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Organizational Factors Influencing Corporates Implementing Server Virtualization Technology: A Survey of Companies Listed on the Nairobi Securities Exchange, Kenya

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ABSTRACT

Although it is widely acknowledged that server virtualization technology has the potential to transform a large part of the IT industry, issues surrounding the adoption of virtualization technology have received relatively little attention which this study sought to fill the existing gap. Most prominent of the challenges, that are being faced today, are organizational factors. This research sought to find out the role of organizational factors for successful adoption and implementation of server virtualization in 60 companies listed in the Nairobi Securities Exchange. The study employed a descriptive study and targeted the chief information technology officer, information technology managers, information system managers and managers involved in policy making decisions on computing systems in the listed companies on the NSE. Both primary and secondary data were collected in completing this study. Primary data was collected using a questionnaire. Descriptive and content analysis techniques were employed. Quantitative data analysis was done by descriptive statistics by use of SPSS to obtain percentages, tabulations, means and other central tendencies. The analysis revealed that 97.5% of the respondents indicated that server consolidation minimizes wasted capacity. The study found out that there was 77.8% of corresponding change in the implementation of server virtualization technology induced by organizational factors. Test of overall significance ANOVA, at 0.05 level of significance found the model to be significant. The study recommends that organizations should develop proper infrastructure in order to keep up with the demands of the constantly evolving virtualized environment that runs their servers.

Keywords: *Organizational factors, server virtualization*

1. INTRODUCTION

Organizations are becoming increasingly reliant on IT product and services to manage their daily operations. The application of information technology has transformed the way business is carried out in most organizations [1]. This widespread use of technology has caused a critical dependency on IT that calls for specific focus on IT Governance. Many organizations are increasingly embracing technology as a means of achieving operational efficiency and in the process reduce the cost of doing business. The total cost of ownership (TCO), which includes the hardware and software purchase cost, management cost, and so on, has significantly increased and forms one of the major portions of the total expenditure of companies [2]. The fact is that, Information Technology (IT) is hard to analyze from an economic point of view despite its apparent numerous and formidable enabling capabilities. Virtualization is one of the ways to cut costs which the current study seeks to analyze.

Virtual server technology issue has become one of the greatest concerns to the IT field in the 21st century [3]. The features of virtual server technology may include super-large scale, dynamic scalability, and on-demand deployment in which virtualization plays a central role and the industry realizes its importance and begins to implement it. Virtualization has such advantage as having a single server to carry multiple operating systems. It not only saves the quantity of purchased servers, reduces the management and the maintenance costs, but also reduces the consumption of electricity and cooling power. The global market of virtualization technology is now on the rise. According to the forecast by Global Industry Analysts, Inc., the global virtualization software market is projected to reach US$11.98 billion by 2015.

The global economic recession that happened in the year 2008 resulted in a massive cut in budget allocation world-wide. The recession forced many companies to look for ways to revamp their profits and general performance through process re-thinking and re-engineering [4]. One of the ways that was adapted by many organizations was seeking new technology that would ensure costs reduction and optimization of productivity. Research indicates that many IT executives and Chief Information Officers (CIOs) turned to server virtualization. As a matter of fact, in the year 2009, server virtualization was rated as the second most important type of technology in terms of cost reduction and optimization of productivity.

In another article review, it was pointed out that Toyota Tsusho Africa completed its entire virtualization programme within 22 days, attributing their ability to do so to the Microsoft System Center Suite they installed first [5]. Moreover, they have enjoyed improved system availability due to the reliability of the fully integrated solution. They have also created a standardized, integrated platform improving their operational maturity in providing a base in which they are now able to grow their

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IT and improve productivity across the company. In addition, centralized management of all systems has allowed them to optimize their data center and system performance.

In South Africa, the lack of unifying frameworks to investigate emerging technologies and changing practices in organizations remain a major challenge for virtualization [6]. Among the major factors influencing virtualization include organization preparedness, industrial relationships, resistance and external influence. However, with organizations readiness for server virtualization, an impressive 73% of the respondents said that they had implemented server virtualization to one extent or another.

In a report on cloud computing in developing countries, virtualization has been a major focus of some businesses and government agencies in developing economies. However, it is argued that findings and conclusions drawn from survey across Africa have remained inconsistent and therefore there is a need to carry out further studies on the same [7]. Against this African background, we seek to bridge this gap by carrying out a study on role of organizational factors on implementation of server virtualization in companies listed in the NSE.

In a study on a framework to guide companies adopting cloud computing technologies in Kenya, Kenya's global leadership in the area of e-commerce as evidenced through success of Safaricom's M-pesa service demonstrates that the developing world is not only catching up with the developed world on technological uptake, but that it also has the capacity to take leadership in some aspects [8]. However it was found that Kenya lacks the plethora of IT paradigms that are available to the developed countries. However, the author was optimistic that much like Mpesa, so long as businesses and consumers are convinced of the utility, capacity and other benefits of server virtualization, they would be willing to embrace this new model of acquiring IT infrastructure.

1.1 The Nairobi Securities Exchange (NSE)

The Nairobi Securities Exchange (NSE) is the principal stock exchange of Kenya. It began in 1954 to oversee stock exchange in Kenya. The NSE is Africa's fourth largest stock exchange in terms of trading volumes, and fifth in terms of market capitalization as a percentage of GDP. The Exchange works in cooperation with the Uganda Securities Exchange and the Dar es Salaam Stock Exchange, including the cross listing of various equities.

Companies listed in the various Stock Exchange(s) in the world tend to be the industry leaders in various aspects one of them being technology and technology adoption. This tends to influence other companies and institutions. As such, the companies listed in the Nairobi Securities Exchange (NSE) would have an influence on the adoption and implementation of server virtualization technology in Kenya. Most of Kenya's Small and Medium sized companies will be looking at the big corporations listed on the NSE to see how they react to the new technology wave of virtualization.

1.2 Problem Statement

According to Makatiani [9], many organizations in Kenya have expressed interest in adoption of server virtualization. While companies are ready to virtualized, the IT paradigms necessary to facilitate successful implementation of server virtualization is still lacking, as a result, very few companies have been able to implement server virtualization fully. A major concern, as the researcher has observed is that there are no empirical studies showing the extent to which the country has implemented server virtualization. Hoving [10] attributes the challenge of successful implementation of server virtualization technology to several factors including expertise and skills, integration with existing technologies and external factors including security risks. However, despite the argument that up take of server virtualization could be influenced by several factors, researchers have focused on benefits and adoption rates, especially in developed countries, for server virtualization but have not identified motivating factors or influences leading IT managers to recommend server virtualization within the organization [11]. Virtualization offers solution to the problems, its implementation faces a lot of challenges especially in corporate in developing countries with a lot of data such as Nairobi Securities exchange. Data Centers are the main culprits of consuming huge energy and emitting huge amount of CO_2, which is very hazardous for global warming. Virtualization technology provides the solution but it has many overheads, like total cost of ownership, energy and efficiency calculations and return on investment. The other problem faced by IT managers related with the proper implementation of Virtualization technology in data centers to cop up with the above defined problems. Against this background, the researcher seeks to investigate the role of organizational factors on implementation of server virtualization in companies listed in the NSE.

2. LITERATURE REVIEW

2.1 Overview of Virtualization

Virtual machine technology, or virtualization, is gaining momentum in the information technology community. While virtual machines are not a new concept, recent advances in hardware and software technology have brought virtualization to the forefront of IT management. Stability, cost savings, and manageability are among the reasons for the recent rise of virtualization. Virtual machine solutions can be classified by hardware, software, and operating system/containers. From its inception on the mainframe to distributed servers on x86, the virtual machine has matured and will play an increasing role in systems management [12].

Virtualization at the start of 2009 can no longer be called "bleeding edge" or early adopter technology—it is mainstream. As shown in this report, two-thirds of all organizations are implementing virtualization in live

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production, for mission-critical applications. Virtualization is here and is no longer perceived as risky or unreliable technology. In fact, IT professionals can cite numerous legitimate reasons why virtualization is a good idea [13].

2.2 Definition of virtualization

Server or machine virtualization is the most common method of virtualization [14]. In server virtualization, the whole machine runs independently in a virtual system. It has a separate operating system as well as hardware and networking capabilities. The virtual server is displayed to users as a separate physical server although there can be several similar systems in one physical environment.

Virtualization abstracts the underlying physical structure of various technologies. Virtualization, in computing, is the creation of a virtual (rather than actual) version of something, such as a hardware platform, operating system, a storage device or network resources. Server virtualization creates multiple isolated environments, allows multiple OS's and workloads to run on the same physical hardware, and solves the problem of tight coupling between OS's and hardware.

A virtual machine (VM) is an abstraction layer or environment between hardware components and the end-user. Virtual machines run operating systems and are sometimes referred to as virtual servers. A host operating system can run many virtual machines and shares system hardware components such as CPUs, controllers, disk, memory, and I/O among virtual servers [15].

2.3 Goals of Server Virtualization

Organizations have considered server virtualization initially from a tactical viewpoint: an effective technology for consolidation, offering increased utilization levels, reduced server sprawl, and lower capital and energy expenses. Over time, server virtualization is being considered more from a strategic viewpoint: a catalyst for IT modernization that changes how IT is acquired, deployed, consumed, managed, and paid for [16].

Server virtualization enables IT to become more service-based, allowing scalable and elastic delivery of resources at much greater speed, driving economies of scale with shared resources, and measuring and charging back based on dynamic usage. Hence, server virtualization makes an IT organization behave much more like an internal cloud-computing provider [17].

2.4 Pitfalls of Server Virtualization

The workload for the operational staff can spiral out of control due to the constant stream of configuration changes that must be made to the static data centre network devices in order to support the dynamic provisioning and movement of VMs [18]. One way to think about the current generation of virtualized data centers, and the related management challenges, draws on the concept of a fractal. A fractal is a geometric object that is similar to itself on all scales. If you zoom in on a fractal object it will look similar or exactly like the original shape. This property is often referred to as self-similarity.

The relevance of fractals is that the traditional data centre is comprised of myriad physical devices including servers, LAN switches and firewalls. The virtualized data centers that most IT organizations are in the process of implementing are still comprised of physical servers, LAN switches and firewalls. In addition, these data centers house servers which have been virtualized and which are comprised of a wide range of functionality including virtual machines, a virtual LAN switch and in many cases virtual firewalls. Hence, if you take a broad overview of the data centre you see certain key pieces of functionality. If you were to then zoom inside of a virtualized data centre server you would see most, if not all of that same functionality. Hence, a virtualized data centre can be thought of as a fractal data centre [19].

Because of the fractal nature of a virtualized data centre, many of the same management tasks that must be performed in the traditional server environment need to be both extended into the virtualized environment and also integrated with the existing workflow and management processes. One example of the need to extend functionality from the physical server environment into the virtual server environment is that IT organizations must be able to automatically discover both the physical and the virtual environment and have an integrated view of both environments. This view of the virtual and physical server resources must stay current as VMs move from one host to another, and the view must also be able to indicate the resources that are impacted in the case of fault or performance issues [20].

2.5 Organizational Factors

Virtualization still has untapped potential for integration throughout the corporation. For 60% of virtualization projects, the organization's server team drives implementation. Other aspects of the corporate network which could benefit greatly from virtualization, such as storage, networking, applications, and desktops, added up to a slim minority of implemented projects [21]. For organizations that have not yet deployed virtualization technology, their concerns run in two directions: they worry that their network might restrict the operation and benefits of virtualization; and they worry that virtualization might hamper their network.

The ease with which new VMs can be deployed has often led to VM proliferation, or VM sprawl. This introduces new management challenges relative to tracking VMs and their consumption of resources throughout their life cycle. In addition, the normal best practices for virtual server configuration call for creating separate VLANs for the different types of traffic to and from the VMs within the data centre. While not all of

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these VLANs need to be routable, they all must be managed. The combined proliferation of virtualized servers, VMs, and VLANs places a significant strain on the manual processes traditionally used to manage servers and the supporting infrastructure. The problem of scalability places an emphasis on management tools that can provide some degree of integration by being able to manage homogenous, or even somewhat heterogeneous, collections of physical and virtual data center entities as a single system [22].

Another example of a management capability in the traditional physical environment that is important to implement in a virtual environment is adaptive performance thresholding. This capability identifies systemic deviations from normal as well as time over threshold violations, and can automatically update thresholds based on changes to historic levels of utilization. That same capability is needed in a virtualized environment so that IT organizations can monitor the performance of individual VMs.

As recently as 2009, VMware was the dominant hypervisor vendor. VMware is still the most commonly used hypervisor. It is, however, becoming increasingly common to find IT organizations using other hypervisors, including Xen from Citrix, KVM (Kernel-based Virtual Machine) from Red Hat and Hyper-V from Microsoft. One of the challenges associated with having multiple hypervisors is that each comes with their own management system. This means that IT organizations need to learn multiple management interfaces. Another challenge associated with having multiple hypervisors is that the management functionality provided by each hypervisor varies, as does the degree to which each hypervisor management system is integrated with other management systems. As a result, the IT organization's ability to manage VMs and the associated data center infrastructure will vary based on which hypervisor supports which groups of VMs [23].

At the present time, there is no overarching solution for the comprehensive management of a computing environment composed of virtualized servers, storage, and networks. Vendors, however, are beginning to address the challenges previously described by enhancing the functionality of their products with virtualization features, automation, and support for some level of integration - primarily with the virtual server management system. IT organizations, however, need to avoid introducing a new suite of management tools every time they introduce a new technology such as virtualized servers. This approach is too expensive and creates additional management silos. To avoid the proliferation of management tools, IT organizations need to identify a core suite of tools that can evolve to span or eliminate the traditional boundaries between physical and virtual infrastructure elements.

Once server virtualization has been introduced, organizations can more accurately compare internal IT services with external IT services, and they have gone through fundamental cultural, political and funding changes that will ease outsourcing to external cloud-computing providers [24]. Before stating the benefits of virtualization, the problems in IT solutions need to be understood. Most of the companies have servers, desktops and networks. Not all of these companies are professionals in IT solutions. Easily these companies combine many solutions; moreover, they have duplicate and too complex system to administrate efficiently. Another key problem is the usage of the server resources. According to the same study, approximately 20% of the server resources are utilized. This increases energy costs and the overall IT budget.

From these problems we can already identify why corporations are looking for the alternative solution. According to the surveys, companies see virtualization as saving money, ease to manage and giving higher utilization level. This clearly indicates that cost-cutting and the easier management as the key factors. When it comes to storage availability and server functionality, the design element is important. The system needs to be designed in way where virtual machines can work independently without worrying about local storages [25]. It is essential to carefully plan which kind of actions the virtual machine carries and how many resources it would take. Server virtualization therefore can perform different individual system environments on a single physical machine. Some benefits of virtualization compared to a solution where each system is based on its own physical machine are that it saves hardware costs, reduces the amount of space needed and consequently need less energy consumption in terms of power supply and cooling.

3. METHODOLOGY

This was a descriptive study aimed at determining the role of organizational factors in influencing corporations' implementing server virtualization technology of companies listed on the NSE. The target population for this study were the IT employees (chief information technology officer, information technology managers, information system managers and managers involved in policy making decisions on computing systems) from the 60 companies listed on the Nairobi Securities Exchange. According to Mugenda and Mugenda [26], 20% of accessible population is enough to conduct descriptive study. For the purpose of this research, the researcher focused on the section and particularly on the chief information technology officer, information technology managers, information system managers and managers involved in policy making decisions on computing systems. This population consisted of 240 management staff currently working in the NSE listed companies. From the above population of three hundred and sixty staff working in the NSE listed companies, a sample of 20% from within each group was taken using stratified random sampling which will give each item in the population an equal probability chance of being selected. This generates a sample of 72

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respondents for this study. Questionnaires were the main data collection instruments. Quantitative data was analyzed by employing descriptive statistics and inferential analysis using statistical package for social science (SPSS). This technique gives simple summaries about the sample data and present quantitative descriptions in a manageable form [27]. Findings of the study were presented in various ways such as descriptions and discussions, frequencies, percentages, tables and bar graphs and measures of central tendency. Together with simple graphics analysis, descriptive statistics form the basis of virtually every quantitative analysis to data [28].

4. DATA ANALYSIS AND INTERPRETATION

4.1 Response Rate

The data was collected from all the listed firms in the Nairobi Securities Exchange (NSE). The sample of the study consisted of 72 respondents.

Table 1: Response Rate

Issued questionnaires	Returned	Response Rate
72	48	66.7%

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A 50% response rate is adequate, 60% good and above 70% rated very good. Based on this assertion the response rate for this study can be said to be good at 66.7% [29].

4.2 Results of Pilot Study

A pilot study was undertaken to pretest data collection instrument for validity and reliability. A pilot study is necessary for testing the reliability of data collection instruments [30]. Pilot study is thus conducted to detect weakness in design and instrumentation and to provide accurate data for selection of a sample. The validity of the questionnaires was determined using construct validity method. Construct validity is the degree to which test measurers an intended hypothetical construct. Using a panel of "experts" familiar with the construct is a way in which this type of validity can be assessed; the experts can examine the items and decide what that specific item is intended to measure. The study dealt with different groups of experts in the field of server virtualization technology and issued them with the questionnaires. The experts were required to assess if the questionnaires helps in determining the factors influencing implementation of server virtualization technology among listed firms in NSE in Kenya. The coefficient of the data gathered from the pilot study was computed with assistance of Statistical Package for Social Sciences (SPSS). A coefficient of above 0.5 was obtained and this indicated that the data collection instruments were valid. The recommendations from the server virtualization technology experts and the pilot study respondents were used to improve on data collection instruments. Data validity played an important role towards generalization of the gathered data to reflect the true characteristics of the study problem.

Table 2: Reliability Analysis

Reliability Statistics	No. of Items	Cronbach's Alpha value
Server virtualization	10	0.71
Organizational factors	10	0.82

4.3 Coding and Editing

For missing data, the researcher replaced the missing values using SPSS/imputation. There is little agreement about whether or not to conduct imputation [31]. There is some agreement, however, in which type of imputation to conduct. You typically do NOT conduct Mean substitution or Regression substitution. Mean substitution is replacing the missing value with the mean of the variable. Regression substitution uses regression analysis to replace the missing value. Regression analysis is designed to predict one variable based upon another variable, so it can be used to predict the missing value based upon the subject's answer to another variable. The favored type of imputation is replacing the missing values using different estimation methods. The researcher used the "Missing Values Analysis" add-on module in SPSS which contains the estimation methods. In some cases, the researcher deleted the datasets if the missing values were many.

5. DEMOGRAPHIC INFORMATION

5.1 Level of Education of Respondents

Respondents level of education was sought and majority (64.3%) of the respondents indicated that they have at least a degree level of education while sizeable (40.48%) posses a higher degree at postgraduate level. This is highly expected since the respondents are at a senior management level where the skills, knowledge and competencies are supposed to be high. Nevertheless, the well educated respondents mean that they were well informed and furnished this study with better information which added value.

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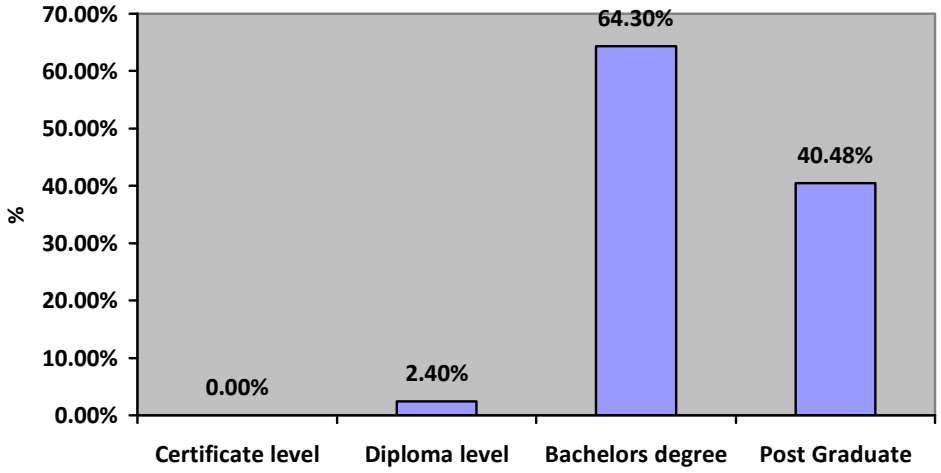

Fig 1: Level of education of Respondents

5.2 Job Titles of Respondents

Although the unit of observation for this study was the MIS manager and the ICT managers as already indicated in the methodology. An overwhelming (30.9%) of the respondents were ICT security managers with a paltry (2.90%) indicating MIS manager designate respectively. In addition, 17.6% of the respondents were database managers, 17.6% were system engineers and 8.8% were chief information officers. This was a very important profile distribution for this study since the respondents were the right people with adequate information relevant to this study hence best placed to provide information for the study.

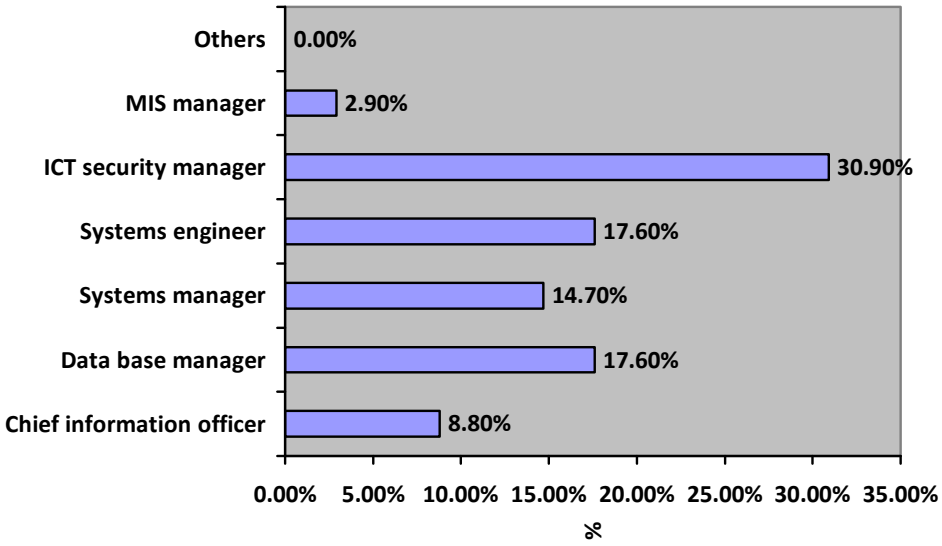

Fig 2: Job Titles of Respondents

5.3 Work Experience of Respondents

The question sought to investigate the number of years each respondent have worked with the corporation. Majority (45.2%) of the respondents have a working experience of more than ten years, 19% have 5 to 10 years, and a few (35.7%) have less than 5 years experience. This means that the respondents have adequate working experience with the corporations and therefore posses the necessary knowledge and information which was considered useful for this study.

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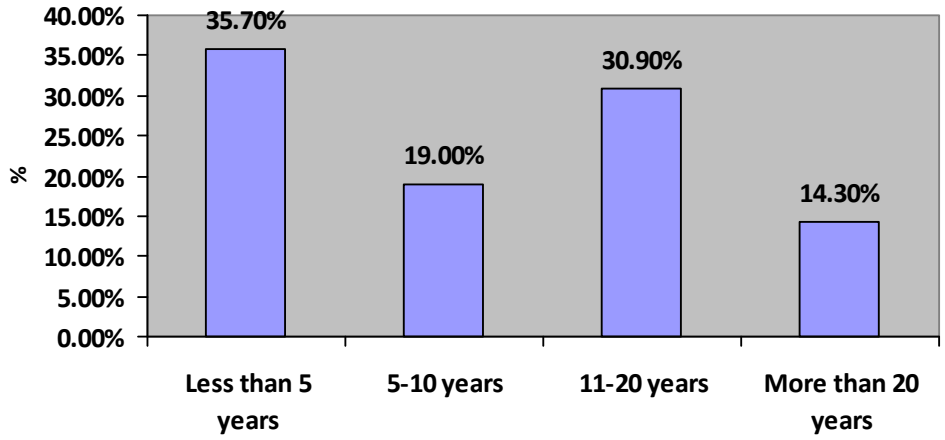

Fig 3: Work experience of Respondents

5.4 Category of NSE corporations

Respondents were asked to indicate the categories in which their corporations belonged. A simple majority (12.2%) of the corporations belong energy and petroleum category, 7.30% construction and allied, 4.9% investment, 12.2% insurance, 12.2% commercial and services, 9.8% banking, 9.8% automobile and accessories, 9.8% telecommunication and technology and 9.8% agricultural. This was a very good distribution based on the various categories used to classify firms listed in the Nairobi securities exchange as all categories were represented. This is because the study sourced data from across all the available categories of the corporations making it a more representative sample that eased the generality of the research findings.

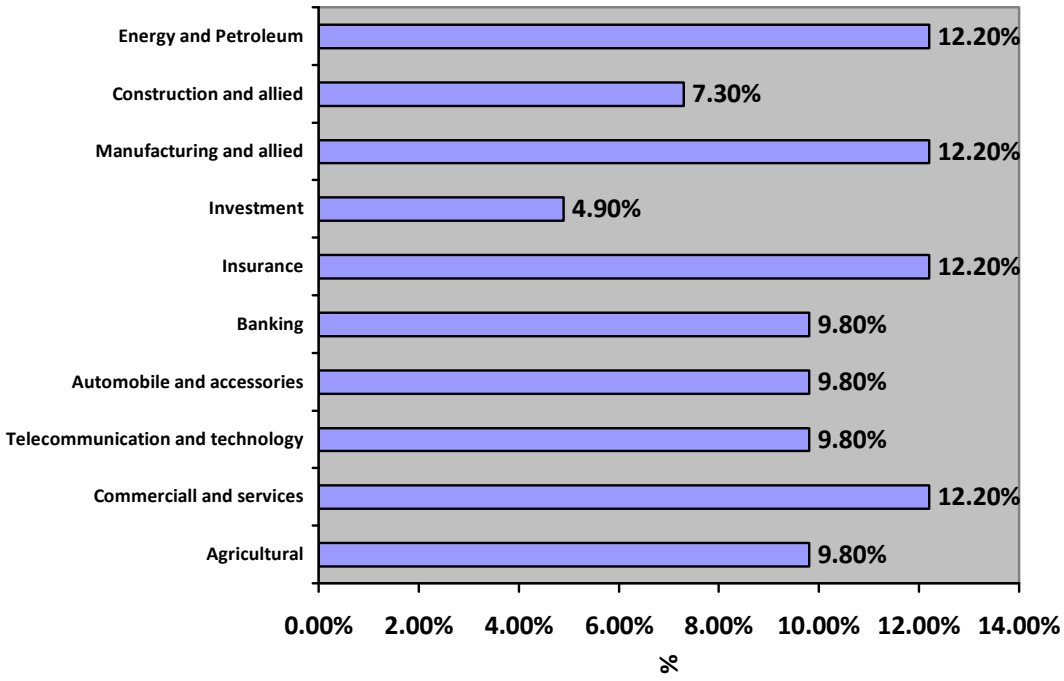

Fig 4: Category of NSE Corporation

5.5 Corporations Year of Establishment

For each corporation sampled the year of establishment was also sought. A range of years were given which were categorized to come up with various range for easy presentation. The analysis indicates that 73% of the sampled firms were more than 15 years old. In fact during the interview session, the researcher established that some of these corporations have existed for over 50 years and were formed around the time when Kenya attained independence.

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This was important since 50 years is a reasonably long duration which can allow the corporation to build adequate memory and knowledge database and therefore offer a good profile for study.

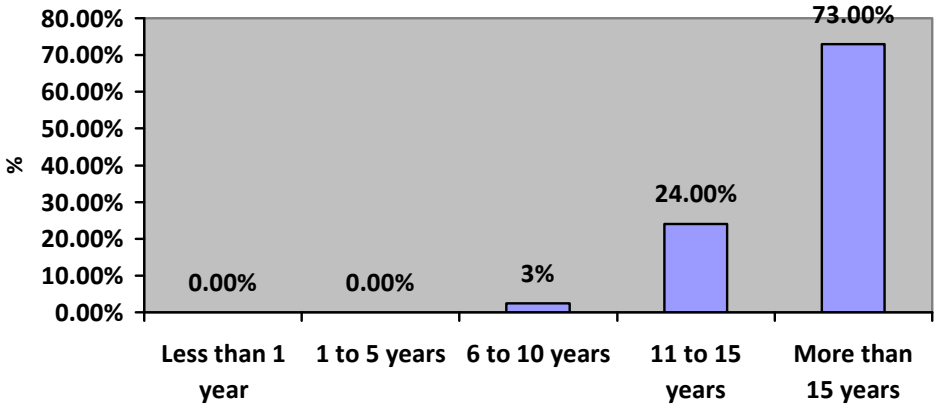

Fig 5: Corporations year of establishment

5.6 Organizational Factors

This section sought to find out the role of organization factors on implementation of server virtualization technology. The analysis indicates that 97.8% of the respondents disagree that the combination of physical and virtual servers creates data management problems. In addition, 90% of the respondents disagree with the assertion that different parameters of proprietary virtualization software create obstacles to interoperability. This implies that the respondents have faith in server virtualization technology and are of the opinion that it aids interoperability in the organization. In addition 92.3% of the respondents disagreed that virtualization creates challenges for system design.

Table 3: Organizational pressure in managing server virtualization technology

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
The combination of physical and virtual servers creates data management problems	0.0%	0.0%	2.2%	41.7%	56.1%
Different parameters of proprietary virtualization software create obstacles to interoperability	0.0%	0.0%	10%	55%	35%
Virtualization creates challenges for system design	0.0%	0.0%	7.7%	71.8%	20.5%
Our organization employs external IT subcontractors	0.0%	2.6%	39.5%	39.5%	18.4%
System administrators in my organization are free to create their own system structure	0.0%	0.0%	27.5%	57.5%	15%

The study findings indicate that 70.8% of the respondents agreed that server virtualization reduces server installation costs. In addition 97.6% of the respondents disagreed that virtual server proliferation is an increasing problem in my organization. This indicates that most of the challenges alluded to server virtualization technology are not real but imagined (Green, 2009).

Table 4: Organizational factors and server virtualization technology

Statement	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Server virtualization reduces server installation costs	22.9%	47.9%	12.5%	12.5%	4.2%
Attacks on a hypervisor compromise the virtual machines under it	53.2%	27.7%	2.1%	12.8%	4.3%
We install new management software every time we create a new virtual machine	0.0%	0.0%	37.5%	45.8%	16.7%

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Virtual server proliferation is an increasing problem in my organization	0.0%	2.4%	0.0%	57.1%	40.5%
Senior management are opposed to server virtualization	0.0%	9.3%	0.0%	46.5%	44.2%

5.7 Correlation analysis for Organizational factors

A correlation analysis for the construct organizational factors was conducted to find out how organizational factors correlated with implementation of server virtualization technology. The findings show that the Pearson correlation coefficient was 0.919374. This is a clear in indication that organizational factors has a positive correlation with implementation of server virtualization technology (p-values >0.05). The significance of organizational factors verses implementation of server virtualization technology showed that all the plots are on the first quartile in the line of best fit. These findings indicate that there is a strong linear relationship between organizational factors and implementation of server virtualization technology. Organizational factors to a large extent affect adoption and implementation of server virtualization technology [32].

Table 5: Correlation analysis for construct organizational factors

		Server virtualization technology	**Organizational factors**
Implementation of server virtualization technology	Pearson Correlation	1	0.919
	Sig. (2-tailed) N	0.0002 48	 48
Organizational factors	Pearson Correlation	0.919	
	Sig. (2-tailed) N	0.0002 48	 48
Correlation is significant at the 0.01 level (2-tailed)			

5.8 ANOVA for Organizational factors

Analysis of variance (ANOVA) for regression coefficients, the results demonstrate that the significance of F statistics is 0.00 which is less than 0.05. Therefore it implies that there is a significant relationship between organizational factors and implementation of server virtualization technology. To coordinate demand requests, cost of technology, manpower resources for information technology, support by top management; organizational factors become core to adoption and implementation of server virtualization technology [33].

Table 6: ANOVA for organizational factors

Model	**Sum of Squares**	**Df**	**Mean of Square**	**F**	**Sig**
Regression	32.614	1	32.614	9.61	.0002
Residual	465.213	135	3.446		
Total	497.827	136			
Predictors: (Constant) Organizational factors					
Dependent Variable: Implementation of server virtualization technology					

5.9 Regression Analysis for Organizational factors

The regression model of organizational factors with a coefficient of determination of $R^2 = 0.412$ and R= 0.442 at 0.05 significance level. The coefficient of determination indicates that 77.8% of the variation on implementation of server virtualization technology is influenced by organizational factors. This shows that there exists a positive relationship between organizational factors and implementation of server virtualization technology. The test of beta coefficient shows that there is a significant relationship between organizational factors and implementation of server virtualization technology as positive. The coefficient significance of organizational factors effect as .191 and is significantly greater than zero since the significance of t-statistics 0.00 is less than 0.05. this demonstrates organizational factors as having a positive effect on implementation of server virtualization technology.

These corroborated findings that organizational factors such as installation costs, security features, role of senior management affect financing and capability and affect implementation of server virtualization technology [34].

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Table 7: Model Summary for organizational factors

Model Summary				
Model	R	R Square	Adjusted R Square	Std Error of the Estimate
	.782	.778	.190	0.8244
Predictors: (constant) organizational factors				

5. CONCLUSION

The study findings indicated that 70.8% of the respondents agreed that server virtualization reduces server installation costs. The analysis also indicated that 97.8% of the respondents disagreed that the combination of physical and virtual servers creates data management problems. In addition, 90% of the respondents disagreed with the assertion that different parameters of proprietary virtualization software create obstacles to interoperability. In addition 92.3% of the respondents disagreed that virtualization creates challenges for system design. The study recommended that organizations should develop proper infrastructure in order to keep up with the demands of the constantly evolving virtualized environment that runs their servers.

The hard reality of virtualized server management is that the environment itself is highly dynamic. This is a complicated technology, which will require an advanced IT team to be able to understand and manage the virtualization system. Since the technology is always evolving, individuals maintaining the systems must stay informed on developments and breakthroughs in the industry. Many organizations continue to back up their virtualized server environments in the same way as their physical servers, but this approach has its downsides. A key challenge relates to the fact that such activity in a physical environment is often undertaken by software agents that are installed on host operating systems and back up both applications and data to either disc or tape.

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