International Journal for Innovative Engineering and Management Research
A Peer Revieved Open Access International Journal
www.ijiemr.org

THE SUPERIORITY COST PROTOTYPES AND OPTIMIZATION CENTERED ON ADVANCED MANUFACTURING ENVIRONMENT

[1]I.SRI DEEPTHI, [2]A.ARUNA JYOTHI, [3]P.BALAJI KRUSHNA,[4]A.RAVEENDRA

[1,2&3]Asst.Professor, Department of Mechancial Engineering, Malla Reddy Engineering College (Autonomous), Maisammaguda(H), Gundlapochampally Village, Secunderabad, Telangana State – 500100

[4]Assoc.Professor, Department of Mechancial Engineering, Malla Reddy Engineering College (Autonomous), Maisammaguda(H), Gundlapochampally Village, Secunderabad, Telangana State - 500100

Abstract:
Advanced manufacturing technology has not onlythe technology advanced facet but also the conceptualityadvanced facet, according to this principle idea ,the paperpointed out that quality cost must be re-identificationunder the concept of "reasonable quality". A relativeperfect quality cost management evaluating systemconformed to AME requirements must be constructed andquality cost evaluation index system has been designed inthis paper.

I. INTRODUCTION

Advanced manufacturing environment is amanufacturing environment (partly) including advancedmanufacturing technology, such as FM(FlexibleManufacturing), Agile Manufacturing, Lean Production,CE (Concurrent Engineering) and other productionenvironment of advanced manufacturing mode.Advanced manufacturing technology, simply to say,is the infiltration of information technology tomanufacturing technology, this concept is beyond theborder of the traditional manufacturing techniques andfactories and workshops, from system of the marketdemand, innovative design, process technology toorganization and monitoring of the production process,market information feedback; a modern manufacturingengineering project of information, design methods,process technology, energy engineering andcorresponding management project integration, which iscentered by advanced manufacturing technology andcomputer application technology; is a high-tech systemwith continuous update and development. Advancedmanufacturing technology includes four aspects such asdesign technology for manufacturing, manufacturingtechnology, supporting technology, manufacturing baseand its development trend is: conventionalmanufacturing processes optimization; the developmentof special processing methods; professionalinterdisciplinary integration, the disappearance ofboundaries; technology from the experience toquantitative analysis ; close connection of high-tech andtraditional craftsfll Advanced manufacturing

technology,especially the mechanical manufacturing technology, isnot the traditional sense of the mechanicalmanufacturing technology; it is a new and emergingtechnology including mechanism, electron, optics,information science, materials science, biologicalscience, the latest achievements of management. Atypical representative of modern advancedmanufacturing technology is the computer integratedmanufacturing (CIM), a high-tech orienting businessproduction process L2J. As a result of the use ofadvanced manufacturing technology, China's Manufacturing environment has undergone tremendouschange, the internal management of its own is in anurgent need to be improved.

Modern quality cost management, as an emergingdiscipline closely related to quality management, costmanagement, responsibility accounting, after decades ofdevelopment, has formed a complete theoretical systemand practice management methods. However, as otheremerging disciplines, with the change of advancedmanufacturing environment, the modern quality costmanagement theory still needs further improvement anddevelopment, including improvement of the concept ofquality cost, the construction of quality cost managementevaluation index system and so on.

Cost of quality (COQ) is defined as a methodology that allows an organization to determine the extent to which its resources are used for activities that prevent poor quality, that appraise the quality of the organization's products or services, and that result from internal and external failures. Having such information allows an organization to determine the potential savings to be gained by implementing process improvements.

Cost of poor quality (COPQ) is defined as the costs associated with providing poor quality products or services. There are three categories:

1. Appraisal costs are costs incurred to determine the degree of conformance to quality requirements.
2. Internal failure costs are costs associated with defects found before the customer receives the product or service.
3. External failure costs are costs associated with defects found after the customer receives the product or service.

Quality-related activities that incur costs may be divided into prevention costs, appraisal costs, and internal and external failure costs.

Appraisal costs

Appraisal costs are associated with measuring and monitoring activities related to quality. These costs are associated with the suppliers' and customers' evaluation of purchased materials, processes, products, and services to ensure that they conform to specifications. They could include:

- Verification: Checking of incoming material, process setup, and products against agreed specifications
- Quality audits: Confirmation that the quality system is functioning correctly

- Supplier rating: Assessment and approval of suppliers of products and services

Cost of Quality:
Internal failure costs

Internal failure costs are incurred to remedy defects discovered before the product or service is delivered to the customer. These costs occur when the results of work fail to reach design quality standards and are detected before they are transferred to the customer. They could include:

- Waste: Performance of unnecessary work or holding of stock as a result of errors, poor organization, or communication
- Scrap: Defective product or material that cannot be repaired, used, or sold
- Rework or rectification: Correction of defective material or errors
- Failure analysis: Activity required to establish the causes of internal product or service failure

External failure costs

External failure costs are incurred to remedy defects discovered by customers. These costs occur when products or services that fail to reach design quality standards are not detected until after transfer to the customer. They could include:

- Repairs and servicing: Of both returned products and those in the field
- Warranty claims: Failed products that are replaced or services that are re-performed under a guarantee
- Complaints: All work and costs associated with handling and servicing customers' complaints
- Returns: Handling and investigation of rejected or recalled products, including transport cost

PREVENTION COSTS

Prevention costs are incurred to prevent or avoid quality problems. These costs are associated with the design, implementation, and maintenance of the quality management system. They are planned and incurred before actual operation, and they could include:

- Product or service requirements: Establishment of specifications for incoming materials, processes, finished products, and services
- Quality planning: Creation of plans for quality, reliability, operations, production, and inspection
- Quality assurance: Creation and maintenance of the quality system
- Training: Development, preparation, and maintenance of programs

Proposed method

In advanced manufacturing environment, the concept of quality costs must be redefined according to "reasonable quality", to ensure that quality is neither a shortage nor a surplus, on this basis, building a quality management evaluation system. The quality cost evaluation index indicator system design should follow the principle of science, system, feasibility and comparability, the composition of indicator system includes a total of nine two categories of review indicators and

economic indicators, objectively assess the level of quality cost management.

Methodology

II. THE EMPHASES ANALYSIS OF QUALITYCOST MANAGEMENT IN ADVANCEDMANUFACTURING ENVIRONMENT

A. To establish the best quality cost evaluation model inorder to control the quality surplusThe traditional concept of quality cost refers to theexpenditures cost by enterprise's endeavor to ensure andguarantee the quality satisfying customers, and the lossincurred if not. The quality costs of business operationconsist of control costs and control failure costs. Controlcosts is caused by ensuring and guaranteeing thesatisfactory quality, including costs of prevention andidentification, generally, this part of the quality cost isregarded as inputs. Control failure costs are incurred bymaterials and products not in conformity with qualityrequirements, also known as the quality loss cost,including internal and external damage costr3l Thestructure and proportion of the four components differ indifferent industries, different times and differentproducts, but their development has a certain degree ofregularity, that is, test costs and the costs of prevention increase with the requirements of quality, but whenquality achieve a certain level, if continuing to demandquality, quality assurance costs will rise sharply. Internaland external quality loss is just the opposite, to reducewith the continuous improvement of qualityrequirements, when the quality reaches a certain level,despite the increase in quality assurance, the speed of thereduction of quality loss decreased. Therefore the bestquality enterprise level, which corresponding the lowestquality cost, that is, the existence of the issue, " the bestquality cost decision-making".In traditional manufacturing industries there exists areal problem of serious shortage of quality, because oflimitations of science and technology, the production ofbusiness, industry and the whole society mostly exist amore and more serious problem of inadequate quality, sothe quality of management, quality cost management arebased on the quality inadequate, making every effort toimprove product quality in order to make products tomeet customer requirements. With the continuousdevelopment of advanced manufacturing technology, theconcept of quality cost, the content of quality costmanagement in advanced manufacturing environmentalso changed accordingly, there exists a case of qualitysurplus of products quality, that is the conflict betweenthe infinite inherent requirement to improve productsquality and the natural properties of the pursuit ofeconomic efficiency and enterprise L4J. First of allenterprises is an economic entity whose goal ismaximizing the value on the premise of ensuring toassume the social responsibility, one of the ways toimprove product quality, and to improve product quality,it is necessary to improve the machining accuracy, thehigher the machining accuracy, , the higher the pass rateof the products, and the less the loss of the unqualifiedgoods, this also means that if the high-precisionmachinery and equipment or raw materials with goodperformance are used in processing, the investmentwould increase. Therefore, there is a game between thequality cost

management and cost-effective, the processinputs and outputs need to be in a delicate balance. In theproduction process, to maintain a reasonable level ofquality, quality costs output will be limited to theeconomic scope, this is the goal which quality costmanagement activities are carried out to achieve. Usuallythe quality is judged by process capability index Cp, inthe majority views that it is reasonable between 1-1.33,there will be unqualified products if less than 1, noteconomic if greater than 1.67, many companies pursuethe perfect zero-defect movement, which calls for highdemands of process capability index, such as theMotorola in the United States carries out a qualityimprovement movement of Cp = 2, although this doesnot completely avoid the emergence of substandardgoods, but the quality excess costs brought about should856be re assessed as the quality excess costs in quality costsmanagement.

In the manufacturing process, the improvement ofproduct quality will be constrained by the cost in certaincondition. The change of passing rate will impact the riseand fall of the quality costs in two aspects: on one hand,the improvement of passing rate decreases the wastelosses; On the other hand, in order to increase thepassing rate, we need to do more prevention and controlmeasures and the means of test, which is bound toincrease prevention costs and appraisal costs, leading torising costs

III. THE ESTABLISHMENT OF QUALITY COSTMANAGEMENT EVALUATION INDEX SYSTEM

In advanced manufacturing technology environment,design quality cost management evaluation indicators,correctly and objectively analyze and evaluate theproportion of quality cost in corporate profits, sales, andthe output value, scientifically measure the degree ?fimpact of changes of quality cost towards the economicefficiency of enterprises, ensure that quality cost isregarded as a quantitative economic assessmentindicators under the premise of "reasonable quality", andbe used directly on the micro-enterprise managementdecision-making, improving the quality costmanagement.

A. Principles of quality cost management evaluationindex system design

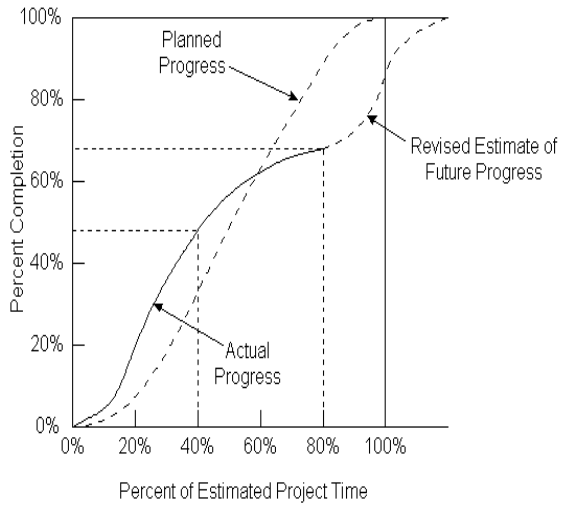
In order to correctly reflect the actual meaning ofquality cost, Indicators of the indicator system should bebased on objective, scientific basis, to reflect the correctmeaning of the quality cost, scientifically evaluating theresults achieved by the quality cost. (2) Systemicprinciples. Indicator system as an organic whole, shouldbe able to reflect entirely and accurately measure thetarget being assessed, different indicators should be ableto reflect the change of quality cost from differentaspects, the indicators are independent of each other andinterrelated and complemented with each other to forman organic whole. (3) The feasibility of the principle. Allindicators should have measurable indicators, readilyavailable data, simple and feasible calculation method,and be able to meet the needs of different departments and different levels.(4) The principle of comparability.Indicators of the indicator system should containhorizontal comparability between enterprises and itself,and the longitudinal comparability of industries ineconomic development.

International Journal for Innovative Engineering and Management Research
A Peer Revieved Open Access International Journal
www.ijiemr.org

B. The composition of the quality cost managementevaluation indicators system L 6 J

1) Subjective indicators

Subjective indicators, refers to the relevant indicatorsadopting different attitudes and behavior out of differentunderstanding of quality costs, resulting in changes inthe level of quality cost management changes. The aimof carrying out quality cost management is to enablepeople to understand the importance of quality costs, thatis to say, to conduct full mobilization and education likethe implementation of total quality management and allother modern enterprise management methods, so thatevery employee of enterprises will recognize that :Enterprise exist a recurrent cost problem, and may beinextricably related to the quality of his work, it isnecessary to control economically in order to improvethe overall economic benefits.



CONCLUSION

Advanced manufacturing environment is not onlytechnically advanced, but also has an advanced conceptin mind, which is more important. In advancedmanufacturing environment, the concept of quality costsmust be redefined according to "reasonable quality", toensure that quality is neither a shortage nor a surplus, onthis basis, building a quality management evaluationsystem. The quality cost evaluation index indicatorsystem design should follow the principle of science,system, feasibility and comparability, the composition ofindicator system includes a total of nine two categoriesof review indicators and economic indicators,objectively assess the level of quality cost management.

REFERENCES

[I] Yang shuzi,Wubo and Libin, "The Research on AdvancedManufacturing Technology and its Trend ofDevelopment"[n Chinese Journal of MechanicalEngineering, vo1.39, no. I 0, pp 73-78,2003.

[2]Yang shuzi and Wu bo, "Re-research on AdvancedManufacturing Technology and its Trend ofDevelopment[n Chinese Journal of MechanicalEngineering, vo1.42, no. 1, pp 1-S,2006.

[3] Satyanarayana, P. and Subramanyam Pavuluri, D.A., 2013. PARAMETRIC MODELING AND DYNAMIC CHARACTERIZATION FOR STATIC STRENGTH OF STEAM TURBINE MOVING BLADES. International Journal of Innovative Research in Science, Engineering and Technology, 2(7).

[4] PAVULURI, S. and KUMAR, D.A.S., 2013. „‟ Experimental Investigation On Design Of High Pressure Steam Turbine Blade‟‟‟‟. International Journal of Innovative Research in Science, Engineering and Technology, 2(5), pp.1469-1476.

[5] Sreenivas, P., Kumar, A.S. and Subramanyam Pavuluri, D.A., 2013.

Investigations on transient dynamic response of functionally graded materials. a a, 1, p.2.

[6] Pavuluri, S., Rajashekar, B. and Damodhar, B., Process of Press Tool Design and its Manufacturing for Blanking Operation.

[7] KUMAR, S.S. and SUBRAMANYAM, P., DESIGN AND WEIGHT OPTIMIZATION OF OIL PAN BY FE ANALYSIS.

[8] PAVULURI, S. and KUMAR, D.A.S., 2013. „‟ Experimental Investigation On Design Of High Pressure Steam Turbine Blade‟‟‟‟. International Journal of Innovative Research in Science, Engineering and Technology, 2(5), pp.1469-1476.