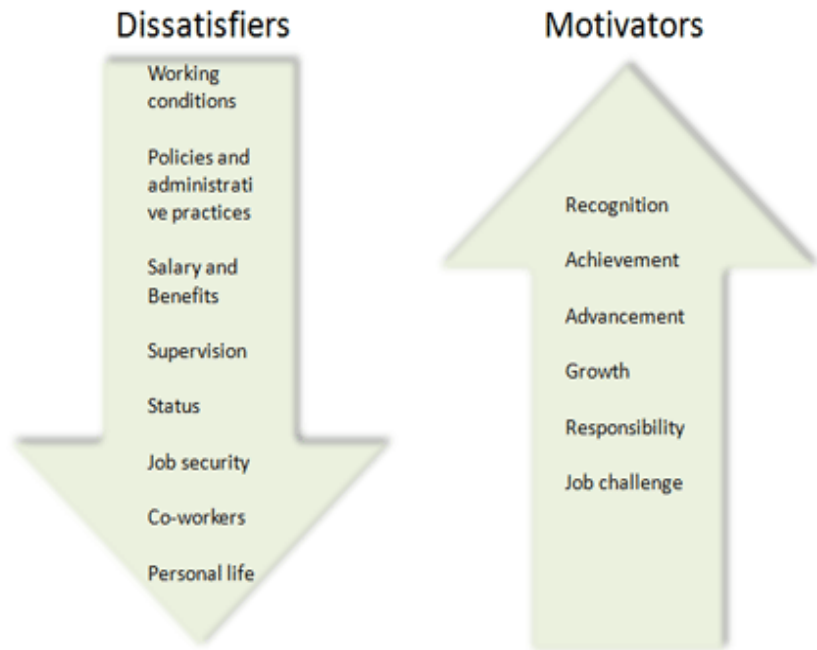


Fig (2.2) Herzberg's hygiene & motivational factors(source Alan Chapman 2002)

Hygiene or dissatisfies factors must be present in the job before motivators can be used to stimulate a person. That is, you cannot use motivators until all the hygiene factors are met. Herzberg's needs are specifically job related and reflect some of the distinct things that people want from their work as opposed to Maslow's Hierarchy of Needs which reflect all the needs in a person's life.

Building on this model, Herzberg coined the term job enrichment — the process of redesigning work in order to build in motivators by increasing both the number of tasks that an employee performs and the control over those tasks. It is associated with the design of jobs and is an extension of job enlargement (an increase in the number of tasks that an employee performs).sourceAlan Chapman

## **2.1.4.2 Human Resources and Skills Development**

### **\* The Human Resources department**

The Human Resources department consists of three major sectors :

- Operation
- Training and development
- Recruitment and selection

#### **• Training and development**

At the organizational level, a successful Human Resources Development program prepares the individual to undertake a higher level of work, "organized learning over a given period of time, to provide the possibility of performance change" (Nadler 1984). In these settings, Human Resources Development is the framework that focuses on the organization's competencies at the first stage, training, and then developing the employee, through education, to satisfy the organization's long-term needs and the individual's career goals and employee value to their present and future employers. "development occurs to enhance the organization's value, not solely for individual improvement. Individual education and development is a tool and a means to an end, not the end goal itself" (Elwood F. Holton II, James W. Trot Jr) Optimum Utilization of Human Resources –Training and Development helps in optimizing the utilization of human resource that further helps the employee to achieve the organizational goals as well as their individual goals.

Development of Human Resources – Training and Development helps to provide an opportunity and broad structure for the development of human resources' technical and behavioral skills in an organization. It also helps the employees in attaining personal growth.



**Development of skills of employees** – Training and Development helps in increasing the job knowledge and skills of employees at each level. It helps to expand the horizons of human intellect and an overall personality of the employees.

**Productivity** – Training and Development helps in increasing the productivity of the employees that helps the organization further to achieve its long-term goal.

**Team spirit** – Training and Development helps in inculcating the sense of team work, team spirit, and inter-team collaborations. It helps in inculcating the zeal to learn within the employees.

**Organization Culture** – Training and Development helps to develop and improve the organizational health culture and effectiveness. It helps in creating the learning culture within the organization.

**Organization Climate** – Training and Development helps building the positive perception and feeling about the organization. The employees get these feelings from leaders, subordinates, and peers.

**Quality** – Training and Development helps in improving upon the quality of work and work-life.

**Healthy work environment** – Training and Development helps in creating the healthy working environment. It helps to build good employee, relationship so that individual goals aligns with organizational goal.

**Health and Safety** – Training and Development helps in improving the health and safety of the organization thus preventing obsolescence.

**Morale** – Training and Development helps in improving the morale of the work force.

**Image** – Training and Development helps in creating a better corporate image.

**Profitability** – Training and Development leads to improved profitability and more positive attitudes towards profit orientation.

Training and Development aids in organizational development i.e. Organization gets more effective decision making and problem solving. It helps in understanding and carrying out organizational policies.

Training and Development helps in developing leadership skills, motivation, loyalty, better attitudes, and other aspects that successful workers and managers usually display

## • **Recruitment and selection**

Applicant recruitment and employee selection form a major part of an organization's overall resourcing strategies, which identify and secure people needed for the organization to survive and succeed in the short- to medium-term. Recruitment activities need to be responsive to the increasingly competitive market to secure suitably qualified and capable recruits at all levels. To be effective, these initiatives need to include how and when to source the best recruits, internally or externally.

The methods of recruitment open to a business are often categorized into:

- **Internal recruitment** is when the business looks to fill the vacancy from within its existing workforce.
- **External recruitment** is when the business looks to fill the vacancy from any suitable applicant outside the business.

### - **Internal Recruitment:**

#### • **Advantages:**

Cheaper and quicker to recruit

People already familiar with the business and how it operates

Provides opportunities for promotion within the business – can be motivating

Business already knows the strengths and weaknesses of candidates

#### • **Disadvantages:**

Limits the number of potential applicants

No new ideas can be introduced from outside the business

May cause resentment amongst candidates not appointed

Creates another vacancy which needs to be filled

### - **External Recruitment**

#### • **Advantages**

Outside people bring in new ideas

Larger pool of workers from which to find the best candidate

People have a wider range of experience

#### • **Disadvantages**

Longer process

More expensive process due to advertisements and interviews required

Selection process may not be effective enough to reveal the best candidate

#### **2.1.4.3 HR Management & Attitude-Behavior Relationship**

The word attitude comes from the Latin aptus meaning fit, connoting a readiness for action. Many definitions of attitude have been offered, Allport cited in 1935 sixteen definitions of attitude, he defined attitude as:

"An attitude is a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with it is related" (Allport, 1935:810)

This definition contains five parts: (1) it is a mental and neural state, (2) of readiness to respond, (3) organized, (4) through experience and exerting a directive and/or dynamic influence on behavior {as quoted in McGuire, 1968:142}. Organizational researchers have failed to take the components of attitudes in account and the relationship between attitude and behavior, when analyzing job satisfaction- job performance. Problems of the relationship between attitude and behavior can be applied to job performance and job satisfaction. Performance is measured at one point in time, by one method and then correlated with a satisfaction measures. Fisher, (1980) sum up this point; he said that "there is no reason to expect a single measure of performance to be related to overall satisfaction.

What should be strongly related to job satisfaction is a multiple-act, multiple-observation measure of variety of work behaviors" (1980:609) and should be aware of the need to have an appropriate fit between attitude measures specificity and behavioral criteria to obtain maximum predictability (611)".

On the relationship between attitudes and behavior, there are three different propositions regarding the relationship between job performance and job satisfaction. These are:

- (a) Performance causes satisfaction.
- (b) Satisfaction causes performance.
- (c) Moderator approach to the relationship between satisfaction and performance.

##### **(a) Performance Causes Satisfaction**

This approach is based on the assumption that satisfaction is a function of performance. Lawler and Porter (1967) were the principal proponents of this approach. They argued that evidence indicated that a low but consistent relationship existed between satisfaction and performance. According to Lawler and Porter (1967), performance may lead to rewards and rewards to satisfaction. They developed a model distinguished between two types of rewards. Extrinsic rewards, such as pay, promotion

are likely to be related to performance, these rewards are associated with satisfaction of the lower order needs. On the other hand, intrinsic rewards such as self-actualization are more directly related to performance. Both extrinsic and intrinsic rewards are indirectly related to job satisfaction and moderated by expected equitable rewards, which refer to the amount of rewards that a person feels he should receive as a result of his job performance.

Moreover, the imperfect relationship between rewards and performance and the moderate influence of perceived equity would be expected to produce a low but positive relationship between performance and satisfaction. Claims that performance causes satisfaction or vice versa are based on correlational studies. This kind of study supports the existence and direction (+ or -) of the relationship between performance and satisfaction and not on causal relationship.

### **(b) Satisfaction Causes Performance**

Human relations approach theorists—which emerged from Hawthorne studies of the 1920s and early 1930s—have their own viewpoint on the relationship between performance and satisfaction (Schwab & Cummings, 1970). Vroom (1964) stated the following:

It was typically assumed by most people associated with the human relations movement that job satisfaction was positively associated with job performance. In fact human relations might be described as attempts to increase productivity by satisfying the needs of employees (p. 181).

A review of more than 50 studies (Brayfield & Crockett, 1955) showed that satisfaction causes performance. Vroom (1964) reviewed 20 studies relating satisfaction to performance that had been conducted between 1949-1963 and found correlation from -0.31 to 0.86 with a median correlation of 0.14.

Application of the exchange theory by Organ (1977), suggested that a reappraisal of the logic underlying the satisfaction cause performance notion. According to Organ, social exchange theory can be applied to the assumption that satisfaction causes performance. Organ argued that performance or production might be viewed as an appropriate form of reciprocal exchange for satisfaction afforded an employee by his/her job.

### **(c) Moderator Approach**

The moderator approach assumes that satisfaction-performance is related under certain conditions. This approach is attributed Lawler and Porter's (1967) work, which emphasized the effects of moderator variables such as rewards contingency and perceived equity of rewards to the relationship between performance and satisfaction. Herman

(1973) suggested that performance could be expected to relate to satisfaction only when workers are given control over their production. Other factors that are expected to influence the relationship between performance and satisfaction are the degree of job fit (Carlson, 1969), pressure for production and task difficulty (Jacobs & Solomon, 1974), and a need for achievement (Steers, 1975). Theorists who take this approach do not assume unidirectional relationship; some posit circular relationship, others assume bidirectional relationship.

#### **2.1.4.4 Job satisfaction as an indicator of job quality**

Although job satisfaction emerged as an indicator of job quality, a Spanish research paper<sup>1</sup> (Llorente and Macías, 2003) concluded that there is little or no correlation between job satisfaction and job quality.

Two approaches were followed to assess the adequacy of using job satisfaction as an indicator of the quality of work. First, the authors explored whether differences between countries in terms of job satisfaction can be explained by job quality-related variables, such as working time, wages, etc.

Secondly, the authors studied the relationship between certain objective measures of job quality and job satisfaction. In both cases, ‘job satisfaction has no apparent relevant relation to other objective indicators of job quality, which makes this indicator of little adequacy for evaluating job quality’ (Llorente and Macías, 2003).

Paradoxically, in a context of pronounced objective differences in quality among jobs, the authors found a coexistence of high levels of job satisfaction, with only a small range of variation between the maximum and minimum levels of job satisfaction. In order to explain this paradox, two possible response mechanisms to situations of job dissatisfaction were put forward. The first would be the process through which workers who are dissatisfied with their job tend to leave it and look for a better job. This process would culminate in those workers finding a more suitable job, and thus raising their level of job satisfaction. The second mechanism refers to those cases, in which workers cannot find a more suitable job and must change and adapt their work expectations to the type of job available. This process of adaptation could lead to an increase in their declared level of job satisfaction(**source** Hani Mahmoud Mohamed -2008)

#### **2.1.4.5 SUMMERY (HR Management, Attitude-Behavior, Job satisfaction)**

Today, the best-in-class companies provide a tremendous amount of training and education for their employees—and are discovering the rewards. For example, Motorola has realized a 10-to-1 return on its training budget. In fact, it requires every employee to

receive 40 hours or more of training annually, of which 40 percent must be in the area of quality.

While the same level of investment may be impossible for smaller businesses, the take-away is that the more you can do the better. It really is an investment in your future.

Each employee must be encouraged to provide input and participate in the company's initiative to

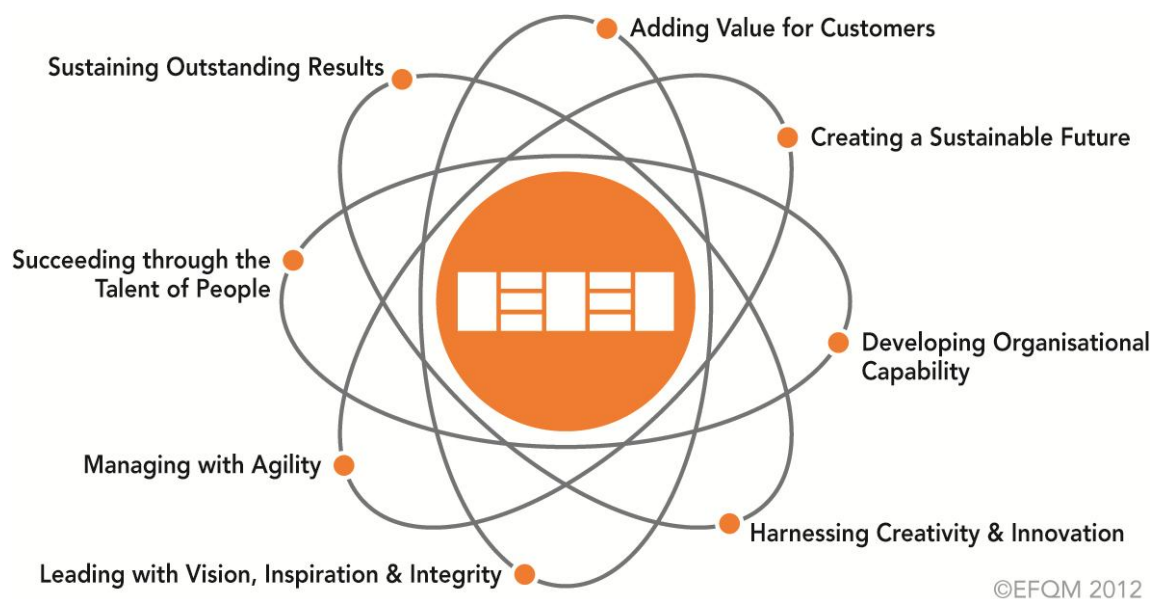
- Improve quality,
- Meet or exceed customer expectations,
- Cut costs, and improve the bottom line processes “work package”.

And, each employee owns his or her part of the process to be improved. In other words, it really is a team effort.

## 2.2 Excellence

### 2.2.1 Fundamental Concepts of Excellence

(fig2.1) outline the foundation for achieving sustainable excellence in any organisation. They can be used as the basis to describe the attributes of an excellent organisational culture. They also serve as a common language for top management.



**Fig (2.3) Fundamental Concepts of Excellence (source EFQM 2012)**



## There are 8 Fundamental Concepts:

- **Adding Value for Customer.**  
Excellent organisations consistently add value for customers by understanding, anticipating and fulfilling needs, expectations and opportunities.
- **Creating a Sustainable Future.**  
Excellent organisations have a positive impact on the world around them by enhancing their performance whilst simultaneously advancing the economic, environmental and social conditions within the communities they touch
- **Developing Organisational Capability.**  
Excellent organisations enhance their capabilities by effectively managing change within and beyond the organisational boundaries.
- **Harnessing Creativity & Innovation.**  
Excellent organisations generate increased value and levels of performance through continual improvement and systematic innovation by harnessing the creativity of their stakeholders.
- **Leading with Vision, Inspiration & Integrity.**  
Excellent organisations have leaders who shape the future and make it happen, acting as role models for its values and ethics.
- **Managing with Agility.**  
Excellent organisations are widely recognised for their ability to identify and respond effectively and efficiently to opportunities and threats.
- **Succeeding through the Talent of People.**  
Excellent organisations value their people and create a culture of empowerment for the achievement of both organisational and personal goals.
- **Sustaining Outstanding Results.**  
Excellent organisations achieve sustained outstanding results that meet both the short and long term needs of all their stakeholders, within the context of their operating environment.

### 2.2.2 (EFQM) Excellence Model

The **EFQM** Excellence Model is a non-prescriptive framework based on nine criteria – 5 ‘Enablers’ and 4 ‘Results’. It can be used to assess an organisation’s progress towards excellence. The Model provides a non-prescriptive framework to guide a construction company to achieve a top quality performance via the attainment of a

sustainable competitive advantage. Within the non-prescriptive framework, certain fundamental concepts underlie the Model.

It is a framework to understand and manage this complexity. The Model is pragmatic and practical, developed by leading organisations to stimulate continuous improvement. The EFQM Excellence Model allows people to understand the cause and effect relationships between what their organisation does and the Results it achieves.

Having recognised that corporate excellence is measured by an organisation's ability to both achieve and sustain outstanding results for its stakeholders, the enhanced version of the EFQM Excellence Model was developed. The fundamental advantages of the new Excellence Model included:

“Increased cost effectiveness; results orientation; customer focus; partnership; knowledge management; performance, and learning” Regardless of sector, size, structure or maturity, organisations need to establish an appropriate management framework to be successful. (EFQM organization 2013).

**2.2.3 Criteria's** The Excellence framework based on nine criteria (leadership, people, strategy, partnership, process, people result, customer result, society result, key result) divided into two areas one is the enabler criterion and the other is the result criterion. Figure (2.4) shows the logical relationship between the criteria.

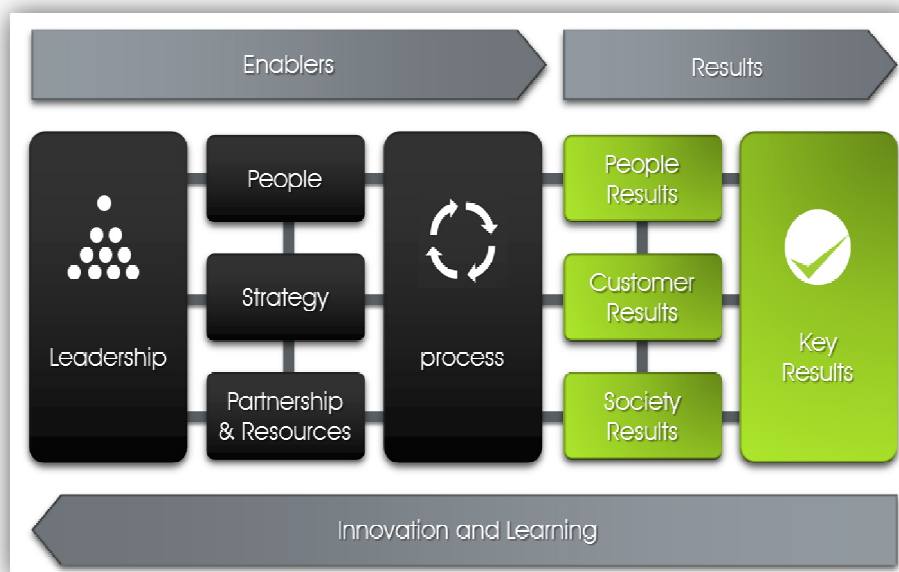


Figure (2.4) EFQM model (Source: EFQM, 2012)

### 2.2.3.1 ENABLER CRITERION

There are 5 enablers, pictures on the left-hand side of the Model. These are the things an organisation needs to do to develop and implement their strategy.

- a) Leadership
- b) Strategy
- c) People
- d) Partnerships & Resources
- e) Processes, Products & Services

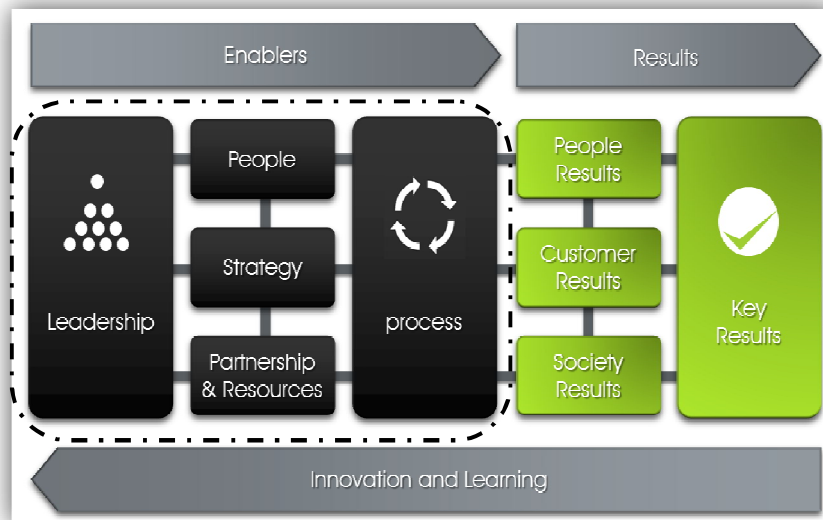


Figure (2.5) enabler criterion (source EFQM 2012)

- **Leadership**

Excellent organisations have leaders who shape the future and make it happen, acting as role models for its values and ethics and inspiring trust at all times. They are flexible, enabling the organisation to anticipate and reach in a timely manner to ensure the on-going success of the organisation.

- a. Leaders develop the mission, vision, values and ethics and act as role models.
- b. Leaders define, monitor, review and drive the improvement of the organisation's management system and performance.
- c. Leaders engage with external stakeholders.
- d. Leaders reinforce a culture of excellence with the organisation's people.
- e. Leaders ensure that the organisation is flexible and manages change effectively.

- **Strategy**

Excellent organisations implement their mission and vision by developing and deploying a stakeholder focused strategy. Policies, plans, objectives and processes are developed and deployed to deliver the strategy.

- a. Strategy is based on understanding the needs and expectations of both stakeholders and the external environment.
- b. Strategy is based on understanding internal performance and capabilities.
- c. Strategy and supporting policies are developed, reviewed and updated.
- d. Strategy and supporting policies are communicated, implemented and monitored.

- **People**

Excellent organisations value their people and create a culture that allows the mutually beneficial achievement of organisational and personal goals. They develop the capabilities of their people and promote fairness and equality. They care for, communicate, reward and recognise, in a way that motivates people, builds commitment and enables them to use their skills and knowledge for the benefit of the organisation.

- a. People plans support the organisation's strategy.
- b. People's knowledge and capabilities are developed.
- c. People are aligned, involved and empowered.
- d. People communicate effectively throughout the organisation.
- e. People are rewarded, recognised and cared for.

- **Partnerships & Resources**

Excellent organisations plan and manage external partnerships, suppliers and internal resources in order to support strategy and policies and the effective operation of processes.

- a. Partners and suppliers are managed for sustainable benefit.
- b. Finances are managed to secure sustained success.
- c. Buildings, equipment, materials and natural resources are managed in a sustainable way.
- d. Technology is managed to support the delivery of strategy.

e. Information and knowledge are managed to support effective decision making and to build the organisation's capability.

- **Processes, Products & Services**

Excellent organisations design, manage and improve processes to generate increasing value for customers and other stakeholders.

- Processes are designed and managed to optimise stakeholder value.
- Products and services are developed to create optimum value for customers.
- Products and services are effectively promoted and marketed.
- Products and services are produced, delivered and managed.
- Customer relationships are managed and enhanced.

### 2.2.3.2 RESULTS CRITERION

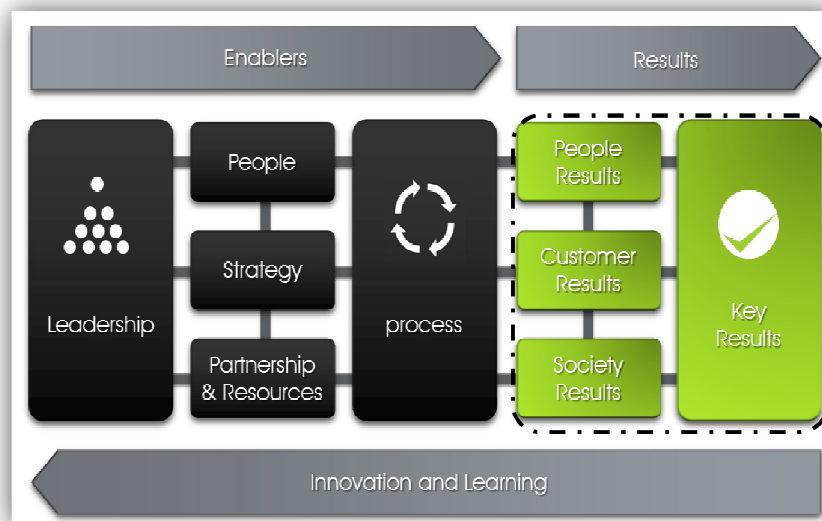


Figure (2.6) results criterion (source EFQM 2012)

There are 4 results areas, shown on the right-hand side of the Model. These are the results an organisation achieves, in line with their strategic goals.

### a) Customer Results

Excellent organisations achieve and sustain outstanding results that meet or exceed the need and expectations of their customers.

### b) People Results

Excellent organisations achieve and sustain outstanding results that meet or exceed the need and expectations of their people.

### c) Society Results

Excellent organisations achieve and sustain outstanding results that meet or exceed the need and expectations of relevant stakeholders within society.

### d) Business Results

Excellent organisations achieve and sustain outstanding results that meet or exceed the need and expectations of their business stakeholders.

In all 4 results areas, we find that excellent organisations:

- Develop a set of key performance indicators and related outcomes to determine the successful deployment of their strategy, based on the needs and expectations of the relevant stakeholder groups.
- Set clear targets for key results, based on the needs and expectations of their business stakeholders, in line with their chosen strategy.
- Segment results to understand the performance of specific areas of the organisation and the experience, needs and expectations of their stakeholders.
- Demonstrate positive or sustained good business results over at least 3 years.
- Clearly understand the underlying reasons and drivers of observed trends and the impact these results will have on other performance indicators and related outcomes.
- Have confidence in their future performance and results based on their understanding of the cause and effect relationships established.
- Understand how their key results compare to similar organisations and use this data, where relevant, for target setting.

The (EFQM) Excellence Model was designed to be

- **Simple** (easy to understand and use);
- **Holistic** (in covering all aspects of an organisation's activities and results, yet not being unduly prescriptive);



- **Dynamic** (in providing a live management tool which supports improvement and looks to the future);
- **Flexible** (being readily applicable to different types of organisation and to units within those organisations);
- **Innovative.**

In a study on self-assessment, Hillman has elaborated further on the benefits of the EFQM Model, stating:

- It is not a standard but allowing interpretation for all aspects of the business and all forms of organisation.
- Its widening use facilitates comparison between organisations. This provides the potential to learn from others in specific areas by using a common language.
- The inclusion of tangible results ensures that the focus remains on real improvement, rather than preoccupation with the improvement process, it focuses on achievement not just activity.
- Training is readily available in the use and scoring for the model.
- It provides a repeatable basis that can be used for comparison over several years.

### 2.2.3.3 BENEFITS DERIVED FROM THE IMPLEMENTATION OF THE EXCELLENCE MODEL

#### A) General benefits of using the EFQM Model are the following:

- Satisfied and loyal customers
- Successful leaders
- A common sense of purpose throughout the organisation
- Constant, well managed change
- Engaged and motivated people and other stakeholders
- An upward flow of ideas
- Efficient and effective use of data
- Efficient and effective operation
- Pride and the desire that drives further improvement

- Minimal fire-fighting / recurring problems
- Innovation is the norm
- Excellent results, including good financial performance

**B) The specific benefits of using the EFQM Model are the following:**

- Reactive to change in the environment
- providing a marketing focus;
- being a means of achieving a top quality performance in all areas of the organisation
- Providing operating procedures for all staff; Allowing for the review of organisational self-assessment performance through providing a competitive weapon via a quality approach.
- Future Focus
- Key Results
- Innovation
- Sustainability

**2.2.3.4 Analysis of ENABLERS:**

- Sound: have a clear rationale, based on the relevant stakeholder needs, and are process based.
- Integrated: support strategy and are linked to other relevant approaches.
- Deployment.
- Implemented: in relevant areas; in a timely manner.
- Structured: The execution is structured and enables flexibility and organisational agility.
- Assessment & Refinement.
- Measurement.
- Effectiveness and efficiency of the approaches and their deployment are appropriately measured.
- Learning & creativity is used to generate opportunities for improvement or innovation.
- Improvement & **Innovation** Outputs from measurement, learning & creativity are used to evaluate priorities and implement improvements & innovations.

### 2.2.3.5 Analysis of Result

- Relevance & Usability.
- Scope & Relevance A coherent set of results, including key results, are identified that demonstrate the performance of the organisation in terms of its strategy, objectives and the needs and expectations of the relevant stakeholders.
- Integrity Results are timely, reliable & accurate.
- Segmentation Results are appropriately segmented to provide at least 3 years.
- Performance.
- Trends Positive trends or sustained good performance over at least 3 years.
- Targets Relevant targets are set and consistently achieved for the key results, in line with the strategic goals.
- Comparisons Relevant external comparisons are made and are favorable for the key results, in line with the strategic goals.
- Confidence There is confidence that performance levels will be sustained into the future, based on established cause & effect relationships.

- **RADAR Analysis:**

The (RADAR) logic is a dynamic assessment framework and powerful management tool that provides a structured approach to questioning the performance of an organisation.

At the highest level Radar logic states that an organisation should:

Determine the Results it is aiming to achieve as part of its strategy. Plan and develop an integrated set of sound Approaches to deliver the required results both now and in the future.

Deploy the approaches in a systematic way to ensure implementation. Assess and Refine the deployed approaches based on monitoring and analysis of the results achieved and on-going learning activities.

To help support robust analysis, the RADAR elements can be broken down into a series of attributes, shown below:

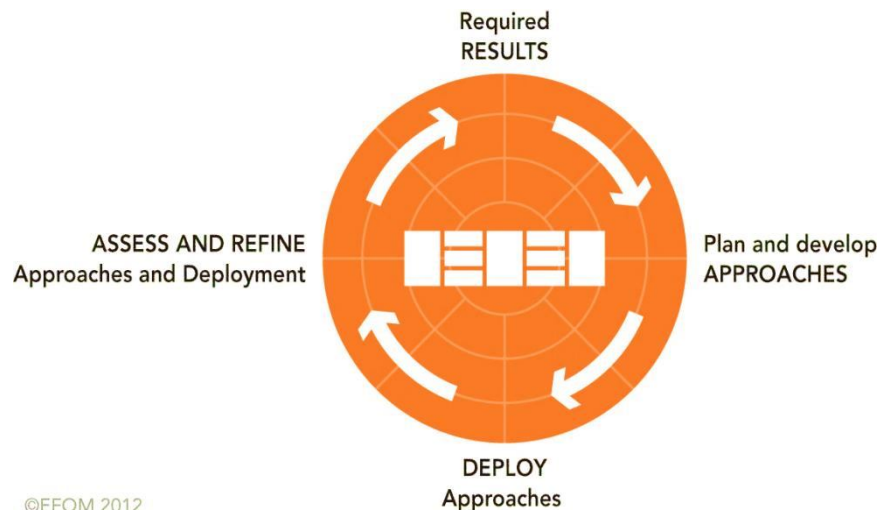


Fig (2.7) the RADAR elements (source EFQM 2012)

### 2.2.4 Self-assessment

The **EFQM** definition of Organisational (Performance) Assessment Is a comprehensive, systematic and regular view of an organisation's activities and results referenced against the EFQM Excellence Model. The assessment process allows the organisation to discern clearly its strengths and areas in which improvements can be made and culminates in planned improvement actions that are then monitored for progress.

As the definition above makes clear, the primary purpose of undertaking Assessment should be to drive improvement. Furthermore, to be successful it must be linked to other management processes within the organisation, primarily the strategy development and business planning processes.

- **Benefits of Self-Assessment?**

- Providing a highly structured, fact-based technique to identifying and assessing your organisation's Strengths and Areas for Improvement and measuring its progress periodically.
- Improving the development of your strategy and business plan.
- Creating a common language and conceptual framework for the way you manage and improve your organisation.
- Educating people in your organisation on the Fundamental Concepts of Excellence and how they relate to their responsibilities. Developing the management skills of staff.
- Involving people at all levels and in all units process improvement.

- f) Assessing, in a coherent manner, the organisation at a macro and/or micro level.
  - g) Identifying and facilitating the sharing of your “good practice” within the organisation.
  - h) Facilitating comparisons with other organisation, of a similar or diverse nature, using a set of criteria that is widely accepted across Europe and beyond.
  - i) Integrating the various improvement initiatives into your normal operations.
  - j) Providing opportunities to recognise both progress and outstanding levels of achievement through internal awards.
  - k) Preparing the organisation before it applies for the EFQM Excellence Award or a national or regional award of a similar nature.
- **Conduct Self-Assessment**

The generic 8-step process

### **Step1 – Gain & retain management commitment.**

There is a greater chance of success if the senior management team has an active involvement in the process plus a sound grasp of the EFQM Model and the Fundamental Concepts of Excellence.

### **Step 2 – Develop and deploy the communications strategy.**

For Self-Assessment to be successful in your organisation it is imperative that early on in the process you have a clear strategy for the message you want to communicate.

### **Step 3 – Plan for Self-Assessment.**

When considering which specific Self-Assessment technique to adopt, the current culture of your organisation needs to be taken into consideration.

- There is no “superior” technique for Self-Assessment. The most important factor is for the organisation to have clarity on the outcomes it is looking to achieve and then choosing the specific Self-Assessment technique that is the most appropriate for delivering those desired outcomes (you also can run two different techniques at the same time).

- There are no set rules; the Self-Assessment can be carried out at any and all levels. However experience shows that many organisations first undertake one or more pilots to “test the water” and learn more about the process.

#### **Step 4 – Select and train people directly involved in the process.**

When undertaking a Self-Assessment there are a number of different roles that can come into play dependent upon the specific technique employed. Some roles, such as sponsor, project manager and staff will feature regardless; others (Assessor, Assessor Team Leader, Facilitator, Data gatherer, Report writer) are very much dependent on the technique chosen.

#### **Step 5 – Conduct Self-Assessment.**

The introduction of any new process needs careful management. Self-Assessment is no exception to this rule and it is best managed as a project.

The primary objective of Self-Assessment is to identify an organisation’s strengths and areas for improvement and create the energy to improve the organisation’s performance.

#### **Step 6 – Consider Outcomes & Priorities.**

Organisations are unlikely to have the resources to address all these opportunities concurrently and it would be unrealistic for them to try. Indeed some improvement opportunities may have limited impact on the organisation’s key results. Therefore you also need clear processes in place for the prioritisation of the outcomes, as well as the management of the subsequent improvement action plans and the ongoing monitoring of progress through “business as usual” review cycles.

#### **Step 7 – Establish & Implement.**

The outcomes from conducting the Self-Assessment provides the “moment in time” picture of the status of the organisation, usually expressed in terms of Strengths, Areas for Improvement and sometimes a score. Step 6 provides us with the list of prioritised improvement opportunities.

Project management provides a structured methodology for implementing the action plans. Regardless of the size and nature of the specific activities committed to in the action plan.

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## **Step 8 – Monitor Action Plan Progress and Review the Self-Assessment process.**

As with any other activity, progress in implementing the improvement actions should be reviewed regularly and the whole process for linking Self-Assessment and business planning should also be reviewed and improved ready for the next Self-Assessment.

Also, as mentioned previously, when introducing Self-Assessment into the organisation it should be positioned as a long-term intervention, not a one-off activity. Therefore a review of the process is a critical function if the organisation is to maximize its learning.

An important part of the feedback loop between Step 8 and Step 1 is keeping the momentum going.

### **2.2.5 Summary EFQM Model**

Launching & implementation of EFQM will require dedication from every member of the organization. It will energize and empower employees and will affect every aspect of the organization.

In fact, it will forever change the organization's culture, forcing it to think outside the organization's comfort zone and recognize that there is a better, more efficient way to operate. But we'll need a set of tools to get started and a detailed understanding of the steps will be taken on excellence journey.



## 2.3 Construction industry

"As has often been noted, construction tended to be labor-intensive actually even in industrialized countries." Strassmann (1970, p. 395).

The international Standard Industrial Classification of all Economic Activities (1968, pp. 35-36) defines construction as follows:

“ . Constructing, altering, repairing and demolishing building; constructing, altering and repairing highways and streets and bridges, ...and other types of heavy construction...mining services such as preparing and constructing mining sites and drilling crude oil and natural gas wells... specialist trade contractors'... activities...'

"The assembly and installation on site of prefabricated, integral parts into bridges, water tanks, storage and warehouse facilities,...Departments or other units of the manufactures of the fabricated parts and equipment which specialize in this work and which it is feasible to treat as separate establishments, as well as business primarily engaged in the activity, are classified in this group.

Offori (1990, pp.23-24) suggest a broad definition that reads:

" The industry may be defined as that sector of the economy which plans, designs, constructs, alters, maintains, repairs and eventually demolishes buildings of all kinds, civil engineering work, mechanical and electrical engineering structures and other similar works."

### 2.3.1- The Importance of the Construction Industry

Construction is an important industry due to the variety of demand for the essentials project in the life of any nation, which the industry must satisfy:

- The demand for housing construction;
- The demand for building construction such as commercial, social uses etc;
- The demand for heavy engineering construction;
- The demand for industrial construction including factories etc.

The construction industry has single characteristics, which are shared by other industries, but in combination they appear in construction alone, making it worthy of different treatment. These characteristics fall into four main groups, which are:

- The physical nature of the product,
- The structure of the industry together with the organization of the construction process.
- The method of price determination. (Colean, M.L.; Newcomb, R.;1952, ed. Turin; 1973).

### **2.3.2 The Nature of the Construction Industry**

- "The nature of the construction process is labour-intensive. Construction, as an important factor in development, is comparatively less dependent on fixed capital even in developed countries. W.P. Strassmann (1970, p. 395) quoting M. Arthur Lewis:
- "Roads, viaduct, and irrigations canals can be created by human labour with hardly any capital to speak of."
- Following Ragnen Nurkse and writers of general development book, Strassmann (1970, p. 395) argues that under-employed or surplus labour could be used with little capital in buildings community development projects or self-help dwelling.
- Construction is relatively labour-intensive in the sense that it uses a larger number of workers per unit of output than that of most other industries.

### **2.3.3 The Organization of Construction Work**

The construction industry and particularly the building industry are made up of a large number of small firms. Financially, organizationally and technically it is dominated by a very much smaller number of large or medium firms. Traditionally, building firms have been high-risk enterprises with higher than-average rate of bankruptcy. (Awad S. Hassan 2012)

### 2.3.4 Problems Facing the Construction Industry in the Developing Countries

Writers identified several inter-related problems facing the construction industries of the developing countries the problems being: (a) frequent shortage of construction material resulting from the preference of users for conventional materials, most of which were imported; (b) low level of technological development of most of the industries, with a shortage of plant and equipment, inadequate of Research and Development (R&D) facilities and programmes, and poor linkage between research and practice; (c) lack of skilled construction personnel, and the poor social images of construction; (d) an unfavorable operating environment for construction enterprises, this further aggravated by complex procedures, and regulations, delays in payments, and unsuitable contract documents, and (c) low and fluctuating overall levels of construction activity. (Source Awad S. Hassan 2012)

## 2.4 Key Performance Indicators (KPI)

### 2.4.1 Introduction

Key Performance Indicators (KPI) is financial and non-financial metrics used to quantify objectives to reflect strategic performance of an organization. KPIs are used in Business Intelligence to assess the present state of the business and to prescribe a course of action. The act of monitoring KPIs in real-time is known as business activity monitoring. KPIs are frequently used to "value" difficult to measure activities such as the benefits of leadership development, engagement, service, and satisfaction. KPIs are typically tied to an organization's strategy (as exemplified through techniques such as the Balanced Scorecard).

The KPIs differ depending on the nature of the organization and the organization's strategy. They help an organization to measure progress towards their organizational goals, especially toward difficult to quantify knowledge-based processes.

KPIs should not be confused with a Critical Success Factor. For the example above, a critical success factor would be something that needs to be in place to achieve that objective; for example, a product launch. (Wikipedia, 2013)

### 2.4.2 Identifying indicators

It is necessary for any organization to at least identify its KPI's. The key environments for identifying KPI's are:

- Having a pre-defined business process
- Having clear goals/performance requirements for the business processes.
- Having a quantitative/qualitative measurement of the results and comparison with set goals.
- Investigating variances and tweaking processes or resources to achieve short-term goals.

When identifying KPI's the acronym SMART is often applied. KPI's need to be:

- Specific
- Measurable
- Achievable
- Result-oriented
- Time- based

#### - Areas to be analyzed

Among the areas top management analyzes are:

- Customer related numbers:
- New customers acquired
- Status of existing customers
- Customer attrition
- Turnover generated by segments of the customers - these could be demographic filters.
- Outstanding balances held by segments of customers and terms of payment - these could be demographic filters.
- Collection of bad debts within customer relationships.
- Demographic analysis of individuals (potential customers) applying to become customers, and the levels of approval, rejections and pending numbers.
- Delinquency analysis of customers behind on payments.

- Profitability of customers by demographic segments and segmentation of customers by profitability. (source Wikipedia, 2013)

### 2.4.3 Process KPIs (Business metric):

Is a unit of measurement that provides a way to objectively quantify performance (of the business as a whole, a unit, a process, etc.) It provides data to help you gauge results and identify areas for improvement.

- Examples of Business and Process Metrics

What to measure in business? You probably use a number of Metrics.

Which may include some of the following?

- Inventory levels
- Aging of inventory Profits and losses
- Cost of goods or services sold
- Return on investment

We need to supplement these overall business metrics with metrics related to the performance of the processes we trying to improve, such as:

- Cycle time (an important indicator of process speed, which is often a key competitive factor)
- Percent of final products or services with defects or “the number of defects per product or service”
- Hours required producing a certain number of outputs.
- Customer satisfaction
- Yield (amount of acceptable goods or services relative to the total number produced or delivered)
- Cost of poor quality (COPQ)

### 2.4.4 Job satisfaction as a HR (KPI):

Because of the major influence of the job Satisfaction on the total performance of the organization, job Satisfaction Index (JSI) and Performance Rating Index can be considered as anew KPI for People Management issues which include the following:

- Employee satisfaction
- Staff turnover
- Sickness Absence
- Safety

- Working hours
- Qualifications and skills
- Equality and Diversity
- Training
- Pay – salary
- Investors in People

(Source Hani Mahmoud -2008)

### 2.4.5 Summary (KPI)

The KPIs differ depending on the nature of the organization and the organization's strategy. They help an organization to measure progress towards their organizational goals, especially toward difficult to quantify knowledge-based processes.

Some metrics are good and some are bad. How can you tell the difference?

Consider the following:

Good metrics.

- Are linked to key criteria:

Measure only those regular processes and activities that will give relevant information. Never lose sight of Organization goal: to eliminate waste and defects, fix processes, and cut costs.

- Are easy to understand and explain to others:

They should clearly communicate the information you need and should be easy to use. Use units that everyone can understand.

- Generate feedback quickly:

You need to know how you're doing now. If you're using a metric that comes a month after the fact, you'll always be managing the past, not your current performance. Bad metrics are the exact opposite! They tell you about things that have no bearing on your business's performance, are complicated, and/or take a long time to generate. Obviously, choosing of business metrics is the right key to success. Metrics & KPIs should be key indicators aligned with Organization's performance, operational & strategic goals. (Source: Six-sigma for small business 2006).

## 2.5 Project Management

### 2.5.1 Project

A project is a temporary endeavor undertaken to create a unique product, service, or result. The temporary nature of projects indicates that a project has a definite beginning and end. The end is reached when the project's objectives have been achieved or when the project is terminated because its objectives will not or cannot be met, or when the need for the project no longer exists. A project may also be terminated if the client (customer, sponsor, or champion) wishes to terminate the project. Temporary does not necessarily mean the duration of the project is short. It refers to the project's engagement and its longevity. Temporary does not typically apply to the product, service, or result created by the project; most projects are undertaken to create a lasting outcome. For example, a project to build a national monument will create a result expected to last for centuries. Projects can also have social, economic, and environmental impacts that far outlive the projects themselves.

An ongoing work effort is generally a repetitive process that follows an organization's existing procedures. In contrast, because of the unique nature of projects, there may be uncertainties or differences in the products, services, or results that the project creates. Project activities can be new to members of a project team, which may necessitate more dedicated planning than other routine work. In addition, projects are undertaken at all organizational levels. A project can involve a single individual or multiple individuals, a single organizational unit, or multiple organizational units from multiple organizations.

### 2.5.2 Project Management fundamentals

Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. Project management is accomplished through the appropriate application and integration of every project management processes, which are categorized into five Process Groups.

These five Process Groups are:

- **Initiating**
- **Planning**
- **Executing**
- **Monitoring and Controlling**

· **Closing.**

- **Managing a project typically includes, but is not limited to:**
- Identifying requirements;
- Addressing the various needs, concerns, and expectations of the stakeholders in planning and executing the project;
- Setting up, maintaining, and carrying out communications among stakeholders that are active, effective, and collaborative in nature;
- Managing stakeholders towards meeting project requirements and creating project deliverables;
- Balancing the competing project constraints, which include, but are not limited to:
  - Scope,
  - Quality,
  - Schedule,
  - Budget,
  - Resources, and
  - Risks

### 2.5.3 Project Management Office

A project management office (PMO) is a management structure that standardizes the project-related governance processes and facilitates the sharing of resources, methodologies, tools, and techniques. The responsibilities of a PMO can range from providing project management support functions to actually being responsible for the direct management of one or more projects

### 2.5.4 Types of PMO structures:

There are several types of PMO structures in organizations, each varying in the degree of control and influence they have on projects within the organization, such as:

- **Supportive**

Supportive PMOs provide a consultative role to projects by supplying templates, best practices, training, access to information and lessons learned from other projects. This type of PMO serves as a project repository. The degree of control provided by the PMO is low.

- **Controlling**

Controlling PMOs provide support and require compliance through various means. Compliance may involve adopting project management frameworks or methodologies, using specific templates, forms and tools, or conformance to governance. The degree of control provided by the PMO is moderate.



- **Directive**

Directive PMOs take control of the projects by directly managing the projects. The degree of control provided by the PMO is high.

- **Role & Importance of PMO:**

The PMO integrates data and information from corporate strategic projects and evaluates how higher level strategic objectives are being fulfilled. The PMO is the natural liaison between the organization's portfolios, programs, projects, and the corporate measurement systems (e.g. balanced scorecard).

The projects supported or administered by the PMO may not be related, other than by being managed together.

The specific form, function, and structure of a PMO are dependent upon the needs of the organization that it supports.

- **Function of PMO:**

A PMO may have the authority to act as an integral stakeholder and a key decision maker throughout the life of each project, to make recommendations, or to terminate projects or take other actions, as required, to remain aligned with the business objectives. In addition, the PMO may be involved in the selection, management, and deployment of shared or dedicated project resources.

A primary function of a PMO is to support project managers in a variety of ways which may include, but are not limited to:

- Managing shared resources across all projects administered by the PMO;
- Identifying and developing project management methodology, best practices, and standards;
- Coaching, mentoring, training, and oversight;
- Monitoring compliance with project management standards, policies, procedures, and templates by means of project audits;
- Developing and managing project policies, procedures, templates, and other shared documentation (organizational process assets); and
- Coordinating communication across projects.

Project managers and PMOs pursue different objectives and, as such, are driven by different requirements. All of these efforts are aligned with the strategic needs of the organization. Differences between the role of project managers and a PMO may include the following:

- The project manager focuses on the specified project objectives, while the PMO manages major program scope changes, which may be seen as potential opportunities to better achieve business objectives.
- The project manager controls the assigned project resources to best meet project objectives, while the PMO optimizes the use of shared organizational resources across all projects.
- The project manager manages the constraints (scope, schedule, cost, quality, etc.) of the individual projects, while the PMO manages the methodologies, standards, overall risks/opportunities, metrics, and interdependencies among projects at the enterprise level.

### 2.5.5 PROJECT QUALITY MANAGEMENT

Project Quality Management includes the processes and activities of the performing organization that determine quality policies, objectives, and responsibilities so that the project will satisfy the needs for which it was undertaken. Project Quality Management uses policies and procedures to implement, within the project's context, the organization's quality management system and, as appropriate, it supports continuous process improvement activities as undertaken on behalf of the performing organization. Project Quality Management works to ensure that the project requirements, including product requirements, are met and validated.

Provides an overview of the Project Quality Management processes, which include:

- **Plan Quality Management**—the process of identifying quality requirements and/or standards for the project and its deliverables and documenting how the project will demonstrate compliance with quality requirements.
- **Perform Quality Assurance**—the process of auditing the quality requirements and the results from quality control measurements to ensure that appropriate quality standards and operational definitions are used.
- **Control Quality**—the process of monitoring and recording results of executing the quality activities to assess performance and recommend necessary changes.

Project quality Management addresses the management of the project and the deliverables of the project; it applies to all projects, regardless of the nature of their deliverables. Quality measures and techniques are specific to the type of deliverables being produced by the project. For example, the project quality management of software deliverables may use different approaches and measures from those used when building a nuclear power plant. In either case, failure to meet the quality requirements can have serious, negative consequences for any or all of the project's stakeholders.

For example:

- **Meeting customer requirements** by overworking the project team may result in decreased profits and increased project risks, employee attrition, errors, or rework.
- **Meeting project schedule objectives** by rushing planned quality inspections may result in undetected errors, decreased profits, and increased post-implementation risks.

## 2.6 COST OF QUALITY (COQ)

Cost of quality refers to the total cost of the conformance work and the nonconformance work that should be done as a compensatory effort because, on the first attempt to perform that work, the potential exists that some portion of the required work effort may be done or has been done incorrectly. The costs for quality work may be incurred throughout the deliverable's life cycle.

### 2.6.1 Quality and grade

Quality is not the same concepts of grade. Quality as a delivered performance or result is —the degree to which a set of inherent characteristics fulfill requirements‖ (ISO 9000) [10]. Grade as a design intent is a category assigned to deliverables having the same functional use but different technical characteristics. The project manager and the project management team are responsible for managing the tradeoffs associated with delivering the required levels of both quality and grade. While a quality level that fails to meet quality requirements is always a problem, a low grade of quality may not be a problem. For example:

- It may not be a problem if a suitable low-grade software product (one with a limited number of features) is of high quality (no obvious defects, readable manual). In this example, the product would be appropriate for its general purpose of use.
- It may be a problem if a high-grade software product (one with numerous features) is of low quality (many defects, poorly organized user documentation). In essence, its high-grade feature set would prove ineffective and/or inefficient due to its low quality.

The project management team should determine the appropriate levels of accuracy and precision for use in the quality management plan. Precision is a measure of exactness. For example, the magnitude for each increment on the measurement's number line is the interval that determines the measurement's precision—the greater the number of increments, the greater the precision. Accuracy is an assessment of correctness. For example, if the measured value of an item is very close to the true value of the characteristic being measured, the measurement is more accurate. An illustration of this concept is the comparison of archery targets. Arrows clustered tightly in one area of the

target, even if they are not clustered in the bull's-eye, are considered to have high precision.

Targets where the arrows are more spread out but equidistant from the bull's-eye are considered to have the same degree of accuracy. Targets where the arrows are both tightly grouped and within the bull's-eye are considered to be both accurate and precise. Precise measurements are not necessarily accurate measurements, and accurate measurements are not necessarily precise measurements.

The basic approach to project quality management as described in this section is intended to be compatible with International Organization for Standardization (ISO) quality standards. Every project should have a quality management plan. Project teams should follow the quality management plan and should have data to demonstrate compliance with the plan.

In the context of achieving ISO compatibility, modern quality management approaches seek to minimize variation and to deliver results that meet defined requirements. These approaches recognize the importance of:

- Customer satisfaction. Understanding, evaluating, defining, and managing requirements so that customer expectations are met. This requires a combination of conformance to requirements (to ensure the project produces what it was created to produce) and fitness for use (the product or service needs to satisfy the real needs).
- Prevention over inspection. Quality should be planned, designed, and built into—not inspected into the project's management or the project's deliverables. The cost of preventing mistakes is generally much less than the cost of correcting mistakes when they are found by inspection or during usage.
- Continuous improvement. The PDCA (plan-do-check-act) cycle is the basis for quality improvement as defined by Shewhart and modified by Deming. In addition, quality improvement initiatives such as Total Quality Management (TQM), Six Sigma, and Lean Six Sigma could improve the quality of the project's management as well as the quality of the project's product. Commonly used process improvement models include Malcolm Baldrige, Organizational Project Management Maturity Model (OPM3®), and Capability Maturity Model Integrated (CMMI®).
- Management Responsibility. Success requires the participation of all members of the project team. Nevertheless, management retains, within its responsibility for quality, a related responsibility to provide suitable resources at adequate capacities.

## 2.6.2 History of Cost of Quality

2006	<b>New Direction</b>
2002	COPQ present in ISO/TS 16949:2002
1998	COPQ Reappears in QS-9000
1990's	COQ reappears with Six Sigma & Lean
Late 80's to 90's	COQ loses favor
1980's	Cost of Quality is Popularized
1979	Quality is Free –Philip Crosby
1964	Q100 Report IBM
1950's	COQ in GE –AV Feigenbaum
1951	Cost of Quality Concept –Dr. J.M. Juran

Table (2.1)History of Cost of Quality

## 2.6.3 Concept of Cost of Quality

Classic Typology Cost of Quality is categorized into:

<b>Prevention and Appraisal Costs</b>	<b>Failure Costs</b>
<b>Prevention Costs</b>	<b>Internal Failure Costs</b>
New Product Reviews	Scrap
•Quality Planning	•Rework/Repair
•Process Capability Evaluations	•Downtime
•Quality Improvement Team Meetings	•Redesign
•Quality Education & Training	•Excess Inspection
•Improvement Transactional Processes	•Excess Inventory
<b>Appraisal Costs</b>	<b>External Failure Costs</b>
Incoming Inspection	•Warranty
•In-process & Final Inspection & Test	•Retrofits
•Lab Testing	•Service Calls
•Calibration of Measurement & Test Equipment	•Recalls
•Checking Activities to Verify Accuracy (PO's)	•Lost Sales
	•Long Cycle Times
	•Customer Service Resources due to a Complaint

#### **2.6.4 Cost of poor quality is “The Hidden Factory”**

- Avoided capital cost
- Opportunity cost of additional volume if Sales > capacity
- Lost customer loyalty
- Time spent expediting
- Cost to the customer
- Improvement program costs
- Process control
- Quality engineering and admin
- Inspection/test (materials, equipment, labor)
- Vendor control
- Quality audits
- Warranty claims
- Maintenance and service
- service
- Scrap/ rejects
- Rework
- Longer cycle times and excess inventory
- Warranty claims
- Maintenance and service

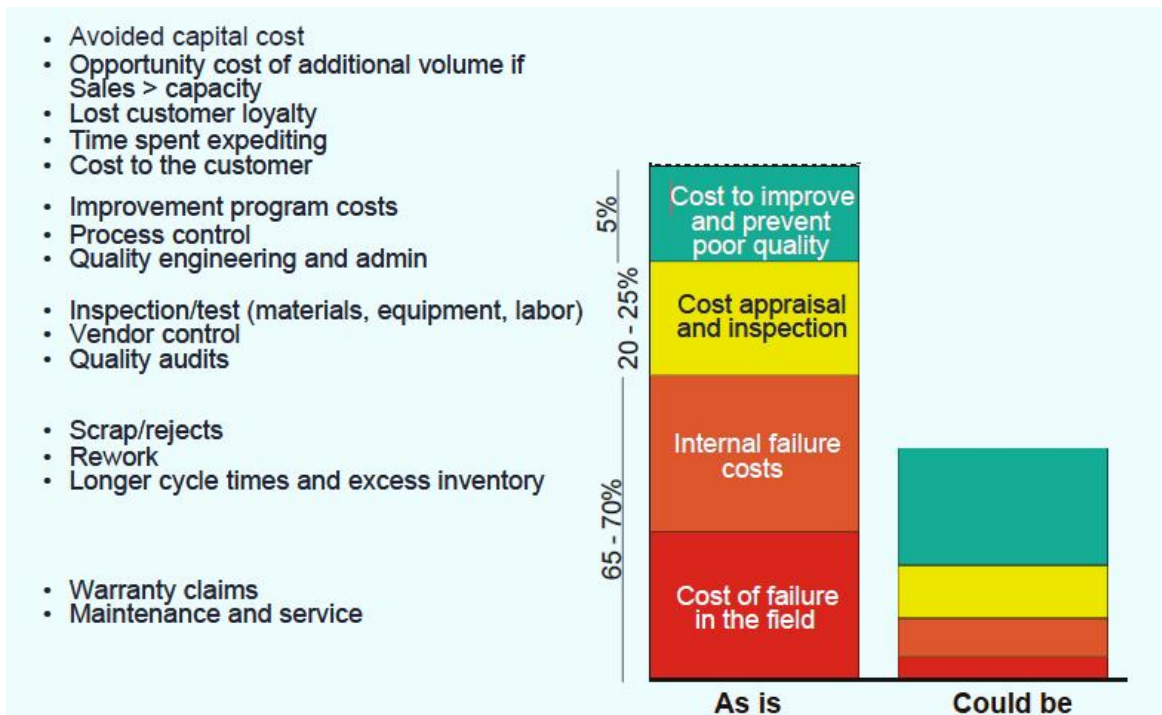


Fig (2.8) COPQ is “The Hidden Factory”(source 2006 Omnex)

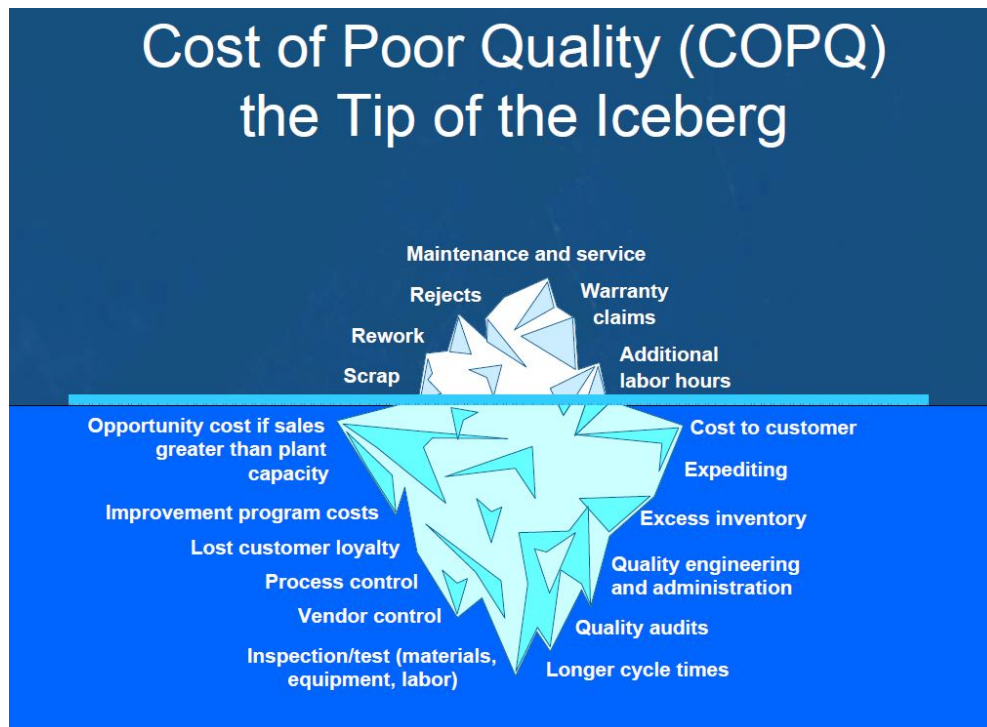


Fig (2.9) Cost of Poor Quality (COPQ) the Tip of the Iceberg (source 2006 Omnex)



## 2.6.5 Cost of quality 6-Sigma Approach

### 2.6.5.1 Six Sigma

Six Sigma is a problem-solving methodology that reduces costs and improves customer satisfaction by greatly reducing waste in all the processes involved in the creation and delivery of your products and/or services.

More specifically, Six Sigma is a problem-solving technology that uses data, measurements, and statistics to identify the vital few factors that will dramatically decrease waste and defects while increasing predictable results, customer satisfaction, profit, and shareholder value.

Six Sigma is about data and facts, and not about thinking, feeling, or believing what you conceive to be the solution to the problem. The elementary Six Sigma methodology was developed, tested, and proven at Motorola in the early 1980s. I had the privilege of being one of the six original pioneers who created what is now simply called “Six Sigma.” After it was proven at Motorola, other companies began to adopt this methodology. First it was Allied Signal. General Electric was then the next company to adopt Six Sigma, with unprecedented success.

**Sigma** A term used in statistics that measures standard deviation. In business, it is an indication of defects in the outputs of a process and how far these outputs deviate from perfection.

- Six Sigma A statistical concept that measures a process in terms of defects. At the six sigma level, there are only 3.4 defects per million opportunities. It is also a philosophy of managing that focuses on eliminating defects through practices that emphasize understanding, measuring, and improving processes.
- Vital few the “vital few” is a recurring concept in Six Sigma. In this context, it refers to the main actions or events in a process that cause problems. By dealing with these vital few causes, we can often dramatically reduce problems. Six Sigma helps us identify the vital few and then provides a step by- step methodology for process improvement.
- The using of Six Sigma begins with an understanding of some of its most basic components.

- **Components of Six Sigma**

The Basic Components of Six Sigma There are three basic concepts that are common to all businesses that Six Sigma addresses: processes, defects, and variation.



Process any repetitive steps— in a transactional, manufacturing, or services environment to achieve some result. The Six Sigma methodology collects data on variations in outputs associated with each process, so that the process can be improved and those variations reduced.

A fundamental concept of Six Sigma is process. A process is any set of repetitive steps—in any manufacturing, services, or transactional environment to achieve some result. There are processes for all of your core business activities and functions. They are the steps that the people in your organization go through to do their jobs and deliver your products or services.

You may not have thought much about them, but they're there nevertheless. Understanding them and making them work at the highest level possible is the goal of Six Sigma.

Defect a measurable characteristic of the process or its output that is not within acceptable customer limits, in other words, not conforming to specifications.

The sigma level of a process is calculated in terms of the number of defects in ratio to the number of opportunities for defects.

Part of the Six Sigma methodology includes measuring a process in terms of defects. Six Sigma helps you eliminate those defects so you can consistently and profitably produce and deliver products or services that meet and exceed your customers' expectations. It's not unusual for a small business to have a minimum of 10 percent of its net income being wasted by process defects. In other words, those defects are dollars wasted!

Variation any quantifiable difference between a specified measurement or standard and the deviation from such measurements or standard in the output of a process. Variation in outputs can result from many causes in the functioning and management of processes.

The Six Sigma methodology reduces variations in business processes. It seems obvious, but you can't consistently produce a high quality product or service (your output) if you have variations in your processes, right? Basically, you have achieved six sigma when your processes deliver only 3.4 defects per million opportunities (DPMO). For example, this would mean that out of one million bags checked in at the airport luggage counter, only 3.4 would be lost. In other words, your processes are working almost perfectly. Of course, this is very difficult to do, but you can begin to approach it (or at least get a lot better) by implementing the methods described in this book. The fact is that most businesses operate at three to four sigma quality levels, which translates to about 25 percent of their revenue lost to defects in their processes. Those defects represent waste, rework, higher costs, and dissatisfied customers.

- **Some of the most common myths about Six Sigma:**

- It applies only to large companies.
- It only works in manufacturing settings. Although it's true that Six Sigma started in manufacturing, it has been applied successfully in all segments of business—banking, healthcare, the military, fast food chains, airlines, hotels, retail stores, and on and on and on. If there's a repetitive process with a problem, you can apply Six Sigma!
- You must hire an outside consultant.
- You need experts (i.e., “Black Belts”), to make it work.
- Six Sigma is a complicated, statistical methodology that the ordinary person is incapable of understanding.
- Six Sigma doesn't include customer requirements. That's totally false. Every Six Sigma project starts with the customers, with determining the factors that are critical to the customer. Those factors focus the project.

#### 2.6.5.2 uses of Six Sigma:

- Identify hidden waste and costs
- Identify and eliminate defects
- Increase profit margins
- Increase customer satisfaction
- Increase your employees' satisfaction and level of commitment
- Grow and expand your business

- **Identify hidden waste and costs:**

On a personal level, if I ask you to give me the last two years of your check register, do you think I could find some waste? And are there hidden or natural spending patterns that don't need to exist?

- **Identify and eliminate defects:**

In your business do you ever have to spend effort and money on FedEx sending things overnight that should not have to be FedEx-ed due mainly to your poor planning or some other related defect caused by your internal process?

- **Increase profit margins:**

How can you increase profit in your business? There are typically two ways: 1) increase the price of the services or product you are selling, or 2) decrease the cost of goods/services. This means you either need a differentiator to increase your price or to

decrease the cost of goods and services you must identify and fix the defects that raise your costs.

- **Increase customer satisfaction:**

For the small business owner, this benefit should probably be at the top of this list. After all, your main function is to make your customers happy and keep them wanting to do business with you. Companies exist for one purpose: to profitably serve customers. So it follows that any problem-solving initiative should help you do that. (See sidebar on next page for more on this.)

- **Increase your employees' satisfaction and level of commitment:**

Your people and you can enjoy solving a problem that costs you time and money. Employees feel like owners when they have the tools and are allowed to fix costly problems in the business. It provides a great sense of accomplishment for everyone

- **Grow and expand your business:**

"Growth," like any other problem, is a problem to solve. So what are the market factors to grow and expand? Is your business ignoring a distribution channel, or perhaps the Internet is not being used effectively. What are the most important factors for growth? What is your growth objective for this year? Six Sigma is about asking new questions and then systematically finding answers.

### 2.6.5.3 Six-sigma and TQM

Up until the 1950s, businesses around the world functioned in pretty much the same way: they focused on mass production, on quantity. After World War II, W. Edwards Deming helped the Japanese to revitalize their industries by focusing on quality. His approach became known as Total Quality Management (TQM)—a term that Deming never liked. He just saw this as a more intelligent way to get better results, an approach that reduced costs, improved customer satisfaction, and facilitated greater growth and profitability.

Because of the phenomenal success of the Japanese industries, U.S. businesses started to take a serious look at TQM. By the 1980s, many business leaders began to see Deming's point that the use of statistics, teamwork, and process control would lead to continuous improvement, higher quality, and lower costs. Those companies that adopted TQM underwent major changes: quality became the focus and the name of the game.

By the mid-1980s, some in the business community had become impatient and disenchanted with TQM. Continuous improvement is worthwhile, of course, but it wasn't producing the great financial results that many had expected. The solution? Six Sigma. This was not a rejection of TQM, but a refinement of it to introduce a methodology for achieving results more systematically.

The Six Sigma methodology was initially developed at Motorola because technology was becoming so complex that long-held views about acceptable quality levels were no longer adequate. In 1989 Motorola set a five-year goal: a defect rate of 3.4 parts per million—a quality level of six sigma, essentially as near perfection as you can get in terms of process outputs.

The success of Motorola's Six Sigma initiative changed American concepts of quality and the means of measuring it. Other companies noticed and the Six Sigma revolution took hold.

Six Sigma concentrates on the vital few processes—those that contribute the most to the costs of products and services and to the quality of outputs. It uses business metrics to identify those vital few processes, connecting quality to cost and the bottom line. This is how Six Sigma generates profit.

#### **2.6.5.4 Defining Quality for Small Business**

Quality for the small business doesn't mean the same thing as for a large organization. Why not? Well, the key difference has to do with size. A large company, with a variety of products or services and lots of resources (like cash), can sometimes afford to provide its customers with less than high quality and still stay in business.

For example, there are big retailers that offer a wide variety of quality goods at competitive prices, but provide poor customer service. Regardless, consumers continue to shop in their stores because of the low prices—they're willing to put up with poor quality service to get those prices.

I'll go even further and state that customers have actually come to expect lower quality from large corporations, as long as the corporations make up for it in other ways. We expect some defects. Here are some examples to illustrate this point:

- Cell phone companies drop calls.
- Car manufacturers recall millions of vehicles.
- Home appliances need constant repairs and/or extended warranties.
- Airlines lose luggage.

When defects like these rear their ugly heads, are we surprised? Of course not. And, more often than not, these defects do not prevent us from continuing to patronize these businesses because we derive other benefits from them that mean more to us. For example, maybe your cell phone company drops calls, but you got a great deal on it from that company.

Six Sigma is all about identifying and fixing problems that lower costs, improve quality, and raise your bottom line. But businesses are about more than just money; businesses are people. So what are the internal effects of Six Sigma? How will Six Sigma affect your employees and your company's culture?

### **2.6.5.5 Six Sigma and HRM**

If you want to maximize your employees' contributions and commitment to your business, you should do Six Sigma. But why does Six Sigma motivate employees?

The answer is simple: Six Sigma inspires employees because it gives them the opportunity to make a difference—by giving them the tools to better understand their own work processes and to make decisions about how to improve them. In a Six Sigma deployment, every single employee, regardless of his or her position in the company hierarchy, is vitally important.

Each employee is encouraged to provide input and participate in the company's initiative to improve quality, meet or exceed customer expectations, cut costs, and improve the bottom line. And, each employee owns his or her part of the process to be improved. In other words, it really is a team effort.

Six Sigma also compensates in other ways, in the form of higher job satisfaction and personal fulfillment. And these go a long way toward increasing employee dedication and effort, further benefiting the organization as a whole.

Finally, Six Sigma promotes professional development. It gives employees the tools and techniques to think more critically, making them better, more effective employees. Of course this is great for your business, but it's also good for them: it makes them outstanding job candidates to prospective employers.

### **• How Six-Sigma will affect the people in organization?**

A Six Sigma initiative

#### **• Motivates**

- It involves employees in the real business issues.
- People are motivated when they have a meaningful purpose.

#### **• Empowers**

- People want to have the skills to fix real-world problems.
- Fixing a real business problem is liberating!

#### **• Energizes**

- Employees who are allowed to fix costly problems are going to be relentless and loyal to the business.
- When employees know that their work has greater meaning, they feel invigorated.

- **Compensates**

– Contrary to popular belief, employees want more than money. Of course they want money, but they also want to like their jobs, fix real problems, and help the business to fulfill its mission. That's a free compensation system that pays off in loyalty, honesty, and a relentless pursuit of excellence.

- **Educates**

– It is an investment in problem- solving skills for your business and in a specific set of tools used to resolve problems. Those skills will benefit employees and owners for decades of improvements. The return on a decade of problem solving is beyond calculation.

## 2.6.6 Summary (COST OF QUALITY)

### \* **Five Categories of the COQ**

- **The cost of failure in the field.**

This includes costs such as warranty claims as well as the cost to service problems. Companies have access to data on the costs incurred by the customer as a result of the failure, but normally group these costs as part of the opportunity costs.

- **The internal failure costs**, the costs in labor and material associated with scrapped parts and rework. These costs also include the additional inventory that we carry for safety stock to cover quality related problems.

- **The costs of appraisal and inspection.**

The material (for samples), test equipment, and labor costs to find defects before they escape out of our processes. It also includes the costs related to quality audits and monitoring vendors and dealing with their quality problems.

- **The costs related to improving poor quality**, including: cost of equipment to better control processes; as well as, the cost of programs to improve quality (CARs, 8-D's, etc.).

- **The opportunity cost of not producing more products with the same assets.**

This is in addition to the opportunity cost of lost sales due to poor quality in the past.

### \* **Six Sigma**

Six Sigma is not a quick-fix or flavor-of-the- month management fad.

It's based on using science and an established set of steps that will give you the bottom-line results you and your employees want.



When you can identify and quantify hidden process defects, you can eliminate them and move those wasted dollars to the bottom line and to investment in new opportunities to grow your business. By knowing which factors affect your process outputs and cause problems, you can take the steps to improve them. Gaining and using that knowledge is the goal of Six Sigma.

Defects are everywhere! Six Sigma will enable you to eliminate those defects and realize significant cost savings and measurable quality improvement. A small business can't afford to continue operating according to the status quo—those defects could lead to extinction.

An extension of TQM, Six Sigma is a precise and surgical approach to quality improvement that will generate bottom-line results.

## 2.7 Summary of Chapter 2

Common Concerns about Implementing EFQM, Six Sigma or TQM with change management:

- **Fear of Change**

It makes sense that if you're going to improve the way your business functions you're going to have to make some changes, some of them major. But, many people are afraid of change. Nevertheless, while we might feel comfortable doing the same things every day, this means we will just keep making the same mistakes over and over. In other words, if you're not willing to change how you do some things in your business, you won't be able to improve your business.

- **Fear of Commitment**

Again, this is a common problem for many people. It's true that to reach the gains that Six Sigma can produce, you have to be dedicated to it. At the risk of sounding like a cliché, anything worth having is worth working for, right? You've undoubtedly been extremely committed to the success of your business. Six Sigma requires a high level of commitment, as well.

- **Fear of Disruption**

Things may not be going as well as you'd like business-wise, but at least it works! In other words, why fix it if it isn't broke (or at least completely broken)? Well, your business may be doing just fine, but it can do better. You can make your customers happier, you can produce a better product or service, you can reduce costs, and you can make higher profits!

- **Increased Cost**

Implementing Six Sigma or any new program is going to cost me money and I'm not sure it will be worth the cost. This is a reasonable concern, but if you do it properly, you can be sure that you will decrease, not increase, your costs.

Wasted Time without Results Maybe you've tried other programs to make your operations more efficient and after a while these just didn't work. This is valid, but this shouldn't be a problem with Six Sigma. It's aimed at specific problems with a specific problem-solving methodology, with the goal of eliminating forever that problem.

All of these fears and concerns are valid. After all, no one likes the idea of getting out of his or her comfort zone.

But if you know that you will not be able to overcome these concerns, then this book is not for you, and neither is Six Sigma.

As Sam Walton, the founder of Wal-Mart, once said, "High expectations are the key to everything." We all know where Sam Walton's high expectations led him! As a small business owner, you must constantly reach for more—complacency is your enemy.