SURVEY OF FACTORS FAVOURING OR HINDERING INTRANET ADOPTION IN KENYA'S PUBLICLY QUOTED COMPANIES.

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A MANAGEMENT RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE MASTER OF BUSINESS AND ADMINISTRATION (MBA) DEGREE.

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SEPTEMBER 2003

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ABSTRACT

The objectives of this study was to determine the extent of Intranet usage in Kenya's Publicly Quoted companies and establish the main factors that favour or hinder Intranet growth. In order to meet these objectives both secondary and primary data were collected and analysed. The population consisted of all the 54 companies quoted in the Nairobi Stock exchange. Primary data was collected using a questionnaire.

The study identified the following benefits of Intranet adoption; reduced paper usage and printing, better storage, better access to information, better collaboration and information sharing. The study also found out that Intranet adoption in Kenyan public companies is low as only 45% of the 53 studied companies had adopted. The main factors that hinders adoption were found to be training, security of information, unavailability of human technical resources and staff awareness.

Declaration

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

Signed _____ Date 12/03/2004

ISAAC KURIA NJAGI

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

Signed _____ Date 31/03/2004

Kariuki James Thuo

WITH MUCH LOVE,

Dedicated to King Jesus. Lord of Lords, King of Kings.
For thy Grace, Love, Care, Faithfulness and Forgiveness.
Lord I give you all the Praise, Worship, Power, Adoration
and Exaltation both now and forever and ever more. Amen.

ACKNOWLODGEMENT

I wish to express my sincere gratitude to Mr. James Thuo kariuki who as my supervisor guided me through the entire project. Indeed, without your assistance this report would not have been what it is. Thank you.

My wife Josephine for her love, patience and support during the unbearable moments deserve a special appreciation. My sons Innocent Njagi, Kelvin Kihara and Daniel Macharia who urged me on through their desire to see a victorious father. My father James Njagi Nganga and mother Alice Wanjiru Njagi for having faith in me through the years. Big brother Peter Macharia Njagi and sister Anne Wanjiku Gateri for all your sacrifice and hardwork- Thank you.

To my friends specifically Ngei, Mawioo, Miringu, Kithunga, Thiongo, Laitete, Woka, Gachegu, Mwalili and Mariga. Thank you for all your prayers and support.

Not to forget Kamande, Mwai and Mary for tirelessly helping in analyzing the data and compiling the report and Lucy Ngatia for her valuable comments.

Lastly the dedicated staff at Njagi Isaac & Associates, all the MBA staff, Lewa Wildlife Conservancy staff and fellow students. You have done more than can be quantified. God bless you all.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the study

1.1.1 Internet

The Internet began in 1966 as a military project in the United State of America. By 1969, research had advanced for the publishing of a plan for computer network system called ARPAnet (Advanced Research Project Agency network). ARPAnet purpose was to act as a nuclear attack resistant method of exchanging scientific information and intelligence. It linked researchers with remote computer centers in the United States, allowing them to share hardware and software resources such as disk space and databases (Zakon, 2001).

In 1974 Internet was released as the first openly accessible public net. This was followed by AT&T Bell Laboratories development of a Unix-to-Unix protocol in 1976. Bell Laboratories distributed the protocol freely to all UNIX computer users. In 1982, a European version of the UNIX network, UUNet was established linking networks in the UK, Netherlands and Scandinavia (Zakon, 2002). The Internet has since 1982 grown to encompass all other sectors of human interaction. It is now a driving force in commerce and information exchange.

In 1995, the Federal Network Council unanimously passed a resolution defining the term internet as;

"A world wide information system that logically links together unique address based on the Internet Protocol (IP) and is able to support communications using the Transmission Control Protocol/Internet Protocols (TCP/IP) suite or its Subsequent extensions/follow-on. It provides, uses or makes accessible, either

publicly or privately, high level services layered on the communications and related infrastructure" (Rowley, 1998).

1.1.2 Intranet

An offshoot from Internet is Intranet. It is a network that is created using Internet technology but isn't accessible to users outside the organization. Some of the Internet-based technology used includes web browsers and servers, TCP/IP network protocols, HTML hypermedia document publishing. Thus, it provide Internet-like environment within the organization for information sharing, communication, collaboration and support of business process. Intranet is therefore used in a range of activities such as publishing internal reports, marketing collateral, annual reports and providing access to corporate databases. Unlike Internet, Intranet is protected by security measures such as firewall and can thus not be accessed by unauthorized users (O'Brien, 2001).

1.1.3 Extranet

Intranets that allow access to select outside users are called Extranets. It links some of the Intranet resources of a company with other organizations and individuals. For example, Extranets enable customers, suppliers, consultants and others to access selected Intranet websites and other company databases (O'Brien, 2001). Extranets therefore allow for connections to specific customers outside the organization.

1.2 Statement of the Problem

The United State International Data Corporation (IDC) predict that the corporate Intranet will become the standard infrastructure companies use to communicate and conduct business within the organizations. According to Zona Research (an

American Research body), by 1997, two-thirds of Fortune 1000 companies had an Intranet and corporations will spend $100 billion on Intranet development by the year 2005. (Wiley, 1997).

The global growth of Intranet is as a result of the benefits associated with Intranet use that includes, easy update of information, easy accessibility by users and enabling end-users to publish their information. These benefits give companies with Intranet competitive advantage. Kenyan firms that have not adopted this technology need to explore the strategic advantages of adopting in order to reap the benefits associated with use.

Intranet study done on large firms and start-up Internet ventures in America revealed that the successful ventures had to deal with complex and expensive implementation and operation issues. Some of these complex issues related to data integration, creating user interfaces, access and security, shifting of responsibilities and behaviour of individuals. One of the companies studied (Knight -Ridder Inc.) recorded a 25% reduction in costs of goods sold and a 20% increase in productivity after the adoption of Intranet (Keen et al, 1998).

Although there are benefits to be enjoyed by organisation that adopt Intranet, there are certain factors that hinder its adoption. Organisations need to address factors such as the content, structure, style, and maintenance. This study aim at identifying the factors that hinder or favours Intranet adoption in Kenyan publicly owned companies.

1.3 Objectives of the Study

The objectives of this study were:

1. Determine the extent of Intranet usage in Kenya
2. Determine the main factors that favuor or hinder Intranet adoption in Kenya.

1.4 Significance of the Study

The significance of this study are as follows:

i. The study will be of benefit to publicly quoted companies since it will enlighten them on the factors that favour Intranet adoption. Factors that hinder Intranet adoption will also be highlighted. As such, companies anticipating adoption of Intranet in the near future will know what factors to address for smooth Intranet implementation.

ii. The Nairobi Stock Exchange will be interested to know the factors favouring or hindering growth of Intranet in the listed firms. It can use this knowledge in advising listed firms seeking help in implementation of their Intranet or Extranet.

iii. The government being the main player in regulatory and policy formulation will use this study to know the challenges facing Intranet adoption in Kenyan publicly quoted companies. This information can be helpful in adequately addressing the policy and regulatory frameworks changes necessary for Intranet adoption.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 A Brief history of Internet and Intranet

The origin of the Internet can be traced back to the Soviet Union who launched Sputnik in 1957, a program that consisted of four satellites, and three of which reached Earth orbit. In response to the Soviet Union Sputnik, America started the Advanced Research Project Agency (ARPA). ARPA was to deal with how information could be shared in the aftermath of a nuclear holocaust. In 1969, Leonard Roberts who was the head of computer research at ARPA published a plan for computer network system called ARPANET (Leiner, 2001). Interface message processors (IMPs) were designed to allow the computers to exchange information. As a result, computers were added quickly to the ARPANET during the following years, and work proceeded on completing a functionally complete Host-to-Host protocol and other network software.

In December 1970 the Network Working Group (NWG) working under S. Crocker finished the initial ARPANET Host-to-Host protocol, called the Network Control Protocol (NCP). As the ARPANET sites completed implementing NCP between 1971 and 1972, which gave capability to the network users for developing applications. During this period, ARPANET networked 23 host computers to each other (Zakon, 2002).

One drawback with NCP was that it didn't have the ability to address networks (and machines) further downstream than a destination IMP on the

ARPANET. Kahn and Stanford had to develop a new version of the protocol that could meet the needs of an open-architecture network environment. This protocol became the Transmission Control Protocol/Internet Protocol (TCP/IP).

During the '70s and '80s many different social groups, universities, colleges in possession of powerful computers started using TCP/IP as they moved from NCP (Network Control Protocol). The computer network became steadily more valuable as it embraced larger and larger territories of people and resources. ARPANET became an utter necessity with computer networking (Henry, 2000).

The commercialization of the Internet involved the development of competitive, private network services, and also the development of commercial products implementing the Internet technology. Vendors had to be brought into play for marketing the products. In the early 1980s, dozens of vendors were incorporating TCP/IP into their products (Leiner, 2001). The United State of America Department of Defense had mandated the use of TCP/IP in many of its purchases but had given little help to the vendors regarding how to build useful TCP/IP products. In 1985, recognizing this lack of information availability and appropriate training to vendors, the DARPA research community who had both developed these protocols and used them in day-to-day work invited 250 major vendor personnel for dissemination seminars and workshops. The results were surprises on both sides: the vendors were amazed to find that the inventors were so open about the way things worked (and what still did not work) and the inventors were pleased to listen to new problems they had not discovered, but were being encountered by the vendors in the field.

After two years of conferences, tutorials, design meetings and workshops, a special event was organized that invited those vendors whose products ran TCP/IP well enough to come together in one room for three days to show how well they all worked together and also ran over the Internet. In September 1988, the first Interop trade show was born and 50 companies were represented with 5,000 engineers from potential customer organizations attending. Internet commercialization attained a critical mass (Leiner, 2001).

In 1989, the World Wide Web (WWW) concept was designed. This is a network of sites that can be searched and retrieved by a special protocol known as a Hypertext Transfer protocol (HTTP). This simplified the writing of addresses and automatically searched the Internet for address indicated. In 1993 the Internet Society was founded with over 19,000 operational Networks on Internet (Appendix IV).

2.2 The Future of Internet

The Internet has changed much in the last two decades it has been in existence. It was conceived in the era of time-sharing, but has survived into the era of personal computers, client-server and peer-to-peer computing, and the network computer. It was designed before LANs existed, but has accommodated that new network technology, as well as the more recent frame switched services. It was envisioned as supporting a range of functions from file sharing and remote login to resource sharing and collaboration, and has spawned electronic mail and more recently the World

Wide Web. But most important, it started as the creation of a small band of dedicated researchers, and has grown to be a commercial success with billions of dollars of annual investment (Zakon, 2002).

The Internet will continue to change and evolve at the speed of the growth of the computer industry in order to remain relevant. It is now changing to provide such new services as real time transport, in order to support, for example, audio and video streams. This evolution will bring us new applications - Internet telephone and, Internet television etc. It is evolving to permit more sophisticated forms of pricing and cost recovery. It is changing to accommodate yet another generation of underlying network technologies with different characteristics and requirements, from broadband residential access to satellites.

New modes of access and new forms of service will spawn new applications, which in turn will drive further evolution of the net itself. The most pressing question for the future of the Internet is not how the technology will change, but how the process of change and evolution itself will be managed. With the success of the Internet has come a proliferation of stakeholders - stakeholders now with an economic as well as an intellectual investment in the network. A struggle to find the next social structure that will guide the Internet in the future is underway. The form of that structure will be harder to find, given the large number of concerned stakeholders. At the same time, the industry struggles to find the economic rationale for the large investment needed for the future growth, for example to upgrade residential access to a more suitable technology (Zakon, 2002).

2.3 Intranet development

Wiley (1997), predict that the Intranet will become the primary vehicle for delivery of employee and company news and the main source of information in companies worldwide. He notes the two major reasons for the global growth to be: large companies that already have implemented Intranets are bringing critical applications into their systems, incorporating dynamic and transactional capabilities. Secondly, smaller companies that have not considered Intranets due to cost and complexity are beginning to implement them as the cost of adoption declines.

Many in business have argued that having an Intranet gives an organization a competitive advantage. This type of attitude along with the long list of Intranet benefits has led to an explosion of development. According to Zona Research, corporations will spend $100 billion on Intranet development by the year 2005. Already, two-thirds of Fortune 1000 companies have an Intranet, according to Forrester Research (Wiley, 1997).

According to Graham (1999), businesses are mainly using intranets for the internal display of company manuals covering employment and other procedures, easily updateable internal news, company catalogues, project notice boards. He reckons that Intranet is replacing historical paper-based information system because it is both cheaper and more easily updateable.

"*Most corporate Intranet are born out of conference room table, with a bevy of expectations heaped upon them from the moment of Conception*" (Graham, 1999).

Implementing Intranet from scratch is an expensive endeavor and thus there lies the challenge of justifying the investment so undertaken.

2.4 Intranet Issues

Intranets are complex and expensive investments. Its scope and reach should positively affect all employees in the organisation and add value to business process. The rigor and execution required to build and maintain a successful intranet is massive; that is from security to content management, and from technology to business processes. Intranet adoption should therefore be guided by a clear plan that captures major intranet concerns and how they impact the organisation. Some of the Intranet issues are highlighted below.

2.4.1 Security

System security refers to the technical innovations and procedures applied to hardware and operating systems to protect against deliberate or accidental damage from a defined threat. While data security on the other hand is the protection of data from loss, disclosure, modification and destruction.

Security risk is a great challenge once the companies Intranet is in place. Companies must keep on evaluating their information security. While progress has been made in computer technology, little has been done to inform users of the vulnerability of data and information to such threats as unauthorised modification, disclosure, and destruction, either deliberate or accidental. There is the danger of hackers within and without the organization.

Performing a security vulnerability assessment helps organization determine what the existing loopholes and vulnerabilities are in the intranet systems and networks at single moment in time. A well undertaken security vulnerability assessment service will deliver a comprehensive report that includes detailed information

about what exploits and possible threats to the intranet systems and networks, and will rank these exploits and threats according to their risk levels. It should also include information about the exploits and threats, specifically naming them and describing how they work, and also provide recommendations for mitigating actions.

As more and more sensitive information is placed in the Intranet, a security plan to secure the data should be developed and adhered to. The following threats and responses need to be considered when developing a security plan:

Threats

- Snooping or eavesdropping: the risk of having someone "overhear" data being sent over the Intranet.
- User impersonation: the risk of having users gain access by pretending to be someone else.
- unauthorized access: the risk of having users obtains access to confidential data.

Responses

- User authentication: A central database should be in place. There should be designated personnel to update that database. Passwords are to should be used. A database administrator will maintain and support password requests and updates. Alternatively, digital signatures may be used after users are given users identifications.
- Access control: Once logged in, a way of tracking through the system should be in place. This together with access controls should be managed through the database.
- Data encryption: Design firewalls to protect corporate information from outside access via the Internet. Ensure that data encryption is done to secure emails that

are sensitive.

The best approach to security is to provide a framework organized around six major services; namely: authentication to confirm identity, authorization, access control to prevent unauthorized use, confidentiality to protect from unauthorized disclosures, integrity to detect unauthorized modifications, non-repudiation to provide proof of origin, and audit to provide records for independent review (Robertson, 2000).

2.4.2 Demand on the Network

Intranet creates some severe demands upon the network. This becomes more critical when Intranets are widely used for accessing corporate databases for mission critical applications. This calls for the differentiating between the types of traffic. For instance, higher speed links should be in place for user communities with mission critical applications; for example the financial data needed for constant decision making.

The bandwidth, which refers to the size of data pipeline, grows very rapidly as a result of the high demand on the network. This demand is largely because of the universal access nature of Intranet, which encourages users to make a far greater number of network connections than they would otherwise do. Therefore, network administrators need to use their flexibility to intelligently engineer the Intranet and satisfy the various user communities.

The organisation and user needs, should be prioritised. Most organisations with mobile workforces geographically dispersed business units, extensive partner networks, or large employee bases benefit greatly from using web-based

communications. The more extensive the needs, the more complex the Intranet can become. '*The complexity of managing operations that are segmented so widely is tremendous.*' (Michelle Boone in Ward, 2001).

An Intranet traffic analysis tool can be used to determine who is using the intranet and how they are using it. One such tool is the web metrics. This software has the capability of analyzing the intranet log files and issue reports on such metrics as hits, page views, site performance, errors and click through. With this information, the Intranet administrator can learn to design sites that deliver greater performance, better navigation and better content. Without this analysis, it's hard to know what is working on the Intranet and what is not.

Intranet administrators need to monitor server and bandwidth needs regularly. An Intranet can publish text, audio and video. Employees can get very excited about the technology and will scream for more and more applications. Thus administrators of the system must be very careful to make conservative estimates on bandwidth needs in order to avoid system snail-up or collapse.

2.4.3 Usability

The Intranet's potential success and performance measures will be less than optimal if user audience does not use the Intranet. Users need to be informed and motivated –organization-wide understanding, acceptance, and Intranet use is mandatory. A marketing or promotion plan is required, particularly in an organization where there is not a proliferation of desk workers (manufacturing, distribution, sales, etc.). Marketing tactics could include email campaign, newsletter stories and promotion, an internal press conference, executive

promotion, hosted chats with the managing director, posters and promotional video.

Addressing Intranet usability requires an in-depth understanding of how target users function in their job responsibilities, and their level of technical acuity. For example, customer service representatives need to access specific customer or product information quickly, but turnover in this job area can be high, and often result in the time-consuming task of training new hires. Usability and Return on Investment (ROI) of the Intranet is a function of content and functionality. How information benefit users most and how this information will further help the organisation's to operate efficiently, and ultimately the bottom line (Ward, 2001).

To ensure high usability, every Intranet need to be promoted so that users know its value and are motivated to use it. Users need to be motivated and educated on why the site is of value to both them and the company. While each organization has its web-head keeners that need no prompting, many more users are not as keen and need to be educated on the Intranet's value.

Target users need to be involved early in the planning process to ensure usefulness and usability (Rowley, 1998). Their perspectives on what they would like accomplished on the Intranet, and how they would go about achieving their goals, will eliminate hours of guesswork for those outlining the basic site structure, functionality, and content. Thus, stakeholders and users should participate, and measurable goals need to be documented.

All content providers and end-users should be invited to take full advantage of the Intranet. Everyone within the organization should feel that the Intranet is affecting their jobs in a positive fashion and should have the ability to make a contribution to its success. Creativity should be promoted, feedback encouraged, standards and guidelines communicated, and extraordinary effort rewarded.

In summary, many of the same methods used to promote other projects within a company may apply in creating intranet awareness:

- Web fair: an all day or half-day event complete with fanfare, training sessions, prizes and contests.
- Internal advertising: newsletters, posters, broadcast e-mails.
- About the Intranet Web site: publish standards and policies, online intranet training, a running ROI meter and recognition of champions.
- Department demos: launch meetings tailored to individual audiences.

2.4.4 Design

Design and content is meant to improve service to Intranet users, increase accuracy of the information, increase speed with which users can access the information, reduce cost and effort of publishing the information. To ensure that design and content issues are taken care of, the people to design the sight should be carefully selected based on sight complexity. Organization should determine well in advance who to design their sites. For a basic site, someone in the IT Department/group can build. For a more complex sight an external vendor can be contracted (Daly, 2000).

Design should also focus on the issues of speed and appearance. The rule is 'keep-it-simple'. Unlike the Internet where high-speed connections and flash animation, cool gadgets and media-rich pages impress many surfers, the employees want to find and download information as quick as possible. As such, Intranet pages should download quickly and be designed for those users with the slowest access speeds.

A general rule-of-thumb is to limit page design to a maximum of 64KBs (requiring about 8 seconds to download via a standard 56KB per second connection). Microsoft's global Intranet home page, MSWeb, closely adheres to the principle of keeping it simple. The look is simple, mainly white with a splash of light blue, with very few graphics, and no animation.

2.4.5 Content Management

Content management answer the question of how well the Intranet is meeting both business and user needs. Simple and quantifiable goals might be to reduce printing costs and shorten response times between business units. The goals act as a basis upon which Intranet success is measured and for implementing necessary changes that all tie into the original business goals and initiatives. It is the Intranet administrators who are faced with the problem of how to publish Intranet content quickly and effectively in order to keep information up to date, accurate, and interesting to users. They have the critical task of understanding what the user want on a daily basis. If users don't find value in a site the first time they visit, it will be hard to convince them to use it on a regular basis.

Content management is important for effective implementation of Intranet. Herring (1999), says that exchange of information is the primary goal, and so the quality of

the content drives the site's success. The sheer volume of information and the effort it takes to keep Intranet information fresh and dynamic requires the distribution of content contribution responsibilities across an organization. This help in keeping the content management system user-friendly, without needing to involve the IT staff at every turn. The IT staff time is therefore not used for unnecessary publishing tasks.

Accurate and upto-date data is what employees need for decision making. How relevant is the hosted information. If human resource has not updated information since its Webmaster left the company three months ago and the staff who is supposed to upload the new sales information has not had the time to do it. The employees may have everything at their fingertips, but they don't use it because it's not accurate and up-to-date.

Employee driven content management is one way of ensuring that information is accurate, upto date and relevant. The Intranet makes it possible for business managers to Contribute and control content in a dynamic environment and keeps their own administrative operations running smoothly as a result of more timely information for decision making (Roberstson, 2000). Employees are the key component of a content management system. Without active and well-trained authors, no new content will be created. Every page on the Intranet or corporate website should have a content owner. Over time, organizational restructuring and changing job roles leads to a gradual breakdown of the list of content owners. Intranet administrator should therefore put in place systems for more effective tracking of content owners. The administrator should also automatically notify content owners when pages haven't been updated for a specified period of time.

Content review issues before implementation of a new system includes:

i) Conducting a comprehensive requirements process, to ensure that the real business needs are met

ii) Reviewing the existing system, to identify its strengths and deficiencies

iii) Ensuring all stakeholders are involved throughout the selection and development process

iv) Reviewing the existing content and updating where required

v) Rebuilding an accurate list of content owners

In summary, the most important aspect of a successful Intranet revolves around identifying and populating the Intranet with relevant and updated information, which need to be inputted and maintained by more than one person and ensure that this collaborative effort is well harnessed through set guidelines and policies.

2.4.6 Standard Policy

The other Intranet adoption factor is the need to have a standard Policy and guidelines. "Create rules for the road" (Tellen, 1997). According to Tellen (1997), Intranet rules and regulations need to be in place well before implementation. These rules help to define the roles and responsibilities of the users thereby reducing Intranet abuse and misuse.

Publishing policies dictates on what can go on the Intranet and what cannot. These policies should touch on the following areas: who can publish, types of content allowed, sites styles, legal issues, proper use of copyrights and logos, ownership of applications and content, security concerns, logistics for requesting server space,

testing and loading, maintenance and content management, site communications, allowed technologies etc (Graham, 1999). Once these policies have been set up, they should be communicated early and often.

In order to ensure consistence in style, a guide should be published. The style guide enforces standards on font size, colour, style, default screen, use of graphics, authoring standards such as headers and footers. Many companies create a web site on the Intranet that promotes these standards. They create a place where publishers can download templates and see examples.

Swiss-based Adecco is the largest staffing/personnel firm in the world with more than 5000 offices in 59 countries (Ward, 2001). A highly decentralized company with managerial decisions largely resting with the respective regions and offices, Adecco has a centralized Intranet team that is primarily focused on developing and managing Intranet standards rather than actually managing the Intranet itself. Core international Intranet team is responsible for global intranet strategy and standards, international Internal communications (content relevant to all users), overall management of the centralized portal, core application development, and Intranet training and tools. Most of the 55 user countries have their own Intranet site with their own management that may include an executive champion, a team leader, a strategist, department level publishers and content writers that all must adhere to global standards, use standardized templates and production procedures while relying on centralized support and training from the international team (Ward, 2000).

2.4.7 Measurement

Each Intranet must be measured by a set of predetermined critical success indicators that measures both quantitative and qualitative performance. Measuring intranet's performance is perhaps the most important element for justifying Intranet's existence and budget. There are available multiple measurement channels – both online and offline – for appraising performance. Popularly employed measurement channels include metrics or log analysis, online and offline surveys, focus groups (also available online), feedback email, help desk calls and email, usability testing and return on investment (Ward, 2000).

Return On Investment is increasingly becoming the most critical measurement as Intranets grow in importance and demand more funding and investment. Since early 2000, Mitre Corp., a not-for-profit technology company that services several U.S. federal agencies, has regularly appraised both hard and soft cost savings on their Intranets (Ward, 2001). Mitre has measured HR and administration, IS management, financial operations, technical operations, employee productivity and other miscellaneous Intranet savings from its Intranet. In total, a US$7.2 million Intranet investment has returned US$62.1 million in reduced operating costs and improved productivity.

Metrics are also an important measurement tool in the yearly, monthly, weekly and even daily measurement of Intranet traffic and usage. Popular metrics or log analysis software packages such as Web-Trends enable one to measure 'hits', page views, unique visitors, average user session, entry and disembarkation points, click streams, etc.

Measurement for start Intranet should be done by first identifying the costs of developing and maintaining the Intranet on a full time basis. This cost is matched against both the tangible and intangible benefits of the corporate Intranet. It is easier to identify tangible returns (reduction in paper for one) since direct costs are associated. For measuring intangible benefits, such as gains in productivity or corporate culture, one-to-one relationships between the bottom line and various Intranet projects should be sort. No matter how it is decided to measure the success of the Intranet, it is critical that the standard being used is communicated to all involved.

2.5 Intranet Benefits

2.5.1 Tagible Benefits

Some of the tangible benefits of Corporate Intranet are time saving as information can be accessed much faster, better quality of information as readily available information is available for decision making, improved productivity as it allows more collaboration and sharing information during joint projects, saving in printing and shelf space.

In summary Intranet has the following tangible benefits: inexpensive to implement for organization which already have the basic computer hardware and software, easy to use for computer literate employees, saves time and money, faster information retrieval, scalable and flexible, connects across disparate platforms and putting users in control of their data through own content management and publishing.

2.5.2 Intangible Benefits

Intranets allow an organization to spend less time on things that bring no value such as looking for the right information to solve a problem in the physical filing storerooms and archives.

Productivity increases as corporate knowledge is more accessible and the data is more accurate. Flexibility in time of delivery of knowledge is gained as information is easily accessible online. Intranets allow for a place where boundaries are lowered and information exchange is encouraged. This leads to more informed employees with the ability to make better and faster decisions. This in turn leads to better productivity and more time for revenue generation. Therefore, the main intangible benefits of Intranet are; improves decision making, empowered users, builds a culture of sharing and collaboration, facilitates organizational learning, breaks down bureaucracy, improves quality of life at work and productivity.

2.5.3 Intranet Limitations and Failures

Although Intranet has many benefits, poor original design may result to as many as three redesigns. This results to over-expenditure as and time wastage. Secondly, failure to develop an integrated plan that accounts for an organization's structure, stakeholder, and user requirements may result to failure and with it, a loss of significant time, money and jobs.

"*Too many intranets and portals fail or don't live up to their potential because they lack direction and often become a political football torn between rival groups and competing priorities within an organization*," Carmine Porco, vice-President, Prescient Digital Media (Ward, 2000).

Problem arises when executive desires are allowed to shape the Intranet instead of research and requirements. The other threats to Intranet include management seizing control, especially where managers of various departments vie for profile editorial power. Intranet can also be a hindrance if design and redesigns is based on a myriad of product demos and vendor presentations instead of good implementation plan.

Misuse of Intranet where staff spends valuable organisation time and resources in the intranet getting information not relevant to their day-to-day operations is another major drawback. This calls for the network administrator to be monitoring periodically and reporting misuse to departmental heads.

Other limitations include:

a) Difficult to maintain content over time
b) Animation, video and audio are slow
c) Unfiltered information may overwhelm users
d) Lack of security features
e) Browser/server software incompatibility between versions

2.6 The future of the Intranet

According to Wiley (1997), the Intranet will become the primary vehicle for delivery of employee and company news and the main source of information in companies worldwide. He reckons that more processes will be added to turn information into knowledge thus increasing the value the Intranet delivers to each employee (1997). Besides, he notes that Extranets will enable a significant degree

of electronic bonding with our customers and suppliers by allowing them to connect to companies Intranet (Wiley, 1997).

O'brien states that; "*the sooner an Intranet becomes a core component of the corporate technology infrastructure, the sooner the company can reap the benefits of intranet*" (2001). Intranet technology is therefore bound to be embraced by many corporations worldwide, thus making it an indispensable business tool.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Population of the Study

The population of the study consisted of all the firms that were listed in the Nairobi Stock Exchange (NSE) in 2001. 54 companies (Appendix III) were listed. However, 53 companies were reached as one had closed down. Since the population was not very large, the entire population was studied (census). The researcher chose publicly owned companies for this study because of their cross-sectional representative ness.

3.2 Data Collection Method

Both primary and secondary data was collected for the study. The primary data was collected using questionnaires. In preparation of the questionnaires, reference was made to the relevant literature. Two different questionnaires were used. One was administered to the IT manager or the designated person in charge of IT operations (*Appendix I*). The second questionnaire (*Appendix II*) was administered to user department staff. The reason for two different questionnaires being sent was to get a technical view from the information technology experts as well as the user department view. As most of the quoted companies have their head office in Nairobi, a drop and pick method was used. Both questionnaires were pre-tested and corrections made accordingly.

CHAPTER FOUR

4.0 DATA ANALYSIS

4.0 Data Analysis defined

Data analysis refers to extraction of meaningful information from a mass of raw data. Descriptive statistics has been used for data analysis in this study and this includes cross-tabulations, proportions and percentages. The five sectors in the publicly quoted companies have been cross tabulated with the level of Intranet usage.

Percentages and proportions have been used to give the respondents perceptions in the study areas of concern like challenges of Intranet usage, security concerns and benefits derived from the Intranet.

4.1 Response Rate

A total of 54 quoted companies were targeted, as per *appendix III*, however one company was not studied because it was not operating at the time of the research. Of the 53 questionnaires distributed to company IT managers only 22 were returned fully completed. Thus the response rate was 42%.

Thirty questionnaires were sent to the various user department staff that use computers regularly. Out of these 9 were received giving a response rate of 30%. Four were from companies with Intranet and the other 5 from companies that have not adopted Intranet. One of those from the companies with Intranet had been completed by IT staff and hence not used in the analysis.

4.2 Intranet Usage in Publicly Quoted Companies.

4.2.1 Cross-Tabulation of Intranet Adoption by Sector

Sector	Questionnaires sent	Questionnaires returned	Number of returned with Intranet
Agricultural	5	-	-
Commercial & Services	10	5	3
Finance & Investment	12	5	4
Industrial and Allied	16	10	3
Alternative Investment Market	10	2	-

Table I: Intranet adoption by sector

As per Table I above Finance and Investment sector had 80% Intranet adoption. The Commercial & Services sector recorded 60% Intranet adoption. Industrial and Allied sector reported 30% adoption. No questionnaire was returned from the agricultural sector while the two returned by Alternative Investment Market sector were from companies without Intranet.

Finance and Investment sector had the highest rate of Intranet adoption and was followed by the Commercial and Services sectors. The study found that the services sectors are way ahead of the other sectors in Intranet adoption because of the need to better manage the delivery of services to the customers. For instance, banks have invested heavily in Information Technology to ensure better service management. Intranet usage enhances knowledge sharing, collaboration and data sharing across the organization. Search for relevant data across the enterprise is also enhanced which help meet customer's demands.

4.2.2 Intranet Benefits

Table II below shows percentage of benefits attributed to intranet adoption.

Benefits	High (%)	Medium	Low (%)
A) Reduced cost of office supplies	60	30	10
B) Better access to information	100		
C) Better storage	100		
D) Achieved improved productivity	80	20	
E) Reduced paper filings	80	10	10
F) Reduced printing	60	40	
G) Reduced copying	60	40	
H) Reduced shelf space	40	30	30

Table II –intranet benefit

100% of the IT manager's response indicated that Intranet has brought a high benefit of better access to information and storage. Information, which before was held in hardcopies somewhere in the filing room, becomes available on the Intranet. Seated at their desk, users are able to access the information that they need. This bring saving in time, printing papers and reduce filing space. Since some of the companies reported an hourly and daily update of information, users are able to access timely information for decision making.

60% of the IT managers felt that they were enjoying high benefit from reduction in printing. On the other hand 30% felt that reduction in printing has been medium and 10% felt it was low. Some staff are still finding it safe to have a hard copy despite the information being available online electronically. Notably, Intranet adoption may not result to significant reduction in paper work unless paper culture is dealt with during the implementation stage. Major Banks for instance have initiated electronic authorisation codes, thus designated manager electronically approve disbursement. Thus significantly reducing paper work.

80% reported that Intranet has resulted to improved productivity and reduction to paper filing. Staff now can easily access information needed for decision-making on a timely basis. Besides, joint projects can be undertaken by joint teams posting their work in the Intranet for all to access and make changes. The projects reports don't have to be filled in static files but are all available online. Interested staff can download the information for their use. Productivity is also improved through online staff training. Intranet adoption has resulted in companies reducing their classroom based training significantly by posting training materials in the Intranet with self-explanatory user guides.

4.2.3 Intranet usage in companies

70% of the IT managers reckon that Intranet is very important for joint team projects, memos and also for publication of policies. Companies with widely geographically dispersed branches may have teams dealing with certain projects that undertake these projects through Intranet. Team members post their finds and comments on the common Intranet page for other members to review.

60% of the IT managers indicated that Intranet is important for their staff training, internal recruitment and for general information. With Intranet training materials can be availed electronically for trainees to read and thereafter a training session can be held. This facilitates a training process as trainees have opportunity to forward their comments and feedback. Vacancies in the organization are posted in the Intranet page. Staff wishing to change jobs can apply. Information of general nature is also posted on the Intranet.

The percentage of staff with Intranet that were making use of the Intranet ranged from 70-90%, which means that some staff were not making much use of the

Intranet. This calls for further marketing of the Intranet. IT managers should find out why some users are struggling and what assistance they need.

Users listed the following as the problem they face while using Intranet:

i) Server downtime

ii) Late update; making information of little use

iii) Security

iv) Computer literacy

Companies need to address computer related issues in order to ensure that maximum benefits are realized from Intranet. Companies facing server downtimes and computer illiterate staff need to address those problems through better computer maintenance policies and staff training. Staff training should be geared towards making maximum use of the Intranet. Employees should be empowered and trained to publish their own content. This will ease the burden of corporate publishing.

Integration of Intranet into employees' workload advances acceptability and usage of the Intranet by employees. The Intranet becomes a highly effective and personalized site. If employees personalize information they see on Intranet and this advance the use of Intranet from static resource to a living and essential part of the corporate culture. A certain amount of maintenance is however required to preserve the integrity of the site. This is to ensure that information is upto date and that the links are always working and relevant.

In summary Intranet should advance the business goals. It should integrate itself into employee's workload making the employees more effective in what they do.

When this happens, the business reaps tangible benefits in reduced cost of office supplies, better access to information, better storage, reduced shelf space and improved productivity.

4.3 Factors favouring Intranet adoption

Table III below shows the relative importance of the factors favouring Intranet adoption.

Factors	Important (%)	Neutral	Not important (%)
1. Telecommunication infrastructure	80	10	10
2. Cost of intranet design	50	20	30
3. Duty & taxation on intranet communication Related equipment	40	20	40
4. Training	70	20	10
5. Security consideration	70	10	20
6. Availability of human technical resources	80	20	
7. Staff awareness	80	20	
8. Companies financial resources	100		
9. Data access by all stakeholders	80	20	
10. Data presentation	80	10	10
11. Corporate culture	60	40	
12. Management of content of published information.	80	20	
13. Integrating data from diverse sources	80	20	
14. Internet regulations and policy issues	50	20	30
15. Information hosted: -Content -Quality -Quantity	100		

Table III –Factors favouring intranet adoption

4.3.1 Telecommunication Infrastructure

80% of the respondent with Intranet indicated that infrastructure is an important factor in the usage of the Intranet. 10% were indifferent and the other 10% felt it was not important factor. For companies with countrywide branch network, getting telephone connections for a sustained period is a major obstacle. This hinders adoption in that they don't expect good return from such an investment. Thus, poor telecommunication infrastructure hinders Intranet adoption for companies with countrywide branch network or mult-nationals. Respondent who

were indifferent or saw it as not important factor were notably having local area network with a well functioning Intranet.

There is need for the improvement of the telecommunication infrastructure in Kenya for the benefit of organizations that have geographically dispersed branches. A move from analogue to digital structure is vital. Besides, the drastic growth in the use of mobile phones may help elevate the problem.

4.3.2 Cost of Intranet Design

The cost of designing the Intranet is not a very relevant factor in its adoption since only 50% of the respondent indicated it to be important. Besides, 20% of the respondents were indifferent with the other 30% indicating it to be un-important. This can be attributed to the fact that 80% of the companies that have adopted Intranet were said to have been done in-house with the result being low cost due to the use of in-house expertise as opposed to the hiring of consultants. Beside, 50% of the respondent indicated that the monthly Intranet expenditure range from Kshs. 50,000 to 100,000. This is low expenditure given the level of capitalisation and operations of these quoted companies. Indeed, some companies indicated that with as little as Kshs. 45,000 a well able consultant could be hired to design the Intranet.

4.3.3 Duty& taxation on Intranet communication Related equipment

40% of the respondents indicated that duty and tax is important to the adoption of Intranet. 20% were indifferent as some expressed their un-awareness on the duty and tax factor. 40% said taxation and duty were not important factor due to the very low charge (only 5%) levied by the government. The June 2003 budget has

altogether spelt out a zero tax charge for computers and related accessories. This implies that duty and taxes are perceived not to have much direct favourable or unfavourable effect on Intranet adoption. This is further reinforced by the fact that 70% of the respondent indicated that the incremental cost of Intranet related items was less than KShs.100, 000.

4.3.4 Training

70% of the respondent indicated that training is an important factor in usage. While 20 % were indifferent 10% felt it was an un-important factor. For the user department questionnaire, 67% of the users indicated that they were initially trained on Intranet use, whereas 33% indicated that they were not trained at all. The areas of further training indicated by users were said to be navigation within the Intranet and Intranet publishing. The users indicated that there is a knowledge gap and thus the need for adequate training. Obviously the level of training may vary from one department to another depending on the user needs and the responsibility they have for maintaining the Intranet.

It can be concluded that training is not a major factor that affect adoption of Intranet. However, it's a critical implementation step that directly affects usage.

4.3.5 Security Consideration

70% of the IT managers felt that security of data was a key consideration in the adoption of Intranet. 10% were indifferent and the other 20% considered it un-important. Most of the respondent who felt it is a critical factor had over ten branches spread throughout the country. In a sense they must have fallen victim to data loss during transmission and hence the critical assessment of security factor.

Data has to be secured against internal users as well as external. The fear of security breaches act as an unfavourable factor to intranet adoption especially where managers perceive the chances of such incident to be high. In companies where electronic fraud has taken place in the past, managers would shy off from going the Intranet way. Indeed, a lot of caution would be exercised in such a company, resulting to very selective data being placed in the Intranet. Others would adopt a wait and see attitude in letting others experiment with Intranet while they lag behind.

IT managers have to ensure that data transmission, storage and retrieval are well safeguarded against hackers or accidental loss. Companies should put in place a Security Incident Response (SIR) system. Security incident response is the resulting process and actions an organisation takes in responding to a security intrusion. This should have details of the actions that you take when a security incident occurs. The Incident Response System should among other things detail the right people, lines of accountability, guidelines for staff to take appropriate actions, and contact lists for outsiders that need to be called upon for support etc

4.3.6 Availability of Human Technical Resources

80% of the respondents indicated that availability of human technical resources is an important factor in adoption of Intranet, 20% were indifferent. Given the fact that most of the respondents indicated that the Intranet was designed in-house, it follows that the existence of a highly qualified human technical resource is a favourable factor to Intranet adoption. Once the Intranet is in place it requires constant attention to ensure good content management (quality and quantity). Updates of the sites need to be done regularly if information is to be found useful by users. After all, the IT field is a highly dynamic learning arena with new

concepts emerging by day. As such, there is a need for one to keep abreast with latest changes.

4.3.7 Staff Awareness

80% of the respondent felt that staff awareness is an important factor in the adoption of Intranet, 20% were indifferent. Respondent said that users need to be made aware of the benefits of Intranets.

Organisation should do internal marketing of the Intranet. It isn't obvious that staff will start using the Intranet once put it is place. Staff should be sensitised on the benefits available in using the site. Important documents like leave forms, salary review surveys, performance appraisal etc, should be made available in electronic form on the Intranet. Staff should be informed of the fact that they can now make their leave application through the Intranet, review the performance appraisal results, and carry out joint projects, among other time saving benefits. This will make the organisation's Intranet support more functions and reduce delays in information access. An organisation can create awareness of intranet use amongst its staff using memos and seminars.

4.3.8 Companies Financial Resources

100% of the respondents felt that financial resources of the company were a critical factor in Intranet adoption. Clearly for companies with only a skeleton of computer hardware, the computerization budget needed might be quite prohibitive. In the past Kenyan major banks have invested millions of shillings in computerization exercises. Thus weak financial or liquidity position negatively impact on Intranet adoption and vise versa.

The study however noted that among those companies that have not adopted Intranet, 30% had invested over 10 million in Information Technology. Thus, though financial resources of the company are critical factor, other factors may outweigh it, for example the security consideration, company Information Technology strategies and the sector of operation.

4.3.9 Data Presentation and Integration of Data from Diverse Sources.

The way data is presented was seen to be critical factor as far as Intranet usage is concerned. 80% of the respondent felt it was important, 10% were indifferent while the other 10% felt it wasn't important. Good data presentation enhances usage and acceptance of the Intranet culture. If users have to spend a lot of time navigating the Intranet to locate the useful information, then many would opt not to use it. Well linked data will entice users.

Intranet users are drawn to the site by the belief that they will access the information they need on a timely basis. Good hyperlinks help safe on time that one would take in going through various physical files and records in cabinets. This calls for user friendliness in Intranet design. The data links should be in such away as to ensure that users are able to access the information the need at the shortest time feasible. The page layouts and table of contents should clearly prompt users to their desired data pages. Hyperlinks should be constantly reviewed to make them relevant. Constant updating and archiving will also ensure that the Intranet isn't clogged with irrelevant data.

4.3.10 Corporate Culture

60% of the respondent felt that the company culture is of high importance to Intranet adoption. 40% were indifferent. Though the percentage indicating importance of culture isn't very high, the organisation wide culture is known to impact on changes. Intranet adoption like any other organisation change must be aware of the culture, of the nature of the situation and the social will of the people. "This is how we do things around here", is a more powerful contract than a psychological contract (Covey, 1991). Intranet adoption may be resisted if it is perceived to interfere with vested interest of certain informal but powerful social groups. Objectives based on deep-rooted, long-standing traditions can't be expected to respond quickly to pressures for change. Intranet implementation strategy should therefore give due diligence to the company culture.

If the culture organisation wide culture is dynamic and innovate, then it would be favourable to Intranet adoption. Whereas if the culture is static, inflexible and rigid, it would be unfavourable to Intranet adoption.

4.3.11 Management of Content of Published Information.

Content management refers to the process and means by which an organisation creates, publishes and maintains content via the Intranet. Technically competent and qualified human resources are key to attaining good content management. The study showed that 80% of the respondent felt that the management of content was a favourable factor for Intranet acceptability and 20% were indifferent.

The updating of the Intranet was indicated to be 30% by owner department 60% by IT department while 10% is done by an outside consultant. Distributed content

management is decentralised content creation, publishing and management by many authors or groups throughout an organisation. This helps in empowering employees and reducing the cost of Intranet publishing. Where this has been achieved, many users become publishers thus resulting to a large pool of knowledgeable staff who are motivated to use the Intranet information for their day-to-day activities. However, a senior IT person needs to foresee and edit what is published. He/she should ensure that the various publishers are abiding by the laid down publishing policies and that sites are updated regularly.

4.3.13 Intranet Regulations and Policy Issues

50% of the respondent felt that the Intranet regulations and policies are important while 20% were indifferent leaving the other 30% who felt that it was not important. This isn't surprising in that the Intranet and Internet world in Kenya is highly unregulated. Thus, in the wider business environment, there are little regulation and policy issues that would hinder intranet adoption. However, at the company level inhibitive company policies will negatively affect adoption and usage of Intranet. Cases where Intranet rules are too rigid and constraining would result to reduced usage thus negatively impacting the intranet. There is need for companies to regularly review their IT policies.

4.3.14 Information Hosted

One hundred percent of the respondents felt that the content, quality and quantity of the information hosted are a very important factor in the adoption of Intranet. Users visit sites seeking relevant information. If very relevant information is hosted initially in the organization website, this acts as a favourable factor in the adoption in the entire organization.

Organization planning for a phased implementation should therefore ensure that very relevant information is hosted in the very first phase. If the extent that information hosted meets the users need, more users visit the site thus increasing the hit rate. Organization purposing to introduce Intranet should therefore determine the information to be included, the design needs, the extent of hyper linking, how often and by whom the Intranet should be updated.

4.4 Anticipated Intranet Status in Kenya.

Thirty percent of the companies with Intranet indicated that they adopted it in the last 1-2 years. With the remaining 70% indicating that Intranet has been in place for over the last 5years. 50% of the companies, which had not adopted Intranet, indicated that the same would be in place in the next one to two years. While only 10% indicated that they do not intend to adopt Intranet in the near future. There is therefore high indication that the Intranet adoption will increase with more companies adopting Intranet in Kenya in the next one or two years.

CHAPTER FIVE

5.0 FINDINGS, RECOMMENDATIONS AND LIMITATIONS

5.1 Findings

5.1.1 Intranet Usage

The Finance and Investment sector of the Nairobi Stock Exchange was found to be ahead of the other sectors in the adoption of the Intranet. The service industry has been in the lead in adopting new information technology. Swift, Automatic teller machines, Internet and Intranet have slowly been integrated with the business way of doing things. Due to the range of Intranets benefits, O'Brien urges for a faster adoption and states that, "*The sooner an Intranet becomes a core component of the corporate technology infrastructure, the sooner the company can reap the benefits*" (O'Brien, 2001).

5.1.2 The Main Benefits for Intranet use.

The following were found to be the main benefits:

a) Better access to information. At the click of a button users can access a whole range of organization data. This is made possible by the use of hyperlinks. Hyperlinks enable users to navigate through a wide range of data in the organization databases.

b) Better storage. Intranet enables users to retrieve information online. Thus, instead of printing massive reports and organization documents, the same is hosted in the Intranet for ease of access. This in turn reduces filing spaces and cost.

c) Higher productivity. Organizations that have adopted Intranet have reduced printing costs. Others use Intranet in joint project work thus reducing project

duration since information is shared online. Intranets have also reduced information retrieval time thus allowing for decision to be made faster.

5.1.3 The extent of Intranet adoption in companies listed in the Nairobi Stock Exchange.

Despite the many benefits associated with Intranet use, the Intranet adoption by the firms listed in the Nairobi Stock Exchange was found to be low. This study found the main factors that hinder adoption of intranet to be:

i) Telecommunication infrastructure. This is especially so for companies with widespread branches. The use of telecommunication links, which are mainly analogue as opposed to digital telecommunication exchanges slow down access. Thus information hosted at corporate headquarters might not be easily available to far-removed branches at the time required. With the dramatic growth of the mobile phones, the scenario may change with time especially if the government allows other mobile phone companies to operate in Kenya. Telkom (K) Limited is also adapting the digital exchanges which are much faster.

ii) Availability of human technical resources. The issues of proper design and content management were seen to be important to users. Intranet publishing is a technical field, which must address the user needs. Organization should recruit and retain well-qualified staff to do editing, constant updating and general content management.

iii) Corporate culture. Companies with IT directors were seen to have had a high level of Intranet adoption. Technically qualified IT directors are well placed to articulate IT issues at the board level. They offer guidance on change management for any IT ventures. Intranet adoption like any other organization

culture must take into account the prevailing culture and its dynamism. Coven notes that this is a more powerful contract than a psychological contract (1991).

iv) Security consideration. Intranets are vulnerable to unauthorized modification, loss and/or interception during data transmission and destruction. Threat of hackers therefore keeps a number of companies from adopting Intranet. Security policies must be thought through before companies implement Intranet. Failure to do so would leave the organization quite exposed to security disaster. The fear of Intranet security breaches is unfavourable factor to adoption. It needs to be overcome and adequate assurance given on the security of the information to be maintained in the Intranet.

v) Company's financial resources. Resource scarcity result to tight budgeting to ensure equitable distribution of resources to the various competing departments. For companies whose computer hardware is obsolete or not there at all, the computerization budget needed for Intranet subsequently to be adopted can be quite prohibitive. Thus the liquidity position of many companies in Kenya does not give room for Intranet adoption especially given the fact that the country has not registered a growth rate high than 1.5% in the last three years.

vi) Data presentation and integrating data from diverse sources. Well presented information that is of high quality and right quantity, well interlinked to allow for ease of navigation will draw many users to the Intranet. On the other hand chaotic data that is lumped together will only discourage even the very well intentioned user. If user can timely get the information they need for their work within the most reasonable time, then the Intranet will experience heightened traffic. Use of good hyperlinks helps safe on time that one would have used in going through physical cabinets.

vii) Information hosted. Closely linked to the factor of presentation are the content, quality and quantity of the information hosted. Organization should

carry out user needs analysis and as far as possible involve the users in the determination of the content, that is what is good quality and just what quantity is right. Various user departments have their own peculiar needs and that is why user departments should be encouraged and empowered to publish in the Intranet. To attain this goal, clear publishing policies should be published and an Intranet administrator given the role of policing to ensure adherence.

5.2 Recommendations

This study recommends the adoption of Intranet in organizations in order for organizations to reap the many benefits resulting therein and the high return on investment on intranets. According to the preliminary result from International Data Corporation (A leading United States of America Information Technology Research group), return on investment study of Intranets found the typical return on Investment well over 1,000 percent which is far higher than usually found with other technology investment (O'Brien, 2001). For Companies that already have the computer hardware and local area network in place the incremental cost of adopting is negligible.

The researcher recommends the need for Intranet planning before adoption. Organizations should have a clear road map. Intranet adoption should be well thought through. Organization should decide on: - who designs the Intranet (in-house or outside consultants), when to implement, what to include, how to go about the publishing etc.

User's response of no adequate training on Intranet calls for organization to ensure that a well coordinated training program need to be put in place. Intranet users should be trained to ensure maximization of the Intranet benefits in the

organization. User training should cover diverse areas such as, publishing policies, downloading information, accessing, and storage, designing and publishing in the Intranet. Tutorial notes can be posted in the intranet in order to cut down on classroom-based learning.

There is need for behavioral change in organizations to ensure that the Intranet benefits are enjoyed. For instance, most IT managers felt that printing and filing spaces has not decreased despite the Intranet making information more accessible. This may mean that many users who were already used to having hard copies are still in the habit of printing and filing hard copies irrespective of the information being a button click away from them. This study recommends more awareness creation within the organizations that have adopted the Intranet. Seminars, conferences, news-bulletins, and organization-wide campaigns, which highlight the various benefits, should be undertaken. Important organization's issues can be put exclusively on the Intranet, for instance leave application forms and new vacancies advertisements.

There is need for improvement of the telecommunication infrastructure. A move from analogue to digital structure is recommended in order to enhance Intranet communication. This will greatly help organization with geographically dispersed business units.

The researcher also recommends that companies review their IT regulations and policies regularly to ensure that they are abreast with current IT development. The dynamism in the IT field may make yesterdays innovation irrelevant for tomorrow's company needs.

The study found that most of the companies that had Intranet had an IT director. Given the benefits derived from Intranet to organizations that had adopted, it is recommended that organizations appoint qualified IT directors in order to ensure that the IT strategy of the organization is well articulated at the board level.

5.3 Limitations

The response rate was low despite the various follow-ups. More so some of the big banks refused to participate in the study quoting customer confidentiality. The user's department response rate was very low due to the fact that most users sent the questionnaires to their IT manager or department thus duplicating the work.

5.4 Suggestions for Further Studies

1.0 A study on the Return on Investment on Intranet in Kenyan companies is recommended. Such a study should be compared with others carried out elsewhere outside the country. This would greatly help companies, which have not adopted Intranet to make an informed assessment of whether to adopt, or not. In such a study, the benefits identified in this study would be quantified and compared to the cost of implementation.

2.0 Research is needed to find out whether firms with Intranets perform better than those without.

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Appendix I

Part I

1) Which NSE sector classification do you operate in?
   ( ) Agriculture ( ) Commercial & Services ( ) Finance & Investment
   ( ) Industrial & Allied ( ) Alternative Investment Market

2) Approximately how many computers does your organisation have?

   ( ) 1 - 50 ( ) 51-100

   ( ) 101 – 200 ( ) Above 200

3) Approximately how many employees are there?
   ( ) 1 - 500 ( ) 501-1000

   ( ) 1001 – 5000 ( ) Above 5000

4) How many branches do you have in Kenya?
   ( ) 1 - 10 ( ) 11-30

   ( ) 31 – 50 ( ) Above 50

5) Does your company have computers regular maintenance policy?
   ( ) Yes ( ) No

6) Does your company have computers annual maintenance budget?
   ( ) Yes ( ) No

Part II

7) Do you have an Intranet? ( ) Yes ( ) NO.
   If No jump to question No 23.

8) Was the Intranet designed in house? ( ) Yes ( ) No

9) If No who did it for you _____

10) For how many years has the Intranet been in place?
    ( )1 ( ) 2 ( )3 ( )4 ( )Over 5

11) State whether in agreement or disagreement with the followings Intranet services in your organisation.

facts	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
A. Intranet have had a positive effects on employees performance					
B. Intranet have been disruptive in our organisation					
C. Intranet is rarely update in time					
D. Not enough fund have been allocated for intranet					
E. No intranet strategy exist					
F. The staff do not positively accept the intranet					
G. Staff waste a lot of productive time on the intranet					

12) What percentage of staff currently linked makes use of the Intranet?
( ) 0-30% ( ) 30-50% ( ) 50-70% ( ) 70-90% ( ) 90-100%

13) Indicate whether you agree or disagree with the following statement.
a) Intranet is rarely used in our company? ( ) Agree ( ) Disagree
b) Intranet users have increased drastically since its establishment. ( ) Agree
( ) Disagree

14) Rank the following intranet services in order of importance. (Tick where appropriate)

Services	Very Important	Important	Neutral	Somewhat Important	Not important
Joint Team Projects					
Memos					
Policies published					
Used in staff Training					
Internal Recruitment					
General Information					
Interactive discussions					

15) Who is responsible of updating your intranet ?
( ) Owner (originating) department
( ) IT staffs
( ) Outside consultants
( ) Others (please specify)_____

16) How often is the update done?
( ) Once a week ( ) Daily ( ) Hourly

( ) Monthly ( ) Quarterly ( ) yearly

17) How much do you spend on intranet (KShs) per month?

( ) 1,000 - 50,000 ( ) 50,000 - 100,000

( ) 100,000 - 200,000 ( ) Over 200,000

18) For what specific purpose is the fund applied in?

_____

_____

_____

Part III

19) What is the estimated initial cost (incremental cost) in Kenya Shillings of setting up the Intranet?

( ) Less than Kshs. 100,000 ( ) Between 100,000 -500,000

( ) Between 500,000 -1 M ( )Over 1 M

20) How important do you consider the following factors to be a challenge to usage of intranet in your company?

Factors	Very Important	Important	Neutral	Somewhat Important	Un-important
1. Telecommunication infrastructure					
2. Cost of intranet design					
3. Duty & taxation on intranet communication Related equipment					
4. Training					
5. Security consideration					
6. Availability of human technical resources					
7. Staff awareness					
8. Companies financial resources					
9. Data access by all stakeholders					
10. Data presentation					
11. Corporate culture					
12. Management of content of published information.					
13. Integrating data from diverse sources					
14. Internet regulations and policy issues					
15 Information hosted: -Content -Quality -Quantity					

21) Rank the following benefits in order of attribution to Intranet use?

Benefits	Very High	High	Neutral	Low	Very Low
A) Reduced cost of office supplies					
B) Better access to information					
C) Better storage					
D) Achieved improved productivity					
E) Reduced paper filings					
F) Reduced printing					
G)Reduced copying					
H) Reduced shelf space					

22) Evaluate the organization intranet on:

Factors	Very high	high	Neutral	low	Very low
Use of colours					
Layout of pages					
Sequencing of information					
Table of content					
Hyperlinks to other pages					
Easy to down load					
Comprehensive(coverage)					
Online help					

23) If your company isn't having an Intranet, how soon do you think it will be adopted? _____years.

24) What is the title of the overall person in charge of computer and information services in your organisation?

( ) IT Director

( ) IT Manager

( ) Finance and administration manager

( ) Others (specify) _____

25) What was the IT Investment during the last financial year?

( ) 1,000 - 5m ( ) 5.1m - 10m
( ) 10.1m- 20m ( ) Over 20 Million

Appendix II

(1) Department of respondent_____

(2) Position (optional) _____

(3) Does your organization have an Intranet?

( ) Yes ( ) No

If no, jump to question 17

(4) Were you formally trained on Intranet use?
( ) Yes ( ) No

(5) How often is the Intranet updated?
( ) Hourly ( ) Daily ( ) Weekly ( ) Monthly ( ) Yearly

(6) Would you feel confident to recommend the Intranet to a new employee?
( ) Yes ( ) No

(7) Is the information in the site available easily in hard copies?
( ) Yes ( ) No

(8) What level of interactive does the site allows e.g. search, chats?
( ) Very High ( ) High ( ) Moderate ( ) Low

(9) Evaluate the organization intranet on

Factors	Very high	high	Neutral	low	Very low
Use of colours					
Layout of pages					
Sequencing of information					
Table of content					
Hyperlinks to other pages					
Easy to down load					
Comprehensive(coverage)					
Online help					

(10) Are there things you are not still clear about on the intranet?
( ) Yes ( ) No

(11) If yes, which ones
_____

(12) Who is responsible of updating your Intranet?
( ) Owner(originating) department

( ) IT staff
( ) Outside consultants
( ) Others (please specify)_____

(13) Were you involved in any stage of the web site development?
( ) Yes ( ) No

14)List three major problems you face in intranet use?
a)
b)
c)

15) State whether in agreement or disagreement

facts	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
H. Intranet have had a positive effects on employees performance					
I. Intranet have been disruptive in our organisation					
J. Intranet is rarely update in time					
K. Not enough fund have been allocated for internet					
L. No intranet strategy exist					
M. The staff do not positive accept the intranet					
N. Staff waste a lot of productive time on the intranet					

16) Rank the following benefits in order of attribution to Intranet use?

Benefits	Very High	High	Neutral	Low	Very Low
Reduced cost of office supplies					
Better access to information					
Better storage					
Achieved improved productivity					
Reduced paper filings					
Reduced printing					
Reduced copying					
Reduced shelf space					

17) How much time do you spend on computer related tasks per day_____hours

Appendix III.

NSE listed companies by sector.

Main Investment Market Segment

Agricultural

1. Brooke Bond Ltd.
2. Kakuzi
3. Rea Vipingo Plantations Ltd.
4. Sasini Tea & Coffee Ltd.
5. Theta group Ltd.

Commercial and Services

6. African Lakes Corporation PLC
7. Car & General (K) Ltd.
8. CMC Holdings Ltd.
9. Hutchings Biemer Ltd.
10. Kenya Airways Ltd.
11. Lonhro Motors EA Ltd.
12. Marshalls (E.A.) Ltd.
13. Nation Media Group
14. Pearl Drycleaners Ltd.
15. Tourism Promotion Services
16. Uchumi Supermarket Ltd.

Finance and Investment

17. Barclays Bank Ltd.
18. C.F.C Bank Ltd.
19. Diamond Trust Bank Kenya Ltd.
20. Housing Finance Co. Ltd.
21. I.C.D.C. Investments Co. Ltd.
22. Jubilee Insurance Co. Ltd.
23. Kenya Commercial Bank Ltd.
24. National Bank of Kenya Ltd.
25. NIC Bank Ltd.
26. Pan Africa Insurance Ltd.
27. Standard Chartered Bank Ltd.
28. Regent Ltd

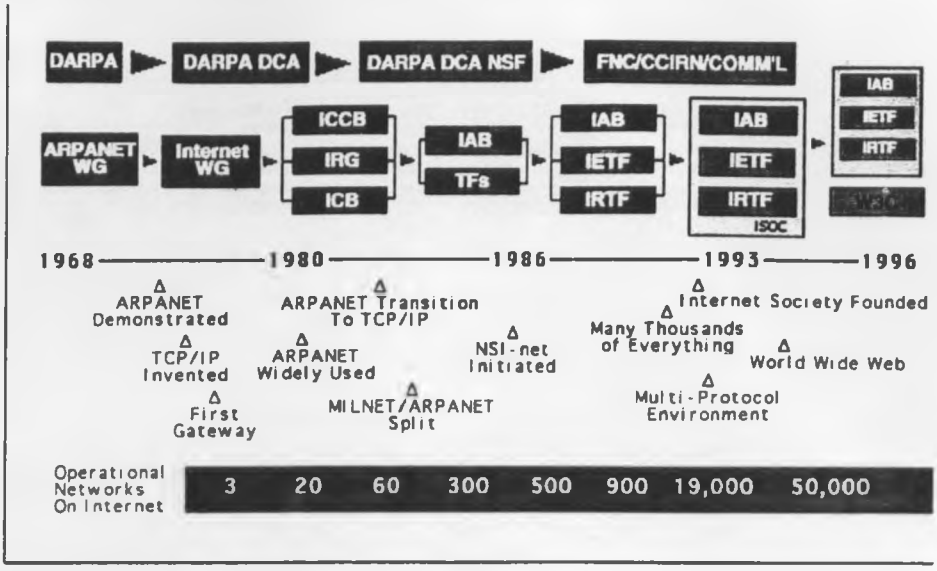
Industrial and Allied

29. Athi River Mining
30. B.O.C. Kenya Ltd.
31. Bamburi Cement Ltd.
32. British American Tobacco
33. Carbacid Investments Ltd.
34. Crown Berger Ltd.
35. Dunlop Kenya
36. E.A. Cables Ltd.
37. E.A. Portland Cement Ltd.
38. East African Breweries
39. Firestone East Africa Ltd.
40. Kenya National Mills Ltd.
41. Kenya Power & Lightning Ltd.
42. Total Kenya Ltd.
43. Unga Group Ltd.
44. Kenya oils Ltd

Alternative Investment market Segment

45. A. Bauman
46. Express
47. STD Newspaper
48. Limuru Tea
49. Kapchorua
50. G. Williamson
51. Eaagards
52. Kenya Orchard Ltd
53. City Trust Ltd
54. E.A Packaging Ltd

Appendix IV: Timeline



Timeline