

**EVALUATION OF FEASIBILITY  
OF IT PROJECTS  
BY PUBLICLY QUOTED COMPANIES  
IN KENYA**

**By**

**Odilon Dizon Jr**

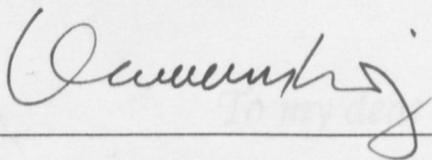
A MANAGEMENT RESEARCH PROJECT  
SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION (MBA)  
FACULTY OF COMMERCE  
UNIVERSITY OF NAIROBI

JULY 1999

# DECLARATION

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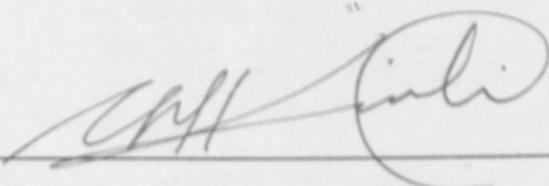
This research project is my original work and has not been submitted for a degree in any other University.

Signed  Date 10/11/99

ODILON DIZON JR.

*Tang and Ima,  
for their Golden Wedding Anniversary  
in April 1999*

This research project has been submitted for examination with my approval as the University Supervisor.

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# DEDICATION

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*To my dear parents,  
Tang and Ima,  
for their Golden Wedding Anniversary  
in April 1999*

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# ACKNOWLEDGEMENTS

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*To my classmates, for the great time we shared and learned together...*

*To my lecturers, for the knowledge and understanding we received...*

*To my friends at Strathmore College, for their understanding and encouragement...*

*To my supervisor, for the guidance and patience throughout the research period...*

## ABSTRACT

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**A**s more capital is being invested on IT projects in the coming years, company decision makers must learn to moderate their zeal in adopting IT solutions. Despite claims to success attributed to IT, there are senior management people who are dissatisfied with what has been achieved with the huge IT investments. Perhaps these managers expect too much from IT or do not know what they expect. This points to the need to have a careful evaluation of feasibility of IT projects. Unless it is made clear as to what can and cannot be achieved with IT, dissatisfaction will continue. In IT project assessment as in life itself, to be forewarned is to be forearmed. Against this background the research study sought to determine the evaluation methods used by publicly quoted companies in the Nairobi Stock Exchange and the criteria for their choice.

Forty-two companies, out of a total of 54, responded to the research survey. Data for the survey was collected using a self-administered questionnaire. Of the 42 companies that responded to the survey, thirty (30) evaluate IT projects at feasibility stage. The IT Department, the Executive Board, the Finance Department, and the User Department are the main players in the evaluation process. The involvement of top management indicates the importance of IT investments in the companies. This is also corroborated by the fact that 76.2% of the companies have separate IT de-

partments. Most firms are familiar and use budgetary constraint, cost benefit analysis, return on investment and payback method to evaluate IT projects. The users of these methods contend that they use them because they are easy to use, understand and interpret. The evaluation teams are composed mainly of people who have strong accounting or finance backgrounds. This is perhaps the reason why the popular evaluation methods are largely accounting-based.

As regards the reasons for undertaking IS/IT evaluation exercise at feasibility stage, the companies list support for organisational requirements, obtaining cost benefit, gain of competitive advantage, and improved management information.

The quantification of the expected benefits of new IT investments pose a problem. On many occasions the normal case for business proposals are not followed. It is not surprising to find a justification of IT projects along the following lines:

- 1. It is IT, therefore it must be good for us.
- 2. Company X has got a new system Y. We should also have it.

# Chapter 1 INTRODUCTION

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## 1.1 Background

**T**he past five years have seen a huge increase in Information Systems (IS) spending. The forecast is that the trend will continue. In a survey conducted by BMI Techknowledge Africa, some Shs 18 billion was invested in information technology in the East African region in 1998. Kenya had 50 percent of the total investments followed by Tanzania with 30 percent and the balance in Uganda. The survey also says that two-thirds of the new investments in IT was spent on public and private telecommunication sectors (cf. Daily Nation, 11th June 1998).

The quantification of the expected benefits of new IT investments pose a problem. On many occasions the normal case for business proposals are not followed. It is not surprising to learn of justification of IT projects along the following lines:

- It is IT, therefore it must be good for us.
- Company X has got a new system Y. We should also have it.

Some managers have become skeptical about the promised benefits of IT investment either because these projects fail during implementation or because they do not live up to the expectations. In other words IT investment projects have come to be seen as “long in promise, but short in delivery”. It would help IT to regain part of the lost confidence if more attention is paid to project evaluation by comparing the costs to be incurred and the benefits to be reaped.

Evaluation of IT projects is a difficult process. The fact that IT systems have costs and benefits that are both tangible and intangible place greater demands on management to exercise care in the evaluation process.

Bawden and Blakeman (1990) say that the process of evaluating IT systems and equipment becomes difficult because of a number of factors:

- The speed of developments;
- The complexity of the application areas;
- The trend to integration and convergence, implying that there may be several different ways of achieving the same objective;
- The problems of distinguishing between fact and fantasy in the claims of suppliers;
- The difficulties of assessing which aspects of technology are meeting real user needs, etc.

Some managers do not carry out evaluation of IT products because they think it is not cost-effective. Since the product under consideration is cheap they just go ahead with the purchase. They fail to realise that the real cost comes, not in the purchase price, but in the cost of implementing or trying to use the IT product or system.

## **1.2 Definition of Terms**

### **1.2.1 Evaluation**

Evaluation in the context of IT is concerned with establishing the worth of IT to the organization by quantitative and/or qualitative means, and involves determination of costs, benefits, risks and values (Willcocks, 1992).

### **1.2.2 Information System and Information Technology**

According to Laudon and Laudon (1996), an information system (IS) can be defined technically as a "set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision-making and control in an organization". In addition to supporting decision making, coordination, and control, information systems may also help managers and workers analyze problems, visualize complex subjects, and create new products. Information technology (IT), on the other hand, is the general term that is applied to technologies used in processing in-

formation in any format. These include hardware, software and communications technologies and attendant techniques (Willcocks, 1992).

### **1.2.3 Tangible Benefits and Intangible Benefits**

Hogbin and Thomas (1994) define tangible benefits as “those that can be measured, often financially” and intangible benefits as “those that cannot be confidently quantified”. Tangible benefits can be classified further according to type of savings, such as:

- Cost or expense reduction, e.g. savings derived from increased productivity and reduced number of employees;
- Cost or expense replacement, e.g. savings in the costs of materials, document, communications, printing and copying, inventory and storage, transport and distribution, rates and rents, space and buildings;
- Cost or expense avoidance, e.g. savings gained through better use of resources; delaying the need for further major investments in fixed or current assets due to IT improvements; reduced storage needs due to lower inventory;
- Revenue-related savings, e.g. increased sales due to improved customer service. Since it is generally difficult to quantify the savings derived from better service, estimates are usually made.

As regards intangible benefits, Willcocks (1992) gives the following examples:

- Improved customer service
- Development of systems architecture
- Higher job satisfaction
- Higher product quality
- Improved internal/external communications and management information
- Gaining competitive advantage
- Improved supplier relationships

### 1.3 Statement of the Problem

Given the huge investments in Information Systems, organisations need to have very clear and systematic procedures to vet IS/IT projects against other alternative projects competing for the same limited resources. Bacon (1994) confirms this observation when he stressed the importance of investment decisions on IT projects because of the money involved. In spite of this the evaluation of IT projects, in terms of costs, still appears to be disregarded in favour of the assumption that computerisation must somehow be a "good thing" (Bawden and Blakeman, 1990). In this regard it would be good to know what the experience of Kenyan firms have been. Do they approach project evaluation on an ad hoc basis too? Do the euphoria of technological novelty and the pressure of keeping up with the times bear on them? Against this scenario the researcher con-

ducted a research survey to determine the criteria used by Kenyan organisations in assessing IS/IT projects. The study also looked into the evaluation practices that the firms have adopted.

In summary, the researcher sought to find answers to the following questions:

- What are the common evaluation methods that organisations in Kenya follow in evaluating the feasibility of IS/IT projects and criteria of their choice?
- What reasons do organisations in Kenya use in undertaking evaluation of IS/IT projects at the feasibility stage?

## 1.4 Objectives of the Study

The objectives of the study are:

- 1) to describe the characteristics of the Kenyan firms that evaluate IT projects at the feasibility stage;
- 2) to examine their evaluation processes and the composition of the evaluation team;
- 3) to determine the evaluation methods used in assessing IT projects at feasibility stage and criteria for their choice;
- 4) to determine the reasons used for undertaking IT evaluation exercise at feasibility stage.

## 1.5 Importance of the Study

Investments in IT are high. Many times IT projects have to compete with other investment proposals within the company for the same limited resource. The situation in Kenya is even more serious. There are some business people who do not have qualms in dumping old and technologically outdated machines into the Kenya market. Management should be very careful in making the decision to purchase IT products. A wrong investment decision at the beginning can have adverse financial consequences in the years to come. Due to the high rate of obsolescence, exacerbated by the lack of standards, it is important to be sure on the type of IT infrastructure to adopt. Senior management people must therefore have a clear understanding of IT projects and IT evaluation process.

The results of the study will help:

- Managers and other decision-makers to know the key factors to take into account in the evaluation of feasibility of IT projects.
- Managers and IT practitioners to understand the importance of IT evaluation methods as means of establishing baseline data for future assessments of investments.
- IT professionals to evaluate IT projects within the context of the organisation's overall strategy.

# Chapter 2 A REVIEW OF PUBLISHED LITERATURE ON EVALUATION OF IT PROJECTS

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## 2.1 Rationale for IT Investments

**I**nformation Technology (IT) is a field that is growing and developing rapidly, yet it is not easy to define it. It means different things to different people. It encompasses many topics such as word processing, image processing, desktop publishing, electronic publishing, local area networks, relational databases, decision support systems, hypertext, etc. The list keeps growing. In spite of the seemingly pervasive presence of IT, many firms are lured into it without much careful thought. Time and again one hears of firms that jump into the IT bandwagon without making a proper investment proposal.

According to Bawden and Blakeman (1990) the introduction of IT must follow a clear need within the organisation and must relate to its objectives. In other words, there must be a "business need". This need should then be translated into the requirements of those who will use the IT systems. Firms often fall prey to the so-called "technology push" ration-

On the *cost side*, the first problem is that a big proportion of IT costs are fixed and independent of utilisation. It is thus difficult to allocate costs to a specific IT project. Second, it is difficult to estimate the cost of running the system because its life is uncertain. Third, the project champions (those who push the initiative with a lot of enthusiasm) tend to underestimate costs to get a better chance of the project being approved.

methods, and variance analysis.

On the *benefit side*, it is difficult to predict and give value to the effects of IT. Providing better information may help a decision-maker improve his decision-making capability but it is not easy to know the extent to which improved information contributed to better decisions. Second, the benefits from investments in IT infrastructure are difficult to evaluate. Third, there are inherent uncertainties as regards outcomes.

following characteristics (Farbey, Land and Targett, 1993)

## 2.3 The Evaluation Process

### 2.3.1 Complexity

Evaluations are usually undertaken at various phases of the life cycle of systems. They consist of two principal processes: 1) data collection and analysis, and 2) decision-making. Data collection involves the establishment of the costs and benefits of the project that is under consideration. When the focus of the evaluation is on estimating future costs and benefits, it is called *ex ante* evaluation. When the concern is on the identification of the costs incurred and the benefits achieved, it is called *ex post* evaluation.

As regards the process of data collection and analysis, the methods that are employed include: organisation and methods (O&M) practices, work measurement, costing methods, operational research (OR) methods, the use of spreadsheet techniques, and cost estimation techniques. Other methods that are used are strength, weakness, opportunities and threat (SWOT) analysis, the identification of critical success factors, Delphi methods, and variance analysis.

Once data collection and analysis are done, decisions must be taken to go ahead with the project (*ex ante*) or to provide justification of the project to see whether it had been worthwhile (*ex post*).

The evaluation methods used in IT investment justification have the following characteristics (Farbey, Land and Targett, 1993):

### **2.3.1 Complexity**

Some methods require large amounts of data and some of the data are themselves difficult to identify and collect. Other methods are conceptually difficult to understand or need expertise and experience to use properly.

### **2.3.2 Ease of communication**

Methods vary in the ease with which they can be learned and how well they can be understood by decision-makers.

### **2.3.3 Degree of precision and quantification**

Some methods attempt to quantify tangible benefits by providing estimates.

### **2.3.4 Facilities provided by the method**

Some methods have facilities to analyse the robustness and sensitivity of the answers given by the methods. Others provide “what-if” analysis or computer support.

### **2.3.5 Congruency with established IT methodologies**

There are methods that already incorporate value chain analysis or make use of critical success factor analysis.

### **2.3.6 Extent of senior management involvement**

Some methods allow the involvement of senior management in the design of methodology together with the technical personnel from accounting or IT departments.

## 2.4 The Methods and Approaches of IT Evaluation

In this section the various approaches or methods used in the evaluation of IT investment proposals are discussed. They are divided into two categories: *quantitative-based approaches* and *process-based approaches*.

### 2.4.1 Quantitative-based approaches

Quantitative-based approaches focus on giving quantitative (monetary) values to tangible benefits that derive from the use of IT projects. Some of these approaches are briefly described next.

#### 2.4.1.1 Cost/revenue analysis

This is the most basic and widely used method. It uses conventional cost and management accounting procedures. The costs of developing, implementing and operating the system are estimated and compared with the value of the benefits that the system will generate. Cost/revenue analysis is used where the benefits can be directly attributed to the change of system and are realised in the form of cost savings, cost displacement, or where this can be directly related to the change or in additional revenue generated.

## 2.4.1.2 Cost Analysis Techniques

These techniques are derived from accounting practices. Essentially they deal with cost figures and treat technology use over time as expense. The common techniques include payback period, return on investment (ROI), and net present value (NPV) (Regan and O'Connor, 1994).

### 2.4.1.2.1 Payback Period

The *payback period* is a very common technique in business. It is found by counting the number of years that it takes before the cumulative forecasted cash flows equal the initial investment (Brealey and Myers, 1991, p. 75). It is simple and easy to understand but it does not take into account the time value of money. Neither does it take into consideration factors other than cost, such as the risks involved in implementing the project.

### 2.4.1.2.2 Return on Investment (ROI)

Return on Investment (ROI) is widely used in IT investment evaluation. It compares the projected lifetime benefits of alternative solutions based on a percentage rate that represents the expected return on the cost of implementing a new system. The solution that gives the highest return on investment is the best alternative. Its main drawback is that the rate of return is an average rating. The actual ROI may vary over time. Besides, like the payback method, it does not take into account the time value of money.

### 2.4.1.2.3 Net Present Value (NPV)

Net Present Value (NPV) takes into account the time value of money. For this reason it is usually the preferred method by those who have good background in business finance. NPV calculations base their discount rate on an interest rate regarded as appropriate by the financial management of the organisation.

In summary, cost analysis techniques would be useful:

- When the application being appraised is expected to deliver direct savings or directly attributable revenue benefits;
- When the estimates can be supported by reliable calculations, i.e. when there is low uncertainty regarding the outcomes;
- Where there are many competing projects demanding investment resources and there is need to be able to compare the potential outcomes of the different projects on a standard financial basis.

Cost analysis techniques would not be very appropriate:

- Where benefits cannot be precisely estimated in cash flow terms;
- Where there is considerable uncertainty about the value of the estimates;
- Where the timescales of projects differ markedly;
- Where intangible benefits are given a zero value because they cannot easily be expressed in cash flow terms.

Indeed some examples of IT projects that have been instrumental in giving a company competitive advantage could have been rejected if the cost analysis techniques were used in their evaluation.

### 2.4.1.3 Cost-benefit analysis (CBA)

This is more sophisticated than the cost/revenue method. Cost-benefit analysis is a method which tries to overcome the problem of valuing *intangibles* by assigning a money value for each element contributing to the costs and benefits of an IT project. The method attempts to find some surrogate measure for intangible cost or benefit which can be expressed in money terms. It then estimates cash flows that provide the data for other cost analysis techniques. This method requires expert analysts and is very useful where projects have many intangible costs and benefits and where there is agreement on the methods used to assign values to the intangibles.

CBA has some drawbacks. It does not work well when there are differing views on the value of the intangibles and on the appropriate form of surrogate money value. It also falls short of expectations when there is a lot of uncertainty as regards the realisation of intangible benefits.

### 2.4.1.4 Return on management (ROM)

The return on management (ROM), originally developed by Strassmann (1990), is based on the notion that the real value of management

information systems is that they enhance management productivity. The method sets out to establish the increase in management productivity, measured as value added by management which can result from the introduction of new systems. It relies on obtaining estimates of cash flows from standard evaluation methods and financial statements and assigning the value added from each systems feature to a part of the value chain. Any value left over is the value imputed to management. ROM is suited to *ex post* evaluation of information systems. The advantage of ROM is that it concentrates attention on the management process. The disadvantage is that the residue, assigned as the value added by management, cannot be directly attributed to the management process.

#### **2.4.1.5 Boundary values or spending ratios**

The main aim of boundary values or spending ratios is to provide a crude but simple view of how an organisation or a division within the organisation compares to its peer organisation or divisions in the same industry sector. They are based on ratios of total expenditure against known aggregate values. Typical ratios include total IT expenditure against:

- The value of sales
- Total labour costs
- Total operating expenses
- Total value of assets
- Total value of deposits (for banks)

### **2.4.1.6 Information economics (IE)**

This method is actually a variant of the cost-benefit analysis (CBA). It takes into consideration intangibles and uncertainties found in IT projects. It uses cost analysis techniques to calculate benefits and costs that can be directly ascertained through a conventional cost-benefit process, but incorporates some decision process that uses ranking and scoring techniques of intangibles and risks. The method is comprehensive in the way it treats benefits and risks. The advantage of information economics is that it provides capabilities for dealing with many of the identified problems. It requires considerable expertise to use. It can be expensive because it requires in-depth analysis of many possibilities such as tracing the possible consequential impact of a change. The method is probably not practical for use in classes of systems where the problem of evaluation hinges on finding the best system to perform a closely defined task. For the more simple transaction-processing system with direct, tangible benefits the method may prove too complex.

### **2.4.2 Process-based approaches**

In the previous section the various quantitative-based techniques and methods that are used in evaluating IT projects were discussed. This section focuses on the process-based methods of evaluating IT projects.

### 2.4.2.1 Multi-objective, multi-criteria methods

Multi-objective, multi-criteria (MOMC) methods are regarded as alternatives to cost-benefit analysis (CBA). The method takes the view that peoples' behaviour is determined by their feeling that their preferences are recognised. People appraise the usefulness of desired outcomes in terms of their preferences.

The advantages of the method are:

- It gives the possibility of exploring the value of a set of system proposals in terms of relative preferences for different system features.
- The methods achieves consensus on the most desired system attributes by means of a thorough exploration of alternatives and preferences.
- It arrives at a decision by evaluating preferences and choosing the system that provides the highest satisfaction in terms of weighted preferences.

The disadvantages of the method are:

- It does not provide any data for other cost analysis techniques thus making it difficult to compare an investment justified using cost-benefit analysis with one justified using MOMC method, and
- The method involves a lot of discussion and can be costly.

MOMC is suited for complex projects that try to meet the needs of many different users and where the benefits are intangible.

### 2.4.2.2 Value analysis

Value analysis is another attempt to establish a value for the outputs of the system. It emphasises benefits rather than costs and is used primarily for evaluating concepts such as "better information". It begins with the observation that most successful innovations are based on enhancing *value added* rather than on saving costs. To get at value the intangibles must be assessed. The method uses many techniques to establish value. One of the techniques is the *Delphi approach* which involves asking "experts" to speculate on their use of the proposed system and to suggest the value of any improved performance on their own part. The views of the managers may vary a lot but the Delphi approach confronts all of the managers with the speculations of their fellow managers. A new round of consultation with the same experts is likely to show modified viewpoints. After a number of iterations a consensus tends to emerge which is then regarded as the most likely outcome.

The advantages of the method are:

- It establishes agreed values for outputs which would normally be classed as intangible.
- It provides decision-makers with some kind of assurance that the benefits can be realised by means of prototype demonstration or Delphi processes. It is a method of reducing uncertainty.

- Values can be expressed in money terms and hence can enter into cost analysis.

The disadvantages of the method are:

- It establishes values can be a lengthy and costly exercise, and
- There is concern about the accuracy of procedures such as the Delphi method.

### **2.4.2.3 Critical success factor analysis**

The use of critical success factors is a popular method for exploring the potential value of IT. Here the analyst explores with executives those factors which are in their opinion critical to the success of the business, in particular those that are important for the functions or activities for which the executives are responsible. Issues are then ranked according to their levels of importance.

### **2.4.2.4 Experimental methods**

This is a fairly recent development in the context of IT project evaluation, though its methods have been used in other types of evaluations. Due to the availability of powerful and relatively cheap software development tools and simulation methods, it is now possible to develop a prototype or model of the new system rapidly. There are three main categories of experimental methods:

#### 2.4.2.4.1 Prototyping

This involves the rapid development of a prototype form of the system. It is then tested and evaluated. Prototyping works best where the impact of the proposed system is highly uncertain.

#### 2.4.2.4.2 Simulation

Simulation involves formulating the proposed system in the form of a model, and using simulation as a basis for the experiment. It is very important for IT projects because it allows sensitivity analysis.

#### 2.4.2.4.3 Game-playing and role-playing

This method can be used to assess the outcome of a new way of doing certain tasks. Instead of the additional expense incurred in building a prototype, a company that is not sure how its employees would react to a new system may ask both management and clerical staff to role-play each others' jobs, first with existing systems, and then with the new office systems in mind. After the exercise they would be able to assess the value of the new system.

Table 2-1 gives a summary of the various methods and techniques that are used in evaluating IT projects.

Table 2-1: Summary of Methods and Techniques

Methods	Level of detail required	Management process or method	Data characteristics	Features of method
Cost/revenue analysis	Very detailed	Accounting and costing staff	Cost accounting and work study methods	Concentrates on cost savings and cost displacement
Cost Analysis Techniques	High	Calculation by professionals; enumerates tangible costs and benefits and aggregates these as cash flows	Tangible; direct; objective	Ex ante and ex post. Takes account of future uncertainty. Middle to high cost
Cost-benefit analysis (CBA)	High	Bottom up; carried out by experts; provides money values for decision-makers by incorporating surrogate measures	Enumerates cost and benefit elements and expresses them in a standard money value form; pseudo-objective	Ex ante or ex post. Selects cost-effective solutions; copes with "external" and "soft" costs and benefits; numbers are more important than process; provides input into return on investment calculations. High cost
Return on management (ROM)	Low	Calculation by professionals; manipulates accounting figures to produce a residue – value added by management	Accounting totals, e.g. total revenue, total labour cost	Ex post. No cause and effect relations can be postulated; applies a formula. Cheap
Boundary values and spending ratios	Low; aggregate	Top-down. Involves senior stakeholders; calculation by professionals	Ratios of aggregated numbers, e.g. IT spend per employee	Ex ante or ex post. Good for comparisons with competitors or others in same industry sector. Cheap
IE, information economics	Can be very detailed	Involves many stakeholders. Requires detailed analysis	Permits ranking and rating of objectives, both tangible and intangible	Deals comprehensively with all options. Hence rather complex

Methods	Level of detail required	Management process or method	Data characteristics	Features of method
MOMC, multi-objective, multi-criteria	Any level	Top-down; explores perceptions; consensus seeking; involves all stakeholders; computes best choice, helped by expert facilitator	Stakeholders revealed preferences; uses subjective evaluations of intangibles	Ex ante. Good for extracting softer requirements; process is more important than numbers; helps select (a) preferred set of design goals, (b) best design alternative. High cost
Value analysis	Any level; generally detailed	Iterative. Involves senior to middle management; relevant variables and their values are identified using a Delphi method	Indirect; include subjective evaluations of intangibles; uses utility scores	Ex ante. Iterative. Incremental; concentrates more on value added than on costs saved; process is more important than numbers. High cost
Critical success factor analysis	Short list of factors	Senior management define CSFs	Interview or self-expression. Quick but takes up senior management time	Ex ante. Highly selective
Experimental methods	Can vary from detailed to abstract	Management scientists working with stakeholders	Exploratory. Reduces uncertainty	Ex ante

Source: Farbey, Land and Targett (1993)

## 2.5 Different types of projects

Farbey, Land and Targett (1993) say that the evaluation method to be used in assessing information systems depends on the type of application and objectives. They cite research studies carried out by Richard Nolan about the link between the various classifications of applications and the stage of growth they are in. According to these models, as organisations develop they follow a predetermined path from simple cost-saving applications to more complex value added application projects. Farbey, Land and

Targett (1993) proposes a model that they represented as a ladder with eight rungs, each rung representing a type of change and hence a type of application. As one goes up the rungs applications increase their potential benefits but at the same time they also increase uncertainty on outcomes and risk of failure. Each rung will require a different type of evaluation procedure. Those in the bottom rungs would require more precise quantification of costs and benefits, whereas those in the higher rungs would rely more on experimental methods. Table 2-2 below illustrates the model.

Table 2-2: Different Types of IS/IT Projects

Rung 8	Business transformations
Rung 7	Strategic systems
Rung 6	Inter-organisational systems
Rung 5	Infrastructure
Rung 4	MIS & DSS Systems
Rung 3	Direct value added
Rung 2	Automation
Rung 1	Mandatory changes

Source: Farbey, Land and Targett (1993)

### 2.5.1 First rung: Mandatory changes

At the lowest rung decisions are confined to choosing alternative designs. Evaluation is limited to providing technical assessments and costings of the alternative solutions. The most widely used evaluation method is classic cost accounting techniques.

## 2.5.2 *Second rung: Automation*

Automation involves applications designed to replace existing methods in order to reduce costs. The process typically automates existing routines. Applications that fall under this category include transaction processing, i.e. automation of existing procedures. Very little contribution towards new business approaches can be expected here.

The focus of the evaluation is on efficiency and the most appropriate evaluation methods are cost analysis techniques, simulation and modelling.

## 2.5.3 *Third rung: Direct value added*

This rung is represented by applications that reduce costs and at the same time add value directly, e.g. by doing things that were not done before. The idea is to improve some aspects of business performance that had already been identified as "valued". Adding value is a form of increasing effectiveness. The additional value may be in the form of increased turnover or increased market share. Here the focus of evaluation is on the value added and how it can be distributed. Experimental methods of evaluation are the best methods to use in assessing this type of applications.

#### **2.5.4 Fourth rung: Management Information Systems (MIS) & Decision Support Systems (DSS)**

MIS and DSS applications provide information for planning, control and decision making and often directed to higher levels of management. It is believed that by providing managers with information that are more relevant, more reliable, more accurate, more timely and presented in a more easily used form, they would perform their tasks of planning, controlling and general decision making better. The common features of applications representing the fourth rung is that they provide facilities which add value only if the users of the facilities have the capability or opportunity to take advantage of them. In this level of application the focus of evaluation is on assessment of the potential added value.

#### **2.5.5 Fifth rung: Infrastructure**

The fifth rung is represented by investments that provide a general capability. They are intended to provide the foundation upon which subsequent value-adding applications can be built. The focus of evaluation is on the capability of an infrastructure to support a range of future activities.

#### **2.5.6 Sixth rung: Inter-organisational systems**

In this rung inter-organisation systems are included. These are systems that are shared by two or more organisations, e.g. electronic data interchange (EDI) systems. The focus of evaluation is to balance the loss of total independence against potential benefits from shared systems.

### **2.5.7 Seventh rung: Strategic systems**

This rung represents the strategic use of IT. Earl (1989) describes strategic use as “gaining competitive advantage, improving productivity and performance, enabling new ways of managing and organising, and developing new types of business”. To achieve strategic use of IT the business strategy must be closely aligned with information systems planning. This means that senior management must see information systems as a strategic resource. It is difficult to estimate the outcome of investments in strategic IT systems. Nevertheless the evaluation process must take into account the whole business situation and that of the competition. Risk analysis will also play an important role in the evaluation.

### **2.5.8 Eighth rung: Business transformations**

The top rung of the application ladder is represented by applications of IT which enable changes to take place that transform an organisation. IT is just one component of the entire transformation. The focus of evaluation is on the total package.

It should be emphasised that each rung, representing a particular type of application, requires a different evaluation emphasis. As one moves up the ladder the emphasis changes from quantification to judgmental evaluation. The higher the rung, the greater the involvement of senior management and the greater the level of uncertainty. In the real world,

higher rungs may have components that belong to lower rungs. In these cases the appropriate evaluation method should be applied taking into consideration the levels of application at a particular rung.

## 2.6 Suggestions for IT evaluation process

In order to make evaluation of IT projects meaningful and useful, Bawden and Blakeman (1990) recommend that organisations must have a general IT policy that includes the following:

1. The function IT will play in the overall life of the organisation;
2. How integral it is to the organisation's objectives;
3. Clear policy to keep up with technological development;
4. IT seen as strategic tool;
5. Is it the intention to be at the forefront of IT applications, or is it the policy to wait until a technology is well established before making use of it?;
6. Policy of equipment purchase:
  - Everything is purchased from a single major supplier.
  - All systems should meet certain standards of compatibility.
  - Users are free to choose hardware or software.
7. Policy on how systems are acquired
  - Staff to undertake systems development in-house.
  - Buy standard software packages and use them as they are, or is there commitment to customisation where necessary, using in-house staff or consultants.

They also suggest the order of planning for IT be as follows:

- Identify some organisational need;
- Translate it into more specific user requirements;
- Specify the nature of the solution.

## 2.7 Uncertainties in IT Evaluation

No matter what type of IT tool or equipment is finally selected, decision-makers must realise that uncertainties will still be present. This does not mean to say that evaluation methods are useless. It simply underscores the complexity of investment appraisals.

Edosomwan (1989) has identified some of these uncertainties:

1. Size, share and growth rate in the market. These can be affected by several factors, such as new competitors, effectiveness of marketing efforts and techniques, growth of the economy, new products, aggregate consumer demand, product quality, and alternative products.
2. Operating and fixed costs for producing goods and services. Factors such as overhead rates, administrative expenses, learning curve, labour rates, energy expenses, and process improvements can influence the amount of risk involved in managing fixed and operating costs.

3. Intangible factors such as customer, employee and public relations.
4. Obsolescence and deterioration, which can affect the useful life of tools and technologies.
5. Major technical breakthroughs such as process technology or ability to substitute materials and products, which can affect product development risk.
6. Factors such as price changes, competition level, time delay of prices, quality of estimates, machine loading, capacity statements, and quantity of production, all of which may influence selling price and required investment risk.
7. Demand rate for scrap and used tools and machinery, which affects residual value.

## 2.8 Informal procedures

Up to this point the emphasis on IT evaluation methods has been on *formal* procedures of evaluation that are based on analytical considerations of factors and variables inherent in IT systems. Bawden and Blakeman (1990) propose the need to complement these procedures with *informal* evaluation. By informal evaluation one ensures that there are no major mistakes from formal evaluations. Informal evaluation looks at the overall characteristics of the IT system and of the purchasing organisation, and asks "are we compatible?" "Does the system fit in with the real needs of the users?" From the formal evaluation aspect the system is jus-

tified. From the informal evaluation side, will the users adopt it? The informal evaluation also plays a role in the selection of a particular supplier. If an organisation has had very good relationship with a supplier it is likely to continue the relationship even if formal evaluation say otherwise.

Some of the informal evaluation techniques used by organisations include: asking whether any similar organisations use the system, involving the staff who would use the system, and using simulations to envisage the system in use.

## 2.9 Previous Studies and Findings

There is abundant literature on IT project evaluation. Bacon (1994) undertook a survey in 1990 of 80 American, British, Australian and New Zealand companies on the evaluation criteria they used in justifying IS/IT investments. He came out with some proposals that organisations might consider in making decisions on the information systems projects and investments. Some of the proposals were:

"More accurate quantification of cost vs benefit and more informed IT investment decisions are facilitated where there is effective benefit-tracking and chargeback in place."

"The system investment may be made, or the project go-ahead may be given, even if it has not been budgeted, as long as the invest-

ment/project provides (a) a positive net present value, or (b) is required in support of overriding strategic business objectives.”

“The Optimum is for an IT project or investment to be undertaken in pursuit of both (a) quantifiable net benefits and (b) explicitly planned business objectives.”

Likewise Willcocks and Lester (1994) reported that organisations need to “shape the context in which effective evaluation practice can be conducted” and that “traditional techniques cannot be relied upon in themselves to assess the types of technologies”. They also said that past evaluation practice tended to look at the price of IT rather than at the value of IT to the organisation. There was therefore need to supplement techniques with processes that took cognizance of the social and organisational impacts of IT investments. Peters (1994) focused on the evaluation of computer investment strategy. He came up with IT *investment maps* that assist managers in comparing one investment with another. These maps could also be used to assess planned IT investment strategy with the organisation’s current strategy. Studies conducted by Hochstrasser and Griffiths (1991), on the other hand, reported that evaluation must be regarded as a continuous process that needs to be kept under review at regular intervals. In a recent article by Bensaou and Earl (1998) they compared the approaches of Western managers and Japanese managers as regards IT investments. Whereas Western managers adapt capital-budgeting process to manage and evaluate IT invest-

ments Japanese managers judge investments based on operational performance improvements.

## Chapter 3 RESEARCH METHODOLOGY

In Kenya, there does not seem to have any article on evaluation methods used by organisations in assessing their IT investments at the feasibility stage. In his research study Richu (1989) looked at security considerations for computer-based financial systems. Nyambane (1996) studied the factors that limit IT usage in publicly quoted companies in Kenya whereas Kipngetch (1991) studied the management satisfaction with performance of computer-mediated information systems. Gatune (1993) explored the factors that were considered important in implementing local area networks (LANs). The nearest to the study of evaluation was that of Ochieng (1998). He looked at the factors that affected the successful implementation of information systems. His focus was on implementation, that is to say, on evaluation *after* the purchase of IS/IT projects. In this study the focus is on evaluation *before* implementation takes place.

Since these companies were engaged in very diverse economic activities, they provided greater scope to the research study.

### 3.2 Sample of the Study

The sample of the study comprised the whole population, that is, the 54 companies listed in the JSE Ltd. The East African, issue of March 29-April 4, 1999, Market Report ending 30<sup>th</sup> March, 1999, p. 109. The sam-

plete list of companies is included in Appendix I. The list of the companies is summarised in Table 3-1 below.

## **Chapter 3 RESEARCH METHODOLOGY**

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Table 3-1: Number of companies listed in the Nairobi Stock Exchange (as at March 1999)

**T**his chapter describes the research design of the study and is divided into the following sections: the population of the study, the sample of the study, the data collection method, and the data analysis methods.

### **3.1 Population of the Study**

The population of the study consisted of the 54 companies that are currently (1999) listed in the Nairobi Stock Exchange (NSE). The rationale behind this choice was that these companies are fairly large and well established. As such, they are deemed to have substantial investments in IT. Since these companies were engaged in very diverse economic activities, they provided greater scope to the research study.

### **3.2 Sample of the Study**

The sample of the study comprised the whole population, that is, the 54 companies listed in the NSE (cf. *The East African*, Issue of March 29-April 4, 1999, Market Report ending 26<sup>th</sup> March 1999, p. 33). The com-

plete list of companies is included in Appendix I. The list of the companies is summarised in Table 3-1 below.

Table 3-1: Number of companies listed in the Nairobi Stock Exchange (as at March 1999)

CATEGORY	NUMBER OF COMPANIES
Industrial & Allied	18
Finance & Investment	13
Commercial & Services	13
Agricultural Sector	10
<b>Total</b>	<b>54</b>

In past management research projects there have been difficulties in getting high response rates from this sample population. This is the main reason why census survey was used instead of sample survey. The other reason is that the population of the study was not very large.

As regards the respondents of the questionnaire, they were mainly IS/IT Managers or Computer Managers in the companies. Some of the companies had non-IT professionals, e.g. senior executives, who acted as persons in charge of IT.

### 3.3 Data Collection Method

In line with the suggestions of Saunders, et al. (1997) for cross-sectional studies, a structured and undisguised questionnaire was used to gather primary data. The questionnaire consisted of both open-ended and close-ended questions. The former was used to gather qualitative data from the respondents, such as the description of the organisation's own evaluation methods. Close-ended questions were used to obtain quantitative data for statistical analysis, e.g. the ranking of evaluation criteria based on importance to the companies.

The questionnaire was divided into four sections. The first section (Questions 1 and 2) gathered basic information about the organisation, such as sales turnover, IT budget, total expenditure, type of ownership, total number of employees, number of branches, existence of separate IT departments or units, and number of IT staff. The respondents were also asked in Question 3 of this section whether their companies carried out evaluation of IT projects at the feasibility stage.

The second section looked at the people involved in the evaluation process at the feasibility stage (Question 4, a to c). It also sought to determine the course of action taken by companies when proposals are not approved (Question 4, d).

In the third section, the respondents were asked if their companies had their own evaluation methods (Question 5) and whether they were familiar with, and use, established evaluation methods (Question 6, a and b). It also looked at the reasons for using the methods (Question 6, c) and the classification categories of IT projects in their companies (Question 7).

Finally, in the fourth section of the questionnaire, the respondents ranked some criteria for evaluation of IT projects (Question 8, a) and matched these criteria with established evaluation methods (Question 8, b).

The questionnaire was developed taking into consideration relevant published literature on the subject and the independent paper written before the research study (Dizon, 1999). Copies of the questionnaire were distributed to some members of staff of the Department of Management Science of the Faculty of Commerce (University of Nairobi) and to MBA colleagues in order to solicit useful suggestions as regards wording and clarity of content. These suggestions were incorporated into the final version of the questionnaire. A copy of the questionnaire is included in Appendix III.

The questionnaires were hand-delivered or mailed to the respondents and were collected later. Upon request, some questionnaires were also sent by e-mail or fax. On a number of occasions the researcher personally assisted the respondents in filling in the questionnaires.

### 3.4 Data Analysis Methods

Data collected were tabulated and analysed using descriptive statistics, such as frequency tables, proportions and percentages. These were used to describe the profile of the companies in terms of ownership, IT departments and staff, composition of evaluation teams or committees. They were also used to determine the preferred evaluation methods by companies, the criteria for their choice, and the reasons for undertaking IT evaluation at feasibility stage.

Some measures of central tendency, e.g. mean, mode, median, and standard deviation, were used to describe better the distribution of the respondents vis-à-vis the number of years they have been in-charge of IT in their companies.

The chi square test was used to test the independence between organisational size, measured in terms of number of employees, and IT department size, measured in terms of number of staff in the department.

The analyses and responses were summarised and detailed in the following chapter.

## Chapter 4 DATA ANALYSIS AND FINDINGS

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**T**his chapter contains the analysis and findings of the research study. It is divided into five sections: the demographics of the respondent companies, companies that evaluate IT projects and their evaluation process, the evaluation methods, the criteria for the choice of evaluation methods, and the reasons for undertaking IS/IT evaluation.

### 4.1 Demographics of the Respondent Companies

This section gives the summary of the responses to the questionnaire, describes the respondents, and provides information on the type of ownership, number of employees, branches, and IT staff of the various companies.

#### 4.1.1 Summary of Responses

A total of 54 questionnaires were distributed in May, 1999. Of these, 42 were returned, representing a response rate of 77.8%. The high response rate may be due to the frequent follow-up by the researcher or to the interest of the respondents on the research topic.

Companies that are listed in the Nairobi Stock Exchange have been grouped into 4 categories. These are Industrial and Allied, Finance and Investment, Commercial and Services, and the Agricultural Sector. This grouping will be followed throughout the research study.

Companies classified under Commercial & Services had a 100% response rate whereas those in the Agricultural sector returned a low response rate of 40%. Table 4-1 below gives a summary of the responses.

**Table 4-1: Summary of Responses and Non-responses**

CATEGORIES	NO. OF COMPANIES	RESPONDED	%	DID NOT RESPOND	%
Industrial & Allied	18	16	88.9%	2	11.1%
Finance & Investment	13	9	69.2%	4	30.8%
Commercial & Services	13	13	100.0%	0	0.0%
Agricultural Sector	10	4	40.0%	6	60.0%
Total	54	42	77.8%	12	22.2%

Source: Research Data

#### 4.1.2 Respondents

The target respondents of the questionnaire were mainly the IS/IT Managers or Computer Managers. Some of the companies had non-IT people, e.g. senior executives, who were at the helm of IT operations. As regards the number of years in the position, 35 respondents (83.3%) had held the post for less than 5 years. The median number of years in the position was 3 years. This low figure suggests that there is a lot of mobility

in the position. It could also mean that the position had been created recently in most companies.

Taking other descriptive statistics on the number of years in the position provided useful information on the distribution. The standard deviation (3.47) was high because the range was very wide (15).

The results are summarised in Figure 4-1 and Table 4-2.

Figure 4-1: Frequency distribution of the number of years in the position

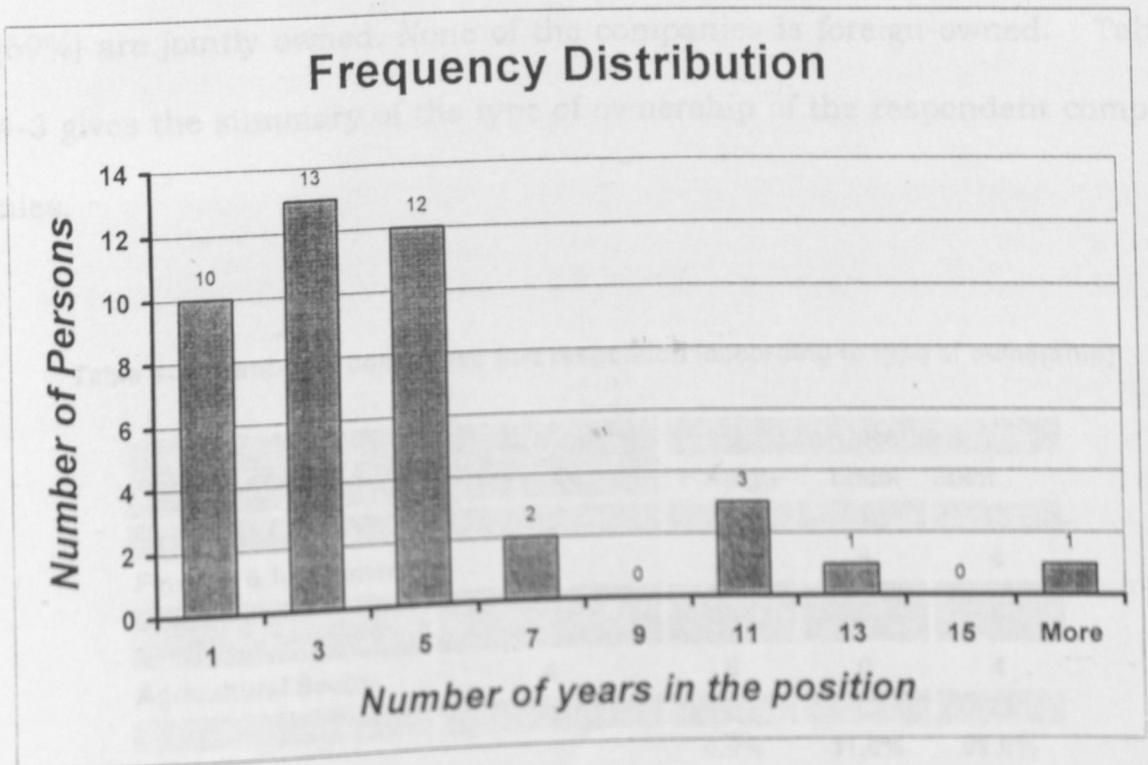


Table 4-2: Descriptive statistics on the number of years in the position

NO. OF YEARS IN POSITION	
Mean	3.93
Median	3
Mode	2
Standard Deviation	3.47
Sample Variance	12.06
Range	15.5
Minimum	0.5
Maximum	16

Source: Research Data

### 4.1.3 Ownership

Most of the companies that have responded to the questionnaire (69%) are jointly owned. None of the companies is foreign-owned. Table 4-3 gives the summary of the type of ownership of the respondent companies.

Table 4-3: Number of companies that responded (according to type of ownership)

CATEGORIES	NO. OF COMPANIES	OWNERSHIP		
		Foreign	Local	Joint
Industrial & Allied	16	0	3	13
Finance & Investment	9	0	5	4
Commercial & Services	13	0	5	8
Agricultural Sector	4	0	0	4
Total	42	0	13	29
		0.0%	31.0%	69.0%

Source: Research Data

#### 4.1.4 Employees

The Kenya Directory of Manufacturing Industries 1993, Revised Edition, Kenya Industrial Research and Development Institute (KIRDI) was used to group the companies according to number of employees. Yego (1995) adopted it in his management research project. According to KIRDI companies that had more than 500 employees were classified as large companies and those with less than 20 employees were classified as small companies. From the results of the study twenty-five companies (59.5% of the total companies that responded to the questionnaire) had more than 500 employees and only 5 of them (11.5%) had less than 100 employees. This indicates that the majority of the companies listed in the NSE are large companies. Table 4-4 gives a detailed summary of the results.

Table 4-4: Summary of companies by number of employees

CATEGORIES	NO. OF COMPANIES	NUMBER OF EMPLOYEES					
		5-19	20-49	50-99	100-199	200-499	500+
Industrial & Allied	16	0	0	3	1	3	9
Finance & Investment	9	0	0	0	3	2	4
Commercial & Services	13	0	0	2	0	3	8
Agricultural Sector	4	0	0	0	0	0	4
<b>Total</b>	<b>42</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>4</b>	<b>8</b>	<b>25</b>
		0.0%	0.0%	11.9%	9.5%	19.0%	59.5%

Source: Research Data

#### 4.1.5 Branches and IT Departments

As Table 4-5 shows, only 4 companies (9.5%), of the 42 companies that returned the questionnaires, did not have branches. Companies

classified under the Industrial & Allied and Commercial & Services had the most number of branches. As regards IT Departments or Units, 32 companies (76.2%) had separate departments.

**Table 4-5: Summary of Companies by branches and IT Department/Unit**

CATEGORIES	NO. OF COMPANIES	BRANCHES		IT DEPT/UNIT	
		With	Without	With	Without
Industrial & Allied	16	13	3	11	5
Finance & Investment	9	9	-	9	0
Commercial & Services	13	12	1	9	4
Agricultural Sector	4	4	-	3	1
<b>Total</b>	<b>42</b>	<b>38</b>	<b>4</b>	<b>32</b>	<b>10</b>
		90.5%	9.5%	76.2%	23.8%

Source: Research Data

#### 4.1.6 IT Staff

In terms of number of IT staff, most companies (42.9%) had between 1 and 9 people working in the IT Department. Five companies (11.9%) had more than 30 people working in the department. These companies were mainly from the Finance & Investment sector. It is significant to note that 10 companies (23.8%) had no IT Staff. This suggests that the extent of IT use in those firms was low.

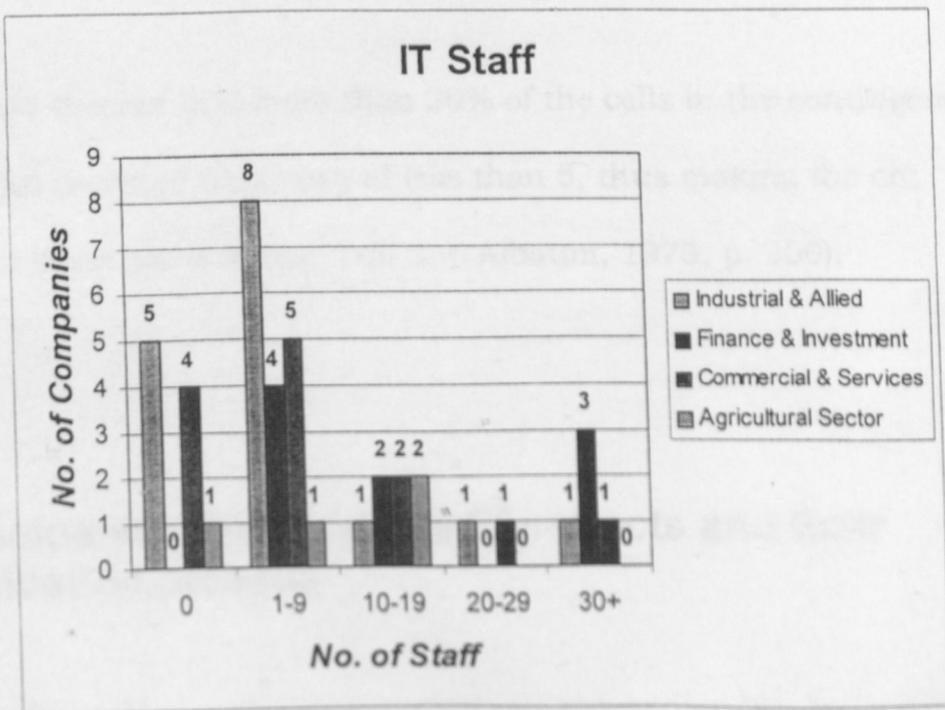
The detailed breakdown is summarised in Table 4-6. Figure 4-2 gives a graphical representation of the results.

Table 4-6: Summary of companies by number of IT Staff

CATEGORIES	NO. OF COMPANIES	NUMBER OF IT STAFF				
		0	1-9	10-19	20-29	30+
Industrial & Allied	16	5	8	1	1	1
Finance & Investment	9	4	4	2	0	3
Commercial & Services	13	1	5	2	1	1
Agricultural Sector	4	0	1	2	0	0
<b>Total</b>	<b>42</b>	<b>10</b>	<b>18</b>	<b>7</b>	<b>2</b>	<b>5</b>
		23.8%	42.9%	16.7%	4.8%	11.9%

Source: Research Data

Figure 4-2: Distribution of IT Staff



The *chi-square test* was used to test the relationship between organisational size, measured in terms of number of employees, and IT department size, measured in terms of number of staff in the department. The null

hypothesis was that these two variables were independent. Combining the data in Tables 4-4 and 4-6 yielded the table shown in Table 4-7 below.

Table 4-7: Table showing Number of Employees vis-à-vis Number of IT Staff

NO. OF EMPLOYEES	NO. OF IT STAFF			TOTAL
	None	1-9	10+	
50-200	5	4	0	9
201-500	2	5	1	8
500+	3	9	13	25
<b>TOTAL</b>	10	18	14	42

Source: Research Data (Tables 4-4 and 4-6)

The analysis showed that more than 20% of the cells in the contingency table had an expected frequency of less than 5, thus making the chi square test inadvisable to use (Tull and Albaum, 1973, p. 200).

## 4.2 Companies that evaluate IT projects and their evaluation process

Out of the 42 companies surveyed, 30 companies (71.4%) evaluate IT projects at the feasibility stage. Companies in the Finance & Investment category registered the highest proportion (100%). This points towards the pervasive presence of IT in this particular sector. There is also wide use of

IT in the Industrial and Allied sector. Table 4-8 below summarises the results.

Table 4-8: Companies that evaluate and do not evaluate IT projects

CATEGORIES	NO. OF COMPANIES	EVALUATION	
		Yes	No
Industrial & Allied	16	13	3
Finance & Investment	9	9	0
Commercial & Services	13	6	7
Agricultural Sector	4	2	2
<b>Total</b>	<b>42</b>	<b>30</b>	<b>12</b>
		<b>71.4%</b>	<b>28.6%</b>

Source: Research Data

The other 12 companies (representing 28.6% of the total) cited various reasons for not evaluating IT projects. These reasons are summarised in Table 4-9 below.

Table 4-9: Reasons why companies did not evaluate IT projects at the feasibility stage

REASONS	NO. OF TIMES
Project is too small to warrant formal evaluation.	5
Formal evaluation is expensive and will not be cost effective.	4
We ask external consultants to do it for us.	2
No reasons given	1

Source: Research Data

Question 4 of the questionnaire pertains to the process of evaluating IT projects with regard to the composition of the evaluation team or committee, the people who were consulted about the IT project, and the people who actually approved the projects. The results, summarised in the following tables, are based on the 30 companies that carried out evaluation of IT projects at feasibility stage.

## 4.2.2 Those who are consulted during the evaluation process

### 4.2.1 Those who form part of the evaluation process

The IT Department stood out prominently as the main player in the evaluation process. The other key people were the User Department and Finance Department. The involvement of external consultants in the evaluation process also came out clearly in the study. Table 4-10 gives a summary of the results.

Table 4-10: People who evaluate IT projects

PEOPLE WHO EVALUATE	NO. OF TIMES CHOSEN (OUT OF 30)	%
IT Department	23	76.7
User Department	16	53.3
Finance Department	15	50.0
External Consultants	13	43.3
Executive Board	10	33.3
Chief Executive Officer (CEO)	9	30.0

Source: Research Data

When analysed at category level, the IT Department and the User Department came out as the major players in the evaluation process. See Table 4-11 on the next page.

Table 4-11: People who evaluate IT projects (by Categories)

INDUSTRIAL & ALLIED	No. TIMES	OUT OF 13	FINANCE & INVESTMENT	No. TIMES	OUT OF 9	COM-MERCIAL & SERVICES	No. TIMES	OUT OF 6	AGRI-CULTURAL SECTOR	No. TIMES	OUT OF 2
IT Dept	10	77%	IT Dept	8	89%	IT Dept	3	50%	IT Dept	2	100%
User Dept	7	54%	User Dept	5	56%	CEO	3	50%	Exec Board	2	100%
Finance Dept	7	54%	CEO	4	44%	User Dept	3	50%	External Consultants	2	100%
External Consultants	5	38%	Finance Dept	4	44%	Finance Dept	3	50%	User Dept	1	50%

Source: Research Data

## 4.2.2 Those who are consulted during the evaluation process

As regards the people who are consulted during the evaluation process, companies turned to the IT Department, User Department Heads, and the Finance Department (cf. Table 4-12).

Table 4-12: People who are consulted about IT projects

PEOPLE WHO ARE CONSULTED	NO. OF TIMES CHOSEN (OUT OF 30)	%
IT Department	20	66.7
User Department Heads	20	66.7
Finance Department	17	56.7
End Users	15	50.0
External Consultants	14	46.7
Executive Board	12	40.0

Source: Research Data

Analysing the results at category levels, companies tended to consult their User Departments, except those in the Agricultural Sector (cf. Table 4-13). This is not surprising considering that the extent of IT use in the Agricultural sector is fairly narrow.

Table 4-13: People who are consulted about IT projects (by Categories)

INDUSTRIAL & ALLIED	No. TIMES	OUT OF 13	FINANCE & INVESTMENT	No. TIMES	OUT OF 9	COMMERCIAL & SERVICES	No. TIMES	OUT OF 6	AGRICULTURAL SECTOR	No. TIMES	OUT OF 2
User Dept Heads	7	54%	IT Dept	8	89%	User Dept Heads	5	83%	IT Dept	2	100%
Finance Dept	7	54%	User Dept Heads	7	78%	Finance Dept	5	83%	Exec Board	2	100%
IT Dept	6	46%	Exec Board	4	44%	IT Dept	4	67%	External Consultants	2	100%
End users	6	46%	End users	4	44%	Exec Board	4	67%	Audit	1	50%

Source: Research Data

### 4.2.3 Those who approve IT project proposals

The research survey showed that the Executive Board, the Chief Executive Officer (or Managing Director), and the Finance Department approved IT projects in the majority of cases. This result seems consistent with other practices that involve approval of capital expenditures in companies. Table 4-14 below lists the other people who approve IT projects.

Table 4-14: People who approve IT projects

PEOPLE WHO APPROVE	NO. OF TIMES CHOSEN (OUT OF 30)	%
Executive Board	18	60.0
Chief Executive Officer (CEO)	16	53.3
Finance Department	10	33.3
IT Department	9	30.0
User Department	5	16.7
Separate committee	4	13.3

Source: Research Data

In all the companies, at category level, the Executive Board was involved in the approval of IT projects (Cf. Table 4-15). Perhaps this indicates the importance that management is now giving to IT projects.

Table 4-15: People who approve IT projects (by Categories)

IN-DUSTRIAL & ALLIED	No. OF TIMES	OUT OF 13	FINANCE & INVESTMENT	No. OF TIMES	OUT OF 9	COM-MERCIAL & SERVICES	No. OF TIMES	OUT OF 6	AGRI-CULTURAL SECTOR	No. OF TIMES	OUT OF 2
Exec Board	7	54%	IT Dept	5	56%	CEO	5	83%	Exec Board	2	100%
CEO	6	46%	Exec Board	5	56%	Exec Board	4	67%	Separate Com	2	100%
Finance Dept	5	38%	CEO	4	44%	Separate Com	1	17%	IT Dept	1	50%
IT Dept	3	23%	Finance Dept	3	33%	Finance Dept	1	17%	CEO	1	50%

Source: Research Data

From the preceding results, the main players in the evaluation of IT projects at the feasibility stage were:

- IT Department
- Executive Board
- Chief Executive Officer (CEO)
- Finance Department
- User Department

### 4.3 The Evaluation Methods

One of the objectives of the research study is to examine the IT evaluation methods used by the companies listed in the Nairobi Stock Exchange. The respondents were asked whether their companies used their own "company-developed" evaluation methods (cf. Section 4.3.1). The study then looked into the familiarity with, and use of, common IT evaluation methods (cf. Sections 4.3.2 and 4.3.3).

#### 4.3.1 Own Method of Evaluation

Out of the 30 companies that carried out evaluation of IT projects, half of them had their own "company-developed" evaluation methods. This was especially the case with companies under Finance and Investment

sector (66.7%). Perhaps this was because companies in this sector tended to be heavier users of IT than those in other sectors. The results are summarised in Table 4-16 below.

**Table 4-16: Companies that have or do not have their own IT evaluation methods**

CATEGORIES	NUMBER OF COMPANIES	HAVE OWN METHOD	%	NOT HAVE OWN METHOD	%	NO REPLY	%
Industrial & Allied	13	6	46.2%	6	46.2%	1	7.7%
Finance & Investment	9	6	66.7%	3	33.3%	0	0.0%
Commercial & Services	6	3	50.0%	3	50.0%	0	0.0%
Agricultural Sector	2	0	0.0%	1	50.0%	1	50.0%
<b>Total</b>	<b>30</b>	<b>15</b>	<b>50.0%</b>	<b>13</b>	<b>43.3%</b>	<b>2</b>	<b>6.7%</b>

Source: Research Data

In Question 7 of the questionnaire, the respondents were asked to indicate whether their companies had their own classification of IT projects and whether they applied the same evaluation method to all their IT projects. Of the 28 companies that responded to this question, 14 companies (50%) had their own classification. Most of them (56.7%) did not use the same method for all IT projects. This is especially the case with companies in the Finance and Investment sector.

The results have been tabulated in Table 4-17 below.

Table 4-17: Classification and Use of Own IT Evaluation Method

CATEGORIES OF COMPANIES	CLASSIFY PROJECTS?		USE SAME METHOD?	
	Yes	No	Yes	No
Industrial & Allied	7	5	5	7
Finance & Investment	4	5	2	7
Commercial & Services	2	3	4	2
Agricultural Sector	1	1	0	1
Total	14	14	11	17
%, Out of 28 respondents	50.0%	50.0%	39.3%	60.7%

Source: Research Data

### 4.3.2 Familiarity with Evaluation Methods

The results of the research study showed that the companies were very familiar with Budgetary Constraints, Cost Benefit Analysis and Return on Investments as IT evaluation methods. They were adequately familiar with the Net Present Value (NPV) method and were not familiar with Information Economics. Table 4-18 gives a summary of the companies and their familiarity with evaluation methods.

Table 4-18: Familiarity with IT Evaluation Methods

	VERY FAMILIAR (VF)	ADEQUATELY FAMILIAR (AF)	COMPLETELY UNFAMILIAR (CU)
1	Budgetary Constraints	Net Present Value	Information Economics
2	Cost Benefit Analysis	Critical Success Factor	Critical Success Factor
3	Return on Investment	Experimental Methods	Experimental Methods
4	Payback Method	Return on Investment	Payback Method
5	Critical Success Factor	Payback Method	Net Present Value

Source: Research Data

Table 4-19 gives the detailed breakdown of the results. Twenty-nine companies (97%) were very familiar with Budgetary Constraint. A close second in familiarity was Cost Benefit Analysis (80%). Return on Investment ranked third in familiarity (57%).

**Table 4-19: Familiarity with IT Evaluation Methods (Detailed)**

	CBA			ROI			PB			NPV			BDG		
	V.F	A.F	C.U	V.F	A.F	C.U	V.F	A.F	C.U	V.F	A.F	C.U	V.F	A.F	C.U
Ind	12	1	0	7	3	1	7	4	0	4	4	1	13	0	0
F&I	6	2	0	5	1	0	3	1	1	2	3	0	8	0	0
Com	5	1	0	4	2	0	5	1	0	1	5	0	6	0	0
Agr	1	1	0	1	0	0	1	0	0	0	1	0	2	0	0
<b>Total</b>	<b>24</b>	<b>5</b>	<b>0</b>	<b>17</b>	<b>6</b>	<b>1</b>	<b>16</b>	<b>6</b>	<b>1</b>	<b>7</b>	<b>13</b>	<b>1</b>	<b>29</b>	<b>0</b>	<b>0</b>
	80%	17%	0%	57%	20%	3%	53%	20%	3%	23%	43%	3%	97%	0%	0%

	IE			CSF			EXP			Oth		
	V.F	A.F	C.U	V.F	A.F	C.U	V.F	A.F	C.U	V.F	A.F	C.U
Ind	5	0	3	4	4	1	3	3	1	1	0	0
F&I	1	3	1	5	3	0	2	1	1	0	0	0
Com	3	1	2	1	3	2	2	3	1	0	0	0
Agr	0	0	1	0	1	0	0	1	0	0	0	0
<b>Total</b>	<b>9</b>	<b>4</b>	<b>7</b>	<b>10</b>	<b>11</b>	<b>3</b>	<b>7</b>	<b>8</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>0</b>
	30%	13%	23%	33%	37%	10%	23%	27%	10%	3%	0%	0%

Source: Research Data

**Note:**

Total number of companies = 30 (Some companies did not answer this part of the questionnaire.)

CBA: Cost Benefit Analysis  
 ROI: Return on Investment  
 PB: Payback Method  
 NPV: Net Present Value  
 BDG: Budgetary Constraint

IE: Information Economics  
 CSF: Critical Success Factors  
 EXP: Experimental Methods  
 Oth: Others

VF: Very Familiar  
 AF: Adequately Familiar  
 CU: Completely Familiar

### 4.3.3 Use of Evaluation Methods

If one is familiar with something, it is likely that one would also use it. This is exactly what happened with the companies. The results of the study showed that, in general, companies used evaluation methods that they were familiar with. Companies used the following evaluation methods very often: Budgetary Constraint, Cost Benefit Analysis, and Return on Investment. Table 4-20 shows the summary. Consistent with the results of the previous section, Information Economics, being the least familiar method, was also the least used method.

Table 4-20: Frequency of Use of IT Evaluation Methods

	VERY OFTEN USED (VO)	RARELY USED (RU)	NEVER USED (NU)
1	Cost Benefit Analysis	Critical Success Factor	Information Economics
2	Budgetary Constraints	Payback Method	Experimental Methods
3	Return on Investment	Experimental Methods	Net Present Value
4	Payback Method	Net Present Value	Critical Success Factor
5	Net Present Value	Return on Investment	Payback Method

Source: Research Data

Table 4-21 below gives the detailed results on the use of evaluation methods.

Table 4-21: Use of IT Evaluation Methods (Detailed)

	CBA			ROI			PB			NPV			BDG		
	V.O	R.U	N.U	V.O	R.U	N.U	V.O	R.U	N.U	V.O	R.U	N.U	V.O	R.U	N.U
Ind	11	1	0	9	1	1	7	2	1	4	1	2	13	0	0
F&I	7	1	0	5	1	0	2	3	1	2	2	1	7	0	0
Com	6	0	0	3	2	1	4	1	1	2	2	1	6	0	0
Agr	2	0	0	1	0	0	1	0	0	0	1	0	2	0	0
<b>Total</b>	<b>26</b>	<b>2</b>	<b>0</b>	<b>18</b>	<b>4</b>	<b>2</b>	<b>14</b>	<b>6</b>	<b>3</b>	<b>8</b>	<b>6</b>	<b>4</b>	<b>28</b>	<b>0</b>	<b>0</b>
	87%	7%	0%	60%	13%	7%	47%	20%	10%	27%	20%	13%	93%	0%	0%

	IE			CSF			EXP			Oth		
	V.O	R.U	N.U	V.O	R.U	N.U	V.O	R.U	N.U	V.O	R.U	N.U
Ind	4	0	4	2	6	1	3	3	2	0	1	0
F&I	2	1	2	2	5	0	1	1	3	0	0	0
Com	2	2	2	1	3	2	1	2	3	0	0	1
Agr	0	0	1	0	1	0	0	0	1	0	0	0
<b>Total</b>	<b>8</b>	<b>3</b>	<b>9</b>	<b>5</b>	<b>15</b>	<b>3</b>	<b>5</b>	<b>6</b>	<b>9</b>	<b>0</b>	<b>1</b>	<b>1</b>
	27%	10%	30%	17%	50%	10%	17%	20%	30%	0%	3%	3%

Source: Research Data

**Note:**

Total number of companies = 30 (Some companies did not tick the methods.)

CBA: Cost Benefit Analysis

ROI: Return on Investment

PB: Payback Method

NPV: Net Present Value

BDG: Budgetary Constraint

IE: Information Economics

CSF: Critical Success Factors

EXP: Experimental Methods

Oth: Others

VO: Very Often Used

RU: Rarely Used

NU: Never Used

In summary, most firms in the research survey were familiar and use the following evaluation methods in assessing IT projects at feasibility stage:

- Budgetary Constraints
- Cost Benefit Analysis
- Return on Investment
- Payback Method

Some companies were very familiar with Critical Success Factor (CSF) Analysis but they rarely used it. Other companies were adequately familiar with Net Present Value (NPV) method and used it, though not as much as expected. The other results seem to be consistent. Those companies that they were only adequately familiar with some methods also reported that they rarely used them. Similarly those that were completely unfamiliar with some methods never used them. The data results show that the use of Information Economics was rare in the companies.

#### 4.4 Criteria for the Choice of Evaluation Methods

From Section 4.3.3 above, it was noted that the three most commonly used IT evaluation methods were Budgetary Constraints, Cost Benefit Analysis, and Return on Investment. One of the questions of the questionnaire (6, c) sought to find the criteria for the choice of evaluation methods. For each evaluation method the respondents were asked to se-

lect the reasons for its choice. The results are shown in Table 4-22 below. The figures indicate the number of times the reason was selected by the respondents.

Table 4-22: Criteria for the choice of evaluation methods

METHODS / CRITERIA	ACCURATE & RELIABLE	EASY TO UNDERSTAND & USE	EASY AND LESS COSTLY TO DEVELOP	EASY INTERPRETATION OF RESULTS	DETAILED IN ANALYSIS	OTHERS
Budgetary Constraint	10	14	13	13	4	1
Cost Benefit Analysis	15	12	9	13	8	1
Return on Investment	10	11	6	8	5	1
Critical Success Factor Analysis	4	2	2	7	4	0
Information Economics	4	5	1	3	1	1
Experimental Methods	1	3	0	3	3	0

Source: Research Data

The popularity of Budgetary Constraint as an evaluation method was due to its *ease of use, ease of understanding and ease of interpretation of results*. Cost Benefit Analysis was considered *accurate and reliable*. The reasons why Return on Investment was used were as follows: *easy to understand and use, and accurate and reliable*.

## 4.5 Reasons for undertaking IS/IT Evaluation

The last section of this chapter looks at the criteria of evaluation. In the first part of Question 8, the respondents were asked to indicate the level of importance that each of the criteria played in the evaluation process, taking each criterion on its own. The results are summarised in Table

4-23 below. The totals of the responses vary from criterion to another because the respondents did not fill in some sections.

Table 4-23: Reasons for undertaking IS/IT evaluation

CATEGORIES	1. OBTAIN COST BENEFIT			2. SUPPORT ORGN RE-QUIREMENTS			3. GAIN COMPETITIVE ADVANTAGE		
	1st	2nd	3rd	1 <sup>st</sup>	2 <sup>nd</sup>	3rd	1st	2nd	3rd
Industrial & Allied	9	2	1	11	1	0	8	1	1
Finance & Investment	6	2	0	6	1	0	7	1	0
Commercial & Services	6	0	0	4	2	0	5	0	1
Agricultural Sector	1	0	0	2	0	0	0	0	1
<b>Totals</b>	<b>22</b>	<b>4</b>	<b>1</b>	<b>23</b>	<b>4</b>	<b>0</b>	<b>20</b>	<b>2</b>	<b>3</b>

CATEGORIES	4. GIVE SERVICE TO PUBLIC			5. HAVE BETTER QUALITY PRODUCT			6. GIVE JOB ENHANCEMENT		
	1st	2nd	3rd	1 <sup>st</sup>	2 <sup>nd</sup>	3rd	1st	2nd	3rd
Industrial & Allied	5	2	3	7	1	2	4	4	3
Finance & Investment	5	3	0	6	2	0	2	1	5
Commercial & Services	4	1	1	5	0	1	3	3	0
Agricultural Sector	0	0	1	1	0	0	0	1	0
<b>Totals</b>	<b>14</b>	<b>6</b>	<b>5</b>	<b>19</b>	<b>3</b>	<b>3</b>	<b>9</b>	<b>9</b>	<b>8</b>

CATEGORIES	7. IMPROVE MANAGEMENT INFO			8. SATISFY USER RE-QUIREMENTS			9. SATISFY LEGAL RE-QUIREMENTS		
	1st	2nd	3 <sup>rd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	3rd	1st	2nd	3rd
Industrial & Allied	9	2	0	8	3	0	4	3	3
Finance & Investment	5	3	0	5	3	0	3	3	2
Commercial & Services	4	2	0	4	1	1	3	2	1
Agricultural Sector	2	0	0	1	0	0	0	0	1
<b>Totals</b>	<b>20</b>	<b>7</b>	<b>0</b>	<b>18</b>	<b>7</b>	<b>1</b>	<b>10</b>	<b>8</b>	<b>7</b>

CATEGORIES	10. GAIN STRATEGIC IMPORTANCE			11. OTHERS		
	1st	2nd	3rd	1st	2nd	3rd
Industrial & Allied	5	2	1	1	0	0
Finance & Investment	5	1	2	0	0	0
Commercial & Services	4	1	1	0	0	0
Agricultural Sector	1	0	0	0	0	0
<b>Totals</b>	<b>15</b>	<b>4</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>0</b>

Source: Research Data

Based on the above results the following criteria appeared as very important in the choice of evaluation methods:

- Support for organisational requirements
- Obtain cost benefit
- Gain competitive advantage
- Improve management information
- Obtain better quality product
- Satisfy user requirements
- Has strategic importance

It is interesting to note that the companies did not give much importance to achievement of job enhancement and to satisfaction of legal requirements in the choice of evaluation methods.

Based on a sectoral analysis of the results, companies in the Industrial & Allied sector chose *support of organisational requirements* and *obtaining cost benefit* as the two most important criteria. Those in the Finance & Investment sector considered *gain in competitive advantage* as the most important reason to consider in the evaluation of IT projects, followed by *support of organisational requirements* and *obtaining cost benefit*. In the case of companies in the Commercial & Services sector, they considered *obtaining cost benefit* as the most important. For them, to gain competitive advantage and to have a better quality product were likewise important.

The last question asked the respondents to match the evaluation methods with the criteria for their use. Each method was taken on its own and not compared with other methods. Companies use Budgetary constraint mainly to support organisational requirements.

The results of the study are summarised below:

### **Budgetary Constraint**

- Support organisational requirement
- Obtain cost benefit
- Improve management information

### **Cost Benefit Analysis**

- Obtain cost benefit
- Improve management information
- Support organisational requirement

### **Return on Investment**

- Support organisational requirement
- Obtain cost benefit
- Gain competitive advantage

### **Payback Method**

- Obtain cost benefit
- Gain competitive advantage
- Support organisational requirement

## Net Present Value

- Obtain cost benefit
- Support organisational requirement
- Gain competitive advantage

The use of an evaluation method was primarily dictated by its ability to show cost/benefit. Support for organisational requirements and ability to gain competitive advantage were also important criteria in the choice of evaluation methods.

## 5.1 Summary and Discussion

Most companies listed in the Nairobi Stock Exchange evaluate their IT investments at the feasibility stage. The incidence rate of evaluation is higher in companies classified under Finance & Investment sector and Industrial & Allied sector than in companies under Commercial and Services and the Agricultural Sector. This could be attributed to the fact that the former are heavier users of IT than the latter. This result, that IT projects are evaluated at the feasibility stage, also points to the growing importance that IT has been getting in these companies.

## Chapter 5 CONCLUSIONS

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**A**s pointed out in Chapter 1, the research study sought to determine the evaluation methods used by companies listed in the NSE and the criteria for using these methods. This chapter has the following structure. Section 5.1 presents the discussion and conclusions of the research study based on the analysis of the results in the previous chapter. Section 5.2 then gives some recommendations. The limitations of the study are described in Section 5.3. Finally, Section 5.4 expounds on areas where further study or research could be done.

### 5.1 Summary and Discussion

Most companies listed in the Nairobi Stock Exchange evaluate their IT investments at the feasibility stage. The incidence rate of evaluation is higher in companies classified under Finance & Investment sector and Industrial & Allied sector than in companies under Commercial and Services and the Agricultural Sector. This could be attributed to the fact that the former are heavier users of IT than the latter. This result, that IT projects are evaluated at the feasibility stage, also points to the growing importance that IT has been getting in these companies.

The majority of the respondents (83.3%) have held their position, as persons in-charge of IT, for less than 5 years. This result suggests that there could be a lot of job mobility in the position.

As regards the structure of the IT departments, the results indicate that only 3 out of 4 companies have separate IT departments. This means that management is giving IT more attention. It also points to the realisation that IT fulfils a definite function in the organisation.

The main reasons why the 12 companies do not evaluate IT projects at feasibility stage were (1) size of the IT projects and (2) cost-effectiveness of the evaluation process. They did not think it was necessary to go through a long and tedious evaluation process because the IT projects they had were small.

In all the 42 companies that carried out evaluation, the IT Department plays a key role in the evaluation process at the feasibility stage. The IT Department takes the lead in the evaluation process. From this finding it is important to note that people who take charge of, or are involved with, the IT department, apart from being very well versed in IT matters, must also be conversant with management processes and issues.

The results of the study has also highlighted the roles played by the User Department, the Finance Department, the Chief Executive Officer,

and the Executive Board in the evaluation process. The fact that users are involved in the evaluation of IT projects shows that there is concern to avert the possible negative effects of IT on end-users. This seems to corroborate the current literature on this matter that advocates user involvement as a way of minimizing resistance to change brought about by IT in organisations. The involvement of the Finance Department indicates that IT projects are treated as normal capital expenditures. These projects follow the evaluation procedures used in assessing capital investments. The fact that the Executive Board is very involved in the evaluation process suggests that IT projects have strategic relevance and hence need the careful consideration of executives at the strategic level.

Half of the companies that carry out evaluation of IT projects at the feasibility stage have developed their own evaluation methods. This suggests that existing evaluation methods, useful as they are, do not fully meet the specific requirements of companies. IT people must thoroughly understand the nature of their company's business in order to determine the most appropriate evaluation method to use for certain IT projects. It is also worth noting that half of the companies do not classify their IT projects, nor use the same method for all projects. This observation reinforces the previous conclusion. Companies use evaluation methods that match their business needs.

Companies are very familiar with Budgetary Constraint, Cost Benefit Analysis, Return on Investment, and Payback Method as IT evaluation

methods. It is interesting to note that these methods are all quantitative in approach and accounting-based. The companies surveyed in the study are familiar with Critical Success Factor Analysis but rarely use it. This shows that they look for simpler methods of evaluation, i.e. those that are easy to use, understand and interpret. It can be concluded from the foregoing observations that companies rely more on evaluation methods that highlight the quantifiable and therefore tangible benefits of IT projects rather than the qualitative and intangible benefits that can be derived from them.

Based on the analysis of the results, it would seem that companies are more internally focused. They pursue objectives that strengthen internal structures. This is evident from the analysis of the ranking of some criteria for evaluation. For them the most important criteria for the choice of evaluation methods are (1) support for organisational requirements, and (2) obtaining cost benefit. To satisfy user requirements and to give job enhancement were not considered very important to most of the companies. It can be concluded that the main focus of IT project investments is the short-term survival needs of the companies.

The study also shows that the most popular evaluation methods are Budgetary Constraint, Cost Benefit Analysis, and Return on Investment. The main reasons for their popularity are (1) support for organisational requirements, and (2) obtaining cost benefit. This points to the presence of decision makers who have strong accounting and finance backgrounds

that influence the choice of evaluation methods in assessing IT projects at the feasibility stage.

## 5.2 Recommendations

Most of the evaluation methods used by companies are quantitative in approach. There is a danger that some worthwhile projects may be rejected outright at the feasibility stage because they do not meet the stringent requirements quantitative-based methods. It would be a pity if some projects that have long-term strategic consequences were shelved because of inappropriate evaluation methods. There is therefore a need to develop evaluation methods that capture the intangible benefits of IT projects. The challenge is to come up with methods that are easy to use, understand, and interpret.

Inasmuch as quantitative-based evaluation methods are still the most commonly used methods in companies, IT professionals must try to have a good foundation in finance and accounting. In this way they can present proposals to decision makers, who are mostly trained in accounting and finance, more effectively. At the same time, management people should study the strategic and operational impacts of IT on firms so that they do not miss out on opportunities that IT can give their companies. In short, there is need to *manage IT* as there is need to *manage people*.

### **5.3 Limitations of the Study**

The main constraint of the study was time. Due to the short time available for the project it was not possible to guide personally all the respondents in filling in the questionnaire. Even though the researcher put a lot of time and effort in constructing the questionnaire it is not possible to avoid respondents from being careless in filling in the questionnaire. It was clear from some of the returned questionnaires that they were filled in hurriedly.

### **5.4 Suggestions for Further Research**

Evaluation methods of IT projects are difficult to develop and, even when they have been developed, difficult to apply. There are so many factors that affect the evaluation process. This study made an attempt to understand the complexity of IT project assessment. More studies could be carried out on the subject, particularly in-depth industry studies to determine the appropriate evaluation methods for specific projects in a particular industry.

It would also be good if specific IT projects, grouped according to similarity of purpose, were looked into, rather than IT projects in general. In this way comparisons among the various companies can be done.

There are also IT projects that are very costly to undertake and complex to install, as for example, the application of Enterprise Resource Planning (ERP) packages in companies. What is the best method of assessing these projects whose effects are felt in all the functions of the organisations at all levels of management?

Industrial & Allied		Commercial & Services	
1	1	32	32
2	2 Athi River Mining Co.	33	33 Uchumi Supermarkets
3	3	34	34
4	4 British American Tobacco	35	35 Car & General
5	5	36	36
6	6 Dunlop	37	37 Mutchings Biomer
7	7	38	38
8	8 East African Packaging	39	39 Kenya Airways
9	9	40	40
10	10 Carboid	41	41 Standard Newspapers
11	11	42	42
12	12 East African Portland	43	43 A. Baumann
13	13	44	44
14	14 Kenya Oil	45	45
15	15	46	46
16	16 Kenya Ordnance	47	47
17	17	48	48
18	18	49	49
19	19	50	50
Finance & Investment		Agricultural Sector	
20	20	51	51
21	21 KDC	52	52
22	22	53	53
23	23	54	54
24	24	55	55
25	25	56	56
26	26 National Bank	57	57
27	27	58	58
28	28	59	59
29	29	60	60
30	30 Pan Africa Insurance	61	61
31	31	62	62

# APPENDIX I: LISTED COMPANIES IN THE NAIROBI STOCK EXCHANGE

As of March 1999

## *Industrial & Allied*

- 1 Total Oil (K)
- 2 Athi River Mining Co.
- 3 BOC (K)
- 4 British American Tobacco
- 5 Crown Berger
- 6 Dunlop
- 7 East African Cables
- 8 East African Packaging
- 9 Firestone East Africa
- 10 Carbacid
- 11 East African Breweries
- 12 East African Portland
- 13 Bamburi Cement
- 14 Kenya Oil
- 15 Kenya Power & Lighting Company
- 16 Kenya Orchards
- 17 Kenya National Mills
- 18 Unga

## *Commercial & Services*

- 32 Marshalls
- 33 Uchumi Supermarkets
- 34 Pearl Dry Cleaners
- 35 Car & General
- 36 Express
- 37 Hutchings Biemer
- 38 Lonrho Motors
- 39 Kenya Airways
- 40 Nation Media Group
- 41 Standard Newspapers
- 42 CMC
- 43 A Baumann
- 44 Tourism Promotion Services

## *Finance & Investment*

- 19 Standard Chartered
- 20 ICDC
- 21 CFC Bank
- 22 NIC Bank
- 23 HFCK
- 24 Jubilee
- 25 Barclays Bank
- 26 National Bank
- 27 Diamond Trust
- 28 KCB
- 29 City Trust
- 30 Pan Africa Insurance
- 31 Regent

## *Agricultural Sector*

- 45 Sasini
- 46 Rea Vipingo
- 47 George Williamson
- 48 Kapchorua
- 49 Brooke Bond
- 50 Eaagads
- 51 Kakuzi
- 52 Limuru Tea
- 53 OI Pejeta
- 54 Theta

# APPENDIX II: COVERING LETTER

## APPENDIX III: QUESTIONNAIRE

6th May 1999

Dear Respondent

I am a postgraduate student in the Faculty of Commerce, University of Nairobi. Currently, I am conducting a Management Research Project on "**Evaluation Criteria Used by Publicly Quoted Kenyan Companies in Assessing IT Projects**". This is in partial fulfillment of the requirements for the Master of Business and Administration (MBA) Degree.

Your company is one of those selected for the study. I am, therefore, kindly requesting you to fill in the attached questionnaire the soonest possible and to the best of your knowledge. The information you give is needed purely for academic research purposes and will therefore be treated with strict confidence. In no way will your name or that of your organisation appear in the final Report.

A copy of the final Report will be made available to you upon request.

Your assistance and cooperation will be highly appreciated. I thank you very much in advance.

Yours faithfully

Odilon G. Dizon Jr.  
MBA II Student

Dr. M. Ogutu  
MBA Coordinator

## APPENDIX III: QUESTIONNAIRE

*The purpose of this questionnaire is to determine the evaluation criteria used by Kenyan organisations in assessing IT projects at the feasibility stage.*

*Your assistance in providing this information — which will be kept confidential — is appreciated. It is part of a University of Nairobi postgraduate management research project.*

Organisation: \_\_\_\_\_

Position held: \_\_\_\_\_

No. of years in this position: \_\_\_\_\_

No. of years in the organisation: \_\_\_\_\_

*Please answer the following questions either by placing a tick (☑) or by filling in the appropriate answer in the space provided.*

### SECTION 1: INFORMATION ABOUT THE ORGANISATION

1. Under which of the following categories does your company fall?

- |                       |                          |
|-----------------------|--------------------------|
| Agricultural          | <input type="checkbox"/> |
| Commercial & Services | <input type="checkbox"/> |
| Finance & Investment  | <input type="checkbox"/> |
| Industrial & Allied   | <input type="checkbox"/> |

2. a. What was your company's sales turnover (value of deposits in the case of banks and financial institutions) during the last financial year?

KShs \_\_\_\_\_ Please state year [       ]

b. What was the IT budget of your company during the last financial year?

KShs \_\_\_\_\_ Please state year [       ]

c. What was the total expenditure of your company during the last financial year?

KShs \_\_\_\_\_ Please state year [       ]

d. Please indicate the type of ownership of the company.

Wholly foreign owned

Wholly locally owned

Jointly owned

e. What is the total number of employees of the company?

\_\_\_\_\_

f. Does your organisation have other branches?

Yes

No

If Yes, please indicate the number of branches:

Within Nairobi \_\_\_\_\_

Outside Nairobi \_\_\_\_\_

Outside Kenya \_\_\_\_\_

g. Do you have a separate IT Department/Unit?

Yes

No

If Yes, how many staff members does it have? \_\_\_\_\_

3. Has your company carried out *ex ante* evaluation (i.e. evaluation at the feasibility stage) of IT projects?

Yes

No

If No, please give reasons. (*You may select more than one choice, as the case may be.*)

- 1. Formal evaluation is expensive and will not be cost effective.
- 2. The project is too small to warrant formal evaluation.
- 3. We ask external consultants to do it for us.
- 4. We do not know how to do it.
- 5. Others (specify) \_\_\_\_\_

## SECTION 2: EVALUATION PROCESS

4. a. Who forms part of the evaluation team at the feasibility stage? (*You may select more than one choice, as the case may be*)

- 1. IT Department
- 2. Executive Board
- 3. CEO
- 4. User Department
- 5. Separate committee
- 6. Project office
- 7. Finance Department
- 8. External consultants
- 9. Others (specify)

b. Who are consulted about evaluation at the feasibility stage? (*You may select more than one choice, as the case may be*)

- 1. IT Department
- 2. Audit
- 3. Executive Board
- 4. Union
- 5. User Department Heads
- 6. End users
- 7. Project team
- 8. Finance Department
- 9. External consultants
- 10. Others (specify)

c. When the evaluation team recommends adoption, purchase, or implementation, who approves the proposals? (You may select more than one choice, as the case may be.)

			Administratively Familiar	Complexity
1. IT Department	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
2. Executive Board	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
3. CEO	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
4. User Department	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
5. Separate committee	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
6. Project Office	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
7. Finance Department	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
8. External consultants	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
9. Others (specify) _____	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
_____	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

d. What happens when proposals are not recommended for adoption, purchase, or implementation? (Please write your answer in the space below.)

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### SECTION 3: EVALUATION METHODS

5. a. Does your organisation have its own evaluation method at the feasibility stage?

Yes   
 No

b. If Yes, please describe the method that your organisation use.

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Please indicate the reasons for using the methods. (You may select more than one choice, as the case may be.)

6. a. With which of the following ex ante evaluation methods (i.e. evaluation at the feasibility stage) is your organisation aware of or familiar?

Evaluation methods	Very familiar	Adequately familiar	Completely unfamiliar
1. Cost/Benefit Analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Return on Investment (ROI)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Payback Method	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Net Present Value (NPV)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Budgetary constraints	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Information economics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Use of critical success factors (CSF)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Experimental methods, e.g. prototyping, simulation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Other(specify) _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. a. Does your organisation have classification categories of IT projects?

b. To what extent does your organisation use these evaluation methods?

Evaluation method	Very often used	Rarely used	Never used
1. Cost/Benefit Analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Return on Investment (ROI)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Payback Method	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Net Present Value (NPV)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Budgetary constraints	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Information economics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Use of critical success factors (CSF)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Experimental methods, e.g. prototyping, simulation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Other(specify) _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- c. Please indicate the reasons for using the methods. (You may select more than one choice, as the case may be.)

*Example:* If you use cost benefit analysis and ROI methods because they are accurate/reliable you will tick the first 2 squares of the first row.

Reasons for using the evaluation methods	1. Cost/benefit analysis	2. Return on investment	3. Budgetary constraints	4. Information economics	5. Critical success factors	6. Experimental methods	7. Other
Accurate/reliable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easy to understand & use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easy and less costly to develop	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easy interpretation of results	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Detailed in analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Others(specify)_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. a. Does your organisation have classification categories of IT projects, e.g. strategic, below-cost-ceiling?

Yes   
No

- b. If Yes, please list the classification categories of IT projects that your organisation use and the corresponding evaluation method for assessing them.

Classification Categories of IT project	Evaluation method used (Please use the reference number in Question no. 6, e.g. ,1 = Cost/benefit analysis)
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	

c. Does your organisation use the same evaluation method at the feasibility stage for all categories of IT projects?

- Yes   
 No

d. If Yes, please describe the method.

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### SECTION 4: EVALUATION CRITERIA

8. a. Please rank the following criteria for evaluation of IT projects according to the order of importance as far as your organisation is concerned (1<sup>st</sup> – most important)

Criteria for evaluation	1st	2nd	3rd
1. Obtain cost/benefit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Support organisational requirements & necessity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Gain competitive advantage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Give service to public	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Offer better quality of product	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Give job enhancement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Improve management information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Satisfy user requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Satisfy legal requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Has strategic importance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Others (specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

b. Please match the evaluation method with the criteria for evaluation. (You may tick more than one criteria for an evaluation method, as the case may be.)

## REFERENCES

*Example:* If your organisation uses Cost/Benefit Analysis because it satisfies cost/benefit and improves management information, you will tick the first and seventh squares of the first row.

Evaluation Method	Criteria for Evaluation										
	1. Cost benefit	2. Organisational requirements	3. Competitive advantage	4. Service to public	5. Quality of product	6. Job Enhancement	7. Improved management information	8. User requirements	9. Legal requirements	10. Strategic importance	11. Others (specify)
1. Cost/Benefit Analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Return on Investment (ROI)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Payback Method	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Net Present Value (NPV)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Budgetary constraints	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Information economics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Use of critical success factors (CSF)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Experimental methods (e.g. prototyping, simulation)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Other(specify) _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thank you very much for your cooperation.



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