BUSINESS PROCESS REENGINEERING:
A Case Study of Kenya Power and Lighting Company Limited, Institutional Strengthening Project.

BY: THIGA J. K.
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SUPERVISOR : KIPNG'ETICH   J.K.

**A Management Project Submitted in
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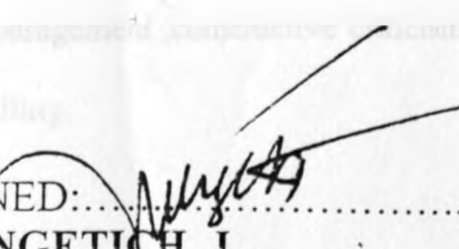Faculty of Commerce,
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Declaration

This Management project is my original work and has not been presented for a degree in any other university.

SIGNED..Date:...10th Sept. 1999........................
THIGA. K.J.

This project has been submitted for examination with my approval as university supervisor.

SIGNED:...........................Date:....28/9/41........................
KIPNGETICH J.
Lecturer,
Department of Management Science

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PROLOGUE

Every Act of Creation is First of all an Act of Destruction.

Pablo Picasso.

Abstract

Three forces in today's business environment have driven the search for a discontinuous approach to managing businesses; customers, change and competition. These three forces either separately and or in combination justify the need for intermittent reengineering of business processes of a going concern to ensure it remains relevant and thriving, in the present ,near and long term future.

When embarking on process reengineering the biggest challenge that a business encounters is that of persuading people within it to embrace the prospect of major change .All people in an organisation become more of associates or partners as the nature of work changes in a reengineering firm. Corporate culture plays a role in this by moderating the conversion of employees to associates. Therefore an enabling culture consisting of appropriate work values and human virtues supports the whole reengineering effort.

In order to identify whether an organization is ready for reengineering a self assessment diagnostic test is illustrated with a holistic approach to the actual reengineering of processes being provided by the three pillars of B.P.R. The pace ,sequence ,feasibility and location of change in actual process reengineering can be managed using 'The Matrix of Change' and 'Business Process Simulation'.

Information Technology (I.T) makes possible discontinuous thinking inherent in reengineering by breaking the rules that limit how businesses conduct their work . It is not therefore the driving force but an enabler.

Business Process Reengineering in conclusion is not a magic pill or magic chant like abracadabra. Reengineering will not happen just because you use the word. In fact it involves real hard work with the key to success lying in a company's' ability and willingness to manage the envisaged change and therefore emerge the better out of it.

The objective of this project is that of identifying how actual process reengineering was carried out in Kenya Power and Lighting Company Ltd. , in contrast to the theoretical approach. Specifically two main aspects of these were studied: efforts of Kenya Power and Lighting Company Ltd. to ready itself for and to support Business Process Reengineering and it's approach to radically change processes with a view to attaining

dramatic ,discontinuous and positive step change .On the first aspect KPLC Top Management spared no effort in: reinforcing the support functions of Software, Hardware and Telecommunications and contracting external outside help in this case Union Fenosa[1]. On the second aspect it was observed that radical change of the Business Processes was achieved through the use of SAP R/3 software which in effect allowed sharing of information throughout KPLC and also reduced the cost and time of capturing information. This impacted positively on interdivisional communication and as a result business is no longer managed on departmental basis but on process basis through the various Integrated Information System's. This has translated to a step positive improvement in the performance of core functions around which the reengineering was designed namely customer service ,stores inventory and the management information system. Only proximal success of the other support processes was confirmed.

Changes as a result of reengineering were noted in the organisations structure,work units, employees roles and the managers roles.

Various problems faced during reengineering were identified with the most serious being interface and data integrity problems, resistance to change ,selection of suitable satellite systems to put in place and shortfalls with key parties and organisations involved in the various integrated systems.

A number of recommendations that could lead to even better performance of the processes and solution of some of the problems being faced were noted .This include contracting out parts of the none core processes to third parties who can manage them better, switching to a sleeper mode or from real time to on-line processing, incorporation of synectics and group nominal techniques methods in meetings and the ensuring of documentation and authorization of all satellite information systems customization.

Areas of further research were also identified .They include the replication of studies by Hofstede (1991) and Brynjolfsson, Renshaw and Alstyne(1997) in surveys in Kenya, investigation of the contribution of Information Technology and corporate culture to reengineering in Kenya and survey studies to identify Business Process Reengineering implementation methods in Kenya.

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[1] Union Fenosa, which is the consultant wing of Acex, a power utility from Spain was the consultant in Kenya Power and Lighting Companys' Reengineering.

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List of Abbreviations

B.P.R	Business Process Reengineering
I.T	Information Technology
T.Q.M	Total Quality Management
K.P.L.C	Kenya Power and Lighting Company Ltd.
W.A.N	Wide Area Networks
L.A.N	Local Area Networks
E.I.S	Executive Information System
I.C.S	Integrated Customer System
I.D.S	Integrated Distribution System
I.P.S	Integrated Personnel System
I.L.S	Integrated Logistics System
P.A.S	Properties Administration System
D.C.S	Design and Construction System
I.F.S	Integrated Finance System

Chapter 1

INTRODUCTION

1.1 Background

For two hundred years people have founded and built companies around Adam Smith's discovery that industrial work should be broken down into its simplest and most basic tasks. These set of principles which Adam Smith first described in 1776 were later developed by F. W. Taylor into what became known as "Scientific Management," a doctrine built around specialization and the division of labor (Obeng and Crainer, 1994). These set of principles by Smith have shaped the structure, management and performance of business throughout the nineteenth and twentieth centuries. However the time has come to retire these principles and adopt a new set.

We should then ask ourselves why we need this radical change. Put simply, business executives and managers are investing in 21st – century information systems but are content to install those systems in 20th – century bureaucracies that use a 19th – century view of human nature (Jaffe and Scott, 1998). These is simply no choice, short of going out of business that business executives and managers will have to adapt these new set of techniques and a new business model, to reinvent their companies for competition in today's world.

In the post industrial age we are now in, business organizations will be founded and built around the idea of unifying the most basic tasks into coherent business processes. The process of unifying the basic tasks into coherent business processes is what is referred to as Business Process Reengineering (B.P.R).

In addition Handy (1994) observes that the world belongs to the discontented which is a warning against complacency and in so doing Handy advocates for perpetual curiosity. There is therefore no perfect answer in a changing world ,an issue that the Japanese address with the philosophy of Kaizen or continuous improvement . In this sense

companies of today are competing for the future and are focusing on not playing catching up but on getting out in front of the rest (Hamel and Prahalad, 1994 a, 1994 b) .With globalization of business there will be no ' hiding place ' for a firm that is out of touch with its environment and would prefer to play catch up.

1.2 The Statement of the Problem

In Kenya B.P.R is still a relatively new phenomenon. A lot of people do not know of its existence while those that do, don't understand it. As a result a lot of business executives and managers consider it as just another management fad.

Reengineering differs from the other plethora of fads and theories which have come and gone over the past decades in that it calls for fundamental or radical change rather than isolated or evolutionary changes (Obeng and Crainer, 1994:Spencer,(1995)). In a preliminary pilot study in which the researcher talked to some consultants knowledge gaps in the following areas were identified.

The first is that people do not know what B.P.R is. People use the word reengineering as a buzzword as if it's a fashionable piece of jargon. Subsequently a lot of changes done in organizations end up being called reengineering. Take for example when organizations adopt turnaround strategies. Quite a few organizations are in fact taking advantage of reengineering, to reduce the head count in their organizations by indiscriminately paying off (or laying off whichever may apply) staff with a lot of work experience, are senior and earn relatively high salaries. They then hire younger people with less work experience to fill in the jobs (of course these young people earn much less than their predecessors) after a few of the jobs have been merged (or a half hearted attempt at reengineering is tried). The company then declares B.P.R to have been carried out and the organization to be mean and lean with dramatic improvement in results expected! The second word next to reengineering which people do no understand is processes. Most business persons aren't process oriented; they are focused on tasks. on jobs, on people and on structures (Hammer & Champy, 1993).

The second area of confusion is that of how B.P.R. relates to all other issues in the present business environment. Such questions as, "what is the difference between T.Q.M

and B.P.R.?, what kind of companies need to Reengineer?, what comes after reengineering?, what is the relationship between B.P.R. and strategy?." illustrate the need to carry out an in-depth study into B.P.R's role and place in an organization .

The third area of confusion is that of tools and techniques used in B.P.R. First, literature on how B.P.R. is actually carried out is not readily available. In fact in Kenya no comprehensive research has been done on B.P.R. except for short excerpts in local newspapers either describing the failure of B.P.R. in a given firm or advertising a seminar on B.P.R. being offered by management consultants. As a result B.P.R. implementation to most business persons is a blackbox, the inputs and outputs of which are known, but the happenings within the box are best left to consultants and academics.

In summary therefore the areas identified are;

⊃   What is B.P.R?

⊃   What is it's Role and place in present-day organisations?

⊃   How is Process Reengineering actually carried out?

1.3 Objectives and Importance of the Study

The objective of this study is to identify how actual process reengineering was carried out in Kenya Power and Lighting Company Ltd.

This report will be important in initializing research into B.P.R. in Kenya. It is intended in the process to dispel various myths about B.P.R. by ensuring that the concept of B.P.R. is exhaustively explained.

This report will be important to three sets of people:-

(1) The people in an organization that is undergoing reengineering . If the employees of an organization understand what B.P.R. is and also understand what is expected of them, then the whole process of reengineering is more likely to succeed.

(1) Secondly business owners and senior management of organizations who oversee actual reengineering in organizations will find the report especially relevant because it explains the role of leaders in the change effort.

(1) The Government can also implement B.P.R. just as the private sector is doing. This is because B.P.R is not sector specific and applies as much to the public sector as to the private sector. In addition. because of B.P.R. being a tool to radically improve the performance of organizations, the Government is interested in ensuring the success of the private sector. This is because the Government is an enabler as well as regulator of private enterprise.

(1) Researchers will also benefit from this report because it will have opened the way for further research into B.P.R.

1.4 Limitations of the Study

This study does not assess the overall institutional success of Business Process Reengineering in KPLC because the actual performance indicators of sampled processes were not provided by KPLC staff. This however does not change the substance of the study, which was to identify how actual process reengineering is carried out.

Chapter 2

LITERATURE REVIEW

2.1 Definition of Reengineering

Hammer and Champy (1993) define reengineering as:

> The fundamental rethinking and radical redesign of business
> processes to achieve dramatic improvements in critical
> contemporary measures of performance, such as cost, quality,
> service and speed.

B.P.R is about beginning again with a clean sheet of paper. Its about rejecting conventional wisdom and received assumptions of the past as embodied by Adam Smiths Industrial Paradigm. At the heart of reengineering lies the notion of discontinuous thinking. which involves inventing new approaches to process structure that bear little or no resemblance to those of previous eras.

In the aforementioned definition, four key words deserve special mention; these are processes, fundamental, radical and dramatic.

2.1.1 Processes

A business process is a collection of activities that takes one or more kinds of input and creates an output that is of value to the customer. (Hammer & Champy, 1993).

An example of a process is that of order fulfillment, which takes an order as its input and results in the delivery of their ordered goods. The delivery of the ordered goods to the customer is the value that the process creates.

2.1.2 Fundamental

In Reengineering, business people must ask the most basic questions about their companies and how they operate, namely;

1) Why do we do what we do?

1) Why do we do it the way we do?

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Asking these fundamental questions forces people to look at the tacit rules and assumptions that underlie the way they conduct their businesses. Often, these rules turn out to be obsolete, erroneous, or inappropriate.

2.1.3 Radical

Radical redesign refers to getting to the root of things; not making superficial changes but reinventing completely new ways of accomplishing work.

2.1.4 Dramatic

This word refers to the fact that reengineering is about making quantum leaps in performance and not marginal or incremental improvements.

2.2 Why Reengineer?

Three forces, separately and in combination, are driving today's companies deeper and deeper into territory that most executives and managers find frighteningly familiar. These are Customers, Competition and Change (Hammer & Champy, 1993; Garvin, 1995).

Customers have taken over and the dominant force in the seller – customer relationship is no longer the seller. The customer decides and tells the seller what they want, when they want it, how they want it, and what they will pay. Customers have gained the upper hand in their relationship with sellers, in part, because customers now have easy access to enormously more data. The world is becoming a global village in which information is not only available but is increasingly becoming cheaper to obtain. The trend expected is a revolution in the way business is done as a result of this revolution in Information Technology (Benjamin & Wigand, 1995).

Competition has now intensified, is varied and has changed the market completely. Now there are niche competitors, startup companies are establishing new competitive standards while technology aided innovation has changed the nature of competition in ways not expected, by expanding the limits of the possible.

Change on the other hand has become pervasive and constant. The kind of change expected in the future will be the type mentioned by Negroponte (1995). For now, product and service life cycles have diminished and so too the time available to develop new products and introduce them. Companies have to move fast, or they wont be moving at all.

The need for reengineering could be summed up as follows (Gross et al., 1993);

> Incremental change is not enough for many companies today. Managers groping about for a more fundamental shift in their organisation capabilities must realize that change programs treat, symptoms not underlying conditions. These companies do not need to improve themselves; they need to reinvent themselves. Reinvention is not changing what is, but what is not. The Journey to reinvent yourself and your company is a sink – or – swim proposition.

There is an obscure law of cybernetics, the law of requisite variety, which postulates a universal truth of nature; any system must encourage and incorporate "variety" internally if it is to cope with "variety" externally (Pascale, 1993). But then again one could argue that B.P.R. is not relevant to firms in the lead in their respective businesses. Handy (1994) notes that the paradox of success, that what got you where you are will not keep you where you are, is a hard lesson to learn. A truly great company is never satisfied with its current performance because in so doing it avoids falling into the trap of extending the very factors that contributed to success to the point where they cause decline, a trap referred to as the Icarus Paradox (Miller, 1990).

2.3 Starting Reengineering

Embarking on Reengineering involves the challenge of persuading people within an organization to embrace or at least not to fight the prospect of major change.Various scholars have written on management of organisational change.

Mabey and Mayon-White(1993) identify three main problems of organisational change namely Resistance,Control and Power. These different problems pose various challenges to management of organizational change.

The implication of the resistance problem is the need to motivate changes in the behavior by individuals which involves overcoming the natural resistance to change that emerges .and getting individuals to behave in ways consistent with both the short-run goals of change and the long-run organizational strategy.The implication of the control problem is the need to manage the transition.Organisational arrangements must be carried out to ensure that control is maintained during and after the transition.The Power issue brings up the need to shape the political dynamics of change so that power centers develop that support the change rather than block it.

In summary Mabey and Mayon-White(1993) come up with twelve action steps to address the implications of the three problems of Resistance,Control and Power which are shown below in figure 1.

Implications	Action Steps
Need to Shape the Political Dynamics of Change	1) Assure support of key power groups. 2) Use leader behavior to generate energy in support of change. 3) Use symbols and language. 4) Build on stability.
Need to Motivate Change	5) Surface Dissatisfaction with the present state. 6) Participation in Change. 7) Rewards for behavior in support of change. 8) Time and Opportunity to disengage from the present state.
Need to Manage the Transition.	9) Develop and Communicate a clear image of the future. 9) Use Multiple and consistent Leverage Points. 9) Develop organizational arrangements for the transition. 9) Build in feedback mechanisms.

Figure 1:Action Steps to address Implications for Change Management emanating from the three problems of change.

Kurt Lewin, a pioneering social psychologist on the other hand developed a way of looking at change, called forcefield analysis that has proven to be highly useful to action-oriented managers(Hellriegel etal.,1986).Lewin saw change not as an event, but as a dynamic balance of forces working in opposite directions in which the resistances to change which tend to maintain the status quo oppose the pressures for change .In order to initiate change , a manager must act to modify the equilibrium of forces by:

1. Increasing the strength of the pressures of change.
1. Reducing the strength of the resisting forces or removing them completely.
1. Changing the direction of a force-that is, change a resistance into a pressure for change.

2.3.1 Selling change

Most human beings don't seem to like change very much especially rapid, radical change. B.P.R like other sources of dislocations like downsizing, outsourcing, mergers and spinoffs when poorly implemented leads to high psychological tolls that impact negatively on employees productivity.

Willets (1996) observes that the reason change is so uncomfortable is because it's "the roller coaster ride of unfamiliarity:" Roller Coasters are both traumatic and exciting just like reengineering.

The change phenomenon itself is in three phases;

- ➲ **Holding on** – which is the stage of anticipation of change and people exhibit negative reactions like denial, anger, anxiety and withdrawal directed either at management, the impersonal organisation, and even co-workers ,especially those who are positive about the change. With change beginning at this stage, peoples imagination and company gossip often go wild.

- ➲ **The Roller Coaster ride** - when "things really get going." Reactions include continuing anger and anxiety plus a new profound sense of confusion which is rooted in being between two worlds – the old organization and culture and the new.

- ➲ **Experience and commitment** – when people gain some experience in the new organization and begin to make real commitments to it.

Resistance to B.P.R is usually manifested in the first two phases. There are two levels of resistance, which have to be recognized when trying to sell change. Mariotti (1998) classifies these levels of resistance to change as follows:

1) Resistance based on lack of information or an honest disagreement over the facts. This type is especially prevalent in the first phase of change.

1) Personal and Emotional resistance. This kind of change is prevalent in both the first and second phase of change. It's often ignored when implementing change can be tackled be encouraging learning.

The most successful companies in selling change are those that have developed the clearest messages about the need for reengineering. Senior managers in these organizations have therefore formulated and communicated two key messages to people in these organizations (Hammer & Champy, 1993):

1) Here is where we are as a company and this is why we can't stay here. This message is communicated to the people in a "Case for Action" document that contains the reason or need for the company to reengineer .It is a dramatically persuasive document, supported by evidence that spells at the out of doing anything short of reengineering. The document must present a strong case, but it shouldn't exaggerate. It should also be concise and preferably blunt.

1) This is what we as company need to become. This message is contained in the "vision statement" document, which depicts the aim of the reengineering effort. ·
It focuses on operations, includes measurable objectives and can be repeatedly used before and after reengineering for evaluating the progress and so:

⊃ Remind people of the reengineering objectives. .

⊃ Prod people to keep the reengineering action going.

The "case for Action" document acts as a wedge to get people unstuck from where they are while the "vision" statement acts like a magnet, to attract people to another point of view.

Hammer and Stanton (1995) observe that there are six impediments to communication in reengineering namely:

1. Disbelief – people putting little stock in anything senior management says or taking management's communication with "a large grain of salt".

1. False Familiarity – which is the sense among employees that, "we have been through this before".

1. Fear of layoffs – no matter what senior managers say, what employees will hear is, "I'm going to be fired."

1. The Rumor Mill – The Grapevine is the real source of most information in any organization. It always distorts the message and never breaks down.

1. Sloppy Execution – This includes falling into the following traps; Incomprehensibility, Abstraction, Complexity of communications and Cliches which have no meaning.

1. Too much communications – Reengineering communications must be heard, must stand out and must grab and hold the audience's attention.

These impediments build up the two levels of resistance mentioned earlier and need to be addressed . In addition messages on the need for Reengineering have to be communicated. Hammer and Stanton (1995) propose the following Ten principles of Reengineering Communication :

1) Segment your Audiences – All reengineering messages must be tailored to the specific characteristics and requirement of each constituency.

1) Use multiple channels of communication – Reengineering must use channels like presentations, video, design simulations, newsletters, workshops, comic strips and even a bold, powerful logo to remind people of reengineering and its aims.

1) Use multiple voices - All communications shouldn't emanate from the chief executive officer but also from other senior managers.

1) Communicate clearly – Content of the message must be clear, specific and comprehensible. The 4P's of reengineering message content are purpose, process, progress and problems.

1) Communicate, communicate, communicate – The key to effective communication is reinforcement in many ways, through many channels, and by many people.

1) Honesty is the Only Policy – Lies about reengineering are not only unethical but also foolish and counterproductive.

1) Use Emotions, not just Logic – Reengineering communications must strive to make an emotional connection with employees by communicating passion, playfulness and the like.

1) Communicate to Heal – Messages of hope, consolation, encouragement or appreciation are necessary because reengineering affects people and causes real pain.

1) Communicate tangibly – Reengineering teams must find experiential ways to convey important issues.

1) Listen, listen, listen – Communication is not just talking it must be two-way and invoke keen, attentive listening. There are two reasons for this;
   - To have a feedback mechanism on the effectiveness of the communication program.
   - To offer employees an opportunity to voice and even to vent their feelings.

People who feel they have been heard, they have a voice and see themselves as participants rather than victims, are more likely to feel positive about reengineering and act accordingly.

2.4 Are your Ready for Reengineering?

Hammer and Stanton (1995) provide a self-assessment diagnostic test design to help an individual determine the company's strengths and weaknesses at reengineering. The diagnostic test consisting of twenty statements that characterise an organization that is well positioned for successful reengineering is organized around three major themes;

   - Engineering leadership (statement 1 to 6)
   - Organizational Readiness (statement 7 to 15)
   - Style of Implementation (statement 16 to 20)

When answering each statement one should ask oneself how true the statement is of the organization. The answer scale is from 1 to 5 with;

⊃ 1 representing strong disagreement.

⊃ 5 representing strong agreement.

The statements are shown in Appendix 1 with the minimum scores displayed at the end. The minimum scores are given for each statement, for each section, and for the diagnostic as a whole. While there are obviously no passing or failing grades, these base scores are intended to help one in identifying problem areas.

This test is to be taken again and again during implementation so as to help in monitoring progress and identifying areas requiring further attention and improvement.

Hammer and Stanton (1995) in addition provide a detailed explanation of how an organization can improve scores and hence address problem areas brought out by this self-assessment diagnostic test.

2.5 Who will Reengineer?

Companies have to select and organize the people who actually do the engineering. They have to decide who fills which role in the redesigning effort. The roles are five in number and are; The leader, Process Owner, Reengineering Team, Steering Committee and Reengineering Czar.

In an ideal world The Leader appoints the Process Owner who convenes a Reengineering Team to reengineer the process, with the assistance from The Czar and under the auspices of the Steering Committee.

2.5.1 The leader

This is a self-nominated and self-appointed role. Usually it's not just filled by a senior executive but by someone with clout to carry it off. He or she becomes the leader once seized by a passion to reinvent the company. Ambition, restlessness and intellectual curiosity are the hallmarks of the reengineering leader (Hammer & Champy, 1993).

The leaders primary role is to act as a visionary and motivator. It's the leaders personal responsibility and communicate the "Case of Action" and "Vision Statement" after fashioning them. He has therefore responsibility of the communication of the messages in these two documents to the two audiences namely:

1. Senior management team – which consists of the leaders peers. The leader can be assisted by an outside agent like a consultant. His diplomacy and credibility are thoroughly tested by this first audience.
1. The rest of the organization.

The leader must therefore be someone with the conviction and persuasion to make the rest of the people want what he or she wants. The leader can demonstrate leadership through;

- ⊃ Signals – which are explicit messages that the leader sends to the organization about reengineering.
- ⊃ Symbols – which are actions that the leader performs to reinforce the content of the signals, so as to demonstrate that he or she lives by his or her word. Examples of signals and symbols are; assigning the 'Best and Brightest' to reengineering teams and rejecting design proposals promising only incremental improvement
- ⊃ Systems of management – which he uses to reinforce the reengineering message. These management systems must measure and reward people's performance in ways that encourage them to attempt major change.

2.5.2 Process Owner

The process owners job is to make reengineering happen at the small individual process level. The process owner should be a senior – level manager, usually with line responsibility who carries prestige, credibility, and doubt within the company.

The leaders job is to make reengineering happen in an organization. After the leader identifies the company's major processes he then designates an owner for each to guide the process through reengineering.

Process owners are expected to take the heat so that their teams can concentrate on making reengineering happen. They also motivate, inspire and advise their teams. In addition once the reengineering of the process is completed they remain to attend to the performance of the process.

2.5.3 Reengineering Team

These are the people who actually reinvent the business. Each process being reengineered needs a reengineering team. Also the reengineering team can only reengineer one process at a time.

The teams normally have five to ten people made up of (Hammer & Champy, 1993);

- ➲ **Insiders** – who are people currently working inside the process undergoing reengineering. The tend to constitute two thirds of the team. They bring credibility to the reengineering work being done especially to their co-workers. They should also be the best and brightest workers from the process being reengineered.
- ➲ **Outsiders** – also referred to as disruptive elements.
  They bring a higher level of objectivity and a different perspective to the team. By definition they come from outside the process being reengineered and can be sourced;
  - ➲ **Internally** – from such departments as engineering, information systems and marketing where people with a process orientation and an innovative bend tend to congregate
  - ➲ **Externally** – consultants who bring with them a wide wealth of experience.

Team members should expect to devote over 75% of their individual working time on the reengineering effort. They should also remain in the team at least through the

implementation of the first field pilot site; preferably until the reengineering effort is established.

As a general rule of thumb, an absence of conflict during reengineering in the team usually signals that nothing productive is happening.

2.5.3.1 The Pros and Cons of using Consultants

Consultants can be particularly helpful in reengineering's more conceptual aspects; clarifying its nature; fashioning a vision of the future; developing a process model of the business; diagnosing the existing process; creating breakthrough concepts; designing communications and marketing programs.

Consultants can also serve as the heart, the emotional core, of a reengineering program. Their commitment can reinforce a client's resolve when things look bleak, and can help sway a skeptical organization. "Heart" work includes counseling leaders and Czars, participating in communication efforts and supporting reengineering teams.

In addition some organizations simply do not have people to spare for reengineering. In such situations hired hands must be brought in to staff design teams, to serve as program manager to develop information systems. Consultants also provide change management skills that most companies have never had occasion to develop.

The following are the pros of using consultants (Hammer & Stanton, 1995);

1. The ability to leverage other companies' experiences – consultants tend to have more reengineering experience than the client and so enable the client leverage other companies' experience and avoid their mistakes.

1. Getting Access to essential skills – specialized skills in a particular technology can be provided by consultants for example skills in accelerated information systems development and change management.

1. Third-party objectivity.

The cons include;

1. The risk of outsourcing an important capability that is vital to the organizations long-term health.

1. Incurring significant expense since skilled consultants can be very expensive.
1. Diffuse Accountability – Consultants may be objective. but they are also not ultimately accountable for a reengineering projects' success or failure. At the end of the day, they leave, the employees stay, and the client must live with the result.

To decide on whether or not to hire a consultant one should weigh the pros and cons just explored. In addition one should consider whether ones organization has the ability to make effective use of consultants. Some companies simply cannot work effectively with outsiders.

Some of the cons and pros should also be examined critically. Take the example of third party objectivity that consultants are supposed to bring to reengineering. Its been found out that this particular advantage is easily discounted by the acculturation trap or as is often referred to by other scholars in the context of Group Dynamics. Groupthink. Consultants are hired to change not only processes and systems. but also culture. Acculturation is defined as the modification of the culture of a group or an individual as a result of contact with a different culture (Smith, 1996).Groupthink involves nondeliberate suppression of critical thoughts as a result of the internalization of the group norms which is quite different from deliberate suppression on the basis of external threats of social punishment (Janis,1971). Acculturation is therefore a trap for all consultants in almost every assignment they're involved in and a hindrance to the advantage of third party objectivity.

2.5.4 Steering Committee

This is a collection of senior managers chaired by the leader but not limited to the process owners who plan an organizations overall reengineering strategy.

Overarching issues that transcend the scope of individual processes and projects get aired in this committee. Decisions on for example, the order of priority among all the competing reengineering projects and how resources should be allocated are made by this committee.

2.5.5 Reengineering Czar

The reengineering Czar serves as the leaders' Chief of Staff and ideally reports to the leader. He has two main functions:

- ➲ Enabling and supporting each individual process owner and reengineering team.
- ➲ Coordinating all ongoing reengineering activities.

He serves as the keeper of a company's reengineering techniques and acts as an advisor for process owners who are new to the task. He can help in a variety of tasks such as selecting insiders for the reengineering team and identifying appropriate outsiders.

2.6 Actual Process Reengineering

Various scholars have come up with holistic frameworks of the B.P.R effort. Paper (1998) has come up with one consisting of three independent components that he refers to as the "3 pillars of B.P.R," namely:

1. A systematic BPR Methodology Pillar.
1. The Environment Pillar – which is really the team structure, employee reward structure and management structure.
1. The People Pillar consisting of empowerment mechanisms for the people who do the work.

The systematic BPR methodology pillar describes five steps of actual process work as shown overleaf in figure 1.

```
┌─────────────────────────────────────────────────────────────┐
│                                                             │
│   ┌─────────────────────────┐      ⎫                        │
│   │   Process Selection     │      ⎬  Identifying processes │
│   └─────────────────────────┘      ⎭  to be Reengineered    │
│              │                                              │
│              ▼                                              │
│   ┌─────────────────────────┐                               │
│   │   Process Mapping       │                               │
│   └─────────────────────────┘                               │
│              │                                              │
│              ▼                                              │
│   ┌─────────────────────────┐      ⎫                        │
│   │ Process Reengineering   │      ⎬                        │
│   └─────────────────────────┘      ⎬  Actual Redesign       │
│              │                      ⎭  process              │
│              ▼                                              │
│   ┌─────────────────────────┐                               │
│   │  Process Verification   │                               │
│   └─────────────────────────┘                               │
│              │                                              │
│              ▼                                              │
│   ┌─────────────────────────┐                               │
│   │ Process Implementation  │                               │
│   │      and Control        │                               │
│   └─────────────────────────┘                               │
│                                                             │
│  Figure 1: Illustration of 5 main steps of process reengineering │
└─────────────────────────────────────────────────────────────┘
```

Figure 1: Illustration of 5 main steps of process reengineering
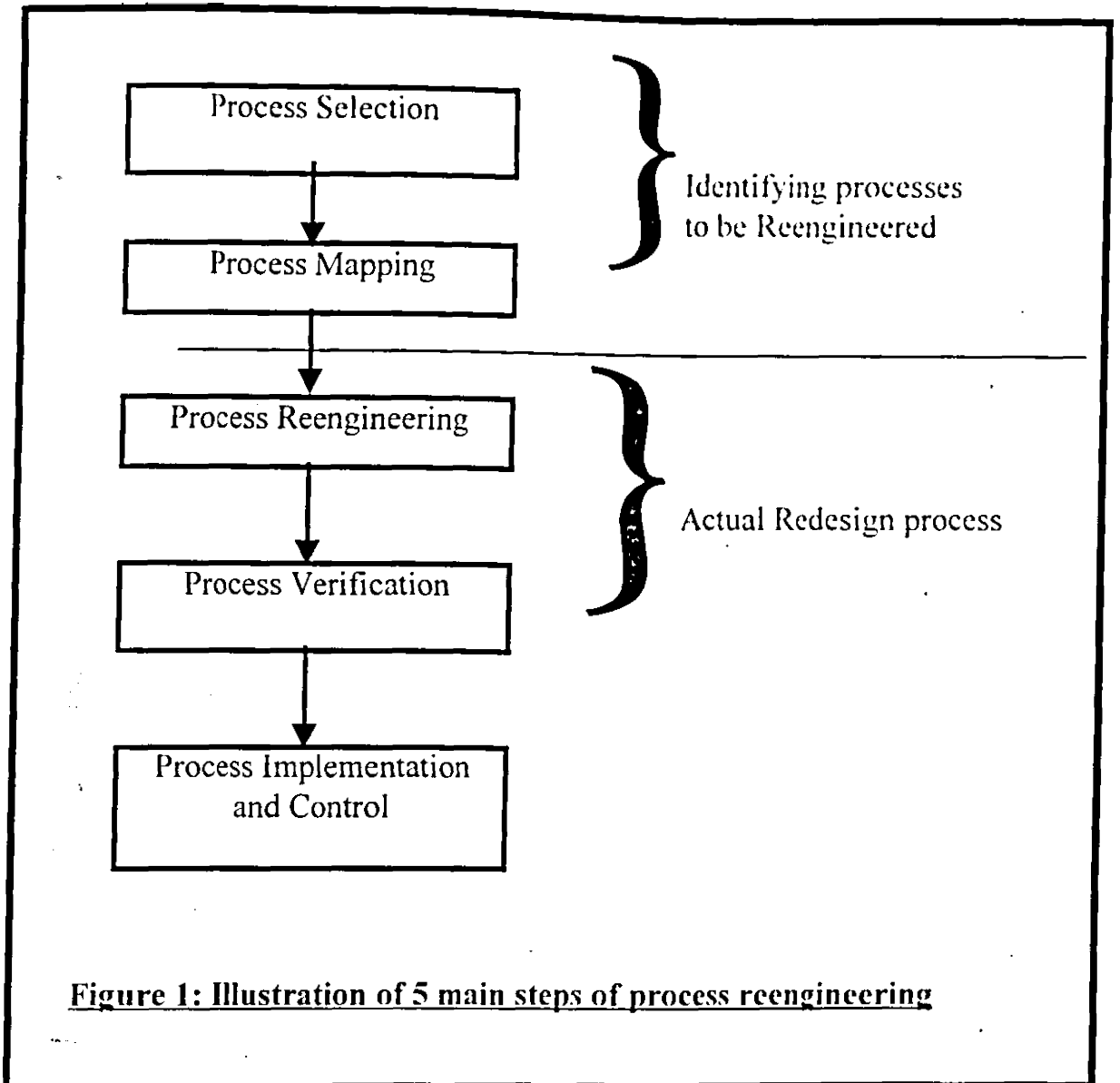
2.6.1 Identifying Processes to be Reengineered

:sses in a company correspond to natural business activities, but they are often fragmented

›bscured by the organizational structures. One way to understand better the processes that

up a business is to give them names that express their beginning and end states. These

s should imply the work that gets done between start and finish for example:Product

›pment – Concept to Prototype, Sales – Prospect to Order,Service – Enquiry to Resolution.

ır (1993) refers to identification of core processes in an organization and provides a figurative

f showing them as shown below in figure 2.

New Product Development

```
┌─────────────────────────────┐
│      Market Research        │
│    Competitor Analysis      │
│     Concept Proving         │
│     Detailed Design         │
│    Product Approvals        │
│     Product Trialing        │
│ Process Design              │
└─────────────────────────────┘
```

Customer Service

```
┌─────────────────────────────┐
│     Enquiry Handling        │
│            ·                │
│            ·                │
│            ·                │
│            ·                │
│            ·                │
│   Account Management        │
└─────────────────────────────┘
```

Human Resource Management

```
┌─────────────────────────────┐
│ Recruitment                 │
│            ·                │
│ Promotion & Selection       │
└─────────────────────────────┘
```

Supply Chain Management

```
┌─────────────────────────────┐
│ Physical Network Design     │
│            ·                │
│            ·                │
│            ·                │
│ Resource Management         │
└─────────────────────────────┘
```

Financial Management

```
┌─────────────────────────────┐
│ Activity costing            │
│ Budgeting                   │
│ Cash fore casting           │
│ Revenue                     │
│ Budgeting/Forecasting       │
│ Tax Planning                │
│ Financial Reporting         │
└─────────────────────────────┘
```

Figure 2: Core Business Processes

Next process maps can be drawn to depict how work flows through the company. They are difficulty to draw primarily because they require people to think across organizational grain since people are used to seeing a picture of the organization. Process maps aren't a picture of the organization but a model or depiction of the work done in an organization. Below in figure 3, a mapped process is shown with the non-value adding tasks in the process being highlighted (refer to the legend).

None Value Adding Tasks

⬇ Move

☐ Inspect

▤ Delay

▽ Store

Standard Symbols

◯ Operation (or off-page connector)

◆ Decision
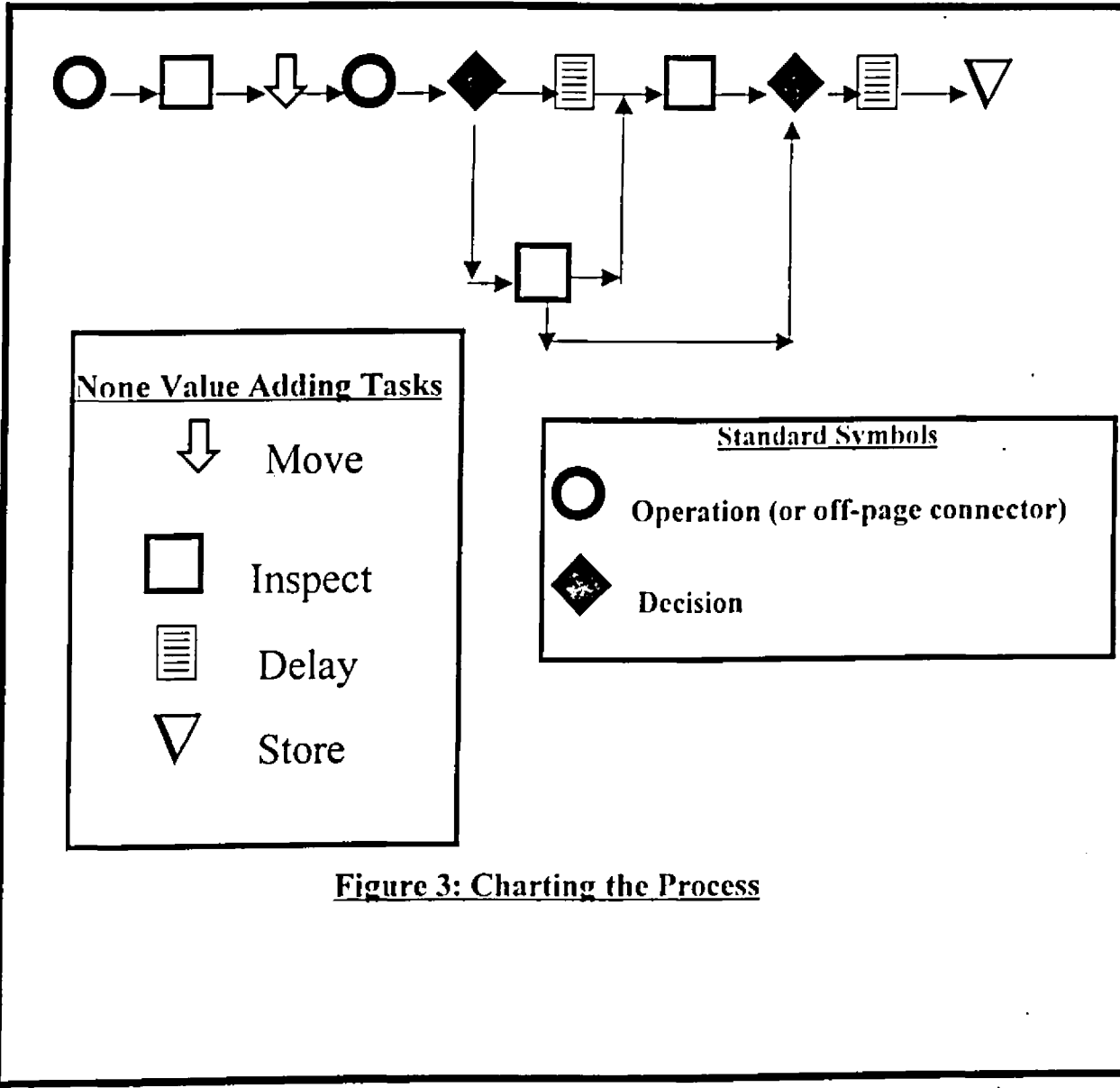
Figure 3: Charting the Process

What follows next is deciding on which of the mapped processes actually require reengineering and the order in which they should be tackled. Most organizations use three criteria to help make their choices (Hammer & Champy. 1993):

- Dysfunction – which processes are in the deepest trouble?
- Importance – which processes have the greatest impact on the company's customers?
- Feasibility – which of the company's processes are at the moment most susceptible to successful redesign?.

These method is not a formal one and anyway the three criteria must be used with wisdom to help make choices. There are formal methods that have for example been suggested as guidelines for choosing the pace, sequence, feasibility and location of change. An example of such formal methods are The Matrix of Change and Business Process Simulation.

2.6.1.1 The Matrix of Change

This tool does for B.P.R what statistical process control did for T.Q.M. (Brynjolfsson et al., 1997). It can help managers anticipate the complex interrelationships surrounding change. Specifically it helps manage concerns about;

- Feasibility (stability of a new system of practices)
- Sequence (which practices to change first)
- Location
- Pace (fast or slow)
- Stakeholder interests.

The matrix woks by graphically displaying both reinforcing and interfering organizational activities. To build this matrix of change. 3 matrices and a set of a stakeholder evaluations are required.

The three matrices represent (Brynjolfsson et al, 1997);

1. The Current organizational practices (represented by the Horizontal Triangular matrix)

2. The Target practices (represented by the Vertical Triangular matrix).

3. A Transitional state that bridges the Current organizational practices and the Target practices (represented by the Transition matrix which is a combination of the vertical and horizontal triangular matrices).

The set of stakeholder evaluations are represented by the Satisfaction Ratings Matrix. The combination of the Satisfaction Ratings matrix and the Transition matrix produces the Matrix of Change so depicted in Appendix 2. Appendix 2 explores one important business process reengineering effort the transition from a hierarchical to a network organization and includes a table depicting existing and target attributes. In addition a diagram showing the functions of matrix graphics is included.

In the satisfaction rating matrix .except for employees the following groups of stakeholders can also be surveyed so as to give a "balanced scorecard" (Brynjolfsson et al, 1997);

⊃ Customers

⊃ Suppliers

⊃ Distributors

All major areas of The Change Matrix when taken together offer useful guidelines on Where, When and How fast to implement change.

2.6.1.2 Business Process Simulation

Although flowcharts and spread sheets are adequate in answering "what" questions on change they are inadequate for answering "How", "When" or "Where" (Tumay, 1996). Business processes are way too complex and dynamic to be understood and analyzed by flowcharting and spreadsheets alone.

Process simulation is the technique that allows representation of processes. people and technology in a dynamic computer model. There are four steps in doing it: Building a model; Running a model; Analyzing the performance measures and; Evaluating alternative scenarios. A model when simulated, mimics the operations of a business.

Typically a B.P.R project begins with an end goal of achieving one or all of the following objectives: Increase service level; Reduce activity cost; Reduce inventory costs.; Reduce inventory costs. In order to achieve these objectives the following principles are usually applied:

- ➲ Combine duplicate activities
- ➲ Eliminate multiple reviews and approvals
- ➲ Reduce batch sizes
- ➲ Process in parallel
- ➲ Implement demand pull
- ➲ Outsource inefficient activities
- ➲ Eliminate movement of work
- ➲ Organize multi-functional teams.

However since BPR involves changes in people. processes over time. the interaction of people with processes and technology results in an infinite number of scenarios and outcomes that are impossible to comprehend and evaluate without the help of a simulation model.

Simulation models can provide the most accurate and insightful means to analyze and predict the performance measures of business processes.

Business processes can be classified into four major categories on the basis of unique modeling considerations (Tumay, 1996);

- ➲ Project based processes .Usually provided by a single person or a group of people typical examples being product development and administrative processes.

- ➲ Production - based processes . Outputs are produced in a batch or continuous . flow mode, examples of which are order fulfillment. accounts payable and claims processing activities.

- ➲ Distribution - based processes. Which include transportation and delivery processes where products or people are carried between locations.

◑ Customer service - based processes - which represent a major application for simulation because total waiting time could be as high as 95% of the total processing time. Examples include telephone services, service factories, service shops and retail stores.

Note however that this classification does not imply that all business processes fall clearly into one of these four categories.

Tumay (1996) also classifies the business process simulation into three:

1. **Flow-Diagramming based simulation** tools - that help in defining activities and routings.

2. **System Dynamics-based simulation tools** - which build models consisting of methodology - specific constructs such as levels, stacks, flows, converters and connectors.

3. **Discrete event-based simulation tools_** - which are the most powerful tools for business process simulation. They provide modeling of entity flows with animation capabilities that allow the user to see how flow objects are routed through the system. Some of these tools even provide object - oriented and hierarchical modeling which simplifies development of large business process models.

2.6.2 Redesigning of the Business Process

After making their choice of the various business processes needing reengineering the reengineering team need now to walk the plank of process redesign. Redesigning is the most creative part of the entire reengineering process. It requires, more than any other part of the process, imagination, inductive thinking and a touch of craziness. Craziness to for example ditch the familiar and seek the outrageous.

An attempt to walk through business process reengineering redesign in the same way repeatedly is a futile exercise. This is because it has no one right way of being done and so has no predetermined step procedures that will for example produce a new radical process design. In other words redesigning of a work process is not algorithmic and

routine.Traditional logical thinking requires vertical thinking which seeks one best way of looking at things. What is actually required is a combination of vertical and lateral thinking. Lateral thinking is never an attempt to prove anything but only to explore and to generate ideas (DeBono.1971).Lateral thinking is chiefly designed to supplement traditional thinking and also to escape from old ideas and produce new ones. DeBono(1971) notes that in practice one would use both lateral and vertical thinking in alternation with lateral thinking either;Turning up ideas that are developed by vertical thinking ,or providing a different approach for vertical thinking to proceed with after vertical thinking encountering a dead end.

Various formal settings for lateral thinking include brainstorming and improved derivatives of it like Nominal Group Technique and Synectics. Synectics is an approach to group problem solving and decision making that uses unconventional methods to examine a problem . Nominal Group Technique seeks to broaden member participation and to reduce the impact of group pressure to conform.

In general there are three techniques that reengineering teams can use to help them get the ideas flowing:

1. Boldly applying one or more principles of Reengineering. Some examples of this principles are;

   ⊃ As few people as possible should be involved in the performance of a process.

   ⊃ If a procedure in the process is not value adding to the output required at the process end (or if it's too costly) it should be done away with.

   ⊃ Control should be kept and since segregation is not recommended; empowerment should be practiced.

2. Searching out and destroying assumptions.

3. Looking for opportunities for the creative application of the technology.

As redesigning proceeds, teams can come back to these techniques to stimulate additional thought or to overcome a seemingly Herculean task.

Gathering from experience, Hammer and Champy (1993) give the following eight experiences of most of the reengineering team members;

   1. You don't need to be an expert to redesign a process.

2. Being an outsider helps.

3. You have to discard preconceived nations.

4. It's important to see things through the customer's eyes.

5. Redesign is best done in teams.

6. You don't need to know much about the current process.

7. It's not hard to have great ideas.

8. Redesign can be fun.

2.7 Culture Context in Business Process Reengineering

2.7.1 Definition of Organizational Culture

Organizational Culture refers to the deeper level of basic assumptions and beliefs that are shared by members of an organization, that operate unconsciously, and define in a basic "taken for granted" fashion an organizations view of itself and its environment (Johnson & Scholes, 1993). Anderson and Barker (1994) on the other hand define the culture of a business as being a complex pattern of assumptions, attitudes, beliefs, expectations, ideologies, norms, philosophies and values. Ansoff and McDonell (1990) prefer to look at culture as a part of the will to respond or climate of a business which involves the following;

- ⊃ The attitude of the business to change; whether it is hostile, passive or predisposed to change.

- ⊃ The attitude of the business towards risk; whether managers avoid, tolerate or seek risks.

- ⊃ The time perspective in which management perceives its problems - whether it puts full reliance on past experience, prefers to deal with the present or puts emphasis on the future.

- ⊃ The Action perspective - whether business attention and energies are focused on internal operations or on the external environment.

- ⊃ The Goals of behavior - whether it is stability, efficiency, effectiveness, growth or innovation.

- ⊃ The Trigger of Change - whether a crisis or accumulation or unsatisfactory performance are necessary or whether the business continuously seeks change.

- ⊃ The Degree of Initiative - from none to self starting

- ⊃ The Degree of Centralization.

Allen (1986) approaches corporate culture from a practical point of view and note that;

> Corporate culture is the pattern of how things are done in an organization. If finance, operations and marketing are examples of a corporations "hard" system, culture in the sum of its "soft" systems.

So is culture something an organization has or something on organization is? Both views are useful but since an analytical approach to culture is intended with an interest in change, the former is adopted.

Hofstede (1991) notes that there is no standard definition of organizational culture but observes most people who write about it would agree that it is:

- ⊃ Holistic - referring to a whole which is much more than the sum of its parts.
- ⊃ Historically determined - reflecting the organization.
- ⊃ Related to the things Anthropologists study - like rituals and symbols.
- ⊃ Socially constructed - created and preserved by the group of people forming the organization.
- ⊃ Soft - it has a "soft" characteristic.
- ⊃ Difficult to change - although at authors disagree on how difficult.

2.7.2 Culture Web of an Organization

The basic beliefs and assumptions shared by members of an organization are what are referred to as the paradigm in figure 4 below. The paradigm contains largely the values part of organizational culture while the web contains mostly the practices. In understanding this aspect alone, it becomes evident that it is really, hard to separate values and practices in organizational culture and that values aren't as tangible as practices.

Corporate culture as aforementioned and represented in figure four consists of values and practices. Values are acquired in one's early youth, mainly in the family and in the neighborhood, and later in school. Organizational practices are learned through socialization at the workplace, which most people enter as adults with the bulk of their values firmly in place. At the organizational level cultural differences reside mostly in practices, less in values therefore perceptions of daily practices should be considered to be the core of an organizations culture (Hofstede, 1991).
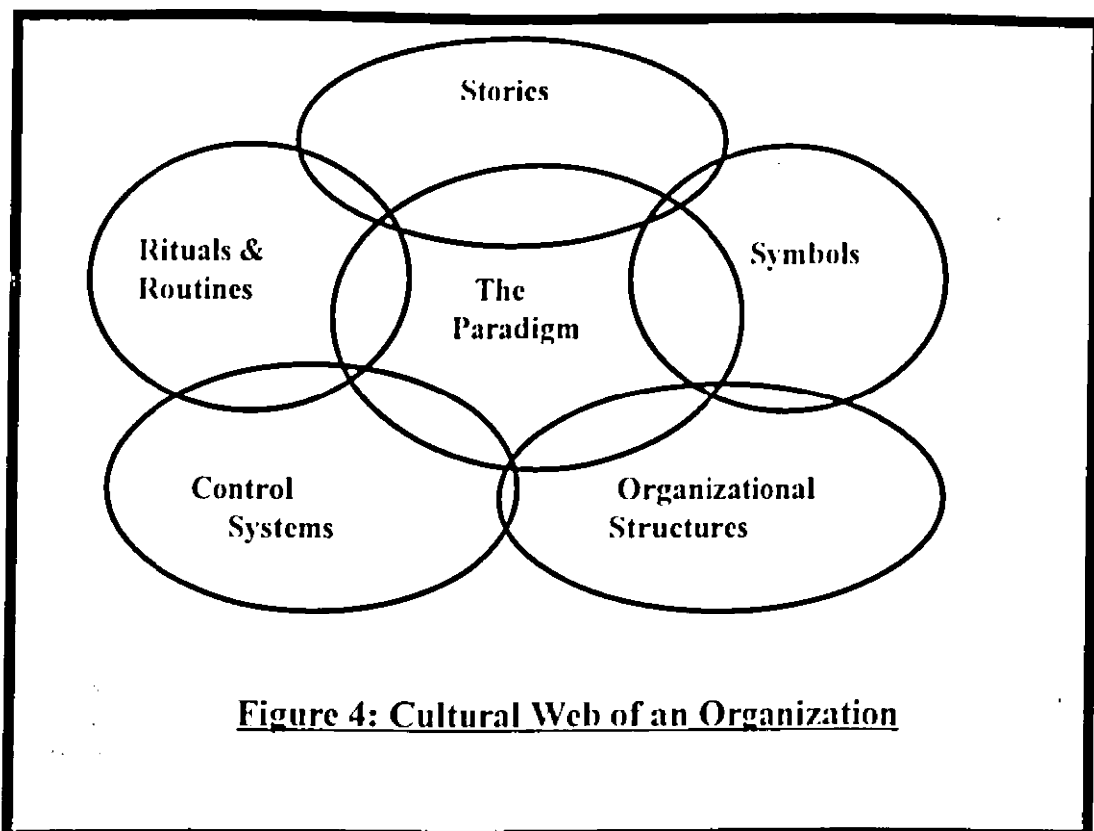
Figure 4: Cultural Web of an Organization

Values instruct our feelings so that we don't always have to pause and think before we act on them. Values are therefore the link between emotion and behavior, the connection between what we feel and what we do. If we are blessed with appropriate values we are able to keep our spirits up in the midst of continuous change. With everything changing around us, we need something unchanging - touchstones, commandments or aphorisms – to hang on to, to find our bearings with, and to steady our nerves. In this sense, values are our navigational devices (Champy, 1995).

Values are also business navigational devices (Champy, 1995). As hierarchies flatten, and power, control and responsibility get pushed out from headquarters to the trenches, from staff to line, we need to know that the people "out there" will do the right thing at the moment of truth. People out there too, customers as well as employees will also need to know that the folks back in headquarters will also do the right thing. Values fill this abyss.

2.7.2.1 Importance of Values

Values in an organization have to be right for it to carry out B.P.R. Values are however hard to change and this is noted by Peters and Waterman (1982) when they remark on the fact that there is no halfway house for most people in the excellent companies, for due to the excellent companies' strong cultures, the people have either to buy into the norms or get out. As such this brings out inevitability of exit of some people from an organization that is reengineering not because they have wrong values, but simply because their values aren't in sync with the values required in an organization that is reengineering.

2.7.2.2 Changing Values in a Reengineering Firm

One vital aspect of the reengineering revolution is a shift in the organizations value system. As intangible as they may seem, values lie at the heart of any successful attempt to reengineer.

Desired values aren't simply to be told to employees in a company. Values must be internalized by the employees because only a deep seated belief in the right values can generate the passion and commitment that a reengineered process requires. When reengineering a process, it is thus vital that values also be realigned. Trying to overlay a new process on people who have old process values is a recipe for chaos. It leads to cognitive dissonance, confusion and cynicism.

It's doubly important that people internalize the new values because they represent a key management tool for a reengineered environment. A hallmark of reengineering is that it creates processes with far greater flexibility than those they replace. Response and speed of employees is therefore important in addition to flexibility in this complex and dynamic world. If an organization's leadership can therefore convince people to embrace a set of values and use them to guide their behavior, then that leadership can be relatively confident that people will do the right thing.

2.7.3 Making New Culture a Reality

Building a culture which involves selecting, motivating, rewarding, retaining and unifying good employees involves three steps (Hickman and Silver, 1984):

- ⮞ Instilling commitment to a common philosophy and purpose.
- ⮞ Developing and rewarding competence in key areas and
- ⮞ Consistently perpetuating commitment and competence by attracting, developing and keeping the right people.

In B.P.R, the above three factors are made a reality by the following five factors (Hammer & Stanton, 1995):

1. **Ensuring that values are reflected in process designs** - If you tell people that you care about customers, yet nobody ever has the chance to interact with them, your words are at best hot air and at worst a symptom of hypocrisy. If you declare a given quality (like speed) a competitive advantage then make damn sure that you design your processes to be fast.

2. **"Walk the walk"**- In trying to communicate values, examples is not the best way but the only way. Top executives have to demonstrate their values through personal behavior.

3. **Use the Values when in difficult situations** - Charley Prides dictum, "You've got to stand for something or you will fall for anything," best illustrates this with the case of Johnson and Johnson in the Tylenol Tampering tragedy serving as an appropriate example.

4. **Incorporate Values into measurements and reward systems.** The way to peoples hearts and minds is not through their ears but through their wallets. If you want people to share you values, you have to specifically measure and reward them for exhibiting those values. Otherwise they will be confused about the importance of the values you espouse and will experience no positive reinforcement for adopting them.

5. **State new values clearly and uniquely** - values and goals must be presented with clarity, freshness and a certain edge so that people will have a sense of what they really mean and not hear them as mere slogans.

2.7.4 Summary

In B.P.R. what is required is a humanly satisfying culture of willingness. The willingness to:

1. Perform up to the highest measure of competence.
2. Take initiative and risks.
3. Adapt to change.
4. Make decisions.
5. Work cooperatively as a team
6. Be open, especially with information, knowledge and news of forthcoming or actual "problems."
7. Trust and be trustworthy.
8. Respect others (customers, suppliers and colleagues) and oneself.
9. Answer for one's actions, to accept responsibility
10. Judge and be judged, reward and be rewarded, on the basis of ones performance.

The first set of five factors deals with work values which are particularly appropriate to the work setting and are to do with the job and how it's performed. The second set deals with human virtues which are to do with living and working fruitfully in a larger, orderly society.

There are two major enemies of a new, reengineered culture of willingness. The first is that of cynicism, self regarding fear and mistrust. The second, that of a banality is the bigger of the two. Banality involves people getting tired of hearing the same old tone of aggressive urgency, in the same old forums. Managers therefore have to fight banality by acting on the values and expressions they talk about so often and keeping the language they use fresh to keep its meaning alive.

Finally in B.P.R one should never forget the Law of Corporate Cultures which observes that bad values tend to drive out good ones, first the social values and then the good work values. This is because good culture requires hard work to establish and maintain while bad culture does not.

2.8　The Role of Information Technology in Reengineering

Information Technology (I.T) is an enabler of reengineering and not the driving force (Talwar, 1993; Turban et al., 1996). Motivation for reengineering has to come from the business itself.

A company should never equate I.T. to automation. That is, throwing computers at a business problem in hand will never lead to reengineering. Reengineering, unlike automation, is about innovation. It's about exploiting the latest capabilities of technology to achieve entirely new goals. The real power of technology is not that it can make the old processes work better, but that it enables organizations to break old rules and create new ways of working that is, to reengineer.

When looking at B.P.R, its necessary to view the role of I.T. from a different perspective. It's necessary for one to think inductively rather than deductively (Hammer & Champy, 1993; Turban et al., 1996). Deductive thinking involves defining problems, seeking and evaluating different solutions to the problems. Inductive thinking on the other hand is the ability to first recognize a powerful solution and then seeking the problems it might solve, problems that the company probably does not even know it has.

Porter and Millar (1985) suggest five steps that organizations can take to exploit the strategic opportunities that IT creates. They however suggest that not all steps need be followed. The five steps are;

1. Assessing Information Intensity of each link in each of the company's value chains. Higher intensity implies greater opportunity. If customers or suppliers of a firm are highly dependent on information, or if the service or product is mainly information related, then intensity is high and strategic opportunity is likely to exist.

2. Determine the Role of I.T. in the industry structure. An organisation needs to know how buyers, suppliers and competitors might be affected by and react to I.T. New strategies may be necessary to retain industry position in some circumstances.

3. Identify and Rank the ways in which IT can create Competitive Advantage. An organization must analyze how particular links of the value chain might be affected by I.T. links that represent high cost or critical areas of business activity are targets for the information services manager to focus his or her efforts.

4. Investigate how I.T. might spawn new businesses. The following factors may provide opportunities for spin-off businesses;

➝ Excess computer capacity

➝ Large Corporate Databases

➝ Special strength in some aspect of I.T.

In investigating spin off businesses ,organizations should ask themselves the following three questions;

➝ What information generated (or potentially generated) by the business could be sold?

➝ What information-processing capacities exist internally to start a new business?

➝ Does I.T. make it feasible to produce new items related to the organizations current products?

5. Develop a plan for taking advantage of I.T. To take advantage of strategic opportunities that I.T presents one must have a plan that assigns priorities to the strategic investments that the organization needs to make. The process of developing such a plan should be business driven rather than technology driven.

Similarly McFarlan (1984) observes that company executives have a duty to carry out a competitive analysis and also assess where I.T. fits in their companies. Towards this goal he produces a matrix that aids them in understanding where a company fits in. The matrix is shown in figure 5 below and in addition a table is attached overleaf to show resource allocation priorities.

	Low	High
Low	Support	Turnaround
High	Functional	Strategic

Strategic Impact of Existing Systems

Figure 5: Position of Information Systems in various types of Companies

Table 1: Resource Allocation Priorities

Status Quo (IS Industry) / Goal of IS Expenditure	Growing highly Competitive industry	Relatively Stable Industry, known Ground Rules	Static or Declining Industry
Rehabilitate & Maintain system	1	1	1
Experiment with New technology	2	3	3
Attain Competitive Advantage	2	2	3*
Maintain or Regain Competitive Party	2	3	4
Defined Return on Investments	3	3	4

* Assuming that the change is not so dramatic as to revolutionize the industry's overall performance.

Note that numbers indicate Relative Attractiveness or Importance of the investment, with 1 having the highest priority.

In summary I.T. has changed competition in 3 ways:

    1 Industry structure and rules of competition have changed.

    2. Organizations have outperformed their competitors by using I.T.

    3. Organizations have created new business by using I.T.

Industry structure and rules of competition have changed because technology has a disruptive power, that is it has the ability to break the rules that limit how we conduct our work. This makes I.T. critical to companies that are looking for a competitive advantage. Such companies therefore need to think inductively about technology during the reengineering process. Table 2 below illustrates some of the rules changed by these disruptive information technologies. Hammer and Champy (1993) note that companies successful in B.P.R., already knew what rules they wanted to break even when the enabling technology was not at hand yet.

ıble 2: Changes Brought by IT(Compiled from Hammer and Champy, (1993))

ld Rule	Intervening Technology	New Rule
formation appears in only one place at e time	Shared databases. client/ server architecture. electronic mail	Information appears simultaneously wherever needed
ıly an expert can perform complex ırk	Expert systems. neural computing	Novices can perform complex work
siness must be either centralized or ıentralized	Telecommunication and networks: clients/server.	Business can be both centralized and decentralized
nagers make all decisions	Decision support systems, enterprise support systems, expert systems.	Decision making is part of everyone's job
ld personnel need offices to receive, d, store and process information	Wireless communication and portable computers, information highways. electronic mail	Field personnel can manage information from any location
best contact with potential buyers is a ıonal contact	Interactive videodisk, desktop teleconferencing. electronic mail	The best contact is the one that is most cost effective
have to locate items manually	Tracking technology, groupware, workflow software, client/server	Items are located automatically
s must come to one place to work ther	High-performance computing systems	Plans get revised instantaneously whenever needed
ıle get revised periodically	Groupware and group support systems, telecommunication, electronic mail, client/server	People can work together while at different locations
omized products and services are nsive and take a long time to develop	CAD-CAM, CASE tools, on-line systems for JIT decision making, expert systems	Customized products can be made fast and inexpensively (mass customization)
ıg period of time is spanned between ıception of an idea and its mentation (time - to - ıt)	CAD-CAM, electronic data interchange,groupware, imaging(document) processing	Time-to-market can be reduced by 90 per cent
mation-based organisations and sses	Artificial intelligence, expert systems	Knowledge-based organizations and processes
labor to countries where labor is ensive (off-shore production)	Robots. imaging technologies, object-oriented programming, expert systems, geographical information systems(GIS)	Work can be done in countries with high wages and salaries.

2.9 Changes Resulting from Business Process Reengineering

2.9.1 Work Units

Work units change from Functional Department to Process Teams. The process team therefore becomes the basic working unit. Process Teams are of many types depending on the nature of work being done. They can be classified into three types (Hammer & Champy, 1993):

1) Case Teams in which a number of people with differences skills work together to complete routine, recurring work such as processing of an insurance claim or connecting a telephone customer to its long distance carrier.

2) Virtual Team which has a shorter life span than a case team because its together for as long as it takes to complete a particular episodic task. People may simultaneously be members of more than one virtual team, splitting their time among different projects.

3) Case Worker (one man) team in which an individual shepherds an entire deal through the process from beginning to end. To achieve this the case worker is greatly assisted by technology such as networked computers and access to online data.

Teamwork represents a set of values that encourage listening and responding constructively to views expressed by others, giving others the benefit of the doubt, providing support, and recognizing the interests and achievements of others .The difference between workgroups and teams is that;

- ⊃ A workgroup focus is always on in individual goals and accountabilities while
- ⊃ A Teams focus is on both individual and mutual accountability

As a rule Katzenbach and Smith (1993) observe that effective teams have:

1) two to twenty-five members
2) the right mix of skills which are 3 in number;
   a) technical or functional expertise
   b) problem solving and decision-making
   c) interpersonal skills

The above can be said to be true for the case and virtual teams although it can be argued that the two skills a) and b) might not be so important in reengineering with the advent of affordable neural computing and expert systems.

2.9.2 Jobs

Jobs change from simple tasks to multidimensional work. People working in process teams find their work far different from the jobs to which they were accustomed. The jobs may need retraining or even extensive education like a college degree in a given discipline with a view to endowing the worker with all round knowledge and insight to ensure that he is able to share joint responsibility with fellow team members. The job is therefore multidimensional.

Work therefore becomes more satisfying since by performing a whole job – a process or sub-process, the worker achieves a sense of completion, closure and accomplishment from his job.

2.9.3 Organizational Structure

Organizational structures are delayered from being hierarchical to flat. Work is performed by teams of essentially coequal people operating with great autonomy and supported by a few managers. The managers are a few because they can coach more people than they can supervise. Therefore at a one to seven managers-to-worker ratio for example, an organization is hierarchical whereas at one to thirty it tends to be flatter.

2.9.4 Values

This change from protective to productive. Employees need to deeply believe that they work for their customers and not their bosses. Hutchin (1996) refers to an organization with such values as being morally mature because the organization:

         ➲ Understands its own motives

         ➲ Honestly represents its motives to relationship members(employee, customers and suppliers)

➲ Is able to effectively links its belief structure to its actions

Customer satisfaction in such an organization is paramount and therefore it is expected that remuneration in the form of bonuses is partly based on customer satisfaction.

2.9.5 Employees Roles

Companies that have reengineered do not want employees who can follow rules but those who make their own rules. In essence, the roles of employee shift from controlled to empowered when an organization reengineers. Processes cannot therefore be reengineered without empowering process workers. Empowerment has powerful implications on the kinds of people hired by companies as the leaders or employees.

A word of caution here is that empowerment is not anarchy and has to still incorporate boundaries within which to operate even for highly empowered workers .There are three levels of empowerment as identified by Lovell (1994):

1. At its most basic empowerment involves consultation with staff, even if not necessarily acting on their suggestions

2. A second level of empowerment allows the involvement of staff in job redesign · so that they use a variety of skills and have a say in how the team works.

3. A third level of empowerment is observed when employees become involved not just in how they do their jobs but in the whole performance of the organisation.Such employees look outside their own particular area and take part in establishing the goals and objectives of the complete organisation.

2.9.6 Job Preparation

People in B.P.R are empowered. They are expected to exercise judgement in order to do the right things. In order to do this, they need sufficient education so that they can discern for themselves what the right thing is. Since it is not the how's of the job (which is stressed by skills and competence) but rather the why's(which is stressed by education)education over the lifetime of a job becomes the norm in a reengineered company. In addition companies do not need to fill a slot, because the slot will only be ·

roughly defined. They need people who can figure out what the job takes and do it and in addition, be flexible to accommodate change, thus the need for education over the lifetime of a job.

2.9.7 Managers Role

Process teams, consisting of one person or many, do not need bosses but coaches. Coaches help teams solve problems. In this sense they are developers of people by being mentors, providing resources, answering questions and looking out for the long-term career development of staff. On the whole managers exercise three types of power (Stewart, 1994): Role power; Expert power and Resource power. Role power has to do with command-and-control management which is not the norm in reengineering a company. Expert power is based on possessing particular skills or knowledge. If a manager truly wishes to empower the staff, the manager will ensure that the staff have sufficient knowledge and skill to exercise power successfully. Therefore if power is to be shared then the knowledge must be shared too. Resource power is the ability to supply or withhold resources. No one can hope to empower staff unless they also provide the necessary resources to support that empowerment.

A manager who knows how to use the powers in the right way and to aid the whole process of empowerment is referred to as a Theory E Manager (Stewart, 1994).

2.9.7.1 Theory E Manager

From McGregors theory X and Y evolved theory Z, which was found to be lacking in the era of T.Q.M. Theory Z is in fact a summary of Japanese management practice. A theory E manager is one who believes that people are capable of more than most organizations allow them to contribute; and that people want to do a good job and will do so if let to. In addition this manager believes that managers are more effective as facilitators than as leaders, and that they must devolve power and not just responsibility to individuals as well as groups.

This manager believes in making people responsible for, not just responsible to. Therefore, he or she believes in Devolution rather than delegation. Devolution unlike delegation;

⊃ Is permanent.

⊃ Includes power as well as responsibility.

2.9.8 Performance Measures and Compensation

In reengineered companies, performance is measured by value created and compensation should be set accordingly. **Compensation** in the form of substantial rewards for outstanding performance is in bonuses rather than pay rises.

Also compensation pegged on seniority or position in the organization is inconsistent with reengineering and so should be discarded. Performance measures and compensation should shift from activity to results based.

Probably the most significant development likely to influence the nature of performance appraisal in the future is the shift away from conventional appraisals undertaken typically by line managers towards the concept of 360-degree appraisal. Anderson(1996) observes that the concept of 360-degree appraisal refers to a situation where appraisal data is collected "all around" an employee ,from his or her manager. subordinates, peers and customers .internal and external (where appropriate). A number of factors encourage organizations to introduce 360-degree appraisal:

1) Flatter, less hierarchical, more flexible ,team-based organization structures.

2) Awareness of the limited perspective managers especially when faced by large spans of control and greatly empowered workers in the flatter organizational structures.

3) The advantage of a range of perspectives .given the increasingly complex roles many people play in organizations.

This method of appraisal is therefore of relevance to B.P.R as Reengineering creates an organization with conditions reminiscent of the first two factors above while creating need for the third.

2.9.9 Advancement Criteria

This should shift from performance to ability. Paying for performance and promoting for ability should become the norm. In brief, a bonus is the appropriate reward for a job well done while advancement to another job within the organization is a function of ability (Hammer & Champy, 1993).

2.9.10 Roles for Senior Executives

2.9.10.1 Power Distance

Senior executives in a reengineering organization move from being scorekeepers to leaders. Because of the flatter organization senior executives move close to customers and the people or personnel performing the company's value–adding work. Subsequently the power distance between staff drops as can be demonstrated by:

⮕ Employees being open to the option of disagreeing with managers on work issues.

⮕ The subordinates perceptions of their bosses actual decision making that is, the way employees perceive their daily environment.

⮕ Employees preference of work environment.

These three points are used to compose the power distance index which is a measure of power distance or the degree of inequality in an organization (Hofstede, 1991).

2.9.10.2 Activists

Hout and Carter (1995) introduce the idea of senior executives roles evolving from mere enablers or coaches to activists. The reasons they give for activist executives are;

1) Only senior executives can finish the work that reengineering starts by managing the political conflicts that process improvement inevitably stimulates and by removing the managerial obstacles that are the biggest barrier to successful reengineering efforts.

2) Senior Executives can use their Authority to go to the heart of a problem and therefore provide superior solutions in ways that no mid level team can, no matter how empowered it is. Thus it often pays for senior managers to play a hands-on role in improving operations and redesigning work.

3) Only senior executives can create competitive breakthroughs by linking process improvements to strategy. Process Excellence in isolation rarely leads to sustainable Competitive Advantage. The ultimate responsibility of activist executives is to make the connection between strategy and capability.

2.10 Contentious Issues Bought up on Reengineering

2.10.1 Kinds of Companies that Undertake Reengineering

There are three types of companies that can undertake reengineering;

1) Those that are in deep trouble.

2) Those that aren't yet in trouble but whose management has the foresight to see trouble coming.

3) Those that are in peak condition.

Hamel and Prahalad (1994) incorrectly identify B.P.R as concerning catching up with competitors. In doing this they miss out on two facts;

➲ That B.P.R is concerned as much with competing for the future as the present.

➲ That the present and near future are especially important for the first two company types.

Hammer and Champy (1993) show the distinct motive difference of the three companies from their anecdote as follows:

> Companies in the first category are desperate; they have hit the wall and are lying injured on the ground. Companies in the second category are cruising along at high speed but see something rushing towards them in the head lamps. Could it be a wall? Companies in the third category are out for a drive on a clear afternoon, with no obstacles in sight. What a splendid time, they decide, to stop and build a wall for the other guys.

2.10.2 Reengineering in Public and Private Sectors

Reengineering is applicable to both the public and private sector. There are however unique problems encountered in the public sector and these include:

➲ Difficulty of measuring performance since there is no yard stick of profit.

➲ Breaking down departmental barriers is very difficult.

➲ Government Agency heads are primarily policy people and have little experience with operations. Therefore operational excellence which is the aim of reengineering is not a concept "tangible" to them.

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2.10.3 Benchmarking

Foot(1996) defines benchmarking as the process of comparing procedures and performance levels between and within organisations in order to identify where improvement is possible ,how it might be achieved and how much benefit it might deliver.

Different types of benchmarking exist but the one of most importance for B.P.R is process benchmarking otherwise reffered to as the "true" benchmarking(Foot,1996).

B.P.R. does not make benchmarking obsolete. Talwar (1993) argues that four key benefits can be derived from comparisons with competitors and "best of breed" organizations in other industries;

⊃ Lessons and ideas on the design of the transformation process itself.

⊃ Insight into the design of business architecture and the execution of core processes.

⊃ Definition of targets for performance measures and identification of new measures.

⊃ Identification of opportunities to exploit superior capabilities that exist now or what will be created through the reengineering process.

Findings of benchmarking can then be used to create the catalyst for change and provide input into key stages of the exercise.

2.10.4 The Difference Between Reengineering and T.Q.M.

B.P.R. and T.Q.M. are complementary. They share a focus on customers and processes and are complementary in the sense that TQM should be used to keep a company's processes tuned up between periodic process replacements accomplished by B.P.R (Hammer & Champy, 1993).

Turban and others (1996) and Spencer(1995) observe that the truly significant difference between TQM and BPR is the degree of change that can be achieved from the two approaches as depicted below in figure 6.

47
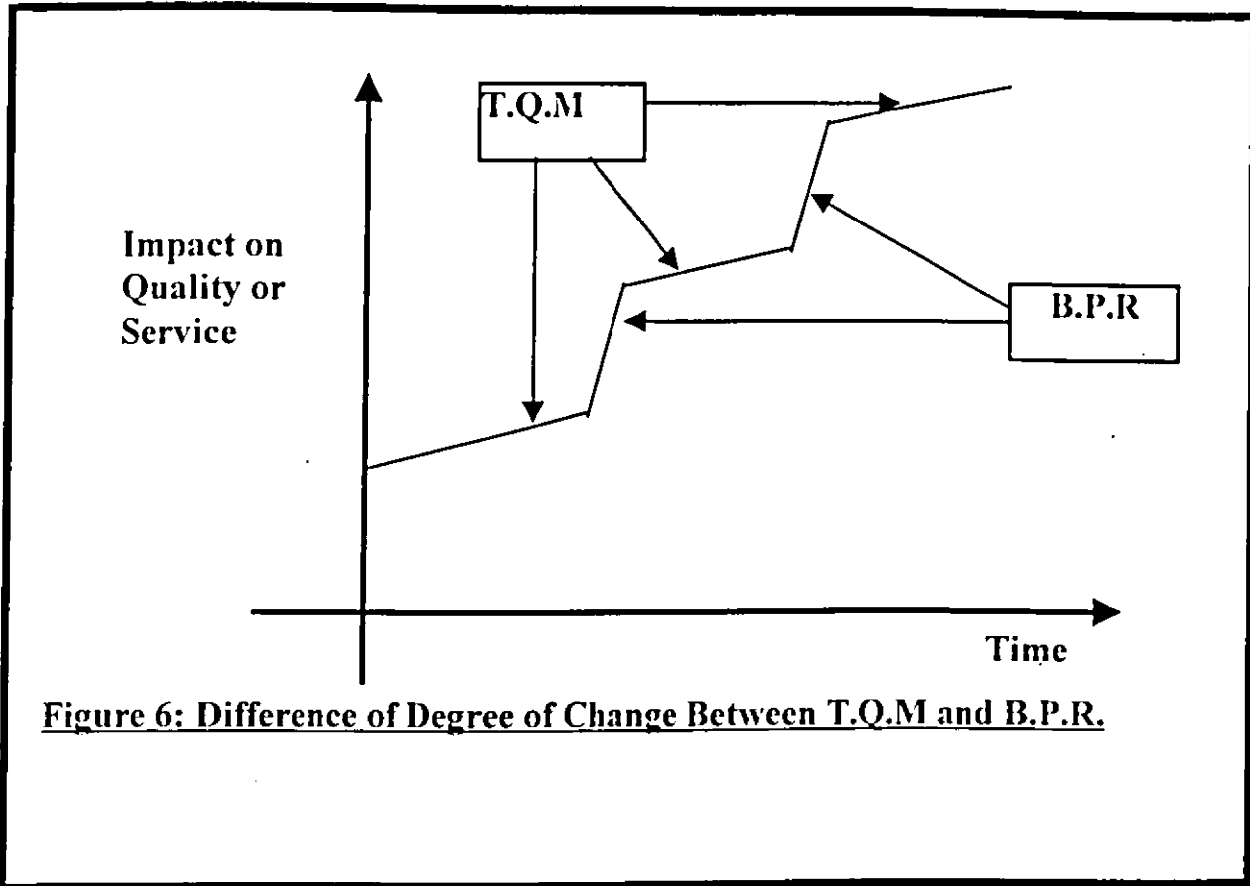
Figure 6: Difference of Degree of Change Between T.Q.M and B.P.R.

Miller (1998) summarizes the differences between BPR and TQM as shown in table 3 below.

Table 3: Difference between BPR & TQM

B.P.R	T.Q.M.
Top Down	Bottom Up
Discontinuous Process Redesign	Evolutionary Process Redesign
Customer Nearly Always external	Customers often Internal
Scoring is by hitting Home runs	Scoring by hitting Singles
Radical Improvements Through Reengineering	Incremental/improvements Through Kaizen
Start with what could be And works backward to Rethink	Starts with what is and what Works, forward to Improve

2.10.5 Who Invented Reengineering?

Reengineering was never invented. B.P.R has been using tools and techniques that were in existence for generations. What is new is the framework that recognizes B.P.R. as a major organization effort or undertaking with clear objectives (Hammer & Champy, 1993; Turban, 1996).

2.11 CONCLUSION

2.11.1 Succeeding at Reengineering

Many companies that begun reengineering don't succeed at it. They end their efforts precisely where they began, making no significant changes, achieving no major performance improvement and fuelling employee cynicism with yet another ineffective business improvement program.

Although reengineering is often unsuccessful it's not a high risk endeavor. The key to success lies in knowledge and ability to manage the change. If you do know the rules and

avoid mistakes you are more likely to succeed. Along the way you will have some slip ups but persistence will dig you out of the bog.

The first step to reengineering success is to recognize common failures and learn to avoid them. Hammer and Champy (1994) document nineteen of these common failures, some of which are:

⊃Trying to fix a process instead of redesigning a new superior process.

⊃Quitting too early.

⊃Being willing to settle for minor results.

⊃Trying to make reengineering happen from the bottom up.

⊃Assigning someone who does not understand reengineering to lead the effort.

⊃Burying reengineering in the middle of the corporate agenda.

Boyle (1996) Summarizes the requirements for success in reengineering in seven rules which he refers to as the seven rules of thumb to be considered when performing reengineering. They are:

1) If you haven't reengineered before, enlist the help of someone who has. This someone could be from inside or outside your organization.

2) Manage scope aggressively. Finish one project successfully before starting on another one.

3) Plan your work, and work your plan.

4) Always involve persons to be affected by the outcomes of reengineering process.

5) Communicate, communicate, communicate. Avoid surprises both on your part and on the part of the organization.

6) Validate, validate, validate. Do not reengineer in a vacuum.

7) Resell, resell, resell. Start developing a comfort level among those responsible for signing off your reengineering recommendation as soon as possible.

Duck (1993) probably best encapsulates the organizations predicament while undergoing B.P.R. as follows;

> It's like the company is undergoing five medical procedures at the
> same time. One person's in charge of the root canal job, someone else
> is in charge of setting the broken foot ....and still another is getting
> rid of the gallstone. Each person is a success, but the patient dies of shock."

So the organization is hell bent on achieving drastic improvement in performance through radical means. However, will it make it?

2.11.2   After Reengineering, What next?

Measures of success in Reengineering are two namely:

1) **Proximal success** – which refers to short term improvements of work processes.

2) **Institutional success** – benefits sustainable over time which are as a result of broad application of B.P.R throughout an organization.

Geisler (1996) mentions the following as signalling the failure of B.P.R:

- ⊃ Low morals
- ⊃ Declining unit performance
- ⊃ Discrepancies in performance of key units.
- ⊃ Increased cost of Human Resources both in individual units and overall in the division and company. Overall head count may remain low but overall Human resource cost may skyrocket because of such practices as: rehiring formerly full time employees as part timers or consultants, overtime payments and managers padding their units with slack resources to protect their power base out of fear further cuts.
- ⊃ Insufficiency of short term benefits - Radical changes in some systems producing quick desired outcomes but also causing stress and overload, which hasten system failure.

Because of improper preparations of a company, improper B.P.R. implementation or inherent weaknesses in a company, B.P.R itself might not succeed. This brings up the need to "clean up" or institute damage control before readying the company for a fresh attempt. Towards this end Geisler (1996) prescribes a six step method to control damage as follows:

1) Assess the damage

2) Announce the Restoration of stability

3) Empower a Champion - to be overall in charge of stabilizing company.

4) Coopt Middle Managers - Reducing uncertainty, diffusing tension.

5) Establish Resources for critical recovery

6) Introduce Localized Changes and Refreeze.

So the big question now becomes what happens after Reengineering?

The answer is that reengineering is followed by more reengineering. Reengineering is not a once-in-a-lifetime activity, a unique response to a singular change in the operating environment. Reengineering should be seen for what it is namely as enabling a company compete for the future.

Chapter 3

RESEARCH DESIGN

These chapter details the research design used to achieve the objective of the study, which is to document how actual process reengineering was carried out in The Kenya Power and Lighting Company Limited.

3.1 Data Collection Method

This study used primary and secondary data obtained through personal interviews with select management groups involved in B.P.R in KPLC. The Personal interviews were conducted on the basis of interview guidelines developed for two distinct areas I and II (See Appendix 3).These two areas I and II are displayed in the figure 7 overleaf. The General B.P.R plan and organizational overview was documented by Interview Guide I. The actual process reengineering documentation was carried out using Interview Guide II which is in three sections ;A,B and C. All Sections were to do directly with the transformation of the process as illustrated in figure 7 overleaf. ·

Prior to the design of the Interview guides , discussions were held with various K.P.L.C staff involved in the reengineering effort to identify an appropriate methodology to try and collect the kind of information sought (See Appendix 3 for attached pilot research and actual research introduction letters).

The kind of questions posed to the Interviewee as seen in appendix 3 are open ended questions which are aimed at encouraging the interviewee provide as much information as possible.

The Personnel interviewed include:

1. For General B.P.R Plan ;The leader of Reengineering (Also ISP head).

2. For Actual Process Reengineering some Process Owners and the Reengineering Czar.

3.2 Sampling Design

The population of consideration in Interview Guide II was all the processes in KPLC. Quota Sampling was used to select the processes to be investigated. These processes were

General B.P.R Plan(II)

Business Processes
(II)

C
Where are we ?

B
How did we Change?

A
Where were we?
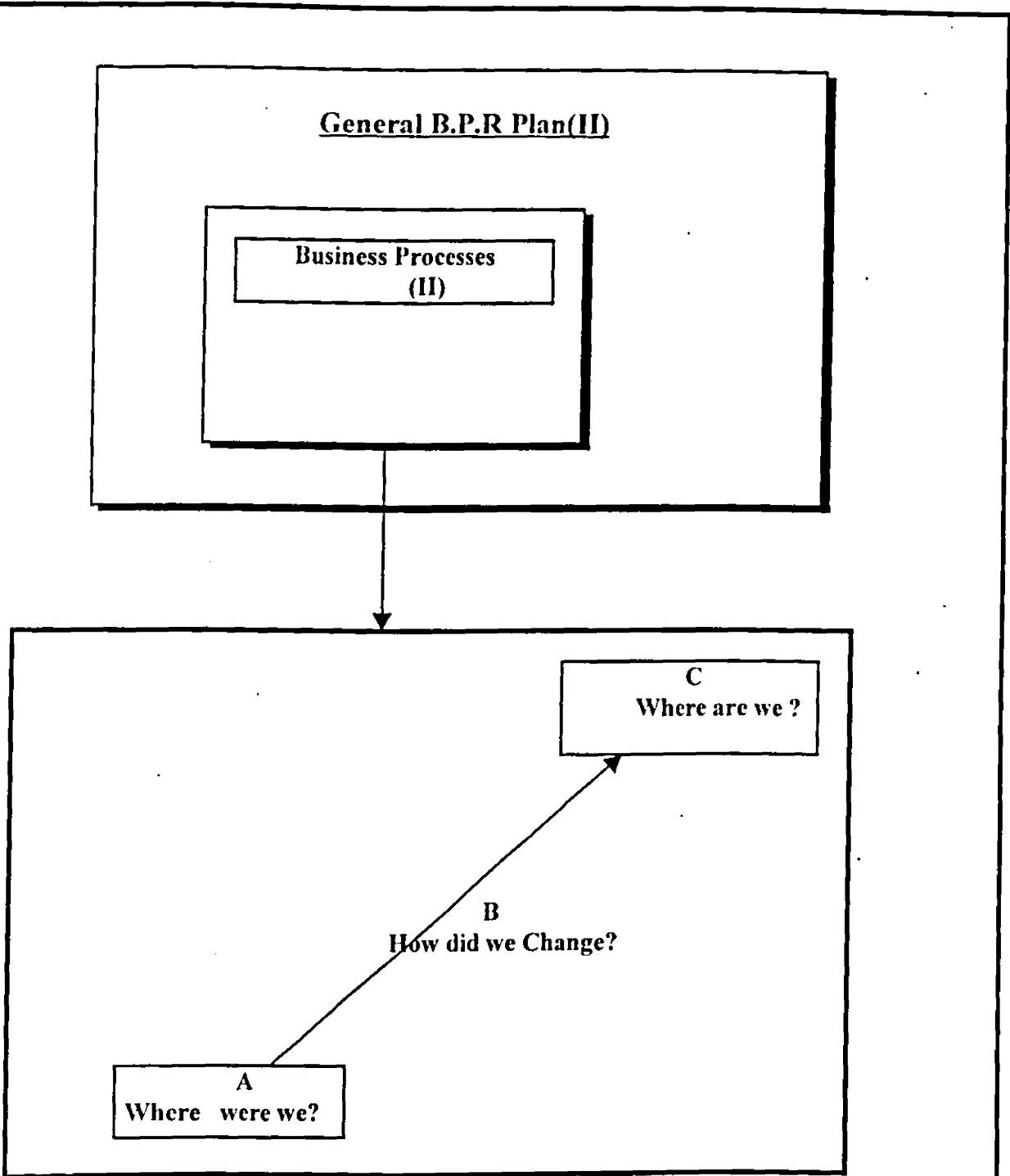
Figure 7:Design Framework of Interview Guides

segmented on the basis of the Integrated Information System of KPLC. This basis was chosen because it was the only convenient one. For example Segmentation by external and internal customers failed because the overall organizational reengineering effort was not structured in this way and so it would have been exceedingly difficult to use. 34 processes were selected and some selected ones are presented in appendix 6 to 12.

3.3 Data Analysis and Presentation

Analysis of the data gathered is by comparison with the theoretical approach as is documented in the literature review of this report. In the case of Interview Guide 1 the nature of information obtained was descriptive and is presented in prose form and by figures 8,9,10 and tables 4,5 and 6. The nature of information from Interview Guide II was mostly descriptive with illustration being carried out in figures A to H. Ordinal level type of measurement was used to rank the problems faced during reengineering.

Chapter 4

FINDINGS AND ANALYSIS

4.1 Introduction

Under the restructuring of the electricity sector there has been a separation of the generation function from transmission and distribution .While KPLC has the function of transmission and distribution , Kenya Electricity Generating Company Ltd.(KenGen) is in charge of generation of power. On the issue of further restructuring of the transmission and distribution function, The Electricity Regulation Board[1],has put forward a proposal to license other power distribution companies in the future.

The future expected changes in the electricity sub-sector served as a wake-up call for KPLC to prepare itself for soon to come competition by improving its service delivery and management .

Prior to reengineering, work in KPLC was accomplished on batch systems with one mainframe serving commercial and finance divisions with a few standalone personal computers in other divisions.

Computer literacy through out the organisation was limited. The bulk of the other systems like Inventory Management were manual. The organization's Management Information System that existed was therefore inadequate and did not provide timely and reliable information due to interface problems of the systems that were in place .The systems in place did not guarantee complete transaction processing. In addition there were the following other problems:

      1)Inventory Management .

      2) Billing and Debtors control.

Initially KPLC sought to go about enhancing it's Management Information System by upgrading its IT Capability on the financials. However upon consultation with the World Bank (who were funding the strategic adjustment programme under which the restructuring of the electricity sub-sector fell) it was recommended that what KPLC actually required was an Integrated system that would address the entire spectrum of the power sector accounting and operations system. The implementation of such a system

required reengineering of KPLC business processes and not just small and accommodative change.

For support in implementing BPR, The World Bank recommended three consultants who had a proven record of Reengineering in the power sector. Out of these three consultants Union Fenosa was selected on the basis of ;

1. Experience in Process Reengineering Projects within the Energy Sector in the Developing World.

2. Cost of the Overall coverage of the BPR Project.

Union Fenosa is the consultant wing of Acex ,a Power Utility from Spain.

Details of the criteria used to select KPLC staff that would team up with the consultants in recording "As Is" status of processes and their reengineering were rather scanty but the following seemed to have happened:

1. The Consultant identified and recommended Software Applications Products-Release 3 (SAP R/3) software for financials (characteristics of software in Appendix 5).

2. The areas not covered by SAP R/3 software were to adapt customized software developed in-house by Union Fenosa. Such areas included Customer Service, Distribution and Human Resource (in such areas as payroll and medical benefits control).

3. The teams to be involved in reengineering were to be composed of KPLC and Union Fenosa staff in the ratio 1:1.

The aim of KPLC's BPR is contained in it's vision statement which is,"To achieve world class status as a quality service business enterprise so as to be the first choice supplier of electrical energy in a competitive environment."

4.2 Organizational Support of Reengineering

4.2.1 Support Before Start of Reengineering

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[1] Electricity Regulation Board is the regulator of the electricity sub-sector.

Prior to Reengineering , KPLC started a retrenchment exercise in which over 1000 employees took advantage of the golden handshake to retire from the services of the company. This staff reduction scheme was devised with the objective of assisting the company achieve a 45:1 ratio of customers to staff by end of 1997. An attractive retrenchment package was offered as an incentive to encourage employees to take up the option. The package included a 3 month notice payment, 3 months salary for each year worked, and Kshs 100,000 handshake for those under 45 years of age. Those employees aged between 45 and 49 got an enhanced early pension and the handshake. Those aged 50 and over received their retirement benefits as if they had attained normal retiring age. In addition KPLC organised a series of precursory courses, tailor made to equip the retiring employees with the capacity to plan for their lives in retirement .The retrenchment scheme was coordinated by a central staff retrenchment committee and committees constituted in various regional KPLC centres.

Next KPLC established the Institutional Strengthening Project (ISP) to handle and coordinate all BPR efforts in the organisation. ISP was composed of both KPLC and Union Fenosa staff. ISP was started with customer satisfaction as the central focus to support and guide the company's overall reengineering effort .ISP has 5 objectives ;

1. Reducing Operating Costs.
2. Optimising Investment Outlay.
3. Improving Efficiency.
4. Improving Product quality.
5. Improving customer satisfaction.

Its overall goal is that of supplying uninterrupted electric energy to a satisfied customer. The Basic structure of ISP is illustrated below in figure 8.In this figure the Deputy ISP leader served as the reengineering czar.

Figure 8: Basic Structure of ISP

Steering Committee
K.P.L.C Board of Directors
and
Consultants (Union Fenosa)

I.S.P Leader
(Member of K.P.L.C Board)

Deputy I.S.P Leader
and
Other I.S.P Support
Staff

Chairmen of Consulting Groups
I.S.P Staff
Outsiders(Union Fenosa)
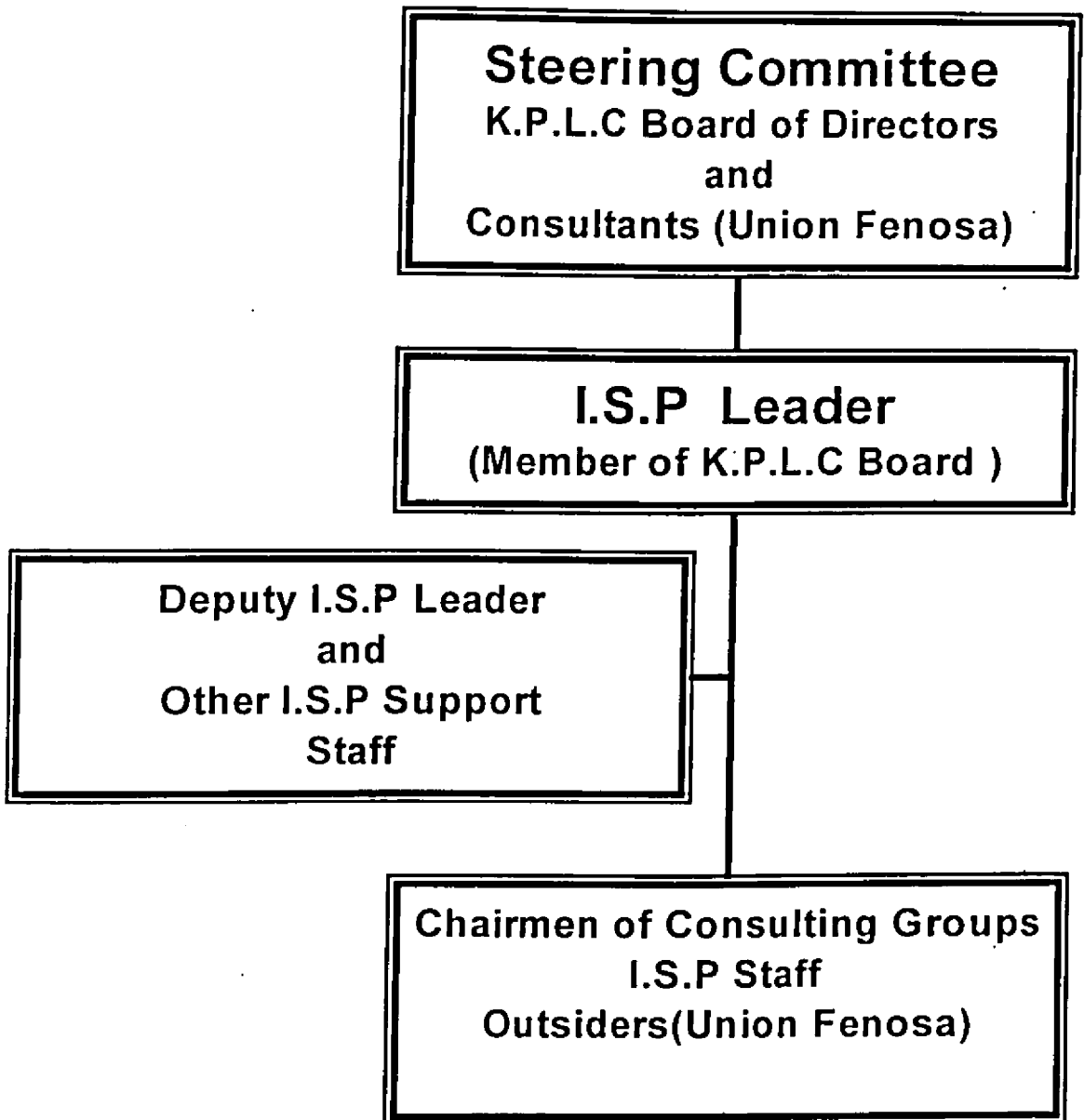
4.2.2 Support After start of Reengineering

4.2.2.1 Problems of Change

The primary issues herein are on how KPLC handled the implications of the three problems of resistance ,control and power identified by Mabey and Mayon-White (1993).Towards addressing the problem of resistance to change KPLC top management undertook to always communicate with its staff through in-house newsletters and also undertake training aimed at helping staff embrace change. In it's financial year ending June 30th 1998 KPLC spent a total of Kshs 113 million on a total of 4578 employees at the company training school and other institutions out of which Kshs 46 million were spent on training programmes in management development ,information technology and customer care and technical skills development.

In addressing the problem of control KPLC's ISP staff first relied on the support of the consultant and Iberafrica who were the vendors of SAP R/3 software .Secondly for purposes of process benchmarking two other firms were used;

1. Acex a Spanish Power Utility firm .
2. Eskom which is South Africa's power utility firm.

The problem of power, which implies the political dynamics of change, was addressed in two ways. First ISP was assured of organisational support by operating directly under the Managing Directors office. This acted as a sign of the seriousness with which ISP issues were taken and also ensured that ISP itself was above " turf wars " especially prevalent in organisations at department or division level. Secondly ISP was assured of key support groups specifically KPLC's unionisable workers .By maintaining industrial peace KPLC management made ISP's work feasible. The means by which this was achieved is outlined in Appendix 9.

4.2.2.2 Systems Development

This involved the customization of an IT platform and installation of appropriate hardware, software and telecommunications. IT played a central role in KPLC's reengineering and allowed the breaking of 4 assumptions;

1. Information appears in only one place at one time. This rule was broken through the use of shared databases , relational databases , client/server architecture and electronic mail.

2. Business must be either centralized or decentralised .This rule was broken by telecommunications and networks.

3. Plans must come to one place to work together. By use of high performance computing systems it was possible for plans to get revised instantaneously whenever needed .

4. A long period of time is spanned between the inception of an idea and its implementation. By use electronic data interchange time-to-market (or Customer) was greatly reduced .

Figure 9 and 10 below provide an outline of KPLC's WAN centre in Nairobi and its countrywide network. In addition Appendix 5 contains futher extracts of telecommunication developments in KPLC and a comment on KPLC's Y2K compliance. Each Regional WAN Node serves other LAN's in its area and in effect means that information is no longer centralized in Nairobi as before.

Figure 9: KPLC's WAN Center in Nairobi
Source: Research Data

Fibre Optic LAN Backbone

To Kisumu and other
Local WAN Nodes

Stima Plaza
Computer
Centre

KPLC   WAN

(KPTC   and Private Lines)

WAN
Routers

LAN Switches

House
Servers

End Users in Stima Plaza LAN which is linked
to KPLC   WAN.

High Speed
Laser
Printers
for Bills
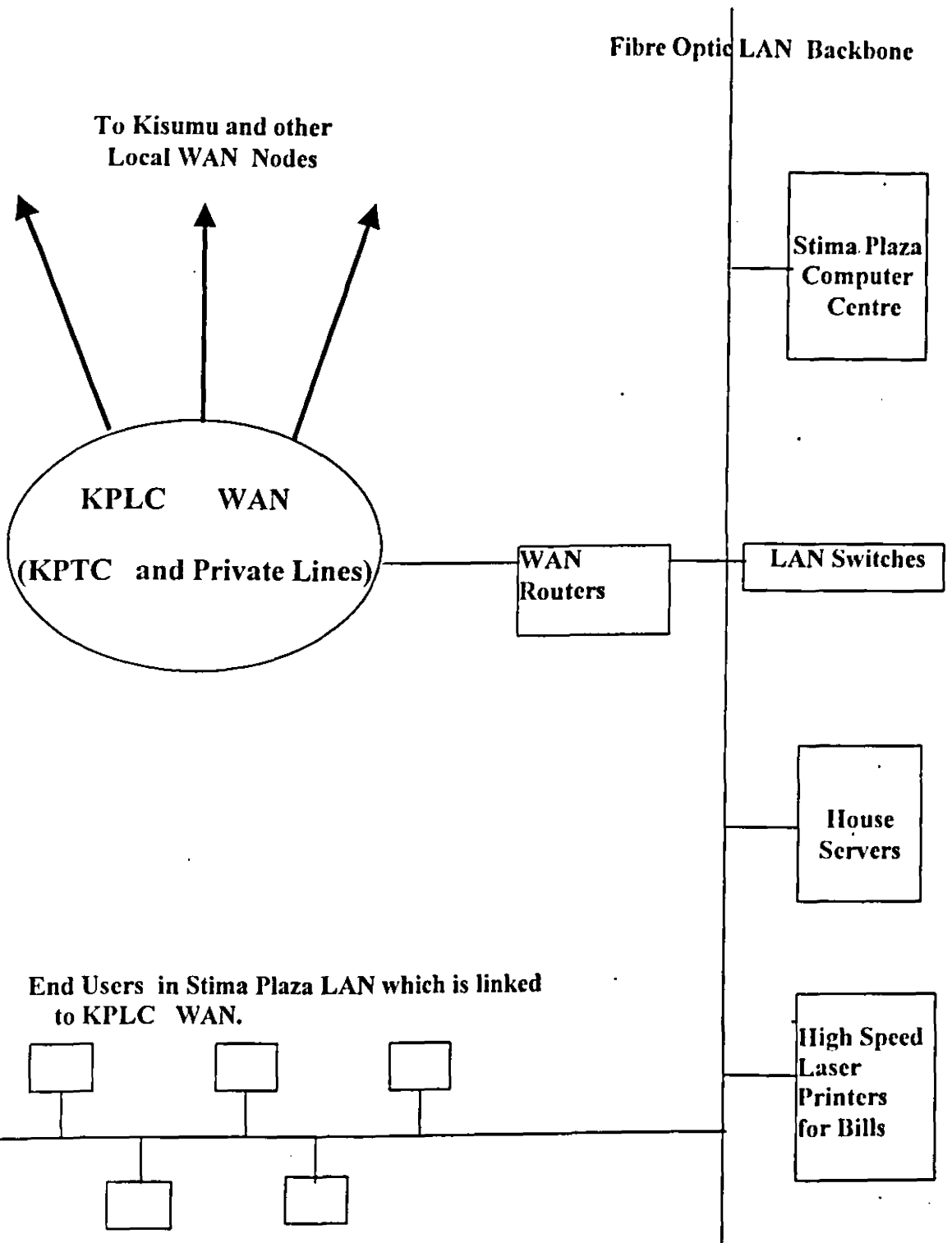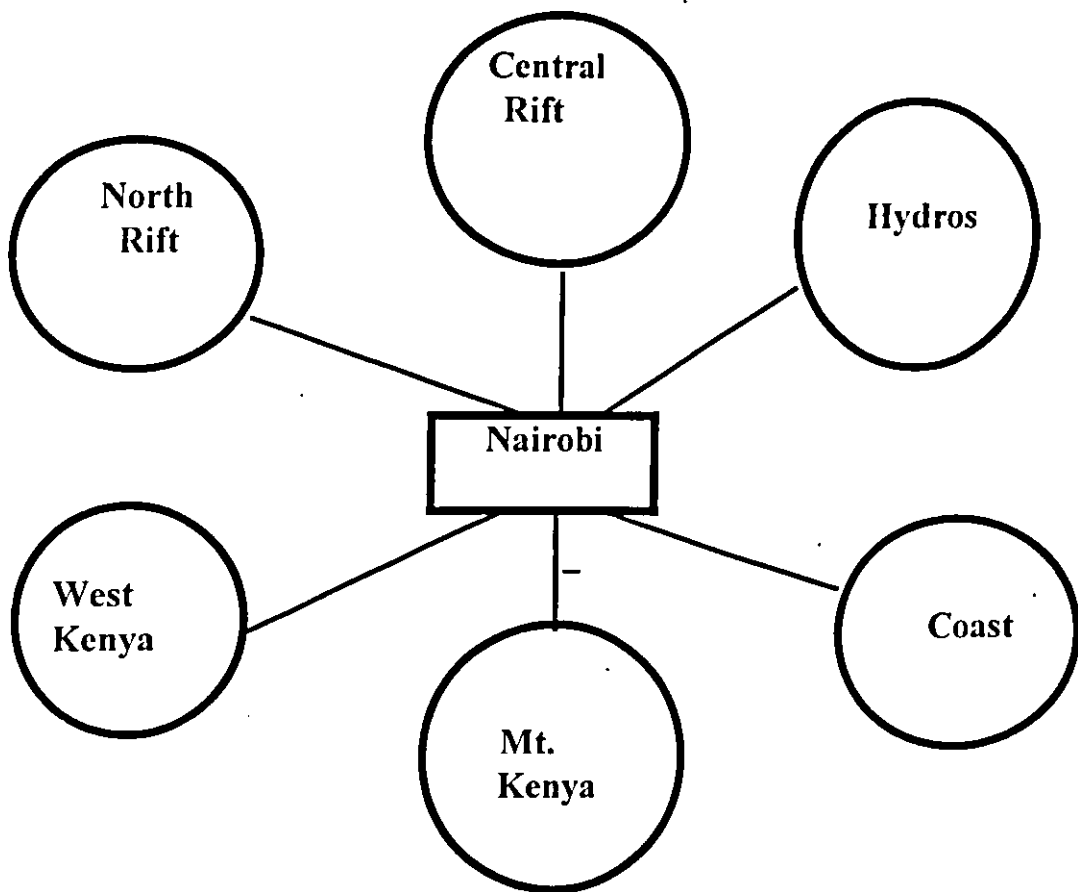
Figure 10 :KPLC's WAN Network
Source: Research Data

4.3 Actual Process Reengineering

Before starting the reengineering process ISP first defined the nature of business that KPLC is in :specifically Resource ,Support and Core Business areas were presented as shown below in Table 4.

Core Business Areas	Resource Areas	Support Areas
Generation	Finance	Hardware ,Software & Telecommunications Organization
Distribution	Transport & Supplies	
Customer Service	Human Resources	

Table 4   : A General Outline of KPLC's Business Areas
Source: Research Data

In trying to attain its overall objective of supplying uninterrupted electric energy to a satisfied customer, ISP identified a number of critical processes around which Reengineering was to focus .This critical processes illustrated in table 5 below are derived from the major problems that led KPLC to BPR.

In choosing the order in which processes were to be reengineered ISP therefore used two of the three criteria mentioned by Hammer and Champy (1993) which in order of importance are:

1. Importance-the processes with the greatest impact on the company's customers.

2. Dysfunction- the processes in deepest trouble with respect to ISP's overall goal.

	Critical Processes	Particulars
1	Backlog in Billing.	3-4 Months lag in Billing.
2	Inadequate Management Information System.	Information system centralised in Nairobi leading to Slow Response times in Decision Making .
3	Outdated Computer technology	Obsolete Computer Technology incorporated with Manual Batch Systems involved in Billing.
	Other Issues	
1	Need for Customer Oriented Practice	Retraining of Staff was required with its focus being on customer satisfaction.
2	Large and Manual Processes	Slow Processes required a radical change to increase performance.
3	Need for Better Management of Inventory in Stores.	

Table 5: Critical Processes and Related Issues Requiring Reengineering Focus
Source: Research Data

4.3.1 Project Implementation

ISP implemented BPR in six general stages outlined below in Table 6. Central to the implantation is the stage of Systems Development which involved the actual customization of the satellite IT systems supplied by Union Fenosa. It is on the basis of KPLC's integrated information system supported by SAP R/3 that processes were sampled .

	STAGES	ACTIVITIES
1	Project Preparation	Selection of Consultants & B.P.R Staff
2	Business Blueprint	Training of Project Staff
3	Systems Development	Customisation of I.T. Platform.
4	Systems Audit	Validation of Systems by External Auditors.
5	Pilot Implementation	Pilot Implementation and from Results Modification of Software.
6	Go Live and Support.	Setting up of change support teams and Quality Control Teams.

Table 6: Project Implementation Stages by I.S.P
Source: Research Data

4.3.2 Processes Sampled

The 34 KPLC processes sampled were segmented on the basis of the Integrated Information System of KPLC as follows:

1. Integrated Customer System (ICS)-selected processes shown in Appendix 7.
   - Incidences Management System(IMS)
   - Customer Services
   - Complaints and Incidences Management
   - New connections (metering).
   - Billing
   - Disconnection's.

2. Integrated Distribution System(IDS)-selected processes in Appendix 8.
   - Facilities Database
   - Preventive Maintenance of Medium Voltage (11KV and 33KV) overhead lines.
   - Preventive Maintenance of High Voltage Lines.
   - Design System
   - Construction System

3. Integrated Personnel System (IPS)-selected processes in Appendix 9.
   - Medical Control Module
   - Training and Development

4. Organisation-selected processes in Appendix 10.
   - Integrated Logistics Systems
   - Logistics Planning Module
   - Properties Administration System
   - Properties Management.
   - Employees Housing Maintenance.
   - Financial Management of Properties.

5. Company Secretary-selected processes in Appendix 11.
   - Insurance Management System
   - Insurance Management
   - Claims Management
   - Financial Management

- ⮂ Legal Affairs Management System
- ⮂ Court Cases Management
- ⮂ Information Management
- ⮂ Financial Management

6. Integrated Finance System (IFS)-selected processes in Appendix 12.
   - ⮂ Entry of Financial Events
   - ⮂ Accounting
   - ⮂ Financial Accounting System
   - ⮂ Management Accounting System
   - ⮂ Auxiliary Accounting
   - ⮂ Budgetary Control
   - ⮂ Consolidation
   - ⮂ Management Control
   - ⮂ Projects

7. Integrated Management System also referred to as Executive Information System.- Simulated examples in Appendix 6.

8. Software ,Hardware and Telecommunications-organisational efforts in Appendix 5
   - ⮂ Quality Assurance

4.4 Analysis

With respect to Companies that undertake reengineering on the basis of motive as identified by Hammer and Champy (1993) ,KPLC falls in the first and second category. The first category of companies are those that choose to reengineer because they're in trouble and they don't have a choice. The second category of companies are those that choose to reengineer not because they're in trouble but because their management can foresee trouble coming.

With respect to the methods employed by KPLC in actual process reengineering, the systematic BPR methodology pillar illustrated in figure 1 as proposed by Paper D.(1998) was observed to apply with one exception. The exception is that none of KPLC's processes were exempt from reengineering.

Organisational support of BPR in KPLC was also comparable with the theoretical proposition put forward by Hammer and Champy (1993) and Mabey and Mayon-White (1993) concerning the reason for reengineering, aim of reengineering and the three problems of resistance, control and power. There was however a discrepancy in the time of introduction of the vision statement to the staff of KPLC at large. This could have worked against the culture of willingness to be open, especially with information, knowledge and news of changes which could have impacted negatively on work values as staff would have then relied on the grapevine . The grapevine by itself is not bad but is open to misleading interpretation of events.

Reengineering communication was done through multiple channels of communications in particular presentations in training courses, in-house journals and notices. Stationery with a bold ISP logo was used in all articles and notices relating to BPR.

The only formal setting for lateral thinking (as defined by DeBono(1971)) in KPLC was brainstorming .No other methods of conducting team meetings like nominal group technique or synectics were used.

4.4.1 Changes resulting from Reengineering

Prior to reengineering as earlier mentioned , work in KPLC was accomplished on batch systems with one mainframe serving commercial and finance divisions, with a few standalone personal computers in other divisions . The bulk of the other systems like Inventory Management were manual. Reengineering introduced networking in KPLC country wide and Real -Time-Transaction -processing or live processing of on line data became the norm.

4.4.1.1 Processes

Not all the processes could be said to have had a marked change in key performance indicators of cost ,quality and speed as a result of reengineering .

Metering or New Connections illustrated in appendix 7 was in an enviable position of getting rid of the shortfalls of the old system by ensuring;

1. No loss of documents.
2. Online Inter-departmental communication.

Because of the old process being manual ,the illustrated tasks involved interdepartmental transfers of actual documents by messengers . For each task the document had to be moved to the persons desk in order to be processed which it usually did in a batch with other similar documents and was processed as a lot. It could however get misplaced or held up quite easily since it was processed through a registry .With the new metering responsibility of connection of a new customer is on customer service who cannot forget the job since the system flashes them a reminder on pending jobs. In addition every person with a role in the process has a constant system reminder of jobs awaiting his expediting to the next task (this system reminder cannot be deleted until the person provides his input and forwards the job to the next person). Furthermore because of automating of the various tasks the system automatically allocates various tasks like the role of preparing material lists required for the job. Collusion among staff to Hot-wire the process is therefore made very difficult.

In the case of the medical benefit control process, the changes were not that tangible over the older process, which involved the use of sick sheets. This was primarily because its main advantage over the old process would have been in having computerized databases for both the chemists and doctors. Sadly most administrative duties by the two professions are still carried out manually in Kenya. However the process even when not leading to drastic performance cannot be evaluated in isolation. For example this process greatly helped the IFS and the payroll module in improving their efficiency.

4.4.1.2 Organizational Structure

Upon examining KPLC's organigram before and after BPR only one change could be attributed to BPR. Except for the renaming of certain divisions like commercial to customer service the only change has been the addition of an Information Technology Division .This Information Technology division covers the ISP project and is represented in the Board of Directors by The Reengineering Leader who is also the ISP project leader. The elevation of ISP project to direct representation in the board of directors happened in mid 1998 as the Reengineering Consultant Union Fenosa handed over the full running of processes to KPLC staff.

4.4.1.3 Work Units

In theory there are three types of work units in a reengineered firm: case teams, virtual teams, and case worker teams. Post reengineered KPLC mostly consists of the case team type with some few cases of the case worker team . An example of the case worker team is the control centre operator in the Incidences Management System illustrated in appendix 7.

4.4.1.4 Employees Roles

Employees roles have been greatly empowered and enriched by introduction of the integrated systems. An appropriate example is that of the control center operator in the Incidences Management System illustrated in appendix 7.Prior to reengineering no one persons' job scope in the customer service division could be so wide and actually be carried out online with the client. The further automating of tasks and improvement of information capture has allowed the freeing of personnel to pursue tasks that cannot be automated and can act as bottlenecks in processes. An example of such a task is wayleaves task in metering illustrated in appendix 7.

4.4.1.5 Managers Roles

Once a transaction is processed through the Integrated system the data becomes available immediately to various staff subject to certain security clearances .What this has meant is that managers roles have changed from authority centers(since their staff have been empowered to make routine decisions)to coaching roles involving assessing progression of work towards meeting objectives and handling non routine aspects of their work. For example the production of end of quarter or year financial accounts is no longer.such a big deal for the finance division. This is a bygone conclusion for the managers. They are in fact no longer asking,"what is the number?" but rather,"What does this number mean and how can we use this information?"

4.4.2 Problems encountered while Reengineering

Various problems were encountered while Reengineering. In order of importance these are;

1. Interface and Data Integrity Problems

   Interface of the various systems was sometimes problematic with inputted data or information not being accessible to users in other systems and also sometimes not looking as inputted. There were a number of reasons for this. First was that KPLC was in some instances using telephone lines in transfer of data in its wide area network. Secondly comparison of data is made much harder by live on line processing since the information or data is changing every moment as new information is being enjoined. Thirdly there were initial problems of the systems security management specifically the control of access to information through the use of passwords. Unauthorized access to information can lead to editing of the same, producing data integrity problems the cause of which would be difficult to trace.

2. Resistance to Change.

   Customer care seminars were held to try to tackle this major problem. For key staff who could not cope with change, transfers to other less dynamic departments were initiated .Non key personnel who didn't have a place after Reengineering were paid off thus providing a dignified exit from the organization.

3. Selection of Suitable Systems to Install when Developing Systems

   Various IT platforms that had worked in other countries could not work in Kenya because of certain Infrastructure and other 'anomalies' present in the Kenyan environment. For example the initial Medical control module was developed assuming that chemists and doctors had computerized their services which is not the case in Kenya. In other cases IT Systems that looked suitable had to be customized. This was the case for the Integrated Customer Service system (developed in-house by Union Fenosa) which could not be installed as it had been developed and had to undergo customizing to suit Kenyan conditions.

4. Problems with Key Organizations and Parties involved in or interacting with KPLC's various integrated systems .

   Such organizations like Survey of Kenya and Kenya Posts and Telecommunications Corporation frustrated KPLC's efforts to start a Geographical Locational System in their billing system. Survey of Kenya had for

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example no up to date maps of all urban towns or significant digitized maps of Kenya and has therefore made the job of creating the Facilities Database illustrated in appendix 8 very difficult.

5. Proliferation of Departments while Reengineering.

In the process of making KPLC process oriented in structure many departments were created and the organization then became too complicated. Various departments had then to be merged on the basis of similarity. An example of this is the making of Design and Construction part of the Customer Service Division.

6. Customers Habits

Despite KPLC staggering its bills most of its customers still prefer to pay their bills at the end of the month. This creates a lot of congestion at the customer service centers every end of the month. This customer habit could be attributed to the harsh economic times faced by most KPLC customers and subsequently they aren't able to accumulate any substantial savings. Attempts at introducing efficient queuing systems failed though this could be explained away as being not customer caused since the same queuing systems have been introduced in banks and they do work. Probably better customer communications need to be initiated when introducing new queuing systems in the customer care centers. With a view to easing paying of bills KPLC has introduced paying of bills;

➲ Through banks although so far only Cooperative Bank account holders can pay through their Bank.

➲ By customers through the automatic teller machines of banks.

Chapter 5

Conclusions and Recommendations

5.1 Conclusions

KPLC Management seems to have taken BPR seriously as is evident from the resources accorded to the change effort .In addition the ISP staff can be said to have been accorded due audience by the organisations top management given the team was operating from the Managing Directors Office. Overall the issues of resistance to change, political dynamics of change and need to manage the transition were well addressed.

By engaging consultants in its change effort KPLC has been able to leverage other companies efforts in its reengineering and also accessed information systems development skills .

The role of Information Technology while generally downplayed in Reengineering literature was central to KPLC's BPR effort by helping it in drastically changing the way it conducts it's business. Interestingly evidence of the other manifestations of BPR (from literature) like flattening of the hierarchy was lacking. The only change in the company's organigram has been the creation of Information Technology division ..Although the new division largely took over the former role of the IT Department it's elevation to Board of Directors Representation status significantly strengthens its placement.

The problems of KPLC in reengineering that could be unique in Kenya are two; culture and infrastructure specifically telecommunications. The first is as manifested by the methods of administration adopted by chemists and doctors in Kenya while the second is one of the causes of the data integrity problems faced by KPLC's reengineered processes.

Except for the retrenchment of staff right at the beginning of the reengineering exercise, no other substantive reduction of staff numbers has been implemented. This is contrary to evidence concerning organizational support of the reengineering effort specifically that of improving working methods. Some of these changes in working methods which were expected to lead to a reduction in headcount as a result of 'working smart' are illustrated in appendix 13.

While security of the various integrated systems has been addressed by having authorization codes, there is a need to ensure that all Satellite systems that are custom made for KPLC are documented and authorized.

Institutional success of KPLC's BPR effort in the form of performance indicators could be assessed for the core processes (processes around which the reengineering was focused) but not for all the support processes. For example the Reading-Billing cycle mentioned in appendix 7 has for example been reduced by 11 days from 14 days to 3 days .Assessment of the efficiency of a process cannot however be carried out in isolation since some are dependent on the performance of others. Of special mention here are the EIS and IFS which are dependent on the performance of the other systems.

Finally the management of unionisable workers in KPLC though not emanating from the BPR effort serves as a good example of future developments in techniques of maintaining industrial peace. Of special mention is the Central Joint Council (CJC) which is a forum where all issues affecting terms and conditions of service of the unionisable employees of the company are discussed and where possible determined. Further information on the CJC is in appendix 9.

5.2 Recommendations

There is a need for KPLC Top Management to consider the option of outsourcing certain activities, which do not form part of the core business or could be more ably done by others outside the organization. An example of a process that could be considered for contracting out is the management of medical benefits.

All satellite systems which are custom made for KPLC should be documented and authorized. This will greatly ease the future development and upgrades of the various systems and system management.

In trying to solve some of the problems to do with data integrity, the option of switching to a sleeper mode of operation instead of on-line real-time-processing of information should be considered. Such a mode of operation would allow the updating of databases with information at specific times when the system is idle (say at midnight every working day) and after the information has been verified to be correct ..A byproduct of switching to this mode of operation would be a reduction on the required processing capacity since the system response time would be greatly improved (which would imply a direct saving on having to acquire servers).

Other formal settings of lateral thinking other than brainstorming like synectics and nominal group technique should be considered for incorporation into meetings.

5.2.1 Directions for Future Research

There is a need for Surveys of firms in Kenya in order to investigate the following :

1) Methods adapted in BPR Implementation.

2) Contribution of IT in BPR in Kenya.

3) The Problems specific to Kenya that hinder BPR.

4) The Role of Management methods like Nominal Group technique and Synectics in Participative Management and the extent to which methods like 360 Degree Appraisal have been adapted in organizations that are Reengineering.

5) Corporate culture and also compute the Power Distance Index as defined by Hofstede(1991).

6) Impact of Corporate Culture on business process reengineering and ways in which it is made enabling to the change effort of reengineering.

7) Replicating the study by Brynjolfsson, Renshaw and Alstyne (1997) (an outline of which is provided in section 2.6.1.1 and appendix 2) in Kenya with a view to coming up with useful guidelines on where, when and how fast to implement radical change in firms.

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Appendices
Appendix 1
The Self-Assessment Diagnostic

Reengineering Leadership

1. The leader of reengineering is a senior executive who is strongly committed to reengineering and who possesses the title and the authority necessary to institute fundamental change. Score:_____.

2. The reengineering leader truly understands the nature of reengineering and the magnitude of the change-organisational change in particular- that it entails.Score:_____.

3. The reengineering leader has a vision of the kind of organisation he or she wishes to create and is able to express that vision clearly and simply in operational terms. Score:_____.

4. The reengineering leader is ready and able to exercise leadership-through communications, personal

   behaviour, and systems of measurement and reward- in order to make reengineering succeed.Score:_____.

5. The reengineering leader is prepared to commit both the organisational resources and personal attention that reengineering requires.Score:_____.

6. The entire senior management team shares the leader's enthusiasm for reengineering.Score:_____.

Organisational Readiness

7. The organisation as a whole recognises the need for reengineering and fundamental change.Score:_____.

8.The organisation understands the nature of reengineering. including the fact that it results in multidimensional change that impacts processes.jobs.organisational structure. management responsibilities. e.t.c.Score:_____.

9.The organisation believes that the reengineering leader and the senior management team are truly committed to reengineering, and this commitment will be long-lasting.Score:_____.

10.The organisation has none of the complacency and arrogance that often follow a sustained period of success.Score:_____.

11.The organisation is free of the skepticism.mistrust and ambivalence that often follow a program of downsizing or restructuring.Score:_____.

12.The organisation has the financial and human resources needed to implement reengineering Score:_____.

13.Key staff organisations-human resources,finance,and information systems-are positive about the prospect of reengineering and capable of innovative response to its demands.Score:_____.

14.The organisation's experience with total quality management (TQM) has created an environment that is receptive to reengineering.Score:_____.

15.The organisation places a high value on serving customers and has a solid understanding of customer needs.Score:_____.

Style of Implementation

16. The organisation is comfortable with the way in which reengineering proceeds. through risk taking. learning.and ambiguity.Score_____.

17. The members of reengineering teams will feel empowered to "break the rules" and to challenge long standing assumptions .Score_____.

18. The reengineering effort is directed at key business processes rather than organisational units.Score:_____.

1~ Managers have been given end-to-end responsibility for the processes to be reengineered and are motivated to assure that the processes are successfully reengineered.Score:_____.

20. Measurement systems and performance goals have been established to chart the progress of reengineering.Score:_____.

Evaluating Scores

The following list indicates the minimum numbers the authors believe an organisation should score before tackling reengineering- that is, prior to launching the effort. Some issues are more important than others, and hence have a higher minimum score .If ones' score on a statement is lower than the indicated minimum, one should take steps to raise it.

The score for each section and the overall minimum score should both be met. Scoring above the minimum for both however does not absolve a firm from further effort.

Minimum Scores

Reengineering leadership

Statement 1:4

Statement 2:3

Statement 3:4

Statement 4:4

Statement 5:4

Statement 6:3

Minimum score for section :24

Organisational Readiness

Statement 7:3

Statement 8:2

Statement 9:4

Statement 10:2

Statement 11:2

Statement 12:3

Statement 13:2

Statement 14:3

Statement 15:3

Minimum Score for section :28

Style of Implementation

Statement 16:3

Statement 17:4

Statement 18:4

Statement 19:3

Statement 20:3

Minimum score for section :18

 Minimum Score for Diagnostic as a Whole: 75

Table A : Different Work Organisations

Hierarchical Organisation	Network Organisation
Mass Markets	Customised production
Fewer Models/Longer lives	Broader offering/shorter lives
High Vertical Integration	Low Vertical Integration
Specialised high-volume Machinery	Flexible machinery
Large W.I.P and F.G. Inventories	Low J.I.T. Inventories
Vertical Communication	Direct Communication
Competing arm's-length suppliers	Fewer ,more trusted suppliers
Function-based Work groups	Cross-functional teams
Multitiered Management	Flatter Management
Narrow job descriptions	Local Autonomy/decentralised decisions
Fixed wages for output	Residual claim incentives
Rank-based Authority	Expertise-based Authority

Matrix Interaction

+	Strong Complement
+	Weak Complement
−	Weak Interference
—	Strong Interference

Column headers:

- Marketing
- Production and Design
- Organization
- Human Resources

Importance | Customized Production | Flexible Machinery | Low JIT Inventories | Use of Advanced IT | Cross Functional Teams | Flat Management | Decentralized Decisions | Expertise-Based Authority

		Importance	Customized Production	Flexible Machinery	Low JIT Inventories	Use of Advanced IT	Cross Functional Teams	Flat Management	Decentralized Decisions	Expertise-Based Authority
Marketing	Mass Markets		−		−				−	
Production and Design	High Vertical Integration		−	−		−	−	—	—	−
	Large WIP and FG Inventories			−		−				
Organization	Competing Arm's-Length Suppliers			—						
	Function-Based Work Groups		−			−	—	−		
	Multitiered Management		−			−	−	−	—	−
Human Resources	Narrow Job Descriptions			−		+	−	—	—	
	Rank-Based Authority					+	—	—	−	—
	Importance									

Hierarchical Organization

Appendix 3

Date... 14/01/99... ... ...

TO WHOM IT MAY CONCERN

The bearer of this letter... ...   THIGA, JAMES K. ... ...

Registration No... ... ...   D61/7082/97 ... ...

is a Master of Business and Administration student of the University of Nairobi.

He/She is required to submit as part of his/her coursework assessment a research

project report on some management problem. We would like the students to do their

projects on real problems affecting firms in Kenya. We would therefore appreciate if

you assist him/her by allowing him/her to collect data in your organisation for the

research.

Thank you.

Sincerely,

DR. MARTIN OGUTU

Lecturer, and Co-ordinator of the MBA Programme
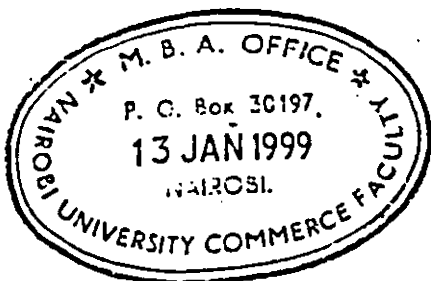
Telephone: 728670/3, 728682/5,
72470/4

Our Ref:

Your Ref:

19th March, 1999

The Managing Director,
Kenya Power & Lighting Co.Ltd.,
P.O. Box 30099,
NAIROBI

Dear Sir,

RE: THIGA, J.K. - D61/7082/97

As part of his end of course project, the aforementioned
student wishes to carry out a detailed case study of
your organization's process re-engineering.

To accomplish this he is required to carry out an initial
pilot study to establish appropriate methodology to adopt
in gathering information on process re-engineering in
addition to background information on your organization.

Any information or data gathered from both the pilot and
actual case study will be used purely for research and
will of course, be accessible to you for self appraisal.

Any assistance given to him will be greatly appreciated.

Yours faithfully

J.K. KIPNGETICH
DIRECTOR

Appendix 4

Interview Guide I

1) Name and Job Designation of Interviewee.

2) Give a Background of B.P.R. in your organisation as follows:

a)Outline the "Case for Action" and the "Vision" Statements in the organisations reengineering effort and how they were arrived at.

b)Provide an outline of the types of groups involved in reengineering (The Leader ,Steering Committee,Czar,Process Owner and Reengineering Team) and the relationships between these groups, highlighting in particular the members of the Steering Committee and its role in the B.P.R effort.

3) a)How did your organisation prepare for the step change brought about by B.P.R?

b)What other policy changes were sought to facilitate B.P.R?

4) What does your organisation see as the role of Information Technology in its Reengineering effort?

5) How has your organisation rewarded employees who undertake reengineering?

6) What has been the role of outsiders in the whole process of B.P.R, from preparation for B.P.R to reengineered processes?

7) Were there any other efforts by the organisations top management to facilitate B.P.R Implementation, not covered by any of the questions above ?

8) a)What were the processes identified by your organisation as constituting the business your organisation is in?

b) On what basis were the processes grouped ?

c) Were all the processes outlined above to undergo Reengineering?

d) Was there an order in which processes were to be Reengineered?

9) What were some of the problems faced at the organisational level;

a)Before Reengineering.

b)During Reengineering.

c)After Reengineering.

Interview Guide II

PROCESS NUMBER:_____

Description of Process:_____

_____

1) a)Name of Interviewee.

b)Job Designation of Interviewee.

c)What was your role in Reengineering the aforementioned process?

Part A

2) Give me an outline or map of the old process .

3) What were the performance measures used in judging the old process?

4) a)Before starting actual process reengineering were there any problems encountered or special circumstances taken into account?

b)If there were any problems encountered please rank them in order of importance.

Part B

5) Who were the members of the Reengineering team in terms of working background and profession training?

6)a) How were team meetings conducted?

b) How often were team meetings held?

7) How many hours in a week did you spend on the actual process of reengineering?(Please include time in and out of meetings of reengineering)

8) Did you use any special tools or methods to assist in reengineering the process?

9)a) How and when did the team liase with the steering committee?

b) How did the various ideas from and decisions made by the team fare with the steering committee?

c) How long did it take the team to come up with a complete redesigned process with only actual implementation pending?

10)a) How and when (at what stage of process reengineering) was the process owner chosen?

b) How was the process owners' eventual job facilitated by team members and the organisation as a whole?

:1) Please mention any other issues you feel could help in understanding the actual process of reengineering and implementation that haven't been mentioned in any of the earlier questions.

Part C

12) Please give me an outline or map of the new reengineered process.

13) How was the switching from the old to the new reengineered process done?

14) a) Was the redesigned process implemented in its entirety?

b) If not please give reasons and problems encountered and rank them in order of importance.

15)a) Have you assessed the new reengineered process yet?

b) If you have please provide actual performance data.

Appendix 5

Software, Hardware and Telecommunications
Characteristics of SAP R/3 Software

SAP R/3 short for Systems Applications Products -Release 3 is an on-line system which means that data is available for every user in the system as it is captured ,for example by posting a document in accounting or creating a material master record .

It also has a Graphical User Interface and is quite easy to use leading to end users being able to run reports and analysis without requiring I.T department help. It's functionality is also greatly improved by use of relational databases.

Data Integration

Data in different modules is completely integrated with the rest of the system,with the result that every piece of information is entered only once and it is immeadiately available for every module that needs it , therefore there is no need for batch interfaces between modules.

Versatility

SAP R/3 covers a great range of situations .It's not industry specific and as such allows for the possibility of changing procedures easily as new requirements appear or more complexity is added. In addition it can be used for many companies ,for example it can be used by both KenGen and KPLC.

Integration with other packages

SAP R/3 has its own tools for developing interfaces with satellite systems .The Batch-input technique used for introducing data from other packages into SAP R/3 in a very secure way making all the validation checks exactly as if the transaction is being realized on-line.

System Maintenance

For SAP R/3 system, maintenance is carried out using fourth generation languages and relational databases. Fourth Generation Languages greatly simplify system maintenance when compared to systems maintained by lower level languages.

Others

SAP R/3 system offers total cover for the stores and purchasing area for KPLC. This means that for the Integrated Logistics System KPLC required minimal satellite systems.

Y2K Compliance

Deadline for KPLC to be Y2K compliant was March 31,1999. A Y2K Technical committee was set up to consolidate organisational efforts to meet this deadline. Towards ascertaining this compliance KPLC contracted External Consultants from Y2K Solutions Africa to carry out tests to validate other tests conducted by the companys' Technical committee.

The efforts towards Y2K compliance of KPLC software and hardware has also been guided by assistance and cooperation from South Africa's Power Utility Eskom in the form of organized tours and seminars in South Africa for KPLC's Y2K technical committee.

Telecommunications

Fibre-optic Cables

By the end of the second quarter of 1997 fibre-optic cables were installed between Dandora 220KV Substation and Juja National Control Center(NCC).

Dandora substation is the main transit station for voice and data communication between the NCC and other KPLC establishments in Nairobi and the rest of Kenya.

Prior communication was transmitted through Powerline carrier. However the 7 channels provided through this carrier were highly congested by the late 1980's hence the need for highly versatile technology. The 2 optical fibre cables offer more than 120 channels and are used in all forms of audio, data and general information. The cables are also immune to electromagnetic interference.

Microwave Link

By the end of the second quarter of 1997 a microwave link had already been established between Electricity House and Stima Plaza. This link serves as a communicator path for an on-line link to the computers located at Stima Plaza. This Microwave link cost US$ 344,000 and consists of antennas, radios, multiplexors and standby batteries as back up supply. It has the capacity to link 60 telephone lines at the same time and provide means for data flow capacity of 4Mbps for the computer.

Appendix 6

Integrated Management System

This system also known as the Executive Information System (EIS) can access any part of KPLC's Corporate System. It is used KPLC's top management and provides them with two types of information ;

1. Evolution Information and Monthly Statistics

The EIS provides analysed information in Tabular ,graphic or both forms whenever the authorised user requires certain specific information. The criteria selected to compose the queries depends on the required point of view..These criteria determine the information displayed and its presentation, depending on the point of view.chosen when the query is executed. There are 2 general points of view in a query ;

- ⊃ The systems point of view which is a default setting.
- ⊃ The Users point of view which involves the user configuring the system to his or her convenience in the exact way he or she may require the information's format.

The main criteria are as follows;

- ⊃ Selected Business Indicators
- ⊃ Selected dimensions
- ⊃ Configuration of the table and or graph-size, color and fonts.
- ⊃ Presentation Mode-whether graphic ,tabular or combined.

1. Business Indicators that are used to measure management's performance on the basis of fulfillment of objectives set for all business units in KPLC. Performance Indicators aren't provided in isolation but together with;

- ⊃ The dimension type range as desired by the user.
- ⊃ The history of the specific performance indicators .This history could be in either of the following forms -monthly average in the previous year, monthly mobile average or with respect to the set objective .

The following are two illustrations of use of the EIS in accessing evolution information about specific diverse operations in KPLC with the corresponding performance indicators attached.

Illustration 1

A user seeks information on budgeted breakdown of costs of large works (in excess of Kshs 10 million) in Network Development.

I.   From the main menu of the EIS the user will select the Design and Construction System (DCS).

II.   From DCS main menu the user then selects the Network Management Module.(a lot of explanation of the structure of DCS is assumed here since SAP R/3 is accessed in windows and so is user friendly and will provide guidance as the user progresses in specifying the query).

III.   From the main menu of the Network Management Module the Network Development Submodule is then selected.

IV.   From the Network Development Submodule evolution information is set in 5 *Blocks* as follows- planned works,large works,works ,contracts and physical units. The user will then select Large works and specifically Costs Breakdown (Budgeted) from its main menu. Under this budgeted breakdown of costs the following indicators are available;

   ➲ % Progress of work.

   ➲ Budgeted Amount of Work.(Kshs).

   ➲ Budgeted Amount of the processing of the Work (Kshs).

   ➲ Budgeted Amount of the permits of the work (Kshs).

   ➲ Budgeted Amount for other costs of the works (Kshs).

   ➲ Budgeted Amount for contract materials of the works (Kshs).

   ➲ Budgeted Amount for the company materials of the works (Kshs).

   ➲ Budgeted Amount for the labor of the work (Kshs).

In addition all this information;

⊃ could be produced on an yearly or monthly operative units , teams or workgroups and state of work basis with the history of the specific indicators attached . These dimensions are the means by which the above indicators will be segmented or divided.

⊃ can be shown in Tabular or and graphical 2D or 3D output as desired by the user.

Illustration 2

Supposing the user requires to know the number of planned retirements in Finance.

The Indicators in this case are

⊃ expected number of staff to retire.

⊃ Actual number of staff retired.

The 13 available Dimensions are ;

1) Job Category-Executive, Management(senior standard or standard),Union(standard union or union),trainees ,casuals.

2) Period

3) Area

4) Gender

5) Age

6) WorkAge

7) Division

8) Education

9) Type of medical expenditure

10) Doctor/Chemist/Hospital

11) Employee /Beneficiaries

12) Course Group

13) Course Trainer

In addition the period level sought would be yearly or ,and monthly.

In this case the user from the EIS main menu could choose to access the IPS or alternatively access the Resources Module that will eventually land him in the human resources submodule.

The Information in the human resources submodule is in 5 blocks each with the following number of dimensions;

1)   Staff Evolution,recruitment-8 dimensions.

2)   Salary/pension-7 dimensions.

3)   Medical-8 dimensions.

4)   Training-10 dimensions.

5)   Finance Interface-4 dimensions.

In this case the user would choose the Staff Evolution, Recruitment Block. The 8 relevant dimensions available under this block are; job category ,period ,area ,division ,gender ,age ,education and work age.The user has a choice of what dimensions to use to segment his information.

In addition all this information

⊃ could be produced on an yearly or monthly basis with the history of the specific indicators .

⊃ can be illustrated in Tabular and or graphical output as desired by the user .

Appendix 7

Integrated Customer System(ICS)

This is the main system within the scope of the ISP and has been managing all of KPLC's clients since September 1997.The implantation of the ICS affected the operation of the whole of KPLC creating new commercial management concepts and a new perception of the business , better focused on improvement of customer service and the resulting increase in invoicing and collection.

As a result of installing its IT Platform, KPLC has been able to:

- ➲ Have customers pay bills in any KPLC customer Service office irrespective of location of meter. For example payment of a customers' bill need not be in the same town as the customer resides in.

- ➲ Meet Billing Requirements for themselves with enough capacity left over for future expansion.

- ➲ Have one-stop-shop Customer Centres where there is integrated Customer Service involving;

    1)   Applications for new connections.

    2)   Payment of Bills.

    3)   Account Queries.

    4)   Closing of Accounts.

    5)   Change of Address.

    6)   Disconnections/Reconnections.

As part of improvement of customer service KPLC is currently undertaking a project under ISP to have customers pay for electricity Bills through Automatic Teller Machines

In the near future KPLC intends to further improve on this by having its bills paid automatically via customer accounts in banks. An example of such an arrangement is the one with Cooperative Bank whose customers can pay their electricity bills through their banks without having to go to any customer service center.

IT has enabled breakthrough performance in KPLC's Reading-Billing cycle .The Reading-Billing cycle has been reduced by 11 days from 14 days to 3 days .The target sought is 1 day (that is one day to have the meter read and the bill posted to the customer).

This has been achieved through the use of handheld sets for recording of meter readings. This handheld sets ensure that meters where possible are read (and meter readers don't just extrapolate readings like before since the databank in the notepad contains only customers name ,account number and location with no previous meter readings),performance of meter readers is assessed (because the notepads do record time of each meter reading entry) and the Reading-Billing Cycle is expedited because downloading of meter readings is done in the evening when returning the handheld set .

To further improve customer service, zonal competitions have been introduced. In the 1998 competition Nakuru Zone was the winner .Rewards were in the form of cash bonuses with the manager receiving a cash bonus of Kshs 20.000 with each meter reader receiving Kshs 5,000.

Billing performance has improved greatly from 7,000 to 35.000 bills prepared and sent daily.This radical improvement in billing performance actually means that KPLC can bill all its customers in approximately fifteen days if the Reading-Billing cycle takes only 1 day countrywide .

Towards improvement of Debtors KPLC has launched an advertising campaign to have customers have accounts in their own names rather than pay through second parties like landlords. By obtaining particulars like identification numbers, customers cannot default on payments even when they shift to a different zone because the identification particulars are primary keys in the customer database and they therefore cannot hold other zonal electricity accounts (while having the same particulars) until they pay their arrears.

Incidences Management System(IMS)

IMS installed in January 1997 came as a sequel to the Emergency Management System installed in June 1996.

The aim of IMS is to provide a tool to allow proper management of problems detected in the electric network in order to:

- ➲ Optimise the resources (both human and material) used in their solution.
- ➲ Improve Customer Service Quality.
- ➲ Provide the company with the control mechanisms necessary to increase its management efficiency.

IMS can be divided into 4 broad modules;

1. Customer Service.
2. Complaints and Incidences Management.
3. Installations and Connections Query and Update.
4. Management Database.

Customer Service

This modules basic role is to liaise between the customer and the breakdown repairs by means of entering the complaint for its immeadiate handling through the corresponding Area Control Centers.

This bring about a better and faster response to the customer on the part of the company .as the operator who receives the call manages at the same station the customers commercial as well as technical information.

Pending Complaints and Incidences Management

This module is the most important in the system, as it is here where the customers complaints are handled through the incidences in the distribution network management. The systems philosophy is not to attend to the complaints individually, but rather to group them according to the feeding of the affected customer and the information on susceptibility of connection to the network .By the system avoiding duplication of efforts mainly in times of adverse weather conditions when the network incidences tend

to accumulate ,better management of human and material resources is achieved. This module is made up of 4 submodels which are :

‌⊃ Pending Complaints Query

‌⊃ Incidences Query which deals with already identified problems in the electric distribution network.

‌⊃ Incidences Update

‌⊃ General Queries obtained as a result of the information registered in the daily operation;

‌   ⊃ which help in the work of the Area control Centers Operator as well as

‌   ⊃ that of the remote control centres operator and

‌   ⊃ the people entrusted with short,medium and long term planning.

Installations and Query Update

Data gathered in the installations , connections and maintenance campaign is the foundation on which the system rests. As such its necessary to query any of this data in order to keep it correct at all times.

Any creation ,termination or change effected in the network (by operation personnel, construction personnel or contractors) that may affect the systems installations and connections information must be updated in this module.

Management Database

The whole of the daily activity entered to the system is summarized , processed and entered in the management database. This information ,updated to the day and displayed at different levels of geographic grouping , allows the activities control and follow up, and is of great assistance in decision making.

Functional Extensions of IMS

1. Integration with the Geographical Information System.

2. Interfaces with SCADA Systems (which are systems of telecommunications between generation stations, substations and the national control center).

3. Isolations Simulations (to study possible power affected.loads.customers .Kwh losses e.t.c).The different possibilities to isolate the section where work is to be done or intended to be left without service. can be studied from the future integration and graphic presentation.

4. Module to manage the materials used by the teams that carry out repairs.

5. Implantation of an Interactive Voice Response Telephone System (IVRS) . which automatically calls those customers who complained, when their service is restored.

Figure B: Complaints Reception(Simplified)

Source: Research Data
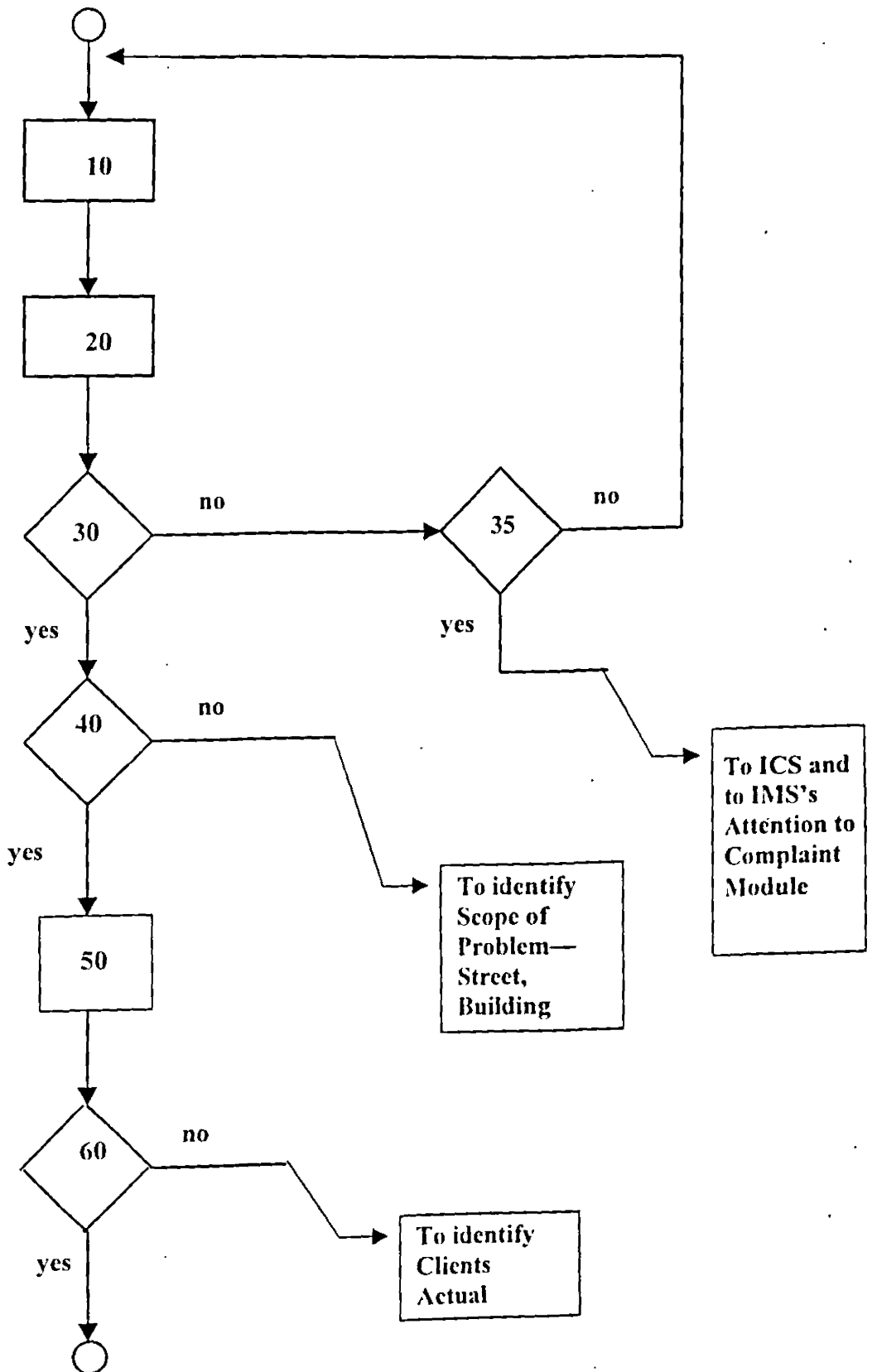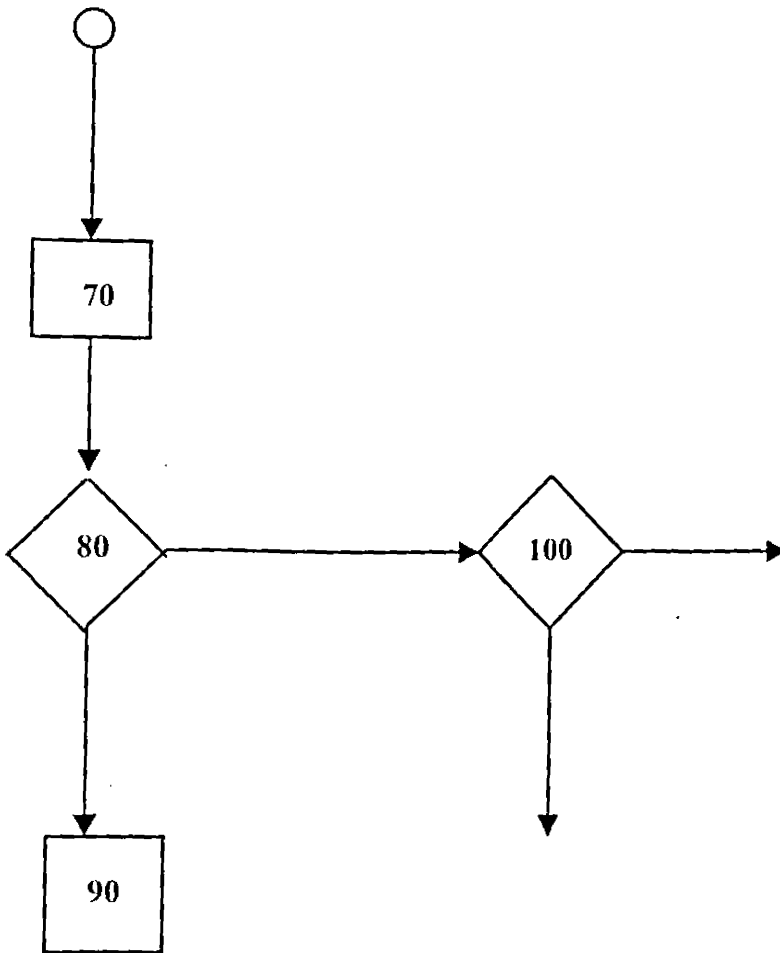
10 Control Center Operator (CCO) remains waiting for a new call.

20 CCO determines the type of problem with customer.

30 Is complaint related to Distribution Problem?

35 Does SCP exist?

40 Is it a problem on customers supply only?

50 CCO tries to identify customer.

60 Is CCO able to identify customers location?

70 CCO Identifies Customers Supply.

80 Is there a pending complaint for that supply?

90 Operator informs customer about existence of a prior complaint and developments.

100 Is some other pending complaint affecting service?

Figure C: Metering Before BPR
Source: Research Data

```
┌─────────────────────────────────────────┐
│        Customer fills enquiry forms      │
│          and submits them back to        │
│            Commercial office.            │
└─────────────────────────────────────────┘
                    │
┌─────────────────────────────────────────┐
│    Design and Construction(D&C)receives  │
│           forms from Commercial.         │
└─────────────────────────────────────────┘
                    │
┌─────────────────────────────────────────┐
│    Designer from D&C goes to clients site│
│       to prepare required materials list.│
└─────────────────────────────────────────┘
                    │
┌─────────────────────────────────────────┐
│   List of Materials received in Commercial office for │
│ preparing quotation and informing client of estimated │
│                     cost.                │
└─────────────────────────────────────────┘
                    │
┌─────────────────────────────────────────┐
│  Customer pays for connection in Finance Office. │
└─────────────────────────────────────────┘
                    │
┌─────────────────────────────────────────┐
│  Commercial office informed of customers approval of work │
│    commencing by having paid for connection . │
└─────────────────────────────────────────┘
                    │
┌─────────────────────────────────────────┐
│              Wayleaves Office            │
│ Overall in charge of ensuring that there is access to clients premises from │
│ existing KPLC grid as designed by designer in D&C.Legal issues such │
│   as right of way are handled at this point . │
└─────────────────────────────────────────┘
                    │
┌─────────────────────────────────────────┐
│   D&C receives go ahead by Commercial office to │
│       commence work of connecting client. │
└─────────────────────────────────────────┘
                    │
                  ┌───┐
                  │ 1 │
                  └───┘
```

Metering Before BPR (Continued)
Source: Research Data

I

Report of completion of work received in Commercial office. Customer then Advised to pay deposit for meter and to present Certificate forms for wiring of residence(three certificates are sought here namely commencement, completion and test of wiring certificates.)

Commercial office books meter from Supplies Division (Stores Department) for installation in clients residence .

Installation Report prepared by Commercial Office with client and meter particulars being communicated to Records .Commercial office then sends particulars to Nairobi Headquarters.

Nairobi Headquarters receives Client and meter particulars. This particulars arethen used to prepare the clients readings page. This page is then sent to customers commercial office

Readings page for client is received in Commercial office and arranged in meter reading book

Meter readings can now start

Figure D : Metering After BPR
Source: Research Data

```
┌─────────────────────────────────────────┐
│ Customer fills in forms in customer      │
│ service center and is allocated a        │
│ computer generated reference number      │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│ A D&C Technician is automatically        │
│ allocated the client by the D&C System   │
│ Module in the Integrated Customer        │
│ Service System.                          │
└─────────────────────────────────────────┘
```

| Wayleaves Office checks on access of clients residence and advices D&C Technician preparing the Estimate accordingly so as to account for wayleave costs if there are any. | Clients location identified in Facilities Database by D&C Technician who then prepares estimate and liases with Wayleaves over access to clients location. | Estimate Printed and Posted to Client |

```
┌─────────────────────────────────────────┐
│ Client pays and signs Contract forms in  │
│ Customer Service Center and is allocated │
│ a meter number by the computer.          │
│ Customer is also informed on required    │
│ certificate of wiring of residence for   │
│ installation of meter.                   │
└─────────────────────────────────────────┘
                    │
                    ▼
        ┌──────────────────────────┐
        │ Meter is installed by D&C │
        │ meter Team and reading    │
        │ using hand held sets      │
        │ can begin                 │
        └──────────────────────────┘
```

Appendix 8

Integrated Distribution System(IDS)

Towards Dramatic Improvement in Distribution as a Core Business Area KPLC has started a project to oversee outsourcing of services that can be just as ably provided if not more so by the private sector .An example is the Building of Powerlines.There are also other organisational efforts to as much as possible reduce the downtime when repairing high-tension lines by introducing online repair and maintenance which involves use of helicopters as a means of transport.

Facilities Database

This is the Distribution Management System integrating core. having graphical and alphanumerical information on the distribution network..The Information Map (the computer window where one can identify the different layers of the database) contains the following Layers;

1) Cartographic basis-where information related with the rural and urban cartography (roads, rivers e.t.c) are represented in vectorial or scanned format.

2) Positional layer-where the geographical view of the network is represented.

3) Schematic Layer-which contains a simplified view of the network.

The Facilities Database was created by schematic maps for 33KV and 11KV networks being updated and then migrated to AutoCAD. This schematic maps were fundamental in defining the topological connectivity between installations in the database.

Geographical maps showing KPLCs distribution were first drawn in a 1:2500 scale for urban areas and 1: 50000 scale for rural areas. For those maps not updated they were first updated .This maps are then to be digitised a process expected to start by July 1999.

When fully functional the Facilities Database will consist of 4 main modules namely;

1) Queries Module

2) Data Maintenance Module

3) Network Analysis Module

4) Information Exchange Sub-module

Preventive Maintenance of Medium Voltage (11KV&33KV) Overhead Lines

This involves the systematic and periodic inspections of the medium voltage distribution network.

The purpose of this inspections is to detect anomalies or wear and tear of one or more elements of the line that could result in a fault. This is in order to prepare to undertake repairs before supplies are interrupted or injuries are caused to humans. animals or damage to property occurs.

Anomalies can be classified into two groups ;

1) Fast developing defects-breakage of insulators. damage through lightning strikes ,growth of trees ,new building sites , e.t.c.

2) Slow developing defects-rusting processes , wear of accessories through grinding ,breakage of strands through vibration , increased earthing resistances. e.t.c.

In line with this classification of anomalies , there are two types of inspection :

> 1) for fast developing defects-visual inspection from the ground .
>
> This are normal inspections carried out exclusively on Medium Voltage Overhead lines or line stretches built in urban or sub-urban areas. densely populated/public facility areas . intensive agricultural areas or areas with some specific problems.
>
> 2) for slow developing defects-thorough and close inspection of all elements that may wear or lose their properties.

Generally for operational purposes the classification of the different types of maintenance is in two groups;

1) Preventive Maintenance which involves actions aimed at correcting anomalies in the components of the installations before they cause a fault that might render the installations out of service.

2) Corrective Maintenance which are maintenance actions aimed at correcting anomalies in the components of the installations that caused the fault of the same and left them out of service.

Normally in preventive maintenance the resources required for the operation and maintenance teams are:

- ⮂ Transport-A 4 Wheel drive vehicle.
- ⮂ Communication means-VHF Radio fitted in vehicle, portable VHF Radio.
- ⮂ Information Systems .measuring and observation means-schematic drawing.
- ⮂ Tools-a line inspection tool list of 28 standard items which range from an axe, first aid kit to a pair of binoculars.

Appendix 9

IPS, Trade Unions, Training and Development

Integrated Personnel System (IPS)

Before the setting up of the IPS KPLC had to undertake some drastic changes in the organisation of employees.

For example by the end of 1995 new state of the art staff identity cards with enhanced quality features were introduced . These cards were generated through a computerised system with special electronic printers to give the cards a high color resolution and so make forging immensely difficult. In the process of producing these cards the personnel division was able to create a databank with employees photographs, which can be screened with respective employees personal data, a feature that greatly enhances the security of the new cards.

By mid 1996 Personnel division had a personnel database for the entire company staff thus ensuring that identification of all it's employees could be easily done in any KPLC facility or related service provider to KPLC.

The Medical Control Module

This module is part of the IPS. Its objectives are ;

1. Reduction and control of all medical expenses.

2. Improvement of Information Management.

3. Improvement of employees' medical scheme.

4. Improvement of KPLC's Image.

This original proposal for this module dealt with the use of an IS to capture ,check, view and control information in KPLC's Medical Scheme. The system was to computerise all the activities of management on medical control giving the Personnel division and the Medical Inspector insights into ways of controlling medical expenses. It is in this form that it's presented here. The only difference with the actual system now is that communication channel illustrated in figure E is via source documents rather than diskette.

While IPS is developed on SAP R/3 and adequately covers the functions of payroll, staff management and time management it does not have the functionality for medical control. As such the medical control module is a system satellite to the corporate intergrated system but is linked to it via the Integrated Finance System and the Integrated Personnel System. These complete Integration with the IPS and an interface with IFS eliminates omission and duplication of work.

Confidential Information is also controlled since only the medical inspector and the administrative assistant in the company handle it.

In general the medical control modules general scheme is as illustrated below in figure E. As is evident from it the Users of the system are four; Doctors, Chemists ,The Medical Inspector and Personnel Division.
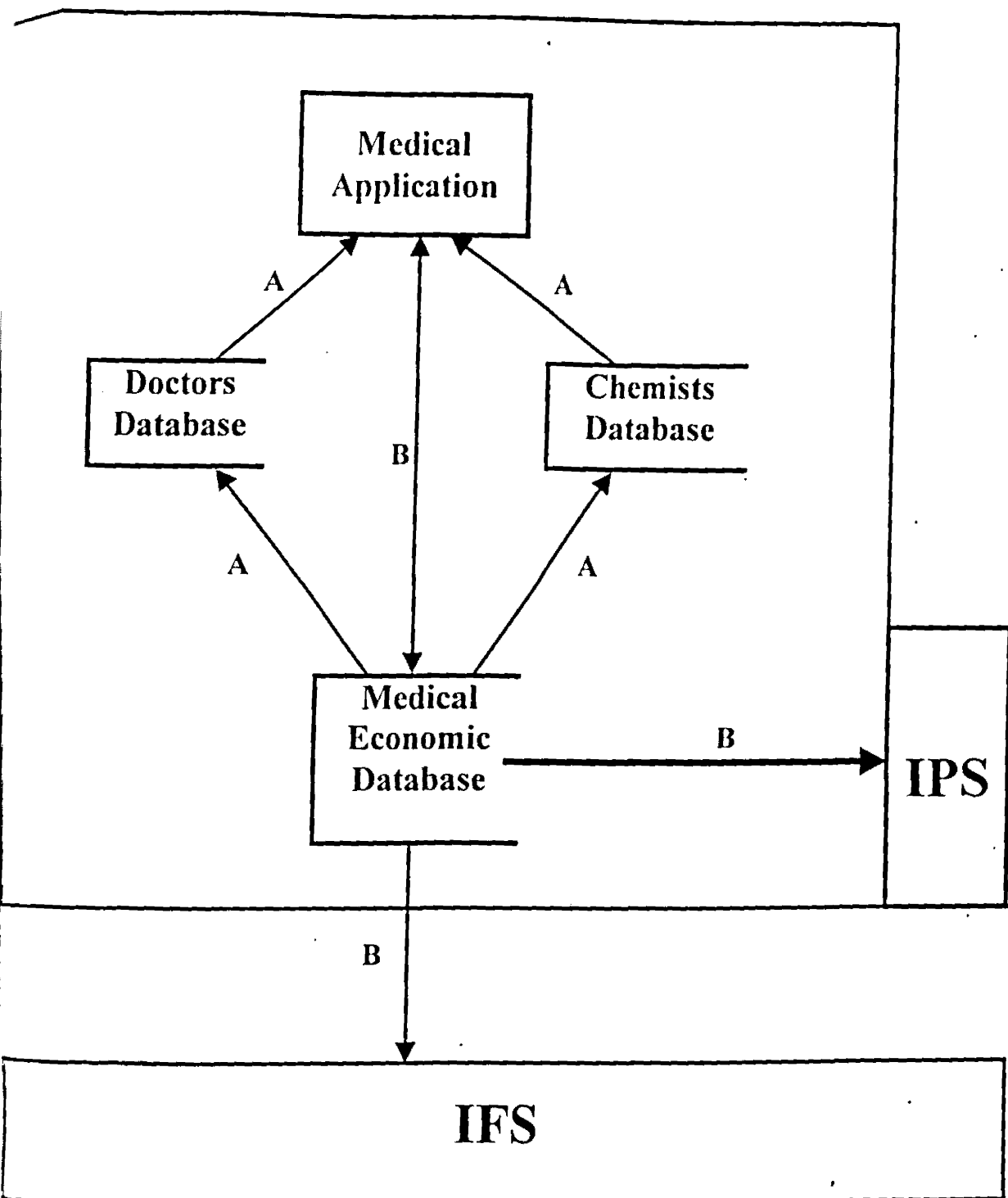
Key

A-Communication Mode is via source documents(initially meant to be diskettes).

Figure E : Illustration of Medical Control Modules' Integration with IPS and Interface with IFS (Source: Research Data)

Doctors Database

This database is installed in the doctors' computer. The database has all the employees and their beneficiary relatives' information and tools to :

- ➲ record the visits to the doctor.

- ➲ print out the prescriptions.

- ➲ print out invoices.

If the doctor does not have a computer their is a manual procedure to be followed.

The functions of this database are:

1. Checking of the employees and beneficiaries.

2. Recording of visits to Doctor.

3. Printing out prescriptions given by doctor to staff.

4. Invoicing KPLC for services to its' staff and beneficiaries.

5. Actualization of information from KPLC.

Every week, the doctor shall receive from KPLC a diskette with the actualized information from employers and beneficiaries if there are changes. The person who gives the diskette to the doctor will introduce the diskette into the computer and actuate the automatic function of updating the beneficiaries database. This information will indicate changes carried out in KPLC staff and beneficiaries like:

- ➲ Retirements and people who have left the company.

- ➲ New employees .

- ➲ New and old beneficiary relatives.

- ➲ Changes in the possibility of medical benefit for employees who have exceeded their economical unit.

⊃ Changes in serial number cards through loss, theft or breakage.

6. Viewing Clinical Histories.

This option is for the doctor when treating a beneficiary so as to know the staff members clinical history.

7. Viewing Economic Reports.

The doctor could also get economical information through a different criteria.

Chemists Database

This database is very similar to the doctors database and its' information is supposed to tally with that of the doctors database.

Medical Application

This application is installed in the Medical Inspectors computer and is used for combining information from the doctors and chemists in order to get clinical histories of beneficiaries and economic reports.

It's functions are as follows;

1. Down loading of data from doctors diskette.

2. Downloading of data from chemists diskette.

3. Data checking

this process involves analyzing the source information from the doctors and chemists and incorporating it into the clinical histories of the staff and eventually actualising the employees' economical balance for medical benefits .

4. Resolution of pending tasks from data checking above like employees who have exceeded their economical limits.

5. Verification of Invoices

After resolving the pending tasks The Medical Inspector revises the invoices attached to the diskettes and then checks the invoices by comparing the correct data from the medical application with the amounts reflected in the invoices.

6. Viewing Clinical Histories of staff by medical inspector so as to note the evolution of an employees' or beneficiaries health.

7. Viewing Economic Reports.

8. Inputing of Data by medical inspector or the administrative assistant in the case of information sent in document form from the doctors and chemists.

Medical Economic Database

This database is integrated with IPS and it's functions are as follows:

1. Management of Medical Cards-this task has 4 components; New and old beneficiary relatives ,Retirements and other exits of staff from KPLC, Entry of staff, Replacement of cards.

2. Management of Excess economical limits- amounts that staff and their beneficiaries incur in excess of their medical benefits ceiling are subtracted from their salaries.

3. Information on employees to

 ⊃ employees-communicated through the payroll.

 ⊃ Doctor and Chemists-communicated through actualising of their databases which is done weekly.

4. Economic Cover Initialisation

This is done for all the databases for each year and for each change in an employees job group category.

5. Management Reports Production concerning the medical benefit, using different criteria like staff number, doctor ,chemist and divisions.

KPLC's Unionisable Workers

KPLC's Unionisable employees secured a 50% salary boost per year over a 2 year period covering 1995 and 1996 following the registration of a new Collective Bargaining Agreement in January 1995 .

Kenya Electrical Trades and Allied Workers Union (KETAWU) and KPLC agreed on a host of packages as follows ;

Minimum Salary per month

Kshs 1700 to Kshs 3500.

House Allowance per month

Scales A-B Kshs 900 to Kshs 1340.

G-H Kshs 1955 to Kshs 2930.

Owner Occupier House Allowance(To be paid at15% of Capital Cost of the House)

Maximum A-B Kshs 3000

G-H Kshs 6100

Medical

Outpatient From Kshs 5200 to Kshs 10000 per annum

Inpatient From Kshs 160 to Kshs 400 per night.

Other Allowances

Shift Allowances was to be 19% of the basic monthly salary.

Hardship Allowance was to be paid at a rate of 30 % of employees basic salary but subject to maximum of Kshs 1600 per month for a married person or Kshs 800 per month for a single person.

In January 1997 upon expiring of this collective bargaining agreement KPLC and KETAWU entered into a new agreement.Under this new collective bargaining agreement unionisable staff received a 75% pay boost with salaries going up by a minimum of ;

1) 40% in the first year from January 1997.

2) 35% in the second year from January 1998.

At a glance this new collective bargaining agreement was as follows;

Minimum Consolidated Salary per month

Kshs 4840 toKshs 8750.

House Allowance per month

A-B Kshs 1340 to Kshs 3500.

J-K Kshs 4250 to Kshs 6400.

Owner Occupier House Allowance (To be paid at 16% of capital cost of house)

Maximum per month A-B Kshs 7300

J-K Kshs 18000

Night Allowances (24 hrs)

A-B Kshs 700

G-H Kshs 920

J-K   Kshs 1000

KPLC and KETAWU have a symbiotic mutualistic relationship whereby both co-exist in harmony .To assist in working better KPLC's management and KETAWU have formed the Central Joint Council (CJC)   which is a forum where all issues affecting terms and conditions of service of the unionisable employees of the company are discussed and where possible determined. This Central Joint Council has 12 members: 6 appointed by the Managing Director and 6 others by the General Secretary of KETAWU with the chairman of the Central Joint Council being appointed by the Managing Director.

One of the main functions of the CJC is the investigation and prompt settlement of disputes that may arise out between the company and unionisable employees by mutual agreement.

Training and Development

An overview of KPLC's training and development shows that every employee of KPLC undergoes some form of training at least once a year. In addition a great variety of inhouse training courses are available for KPLC staff. Some of the figures obtained show that;

- ➲ 1772 employees attended training between March and June 1997.

- ➲ 1259 employees attended training between July and August 1997.

Of the latter group, 95% attended local courses while 5% went on overseas study tours.

Some of the local courses attended included ISP user training and management skills development programmes.

Appendix 10

Integrated Logistics Systems(ILS)

ILS integrates 3 areas namely ;

- ⊃ The Stores Inventory System
- ⊃ Purchasing
- ⊃ Transport

The computer information system for stores is supposed to keep track of the Stores Transactions and Inventory Control. With the integrated Stores Network information is automatically updated (on-line),recording the movement of the inventory (materials) in and out of stores .It is also possible to maintain stores records companywide , providing information on inventory levels on a daily basis .

The computerized IS in purchasing interfaces with the stores subsystem for timely (on-line) monitoring of inventory ensuring ;

- ⊃ Prompt availability of information on purchases.
- ⊃ Optimization of stock holding in stores and improved availability of materials.

The current ILS offers planning tools such as Material Requirement Planning and other tools dealing with the planning of materials in addition to the **Logistics Planning Module (LPM)** .The Material Requirement Planning tool which is implanted in the old ILS system was then to be complemented by LPM which was not included in the functionality provided by SAP/R3. LPM unlike MRP does take into account future needs of operative units when planning for materials (EOQ, safety stock, reorder level, lead time e.t.c).

Logistics Planning Module(LPM)

Objectives of LPM are as follows :

- ⊃ To improve the level of service the supplies area provides to the rest of the operative units in the company, by means of eliminating shortfalls.
- ⊃ Making the stocks in the stores fit the real need of the company as far as quality and quantity are concerned.

➲ Improvement of the purchases cycle by planning the annual needs and obtaining the best prices in the market by grouping purchases together.

➲ Improvement of the Department Image Perception by the rest of the operative units.

LPM has the following 3 functional Modules(main user of the company stores is distribution.) ;

1)Proposals on modification of the articles catalogue.

The purpose of this module is to have an ICS where the operative units (Distribution ,Customer service ,Design and Construction) can revise the catalogue of articles available in the company by;

➲ Creation of new articles in the catalogue -user units are able to propose the new articles they wish to include in the catalogue because of changes in the technology or new developments in the field.

➲ Modifying articles existing in the catalogue-user units may propose the modification of existing data with regard to different articles in the . catalogue.

➲ Deletion of Articles -user units may need to do this because of articles having become obsolete (the example of trivectors)or having fallen into disuse.

All these cases are considered as proposals with the Purchasing Unit watching over the quality of the catalogue .User units are also expected to propose national or international suppliers from whom the articles may be purchased .

2) Planning of Needs
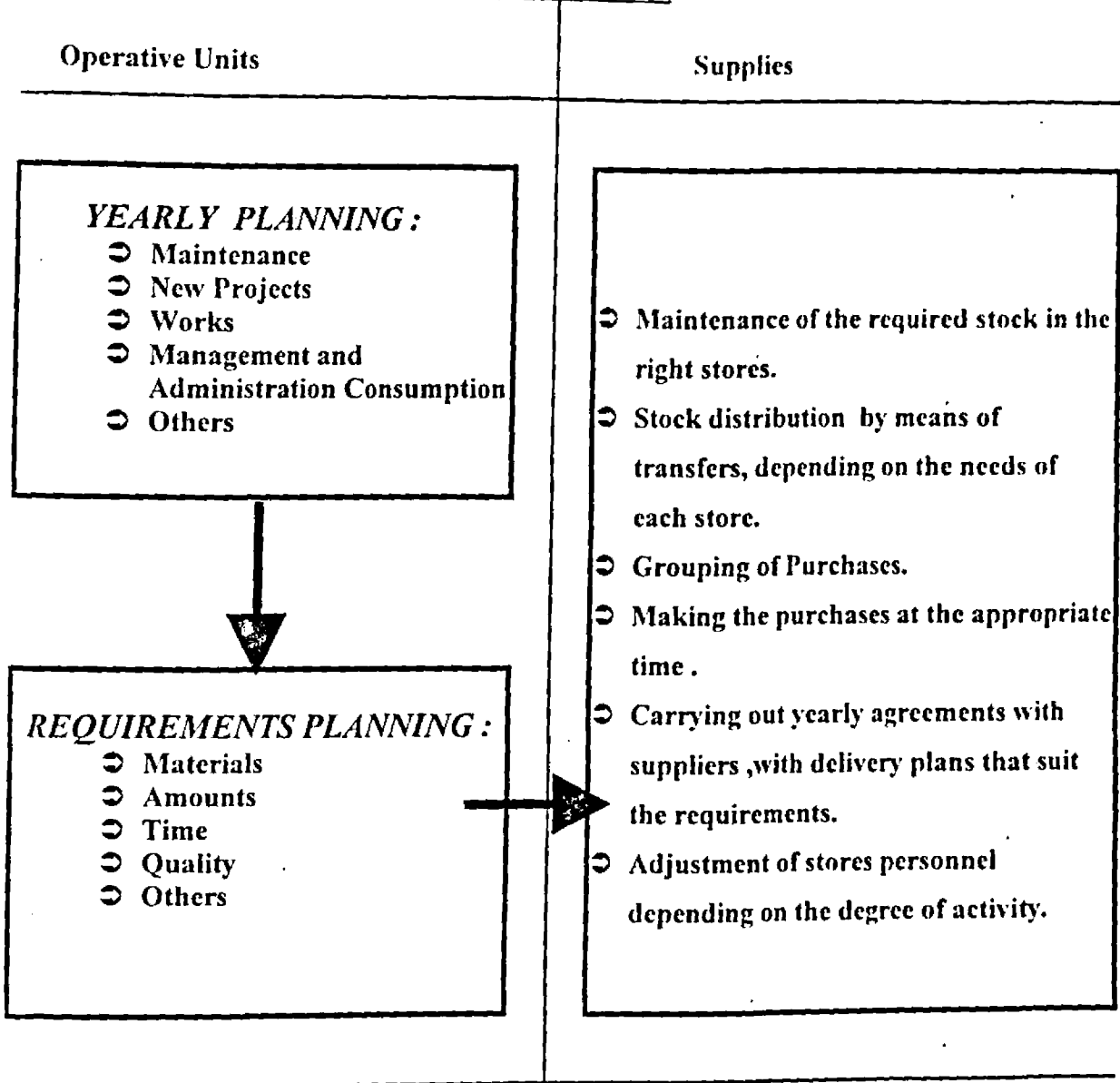
3) Follow Up Planning

This module allows Purchasing and User Units to make the following queries :

➲ Follow up of the planned /real consumption .

➲ Stocks of planned articles in the different stores of the company.

This module also allows modification of plans made by the user units for purposes of . adjusting initial planning as better knowledge of actual schedules emerges.

Figure F: LOGISTICS PLANNING MODULE

Operative Units	Supplies

YEARLY PLANNING :
- Maintenance
- New Projects
- Works
- Management and Administration Consumption
- Others

REQUIREMENTS PLANNING :
- Materials
- Amounts
- Time
- Quality
- Others

- Maintenance of the required stock in the right stores.
- Stock distribution by means of transfers, depending on the needs of each store.
- Grouping of Purchases.
- Making the purchases at the appropriate time .
- Carrying out yearly agreements with suppliers ,with delivery plans that suit the requirements.
- Adjustment of stores personnel depending on the degree of activity.

Properties Administrative System(PAS)

The purpose of this system is to facilitate the clerical and economic management of the properties of KPLC especially with regard to plots ,buildings and houses by means of the automated management of those properties and the associated clerical activities originating from their maintenance and use.

Like ILAM, PAS was introduced in 1999 with its objectives being;

1. Optimizing the economic management of plots, buildings and houses belonging to the company.

2. Improving the maintenance procedures for houses and buildings of the company .optimizing resources and providing a control for the economic expenditure.

3. Providing information with regard to the cost of staff housing .

4. Providing on-line information with regard to the management of the properties of the company.

PAS has the following functional modules;

➲ **Properties Module.**

The purpose of this module is to record the properties of KPLC as well as their physical, economic and administrative characteristics. The aim of the module is to make available an inventory of properties of the company .to be used as a master record for their administrative management. This module interfaces with the Integrated Finance System-Fixed Assets as well as the Insurance Management System.

➲ **Properties Maintenance Module.**

This module enables the administrative and economic management of the maintenance works carried out in the buildings and houses defined in the catalogue of the properties module .The maintenance materials stocked in the stores are accessed from this system by means of an interface with the Integrated Logistic System (ILS) and whenever materials are issued from a store they're charged against the corresponding maintenance jobs.

➲ **Employees Housing Module.**

This module deals with the assignment of houses to employees. Information on the employees who ask for housing and the number of family members is

available by means of an interface with the Integrated Human Resource System. Details of houses allocated to employees is also available in this module.

âž¢ **Economic Management Module.**

This module deals with the economic management of payments and collections with regard to the administration of company properties. This module interfaces with the Integrated Finance System-General Ledger where such matters as taxation of employees housing as a benefit are handled.
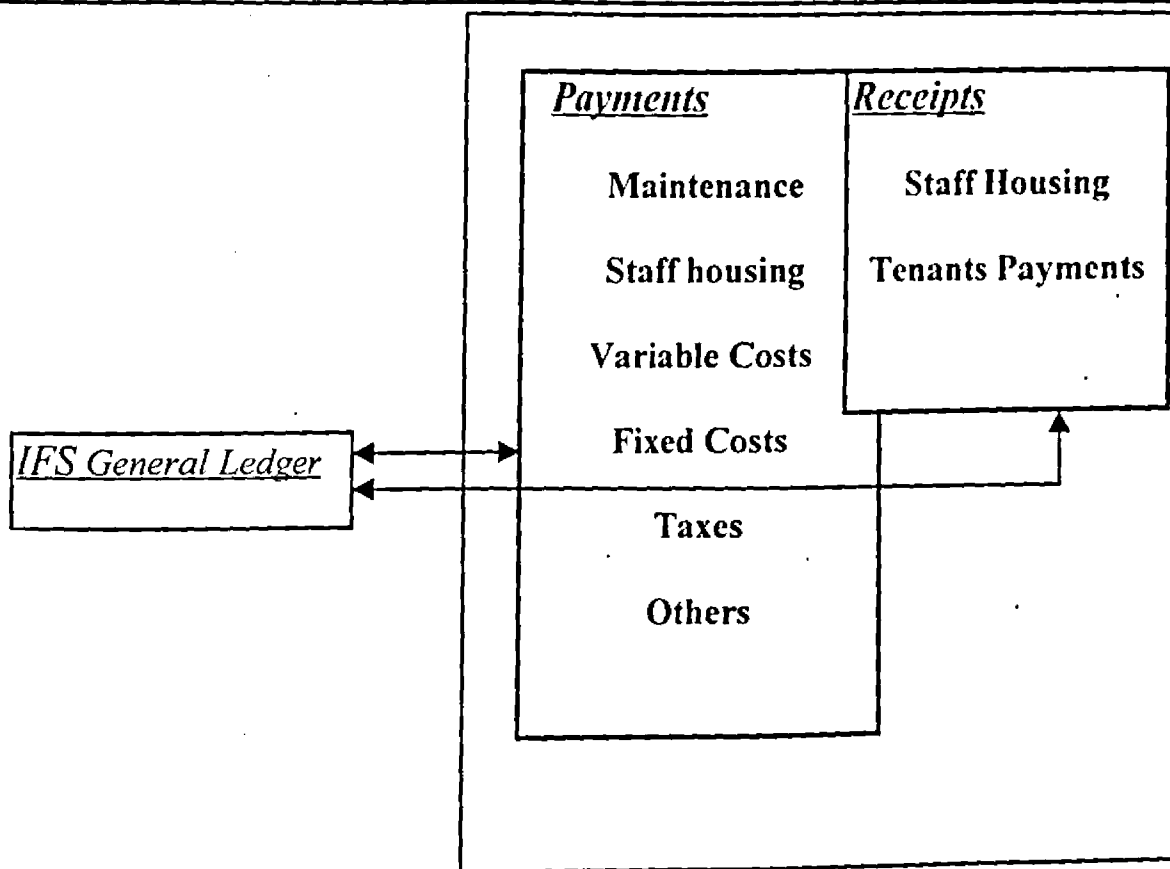

Figure G :Illustration of Economical Management Module
Source: Research Data

○ Information Management Module

This module generates queries. reports and statistics concerning the four modules above.

Statistic Information & Queries

Maintenance	Fixed Costs
Staff Housing	Taxes
Variable Costs	Others

→ Information Management Module

Module → **System**

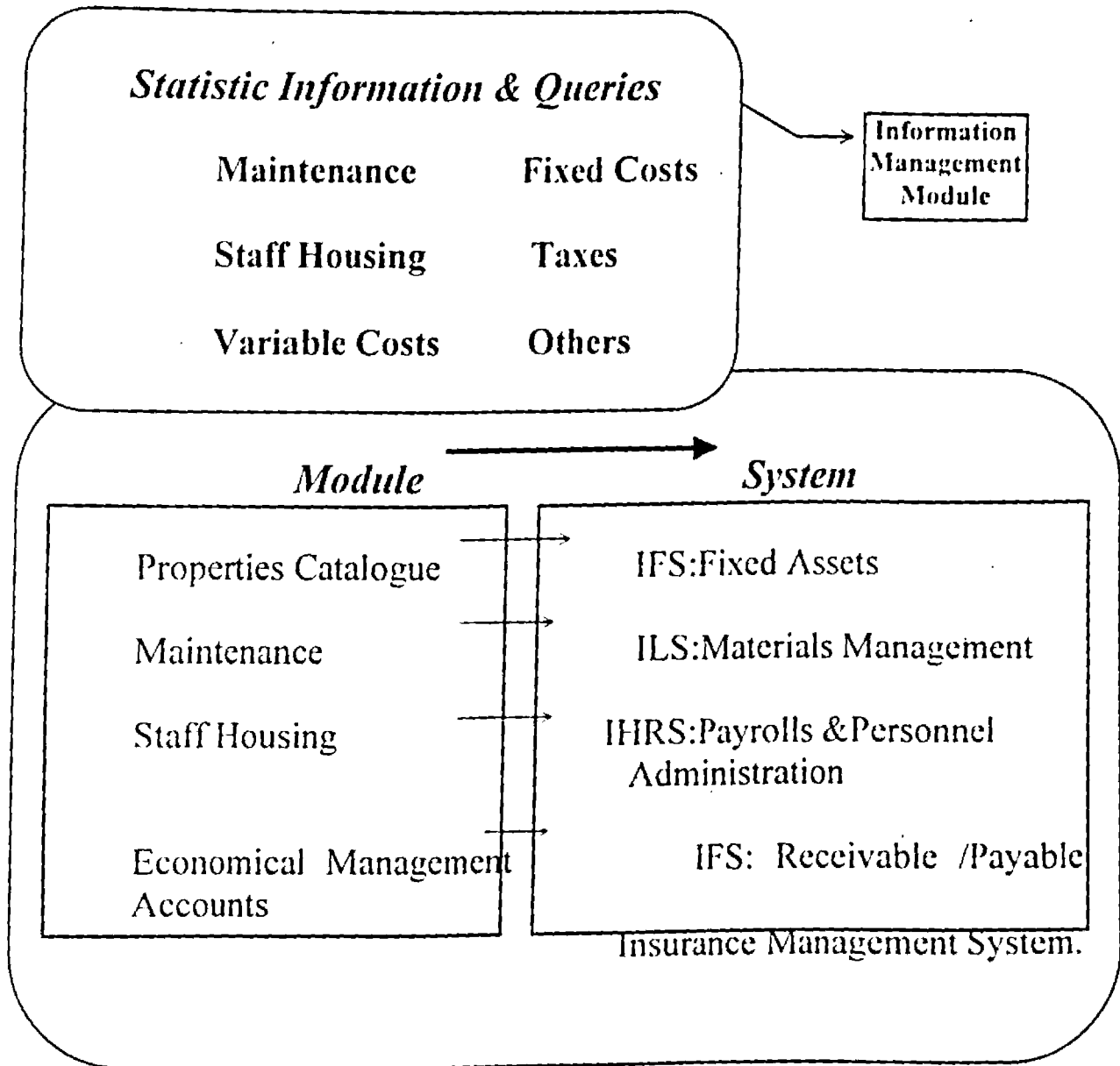| Module	System
Properties Catalogue	IFS:Fixed Assets
Maintenance	ILS:Materials Management
Staff Housing	IHRS:Payrolls &Personnel Administration
Economical Management Accounts	IFS: Receivable /Payable

Insurance Management System.

Figure II : Illustration of Information Management Module in PAS showing interfaces of PAS with other Integrated systems in SAP/R3. (Source: Research Data)

Appendix 11

Company Secretary

Insurance and Legal Affairs Management System(ILAMS)

The purpose of this system is to facilitate the economic and administrative management of the insurance policies and claims of the company ,as well as that of the legal matters of KPLC.

The scope of the ISP prior to 1999 didn't include the management of the insurance policies and legal matters of KPLC. There was therefore a need for an efficient management of these two areas and for this reason there were two management systems:

⊃ Insurance Management System-the objectives of which are as follows ;

⊃ To record the policies ,the property insured and other significant details.

⊃ To record claims to insurance companies and to carry out the administrative management of these claims .

⊃ To facilitate the economic management of payments to and collections from insurance companies.

⊃ Legal Affairs Management System-the objectives of which are as follows;

⊃ To record legal claims made against or in favour of the company .

⊃ To record court cases and to follow up their legal/administrative position.

⊃ To facilitate the economic management of payments and collections resulting from court cases.

Insurance Management System

The following are the functional modules available in this system:

1. **Insurance Policy Module**-The purpose of this module is to record the insurance policies of the company ,together with their legal, administrative and economic details. In addition to this ,this module allows the identification of their physical location within the company files so as to be able to have a correct classification and search for the originals of the policies ,should the need arise. This module also

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interfaces with the Properties Administration System, where the economic details and characteristics of the property insured are available and also the Transport Management System for the case of all company cars.

2. **Claims Module**-This module allows the management of claims arising from calamities or accidents, and will allow their administrative processing and follow up. This module makes it possible to:

   ⊃ Follow up the documentation handed over and that pending delivery for each of the claims.

   ⊃ Allow the printing of claims made to the insurance company ,as well as that of reports and other documents associated to the claims.

This module interfaces with the Transport Management System so as to provide on-line integrated information in case of accidents.

3. **Economic Management**-This module is entrusted with the management of payments and collections originating from the two previous modules.

4. **Information Management** -The queries ,reports and statistics concerning the previous three modules are available through this module.

The Legal Affairs Management System

The following modules are available in this system;

1. **Court Cases Module**-The purpose of this module is to record court cases and to enable their administrative and legal follow up.All the relevant information concerning the administrative state of each court case as well as the list of lawyers and personnel from the judiciary involved in it are also available. In addition this module allows the printing of letters, reports and documents associated to the court cases.

2. **Economic Management Module**- is entrusted with the management of payments and collections originating from the court cases module above.

Information Management Module- is concerned with the generation of queries,reports and statistics concerning the two previous modules.

Appendix 12

Integrated Finance System(IFS)

KPLC implemented the Integrated Finance System (IFS) in July 1996.Areas of responsibility in the Development of IFS were three;

1. Functional Design.
2. SAP Finance System-IFS runs on the SAP/R3 System.
3. Technical Interfaces Area-the need for this is because IFS links with other systems namely

   ⊃ Billing System

   ⊃ Fixed Assets System

   ⊃ Stores System

   ⊃ Payroll System

Unlike the old system where Information availability was delayed, this new system provides on-time and on-line information of the financial situation in the company. IFS also facilitates the;

⊃ Daily recording of financial transactions .

⊃ Management of Cash and budgetary control.

⊃ Data accuracy.

⊃ Speedy production of balance sheets and statements.

Standardisation and improvement of the finance procedures as information keyed in the system is standard for all Divisions and Areas.

The following are the main functions that take place within the Finance Division:

⊃ Entry of financial events

⊃ Accounting

⊃ Budgetary Control

⊃ Consolidation

⊃ **Financial Accounting**

⊃ **Management Accounting(Journal entries and queries and reports)**

⊃ **Auxiliary Accounting**

    ⊃ Client /Supplier Accounting

    ⊃ Banks Accounting

    ⊃ Investments Accounting

    ⊃ Fixed assets Accounting

○ Management Control

○ Projects

The nucleus of IFS is formed by financial accounting and management accounting functions .Financial Accounting function covers those financial events classified by the general ledger and therefore reflects the financial situation of the company and its information provides a basis for the preparation of official statements.

Management Accounting includes financial events according to internal classification criteria which allow follow up on costs and revenue thus facilitating decision making.

Information offered by IFS is structured in three levels;

1. Strategic Information ,destined for top management (via the Executive Information System) which gives financial information by business area ,company , consolidated group or electrical sector.

2. Management Information destined for middle management .heads of financial units that have responsibility centers dependent on them. and heads of responsibility centers.

3. Operating Information destined for those users who enter information into the system. It gives detailed information of transactions that have taken place.

Operating information is obtained from accounting databases and auxiliary modules through queries and reports.

Access to Management and Strategic information takes place through the management control module which is an independent database whose information comes from financial accounting , management and auxiliary modules.

Origin of Accounting Information Entry

There are only three sources of accounting information to be entered into the IFS:

1. Standardized entry of financial events.

2. Interfaces with the other Integrated System.

3. General entry of Journal entries in head office.

Interfaces and Relationships with other Systems

As an accounting system IFS should reflect all the financial operations that occur in the company.It is therefore necessary to maintain interfaces with other corporate systems in order to account for financial events that take place in these other systems.

In the same way other corporate systems need part of the financial information stored in the IFS in order to carry out their tasks .The systems that need to maintain interfaces with the interfaces with the IFS are;

⊃ **Integrated Logistics System (ILS)**

An ILS-IFS interface accounts for invoices and storing transactions as well as sending in information regarding these commitments . Also in the opposite direction IFS-ILS,information regarding actual and budgeted figures are sent and investment files · authorised.

⊃ **Integrated Customer Service (ICS)**

The IPS-ICS interface accounts for commercial operations (collections,invoicing and recruiting). In the opposite direction, IFS sends information pertaining to remittance collection.

⊃ **Integrated Personnel System (IPS)**

IPS-IFS inteface is in charge of accounting for personnel expenses, as well as personal loans and advances to be justified.

⊃ **Integrated Distribution System (IDS)**

The IDS-IFS interface accounts for orders contracted by the IDS.

⊃ **Stocks and Shares**

The stocks and shares-IFS interface is in charge of accounting for operations with coupons and own shares held .

⊃ **Integrated Management System** otherwise referred to as the Executive Information System.

⊃ **Others within IFS**

> ⊃ Cash Management Expert System-IFS interface accounts for manual payments and movements .In the opposite direction .IFS sends the information needed to make payment provisions.

- Financial Management System-IFS interface accounts for financial operations and normalisation .In the opposite direction .IFS sends information pertaining to annual compensated expense balances.
- Fiscal-IFS interface is for budgeting and accounting for taxation.

Appendix 13

Working Smart

Powerline Inspection Made Easy

KPLC acquired a helicopter that is to be used in:

⮑ flying company technical staff on transmission and distribution line inspection and to breakdown sites.

⮑ Undertaking repair and maintenance works on live line works thus obviating the need to shut down high tension lines.

⮑ Infra Red inspection (thermovision) which involves fitting an infrared camera to the of Trhelicopter to locate and scan hot spots along lines and in substations.

⮑ To help in erecting pole structures , pull and string conductors across river valleys.

Replacement of Trivectors with Electronic Meters

Over the last 15 years ,KPLC has had 400 trivectors installed in the network.Trivectors facilitate 2 time -of-day tariffs. Such tariffs encourage customers to utilise electric power during the off peak periods , which is cheaper than at high peak periods.

In 1994 there were about 2200 large consumers , more than the trivectors available.In addition trivectors weren't accurate timewise and further, no more were being manufactured. New electronic meters for large customers have started replacing trivectors. These new electronic meters are more compact and precise than trivectors and in addition have;

⮑ very accurate times (± 5 minutes /year).

⮑ 8 different tariffs capacity.

⮑ Simpler installation than trivectors.

⮑ More accurate - with a margin error of 1%.

⮑ Memory to store 12 previous readings.

⮑ Remote reading when connected to suitable mode modems.

Use of Fully Automated EDI Testing Bench

This high technology equipment was acquired by the Meter testing section and is used in faster calibration and testing of meters . It is capable of testing 40 meters at a go, both electronic and electromagnetic type increasing productivity at the Ruaraka based workshop by 75%.

Erecting of Electricity Poles

Erecting of poles used to be done by linesmen who relied on pure muscle power with any one pole needing at least around 15 linesmen. Now a hydraulic arm crane is used to . lift a tied pole in a few minutes with only a few linesmen (upto 4) being required to guide the pole to its hole.

Meter Reading

Hand held mini computers dubbed Hand held sets (HHS) were introduced in early 1996 to enhance field data collection for the meter reading subsystem which is part of the larger billing system.

Prior to meter-reading personnel embarking on field work, relevant information such as pre-set walking sequences and details of access to each meter and property is uploaded to the HHS. This is done via a controlling personal computer that facilitates the interchange of data between the set and the rest of the billing system, at the meter reading office under the operation of a supervisor.

Zoning of Administrative Areas

Administrative areas were divided into smaller business units referred to as Revenue Collection Areas , headed by a Revenue Collection Supervisor overseeing a team of field operators who perform various functions like;

- ➲ meter reading
- ➲ disconnections and reconnections

➲ fraud detection

➲ customer queries

The team dedicated to each zone initiates action to address customer concerns and follows them up to ensure that they are resolved. This new arrangement :

➲ empowers supervisors and their field staff.

➲ enables supervisors and their field staff to plan their work more effectively.

➲ makes supervisors and their staff more accountable.

Nairobi and its suburbs for example has been zoned into 8 areas .each headed by a revenue collection supervisor. These zones labelled 1A,1B.2A,2B.3A.3B.4A and 4B are subdivided not on the basis of area size but a host of other factors all aimed at ensuring that every client is accounted for.