

Strategies for successfully meeting the demands of quality and service excellence

Abstract

The management of quality is crucial to business survival and merits the personal attention and commitment of executive management, but the primary responsibility for quality lies with those who perform the work. To enable production teams to accept responsibility for quality output, management must establish systems for control and verification of that output and must educate and train the workforce in the execution of duty. This training in techniques to achieve quality standards, will be re-paid many times over by greater output, less waste, an improved product and higher profits.

Keywords: Quality standards, service excellence.

STRATEGIEË OM SUKSESVOL AAN DIE EISE VIR HOOGSTAANDE KWALITEIT EN UITMUNTENDE DIENS TE VOLDOEN

Opsomming

Kwaliteitsbestuur is van die grootste belang vir die oorlewing van enige onderneming en is 'n aanduiding van persoonlike aandag en betrokkenheid van bestuur. Dit bly egter in die eerste plek die verantwoordelikheid van diegene wat die werk doen om kwaliteit te verseker. Om produksiespanne in staat te stel om verantwoordelikheid te aanvaar vir kwaliteitdiens, moet bestuur stelsels in plek hê vir die kontrole en verifikasie daarvan en moet die werksmag opgelei en onderrig word in hul onderskeie take. Opleiding in die tegnieke vir die daarstelling van kwaliteitstandaarde, sal groter omset en winsneming, minder vermorsing en die lewering van produkte van hoogstaande gehalte tot gevolg hê.

Sleutelwoorde: Kwaliteitsbestuur, hoogstaande kwaliteit, uitmuntendheid.

1 Professor JJP Verster, Ph D, UOFS, Head of the Department of Quantity Surveying and Construction Management, University of the Orange Free State, Bloemfontein, South Africa.

Introduction

Quality has at its root the universal idea of inspiration, delight and beauty. In the building industry, quality is vital, since the main functions of architectural design are:

- ◇ Functionality
- ◇ Structural stability
- ◇ Aesthetics

or in architectural terms, referring to the functions according to Vitruvius (Van Pelt & Westfall, 1991: 177-180):

- ◇ Commodity
- ◇ Firmness
- ◇ Delight.

If these functions are in harmony, the architectural object will captivate, motivate and inspire.

Through the ages this has been achieved in many locations throughout the world and today those buildings and structures evoke amazement and the question: "How did they do it?"

By comparison, today's challenges are different in many ways, but the essence of life remains unchanged.

The focus of this article is a strategic approach to quality.

Definitions of quality

Prior to any debate on the management and assurance of quality or ways and means of creating quality products, 'quality products' require definition. Quality has been defined as:

"... the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied need" (Ashford, 1989: 193).

Ashford (1989) further states that:

"Quality is a summation of all those characteristics which together make a product acceptable to the market. It follows that products that are lacking in quality will in the long term prove unmarketable, and that the purveyors of such products will go out of business. The truth applies not just to manufactured articles it is equally valid when applied to services and the construction industry. So the need to promote and control quality is of fundamental importance to any enterprise" (Ashford, 1989: 1).

Therefore (architectural) quality must not only be expressed in physical and functional terms, but quality products must also ad-

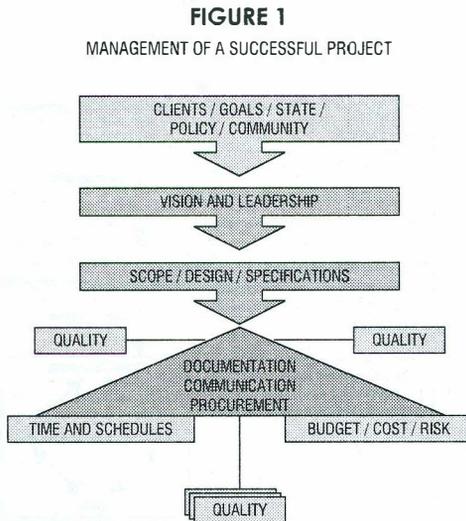
here to the requirements of beauty, form and ambience. The psychological needs of the market must be addressed. "The purpose of a building is to provide shelter; the purpose of architecture is to inspire" (Ashford, 1989: 12).

The quality of a building or structure depends on a number of factors, viz. that the:

- ◇ Product standard or specification properly defines fitness for purpose
- ◇ Product is produced to the specifications
- ◇ Product is delivered on site to standards in terms of expected performance
- ◇ Design of the building explicitly combines all its elements and components to ensure effective performance of the whole
- ◇ Building work complies with the designers' instructions
- ◇ Design adheres to the needs of users of the building facilities
- ◇ Building stands in sympathy with the environment (Fletcher & Scivyer, 1987: 369).

The determinants of quality

This paper argues that quality, quality management, quality control, etc. are not functions but products of sound management. Principles and effective management of design, scope, specification, documentation, cost, budgets and time are illustrated in Figure 1.



A project is successful when completed within budget, on time, and to the owners' satisfaction.

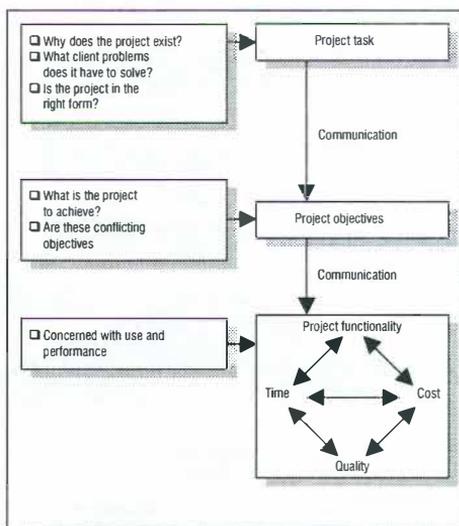
From inception to the completion of a construction project, each function must be aimed at the achievement of quality, whether the function is design, specification, documentation or procurement. Furthermore, the element of competition and what it purports to achieve, must not be forgotten.

The traditional approach to competitive tendering involves the calling of tenders addressed to a principal, which purports to carry out specified work and/or the supply of goods in return for specified payment. In the evaluation of the tenders, the principal will seek a tender that best suits the specific requirements of price, time and quality. From time to time, other criteria may also apply. In recent South African experience, tenders submitted to the various state bodies might also be evaluated on the basis of:

- ◇ Affirmative action
- ◇ Training
- ◇ Labour content
- ◇ Local materials
- ◇ Community involvement (Twyford, 1998: 343-345).

The appointment of professionals may also be classified as 'competitive' as the consultant team should be able to produce a product meeting standard levels of acceptability, manage the process and motivate the contractor to achieve the highest levels of quality (Figure 2).

FIGURE 2
CONTEXT OF PROJECTS



(Kelly & Male, 1993:83)

Taking the foregoing into account, the generation of quality products in construction is influenced by the following determinants:

- ◇ Budgets
- ◇ Development cost plans
- ◇ Design and design management
- ◇ Specification
- ◇ Documentation
- ◇ Communication systems
- ◇ Total cost management and control
- ◇ Time scheduling and time management.

Quality is inherent in each of these processes which should not be reactive, but rather inherent in dynamic and proactive management of quality-achievement.

At the risk of subordinating the purposes and interests of those who use and live in buildings, professionals, consultants, developers and contractors must realise the needs of the market, the people and the community they serve, The danger is that through "conceptual frameworks we risk isolating fragments of social reality, decontextualising, then recontextualising and, in so doing, creating a different kind of world" (Shammas-Toma, Seymour, Clark, 1998: 177-192).

In the final analysis, quality can only be achieved in a specific context, within a specific environment, for a real community.

The balance of functions

Unfortunately, resources are not plentiful and humans are not perfect. It is argued that quality is not absolute, but relative to the functions of quality. The major determinants of quality are time, scope and cost, where time embraces scheduling, time planning, management and control, while scope includes design, brief, specifications, planning and management. Cost means economy, cost design, cost planning, cost control, budgeting and other management functions (Nilsson (NORDNET) 1997: 1).

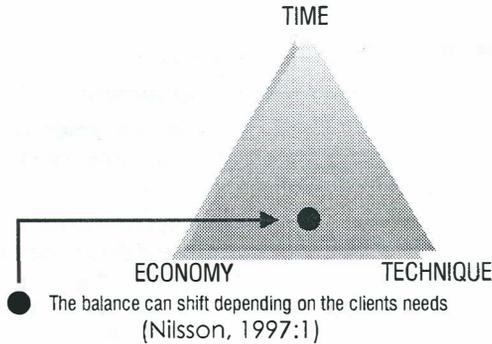
The client, developer, professional team and community should establish a pre-requisite balance between the main determinants of quality to satisfy themselves that the highest relative level of quality is within reach.

Once this balance has been determined, project planning may continue and the results documented, to procure a contractor who can deliver the product to the pre-determined standard.

The contractor may, however, also form part of the quality-planning team, depending on the system used. While this may be considered idealistic, potential success lies in the way the

FIGURE 3

Economy: one of the three quality parameters in the project triangle



team members approach their goals.

Applications

In the context of the construction industry, certain role-players and stakeholders affect the quality-balance in the following areas of project development:

1. Client: the aims, purpose and location of project
2. Designers: the design and specification. "The designer is tasked to produce the 'best' design out of many alternatives, i.e. the 'what', but cannot ignore the 'why', i.e. the overall worth of the project. Thus both technical procedures and evaluation procedures are needed. The latter comprise both economic analyses, typically of the classic investment appraisal type and decision-making techniques" (Summers, Boxton & Stephenson, 1998: 42).
3. Cost engineers and quantity surveyors: cost design, cost planning, cost control, cost assessment and cost budgeting: For effective cost design, cost planning and cost control, it is essential that the cost professionals work in close co-operation with the owner and design consultants. It hap-

pens more often than not, that the budget guides the outcome of a project thus stressing the importance of cost design

4. Communities: community interests and the environment
5. Manufacturers: materials and components supplies
6. Contractors and subcontractors: construction and testing
7. Users: use of the finished structures and their subsequent repair and maintenance (Gunning, 1987: 376-378).

The construction industry, the contractor and quality

Although the principles of producing quality products are universal, it must be realized that the construction industry differs in many aspects from other manufacturing industries.

Differences between factory and construction site cannot be ignored. There are special factors which have to be taken into account, for example:

- ◇ Susceptibility to weather
- ◇ Mobility of labour
- ◇ Uniqueness of projects.

These realities undoubtedly make the introduction of quality management difficult in comparison with other industries, where stricter control of production processes is more defined.

Knowledge of the differences between construction projects and manufactured products assists the professional responsible for quality management, quality assessment and quality control in producing a project approaching the required standards of quality.

In greater detail, these are the following:

1. Most building projects are unique
2. A building site is unique in terms of environment and conditions
3. The life cycle of a building project from inception to completion is longer than that of most manufactured products, and a building continues to evolve throughout its long life cycle in terms of both time and circumstance
4. The mobility of design and construction staff makes production difficult to control
5. There are few clearly evolved, tested and precise standards for the evaluation of overall design and construction quality

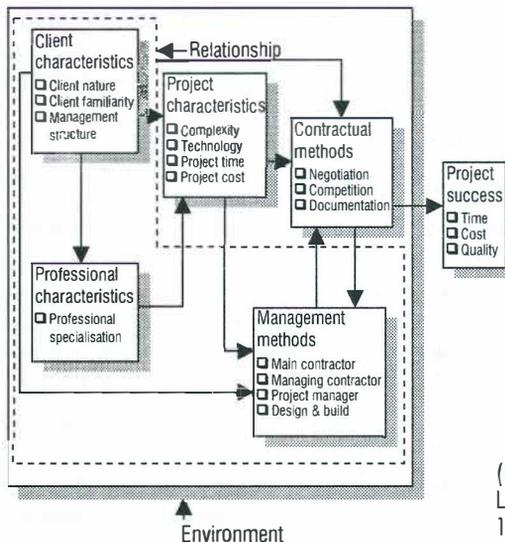
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6. Participants in the design and construction processes are usually different from project to project
7. Feedback from the users of buildings to designers may be remote from the actual time of design and construction
8. Conflicting costing systems exist between design/construction processes and maintenance expenditure. Without the unification or compatibility of these two stages, real quality costs cannot be calculated
9. The respective role of communities and the environment are becoming more important in the development of new projects
10. There is a lack of integrated action between designers and builders
11. Another facet is the diverse delegation of responsibility for supervision work on construction sites (Dalton, 1987: 363).

Various types of procurement systems in the construction industry have also evolved and in recent years a trend towards innovation in contract administration has developed. These phenomena have been caused by extensive failures in past projects. Major disappointments in project performance were caused by extensive delays in planned schedules, cost overruns,

FIGURE 4

Construction project: characteristics, relationships, contracts & management



(Naoum & Langford, 1987:45)

serious problems associated with quality assurance and an increased number of claims and litigation proceedings. The consumer (the public) does not obtain the best product for money (Herbsman, Ellis, 1991: 150; Naoum & Langford, 1987: 45) (Figure 4).

If this situation exists in the construction industry in South Africa, problems should be examined in strategic terms, assessing the aims, goals and value systems of the industry and its allied professions.

Barriers to quality

Numerous barriers militate against achieving quality in the products of construction processes, even if it is accepted that quality standards relate to function.

The following role players are most relevant:

Owners. Returns within specific time frames are critical and developers often sell projects within a short period of time. Long-term commitment is therefore not always present.

Designers. Designers are compelled to adhere to the pressures of budgets, returns, local conditions, the likes and dislikes of communities and fashion in the market place.

Cost management professionals. Budgets and finances force cost professionals to advise on alternatives, procurement methods, documentation and systems that do not always promote quality.

Contractors. Contractors are responsible for generating standards of workmanship embodied in specifications, sometimes within extremely tight time constraints. Generally, their ability to deliver this undertaking is taken on trust. In practice each project will be tackled by a new management team, even if previous contractors are appointed. Also, almost inevitably, different subcontractors and operatives will materialize on site. Studies have shown that the final result is as much the outcome of a zealous agent, resident engineer or clerk of works as would arise from details in respective project specifications. The final demonstration of quality is the absence or presence of defects in the medium and long term (Bishop, 1987: 24).

Steps to quality

It is very important to apply steps to quality during project planning and construction. These steps emanate from a combination of strategic approach and value system, which needs to be designed.

In the opinion of Dillard (1997), five important steps leading to the achievement of quality projects may be identified. These are:

Knowing the customer. Who are the customers? What (and why?) are they developing?

Knowing the assignment. The assignment or brief should be identified clearly. The assignment must also be defined and be quantifiable.

Dividing and conquering. Divide the work and conquer it through success. The work must be divided into smaller units that facilitate more accurate measurement.

Frequent reviews. Internal and external sessions in respect of processes, goals, inspections, audits, etc.

Putting the team in control. The team must make decisions. 'Successful teams' are willing teams; willing to be assessed and have their work reviewed.

Teamwork and proactive team co-ordination are essential to the success of a project. Through a team-directed approach, the foregoing steps to quality become a logical part of the design, planning and construction process.

The experience and knowledge base of the team that executes a project are also very important in ensuring that project results are what is expected by the client and the community, and that projects adhere to the quality standards set by the team itself.

Knowledge areas

In the United States of America the Institute of Project Management has identified nine knowledge areas as fundamental to project management. These are:

- ◆ Integration
- ◆ Time
- ◆ Scope
- ◆ Quality
- ◆ Cost
- ◆ Human resources
- ◆ Communications
- ◆ Risk
- ◆ Procurement (Walsh, NORDNET, 1997).

Furthermore, education, training and experience are essential elements of all these knowledge areas and it is impossible to find the total scope of prerequisite competence in one single profession, person or party. Teamwork will inevitably form part of effective management within these various fields of knowledge. Team members who represent each of the foregoing knowledge

bases should serve as the managers of all matters relating to their specific fields of expertise.

Vital conditions for quality

Vital conditions prerequisite to ensuring project quality are:

- ◆ Profound knowledge and a deep understanding of agreements, contracts and procedures
- ◆ Observance of the order of importance of agreements, contracts, procedures, etc. These are ranked on the basis of the most important to the least important
- ◆ The applications of these principles in a proper manner (Van Roermund, NORDNET, 1997).

The implementation of these conditions occurs at various levels of management:

Policy. Adherence to the internal and external influences and conditions that will affect the project

Management. Meeting all the vital conditions

Administration. Application of sound monitoring and control systems

Execution. Maintenance of acceptable standards and conditions (Van Roermund, NORDNET, 1997).

Quality will be successfully achieved only when the following aspects are also dealt with in the management process (Van Roermund, 1997; Humphreys, NORDNET, 1997):

- ◇ Quality and effective leadership
- ◇ Internal and external reviews and auditing
- ◇ Quality education and training and effective support for team members.

Other conditions that need to be addressed regarding quality management in construction projects, both locally and abroad, are:

- ◇ Accommodating different cultural preferences and protocols
- ◇ Achieving government investment objectives
- ◇ Building facilities fit for specific clients and according to the needs of specific communities
- ◇ Estimating project costs, which take cultural, technical, legal and climatic conditions into account
- ◇ Selecting equipment which is (locally) available (if possible)
- ◇ Applying available cost data with adjustment to suit specific projects, if necessary
- ◇ Taking account of local productivity statistics, weather conditions, religious and construction practices
- ◇ Management of risk, with specific reference to price and time schedules.

Furthermore:

- ◆ Management with a view to quality is an integrated proactive process
- ◆ Quality can be achieved only if the team adheres to a strategic approach in respect of the determinants and conditions influencing both quality and outcome
- ◆ The team must recognise its own shortcomings in respect of knowledge and skills and address these constraints.

Techniques to be applied in achieving project economics

The utilisation and management of capital allocated to a specific project is essential to achieving successful quality standards. Sound cost management systems and procedures must be implemented to ensure that the best quality, scope and specification for specific projects related to pre-set budgets, are realised.

The role of the cost engineer and/or quantity surveyor is vital, regarding cost management in construction projects.

The following will assist in achieving project economics:

- ◇ Cost design
- ◇ Viability calculations
- ◇ Advice on investment alternatives
- ◇ Cost benefit analysis
- ◇ Cost planning
- ◇ Cost control
- ◇ Life cycle costing
- ◇ Net present value calculations
- ◇ Cash flow predictions
- ◇ Valuation/market assessment
- ◇ Cost reporting (Nilsson, NORDNET, 1997).

Managing motivation

Different teams are motivated by different incentives. Some are motivated by a rigid, military regimen, employing autocratic motivational tools, while other teams thrive within a civilian environment.

Eypôr Arnalds (NORDNET, 1997) argues that the difference can be expressed in musical terms. Some teams may be motivated by strong organisational structures, as is the case with classical music, while other teams tend to be stimulated by a structure comparable with improvisational jazz.

There is, however, a universal set of rules that assists teams towards the attainment of quality and success, including the following:

- ◇ Building teams that work
- ◇ Spreading responsibility
- ◇ Following leadership
- ◇ Acknowledging team successes; praise is oxygen
- ◇ Concentrating on goals and vision, not on problems (Arnalds, NORDNET, 1997).

Arguably, various rules may apply, but nevertheless, those outlined above provide a sound foundation for potential team success. The following factors also influence the creation of quality-driven, empowered teams and deserve mention:

- ◇ The client's idea of quality
- ◇ Diverse team structures
- ◇ Upliftment and affirmative action within communities
- ◇ Client support during project creation
- ◇ Worker and team values (meaningful work, dignity, personal worth)
- ◇ Productivity heightened by team/worker interaction
- ◇ Delegation of function by project managers (design, cost management, procurement)
- ◇ Shared goals and vision.

Motivation is therefore not a product of emotions, but a product of sound planning and management.

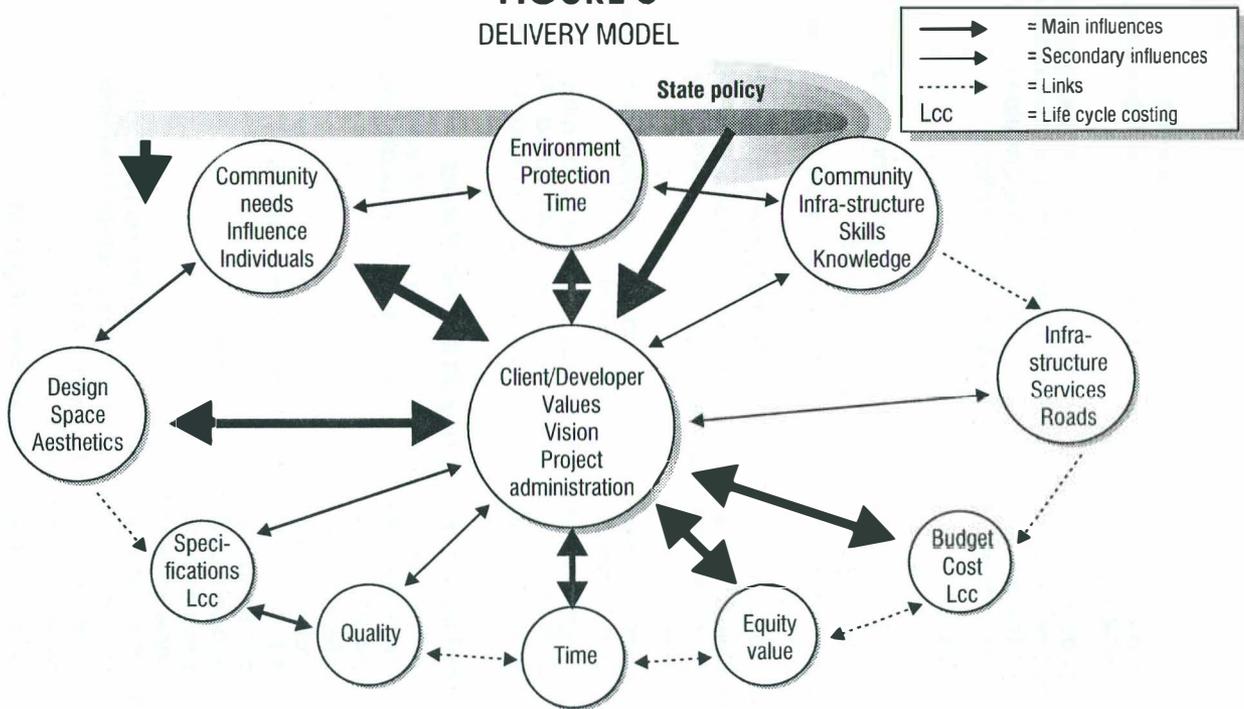
Managers induce motivation by adhering to the rules, principles and factors that motivate others. Motivated teams are goal-driven to achieve product success and quality (Kezsbom, NORDNET, 1997).

Project management which leads to quality products

Project management should adhere to or (at least) take cognisance of the following major elements, if a quality product is to be generated:

- ◇ Clients and their vision
- ◇ Project scope and goals
- ◇ A balance of functions within team activities
- ◇ Barriers to teamwork
- ◇ Budgets, costs and economics
- ◇ Steps to quality
- ◇ Knowledge and skills
- ◇ Vital conditions pertaining to quality management
- ◇ Documentation and project procurement methods
- ◇ Environmental and cultural factors
- ◇ Teamwork and motivation
- ◇ Time constraints and deadlines (Figure 5).

FIGURE 5
DELIVERY MODEL



The foundation of quality in professional service lies in the acceptance and implementation of a value system. The professions allied to the construction industry cannot afford to neglect those values since it is through their application that quality is achieved. Moral and ethical values are intrinsic to quality products.

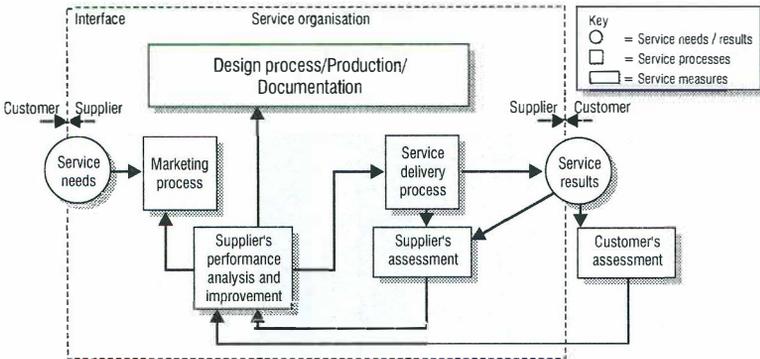
Summary

To conclude, the following statements regarding quality, are significant:

- ◆ The management of quality is crucial to company survival and merits the personal attention and commitment of executive management.
- ◆ The primary responsibility for quality lies with those who perform the work required.
- ◆ To enable production teams to accept responsibility for quality output, management must establish systems for control and verification of that output and must educate and train the workforce in the execution of duty (Figure 6).
- ◆ The cost of education and training in techniques to achieve quality standards, will be repaid many times over by greater output, less waste, an improved product and higher profits (Figure 7).

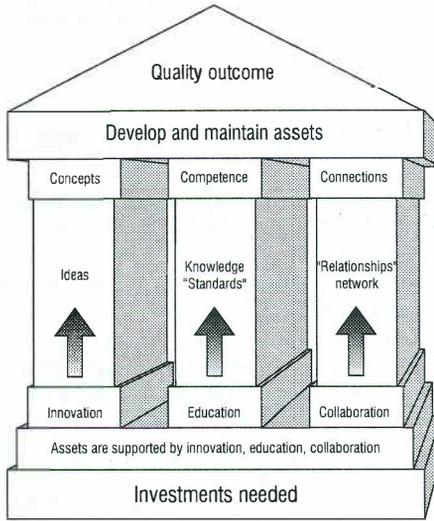
FIGURE 6

Quality management loop from ISO 9004-2
(with service process documents removed)



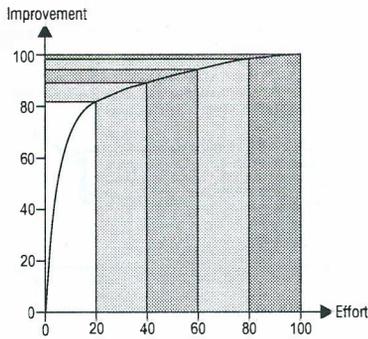
(Barrett, 1995: 10)

FIGURE 7
Strategies towards quality outcome



The foregoing factors are not the only attributes influencing quality and success, they are extremely important and play a major role in the success of construction projects, especially in the early stages of project development when an improvement in quality is critical (Figure 8) (Barrett, 1995: 11).

FIGURE 8
"Pareto effect"



(Barrett, 1995:11)

Quality results not only from a set of rules, it results from a team's commitment and drive, utilising sound principles in achieving set goals and vision.

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