

SURVEY

Kenya ICT Board ICT Monitoring and Evaluation Indicators Study

IDC OPINION

Despite unfavorable global economic conditions prevailing between 2008 and 2009, the Kenyan ICT market remained robust and was propped up by investments in international connectivity during that period, which in turn spurred a flurry of activity in investment in terrestrial networks, broadband services and devices.

The Kenyan ICT Market is forecast to grow at a compound annual growth rate (CAGR) of 15.5% to reach a value of US\$ 1.5 billion by 2015, mainly riding on the back of various factors including positive measures by government to promote ICT usage, political stability and sustained acquisitions cycles in key sectors like telecommunications, financial, government and the consumer segment.

- ☒ **Operating Environment:** According to vendors interviewed in the survey the Kenyan market environment has been favorable over the last few years and it is widely felt that greater growth can be realized if certain challenges can be addressed through government policies and related interventions. Among the chief challenges experienced by vendors include changes of leadership with government organizations with whom vendors would like to enter into private public partnerships (PPPs) to grow skills and nurture usage, enforcement of intellectual property and copyright laws (piracy, counterfeit goods, IP theft, etc), creation of industry standards and overall harmonized policies to govern development the sector.
- ☒ **ICT Skills:** The growth of ICT professionals and the levels of skills in Kenya hinges largely on; the size of and number of both local and international large organizations; the level of maturity and sophistication in their ICT set ups; and the growth of the SME segment as a key consumer.
- ☒ Inherent in this medley of issues are concerns on how to retain staff that have acquired extensive experience (after a major project), who may need to grow further or use that experience in another organization and cannot do so in the local market and therefore elect to seek opportunities outside Kenya. On the other hand, in the supply side, some market players that secure windfall opportunities which are not likely to recur any time soon, will temporarily import skills to implement and manage large projects and will do so outside any framework that ensures transfer of skills to local professionals. Thus the issue of skills when viewed broadly and when viewed at higher cadres, presents a double edged sword that requires a measured approach that factors in the needs of the market, growth of the market and resulting demand for such skills.
- ☒ **Changing Ecosystem:** Various developments in the sector, including a unified telecommunications licensing regime, infrastructure developments and technological advances, have caused the local ICT Ecosystem to undergo some metamorphosis that has gradually seen the lines blurred between traditional telcos and traditional ICT service providers. With voice services nearing saturation, coupled with lower tariffs, telcos have been compelled to re-think their strategies away from both voice services and the mass market towards data

services and enterprise solutions (cloud computing, hosted infrastructure, managed services, etc). The overall effect has been a reduction in the number of Tier II telcos in the market, partly as a result of some mergers and acquisitions, and also by the gradual atrophy of traditional ISPs in the market.

- ☒ **Increased presence of multinational vendors:** Numerous vendors have made entries into Kenya between 2007 and 2011, and those present before that have drastically scaled up their operations both as a result of the favorable operating environment and also to tap into regional opportunities. However, IDC's analysis of the channel structure in Kenya, has revealed that most vendors have a limited pool of channel partners (distributors and Value Added Resellers) with whom they can work with and most of the prominent channel partners are largely foreign owned and can leverage of their regional or international networks to avail goods and services more competitively than local players. IDC sees an opportunity in Kenya to help local companies scale up and participate in a bigger way and create more local employment in ICT.
- ☒ **Kenya as an ICT Hub:** Benchmarking data collected by IDC shows that Kenya has a mix of indicators in its favor vis a vis some of the seven countries it was benchmarked against, mostly African countries. Some positive benchmark items included; higher household internet penetration, higher overall internet penetration, lower broadband tariffs and comparable business internet usage. Indeed the business survey conducted as part of this study shows that 90% of respondent companies have websites while 99% use email. However, as stated above, the issue of producing and retaining higher level ICT skills needs a measured approach to complete the picture in the business end user environment.
- ☒ **Market Demand:** In both the business and residential segments, there is relatively good uptake of various ICT services though costs (of devices and some services), quality and access (last mile, backhaul) still hold back citizens and businesses from more wholesome consumption of ICT.
- ☒ **Outlook:** Overall, given the considerable actions taken by the government in the ICT sector over the last four to five years, which are starting to bear fruit and will continue to in the years to come, there is still great scope to address some issues including ICT skills, access (to devices and services), costs (of devices and services) and generally nurture increased usage among both businesses and residents. In some instances, the interventions recommended by IDC include easy to execute awareness campaigns while others touch on existing plans by the sector regulator (Universal Access Fund and subsidies) and multi stakeholder intervention (academia, government and business in revising ICT curricular, collaborating through various PPPs, etc).

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Executive Summary

Key Performance Indicators 2010

TABLE 1

Key ICT Indicators

Indicators	Data
Volume of international traffic (Mbps)	20,209.56 Mbps
International Internet bandwidth, Mbps per 10,000 population	4.2
Number of Computers per 100 inhabitants	2.4
% of households with a personal computer	6.3
Total number of Internet Subscriptions	4,716,977
Total number of internet users	10,199,836
% of population with Internet Access	25.9
Internet subscribers as % of total population	11.5
Total number of main fixed lines (fixed lines plus fixed wireless)	380.748
Total number of mobile subscriptions	24,968,891
Number of .Ke domain names	18,000
% of organizations with a website	90
% of full time employees who use internet for work at least once a week	52.1

Source: IDC, CCK, e-Gov, WEF, World Bank, Kenic

The premise behind establishing and subsequently tracking key ICT indicators in this study is to provide a means to both measure the impact of government interventions have had on the sector as well as to showcase the sector to possible investors who may want to benchmark Kenya against other competing markets as an investment destination and also to illustrate the level of development in the sector.

Overall these indicators are also crucial to non ICT investors whose businesses are very dependent on ICT, including players in the financial sector, telecommunications, manufacturing, etc.

IDC's research has identified some key developments in Kenya's ICT space between 2007 and 2011, that illustrate where there has already been an impact in these indicators and has helped in growing the market, attracting investment and creating employment.

They include the following

International Bandwidth - The arrival of three submarine cables between 2009 and 2010 helped wean operators off expensive satellite capacity and allowed for greater speeds at lower costs for consumers. However, despite this extra capacity, there still remain challenges in final access as well as development of suitable pricing models (reseller and final end user).

Terrestrial Infrastructure - The development of these cables spurred investment in terrestrial segments chief among them being the government led National Optic Fiber Backbone Infrastructure (NOFBI) project that seeks to cover all major towns in Kenya. Indeed one of the first cables to go live, TEAMS (The East African Marine System) was a government led initiative in conjunction with UAE's national operator Etisalat, which later was opened to include private sector operators from Kenya.

In total Kenya's international bandwidth has grown more than tenfold in two years from xxxx mbps to xxxx mbps.

Unified Licensing Regime - The introduction of a unified licensing framework that simplifies the market structure and allows operators more latitude in terms of service offerings rather than having licenses tied to technology dependent delivery. This framework has also allowed for better stratification of the market along the lines of services, infrastructure, content and applications. Under this new regime, several mobile operators acquired ISP licenses to add to their existing mobile and international gateway licenses and started offering mobile based internet services which have seen residential connections growing exponentially over the last 2-3 years. Presently nearly 90% of all connections are mobile device based connections and many used by individuals.

Cost of Mobile Services and Mobile Termination Tariffs – The intervention by the sector regulator, the Communications Commission of Kenya (CCK) to determine maximum mobile termination rates saw mobile voice tariffs plunge downwards to half the costs. Indeed Kenya now has among the lowest mobile tariffs in Africa and this has resulted in increased subscriptions and consumption of services.

Summary - Overall the above developments have impacted key aspects of the Kenyan ICT market including better communications infrastructure for enterprises and residents, increased uptake of services, lower tariffs for voice and data services, increased usage of computers (given the value addition from affordable internet access and inherent content), more sophistication among business and residential users, among many other positive developments.

However, a lot more needs to be done and by establishing these baseline performance indicators, that in itself can help determine what courses of action might be needed to stimulate the market further.

Thus for this study a second phase is envisaged to review these baseline indicators, note any areas that have changed significantly and perhaps attribute certain actions by government, investors or service providers to such changes and continually monitor such developments in an effort to steer the sector in the right direction.

SITUATION OVERVIEW

IT Environment

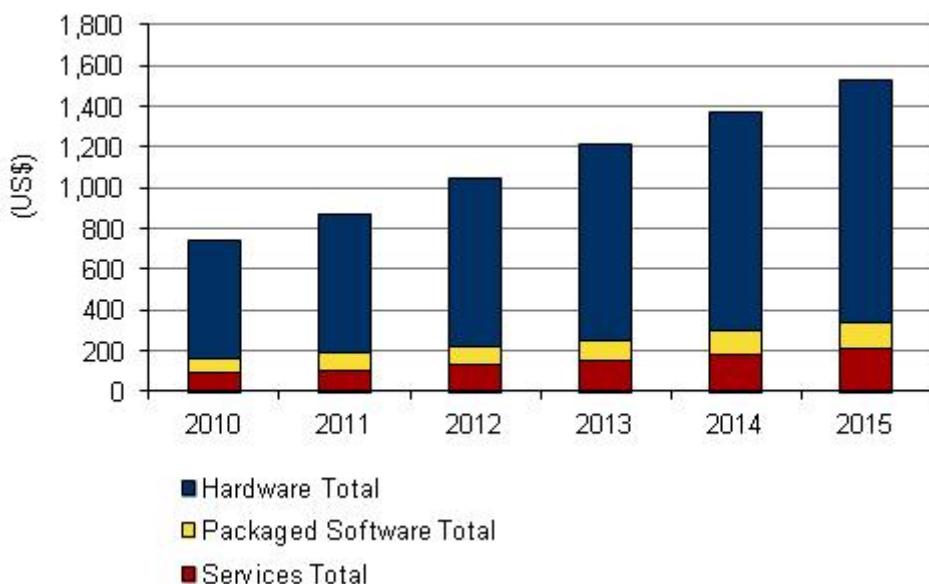
In 2010, ICT spending in Kenya stood at US\$ 3.5 billion with IT spending accounting for US\$ 746 million and telecom services spending at US\$ 2.7 billion. Out of the IT

spending, hardware accounted for 78.5%, followed by IT Services at 12.2% and Software at 9.3%.

Voice services accounted for 80% of telecommunications revenue while data made up 20% of which 12.3% was from mobile data services and 7.4% from fixed data services.

FIGURE 1

Kenya ICT Market Size 2010 and Forecast to 2015



Source: IDC, 2011

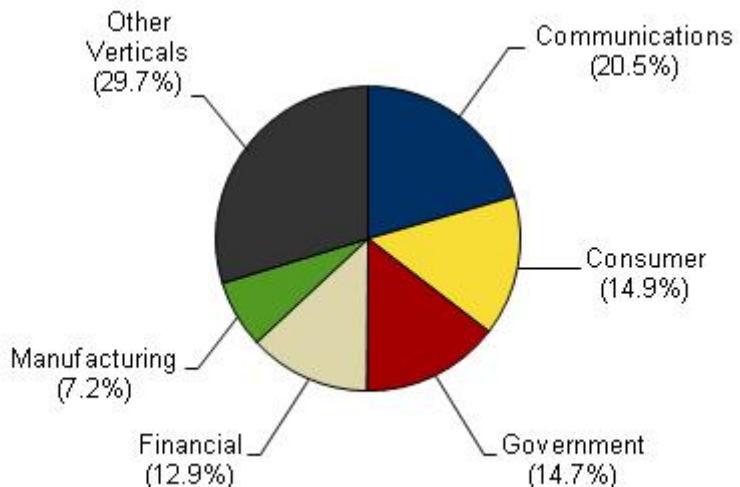
In 2011, IT spend is expected to grow by 16.3% to reach US\$ 868.7 million and over the forecast period will grow at a CAGR of 15.5% to reach US\$ 1.19 billion in 2015. The share held by IT Services will change from 12.2% in 2010 to grow to 13.6% in 2015, reflecting a maturing market that is gradually departing from an infrastructure building phase with more focus on services to support an already amassed infrastructure base.

Telecom services expenditure will grow at a slower rate, reflecting both the saturation in the market (in subscribers) and declining tariffs for both voice and data services. Over the forecast period telecom services is projected to grow at 6.8% from US\$ 2.7 billion to reach 3.8 billion by 2015.

Overall, the growth of the ICT market in Kenya has largely been driven by various developments in infrastructure and regulation which in turn have bolstered consumer spending in both the enterprise and consumer space.

FIGURE 2

IT Spending Share by top 5 verticals



Source: IDC, 2011

The three top key sectors contributing to IT Spending in 2010 were Communications (20.5%), Financial (including insurance and other financial services – 12.9%) and government (including public sector education - 14.7%). The combined consumer segment accounted for 14.9% of IT spending.

The communications sector has seen very robust growth in recent years owing to technological, infrastructural and regulatory effects on the businesses. Further, recent departures from the mass market, coupled with an increased focus on data services (for both enterprise and consumers) has sustained spending on various IT projects in infrastructure, new services, network upgrades and expansion.

The financial sector remains consistently a big player thanks to rigid hardware renewal cycles, software upgrades, enhancements to applications and integration of new technologies and platforms (mobile) and data centre related expenses.

Efforts by government to cut procurement costs, enhance transparency and improve governance, through various ICT systems, has seen it become a major player. The Kenyan government has in the last year articulated its shared services and e-government strategies and intends to consolidate its systems and break away from having discrete systems and multiple operating environments.

Key ICT Market Drivers

- ☒ **Connectivity** – between 2009 and 2011, better access and higher speeds have helped both businesses and residents increase their uptake in data services and devices. Lower bandwidth costs passed on to consumers, mainly by mobile operators, have helped stimulate sales of mobile devices (smart phones, laptops and tablets) in the market and in the business segment, have supported initiatives to deploy cheaper wide area networking (WAN) technologies like Virtual Private Networks.
- ☒ **Growth of basic IT skills** – Skills mainly nurtured in a nascent BPO sector albeit only for IT enabled front office services (help desk, contact centre, etc) have helped bigger market players make the transition to outsourcing such services and encouraging new business practices to develop around this and creating employment.

- ☒ **Positive government interventions** – probably one of the main drivers on which others drive has been the various measures taken by government in terms of policy and regulation to make the ICT sector thrive. The setting of lower mobile termination rates, issuance of unified licenses, investment in innovation, contribution to infrastructure and the revision of the Communications Act are just among the many areas where the government has helped drive the ICT market.
- ☒ **Financial Sector growth** – As it were thissector is constantly among the top consumers of IT and with peripheral technological developments at play (e.g. mobile banking, mobile payments, etc), as well as rigidly adhered to hardware refreshment cycles and software upgrades, the financial sector is a major driver in ICT spending in Kenya.
- ☒ **New Constitution** – Following the promulgation of Kenya's new constitution, which largely dictates a new political environment and envisages better governance, in 2011 onwards, there are high expectations that the new constitution will allow for more equitable governance and spending. It will also address some issues like the development of rural areas and better distribution of resources thus tackling problems with access to IT, services and supporting infrastructure.
- ☒ **Better business environment** – There are major infrastructure projects underway, including roads, electricity and communications which are expected to make Kenya overall an attractive investment for businesses and allow existing investors to increase their levels of investment in the country. Overall translating into more employment and increased purchasing power for Kenyans.
- ☒ **Education sector** – Both as a consumer and as a provider of IT Skills, the education sector is helping drive growth in the IT market. Some recent examples include a programme to introduce 8,000 computers into secondary schools with another phase anticipated to happen soon. Universities are also working with vendors and financial institutions to make computers easily available to students and staff via credit and subsidy schemes.
- ☒ **Economic growth** – Despite high inflation, lower purchasing power and other challenges, the Kenyan economy is expected to maintain brisk growth with real gross domestic product (GDP) expanding 5.4% in 2011. In 2012 it is expected to reach 5.9%.

Key ICT Market Inhibitors

- ☒ **Focus on Skills:** While it has been established that various skills are lacking in the market, as well as the absence of requisite learning initiatives, there is also a tendency to focus on acquiring skilled people to deliver on projects without any means of having such skilled people impart skills locally. Thus a gap if filled and still a void is left behind.
- ☒ **Infrastructure availability and reliability** – Including electricity and frequent outages of communications links (owing to other civil works or vandalism). In areas where there is no power grid, this serves to limit the uptake of IT and for some players, running generators increases their cost of doing business.
- ☒ **Counterfeit products** – lack of mechanisms to verify the authenticity of products as well as poor business practices make counterfeit products a major challenge for both legitimate sellers as well as consumers who end up with sub standard products. Overall it also affects vendor brand equity when counterfeit products

fail and where the consumer cannot distinguish between genuine and counterfeit products.

- ☒ **Relative maturity of the market** – Presently the Kenyan market is largely unsophisticated and the number of major enterprise users of IT are not many. This presents a unique mix of conditions whereby the size of IT projects done help limit the number of professionals in the industry and also encourage high staff turnover especially in IT Departments.
- ☒ **Change of guard** – A most commonly cited problem in the industry has to do with the change of decision makers and leadership in various government departments especially with regard to the initiation of collaboration programmes and projects. Some vendors reach the point of signing an MoU but are frustrated when there are such changes and the projects wither stall or do not take off at all.
- ☒ **Politics** – With an election looming in 2012 and no clear indication of the dates will be a cause for disquiet in the sector as businesses adopt a wait and see stance and while at the same time the government holds back on some ICT expenditure in order to finance the election. At the periphery, electioneering may disrupt policy and other discussions in parliament and elsewhere.
- ☒ **Taxes** - Taxes levied on certain IT products like copiers will curtail growth for these as well as encourage the proliferation of refurbished copiers into the market, which, just like counterfeiting, may affect brand equity.
- ☒ **Currency** – In 2011 the Kenyan shilling has lost ground to major currencies, meaning higher import costs for IT distributors and in turn affecting how much inventory they can acquire and hold. Should the trend persist, this will not only affect the IT Sector but overall other sectors that depend on imported inputs (Agriculture, Manufacturing, etc).

ICT ECOSYSTEM

The supply side of the market is presently dominated by a few major players (excluding vendors) who participate in the bulk of ICT projects in the country. These include some foreign owned companies.

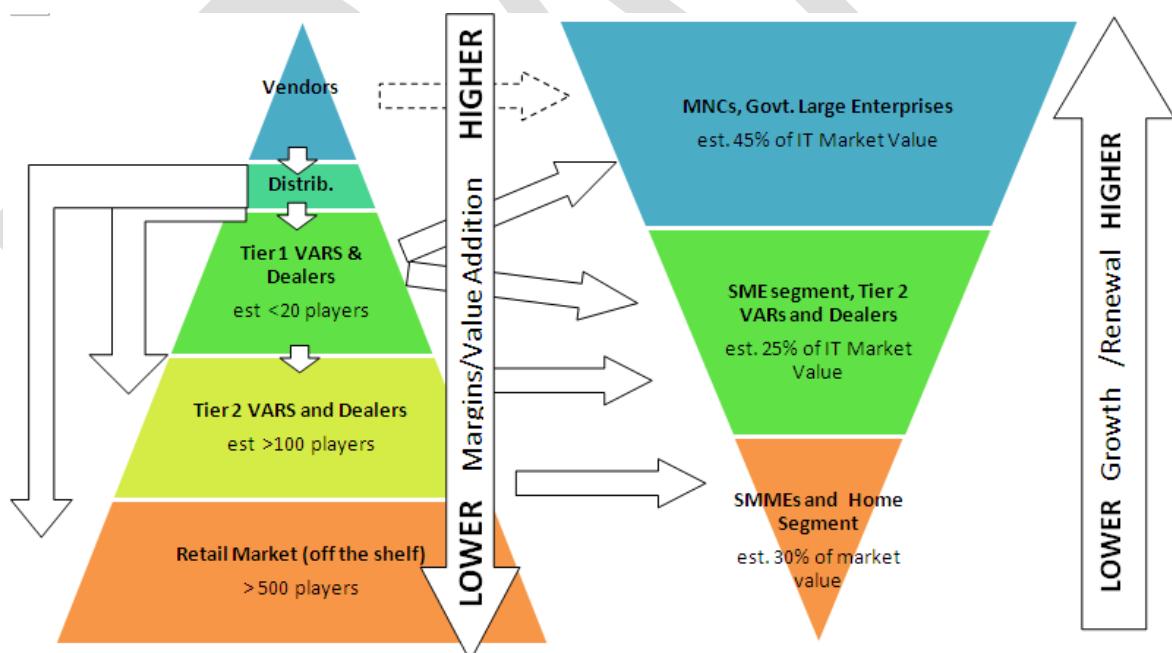
Overall, vendors present in the country are fairly satisfied with the business environment and are increasing their investment and headcount in anticipation of increased sales both in Kenya and in the greater Eastern Africa region.

With the entry of new vendors, it can be expected that the channel partnerships will grow or the need for diverse channel partners will grow. Bearing in mind the challenges faced by Tier II companies, as outlined later in this section, this underscores the need for a broad base of providers to which new and existing vendors can have access.

Smaller players, Tier II players, who are typically Kenyan owned companies, need to be supported and provided with an environment that can help them grow and participate in large deals. These players presently only focus on part of the SME market and the consumer market and are typically regional players (provincial level) without much technical or financial capacity to take on country wide or big projects.

FIGURE 3

Channel and Market Structure



Source: IDC, 2011

Channel Analysis - Vendors and channel performance and trends

IDC's interviews with vendors in the market, indicate that Kenya has, over the last three years, provided a very conducive environment for business, as evinced by their growth in both headcount and business between 2009 and 2011.

Government initiatives including infrastructure development, regulatory reforms (licensing frameworks), investment in public access centers, e-government projects, content creation, device subsidies, have all had a very positive effect in transforming the market, stimulating investment, stimulating ICT uptake and bolstering confidence in the overall ICT market.

Among the highlights of feedback received from vendors include:

- ☒ There are an estimated 20-30 vendors present in the market most of whom rely on a small pool of major distributors and Tier 1 Value Added Resellers (VARs) and Dealers who combined account for the bulk of ICT Business in Kenya estimated at nearly 50-60%.
- ☒ On average PC and Printer vendors each have between three to four distributors and at least six other partners (dealers and systems integrators) each at different market levels.
- ☒ At the lower part of the pyramid are Tier 2 VARs and dealers, estimated to number more than 100 players and whose focus is part of the SME segment, the SMME and home user segment. These are players who typically do not have a country wide presence and would largely be found operating at a provincial level or even a national level (where SMEs have such a presence to require nationwide services) but at a smaller scale nonetheless.
- ☒ These Tier 2 firms are mostly Kenyan owned companies serving other Kenyan owned businesses and occasionally securing parts of relatively good contracts in the government and education segments, where procurement of goods or services may require a local player.
- ☒ The Tier I players largely comprise companies with both a national and regional presence, and in most instances are majority foreign owned companies spinning off regional offices in South Africa, UAE, India among other countries.
- ☒ Owing to having a good foothold in their parent regions, coupled with access to industry best practices, fairly solid skills bases and access to capital, such companies have been able to target the market segment that includes multinational companies (MNCs), large enterprises and government, where such credentials bear heavily on decision making at this level.
- ☒ Vendor competition on channel partnerships has intensified with main distributors being sought after by other vendors to leverage on their reseller network. Thus multiple brand handling by the channels is the norm even for channel partners who were "loyal" to certain vendors.
- ☒ The channel is maturing fast with thinning out of grey shipments while traditional telcos and their channel partners are joining the fray in terms of PC sales.
- ☒ Vendors are keen on setting up offices in Kenya to serve the East and Central Africa region.
- ☒ Vendors with a local presence enhance the brand image significantly as well as improve logistical support and increased marketing campaigns.
- ☒ With more vendors setting up locally, the market has seen an increase in both the number of channel partners.
- ☒ Government initiatives including infrastructure development, regulatory reforms (licensing frameworks), investment in public access centers, e-government projects, content creation, device subsidies, have all had a very positive effect in transforming the market, stimulating investment, ICT uptake and bolstering confidence in the overall ICT market.

- ☒ Thus vendors present in Kenya have registered positive growth over the last three years of between 15-25% in business value and with some posting growth in headcount ranging between 25-100%
-

Kenya as a regional hub

Kenya is without doubt the regional hub for most vendors with a regional reach spanning between three to six countries on average for vendors. Aside from being a hub, it is also a stepping stone for these vendors to set up operations in neighboring countries but still maintaining somewhat centralized marketing, inventory and support functions at regional levels. Inherent in this structure are various opportunities including training, skills transfer, overall higher employment, technology leadership and increased investment.

Among the most common countries some vendors reach into include from their Kenyan hub include: Uganda, Tanzania, Rwanda, Burundi, Ethiopia and Southern Sudan.

In some instances vendor offices in Kenya have an even wider geographic reach with some having sub-Saharan hubs or combined hubs for East Africa, West Africa and Indian Ocean Islands.

Typically these regional hubs would have parent or principal offices in South Africa, United Arab Emirates or various countries in Europe but with sufficient autonomy in terms of marketing, channel management and partnerships.

Key challenges in the sector

- ☒ **Purchasing Power** – In the present environment where inflation hovers around the 20% mark, the consumer market has been negatively impacted, especially in the lower echelons where in some cases ICT spending, including mobile voice services, will take second place to other pressing needs. So when viewed as the long tail end of the market, a lot less spending is being registered in terms of device sales and services consumption.
- ☒ **Taxation** – Despite positive developments to remove import duty and value added tax (VAT) on computers and printers, the present taxation regime for consumables and components, especially amidst a rather unclear taxation framework that does not always properly define various ICT imports, affects various channel players including local assemblers.
- ☒ **Product Perception** – The Kenyan market is mostly inclined towards western brands or brands associated with western countries. For players from Asia and the Middle East, gaining a foothold in the market and at the same time commanding prices that are on par to reflect similar product quality, has been cited as a major challenge.
- ☒ **Lengthy customs procedures** – Both Vendors and Distributors have cited lengthy customs procedures as a stumbling block affecting how fast they are able to place products on the market, and further compounding this issue are demurrage costs levied by customs authorities, which costs in many instances are passed on to end user and therefore needlessly causing higher prices.
- ☒ **Sourcing highly qualified talent** – This issue is dealt with in detail under the SKILLS section of this report but suffice to say, for some vendors, especially those playing in the enterprise space, the issue of availability and quality of ICT Skills is a constant problem that in some cases greatly affects their go to market

strategies and sometimes necessitates the use of expatriates to undertake project implementation, technical sales, support and end user training.

- Currency fluctuation**– The recent decline of the Kenya shilling against major currencies, mainly between April and October 2011, has meant higher Kenya shillings costs for importers and in many instances affects their ability to maintain an adequate inventory. At the consumer end, it has meant higher prices of goods. The currency decline has been attributed to increased oil imports and should this be sustained in 2012, it will affect the market negatively including the manufacturing sector that rely on imports of some raw materials, putting ICT consumers in a quandary in terms of prioritizing their budgets.
- Government Procurement** - Doing business with the government has widely been cited as a major challenge in terms of protracted procurement laws and sales cycles. Impropriety and lack of transparency are other factors that need to be addressed.

Support expected from the government

In view of some of the challenges cited above, and thinking very broadly about what else could be done in the ICT market, the following were among the interventions vendors feel the government should consider to help allay their collective concerns:

- Taxation rates** - Review of taxation regimes on accessories, components and consumables
- Taxation categories** - Education of customs officials on the different array of ICT products to ensure correct application of import duties which can also help speed up clearing of goods.
- Counterfeits** – The government should undertake awareness campaigns to enlighten end users as well as customs officials on how to detect and manage counterfeit imports.
- Copyright laws** – More so the execution of existing Copyright laws. Vendors feel that there are adequate laws expect that they are not upheld.
- ICT Labor market** – To stave off the need to import labor for various projects, or to constantly ship in expatriates to implement projects, vendors feel there is room for the government to create, nurture and then protect jobs by strongly vetting imported labor and ensuring some skills transfer takes place. One additional suggestion pertains to finding a mechanism to establish the value chain in ICT jobs (where is the value added and to which participants does this accrue) to overall gauge how much ends up in the local market.
- Procurement Standards** - Opening up procurement standards to allow a greater variety of software and hardware providers to bid for government jobs would ease the country's adoption of technology on a large scale.

Overall the type of interventions required of the government do not require significant investment and can be operationalised using existing channels and with relative ease of implementation but of course bearing in mind the likely impact of such interventions e.g. lower tax rates = lower revenues.

Market Opportunities

Despite the challenges cited earlier in this document but partly subject to various interventions by the government, looking ahead, vendors have articulated the following opportunities in the market:

- Skills development** - A major factor that even affects the businesses side of the environment in terms of innovation, adoption of technology and advanced services. If this can be tackled appropriately, the Kenyan ICT market can mature further and become more sophisticated. Further Skills gaps are opportunities where channel partners can intervene themselves rather than leave it up to vendors to acquire and maintain the skills. Channel partners can develop their own existing staff to meet some of these positions and leave the vendor to have a basic presence - a sort of shift down the tier and in line with the earlier stated objective to deepen intimacy with customers and strengthen the channel.
- Infrastructure** - Further infrastructure investment, mainly in last mile access and the quality of existing networks is crucial for more pervasive adoption and consumption of services.
- Counterfeit Products** – The success of such products in the market is evidence enough that demand exists. Addressing the problem of counterfeit products (consumables, devices), with support of relevant government departments (in terms of scrutiny, enforcement and standards) can help normalize the market and breed the right culture where consumers opt for quality goods. Further, replacing such products with genuine products can help increase tax revenues owing to the price differences.

Vendors' Market Outlook

Given the relatively favorable market environment, vendors remain optimistic about the Kenyan market and see various opportunities that they themselves can drive to support the growth of the ICT market in the years to come.

Among the areas vendors feel they can validly play a role include:

- Investing in specific ICT Skills like mobile applications development and setting up innovation hubs. Setting up bursaries at universities and within user and developer groups
- Developing strategies to develop and use more local talent than imported.
- Introduction of products relevant to the market that take into account the operating environment and challenges experienced by users e.g. solar powered devices.
- Increased participation in government driven ICT programmes. Some vendors are watching very keenly on developments with the proposed Konza Digital City with a view to examining how they can participate and possibly use that opportunity to enhance their regional presence and investment.
- Deepen customer relations as more intimacy is needed in the market.
- Reforming go to market strategies in line with a changing ecosystem underpinned by technological and other developments.
- Increase presence in the region, headcount and channel partnerships.
- Enhance vertical sector and product specializations – in terms of skills, niche products and their go to market approach.
- Focus on infrastructure issues and address those elements that are not within the ambit of government e.g. terminal devices/equipment, asset finance schemes, etc.

REGIONAL AND INTERNATIONAL BENCHMARKING

Overview

Various benchmarking criteria were identified and Kenya was compared to seven other countries – 5 from the African continent (Egypt, Morocco, RSA, Nigeria and Rwanda) and 2 from the rest of the world (Ukraine and Philippines).

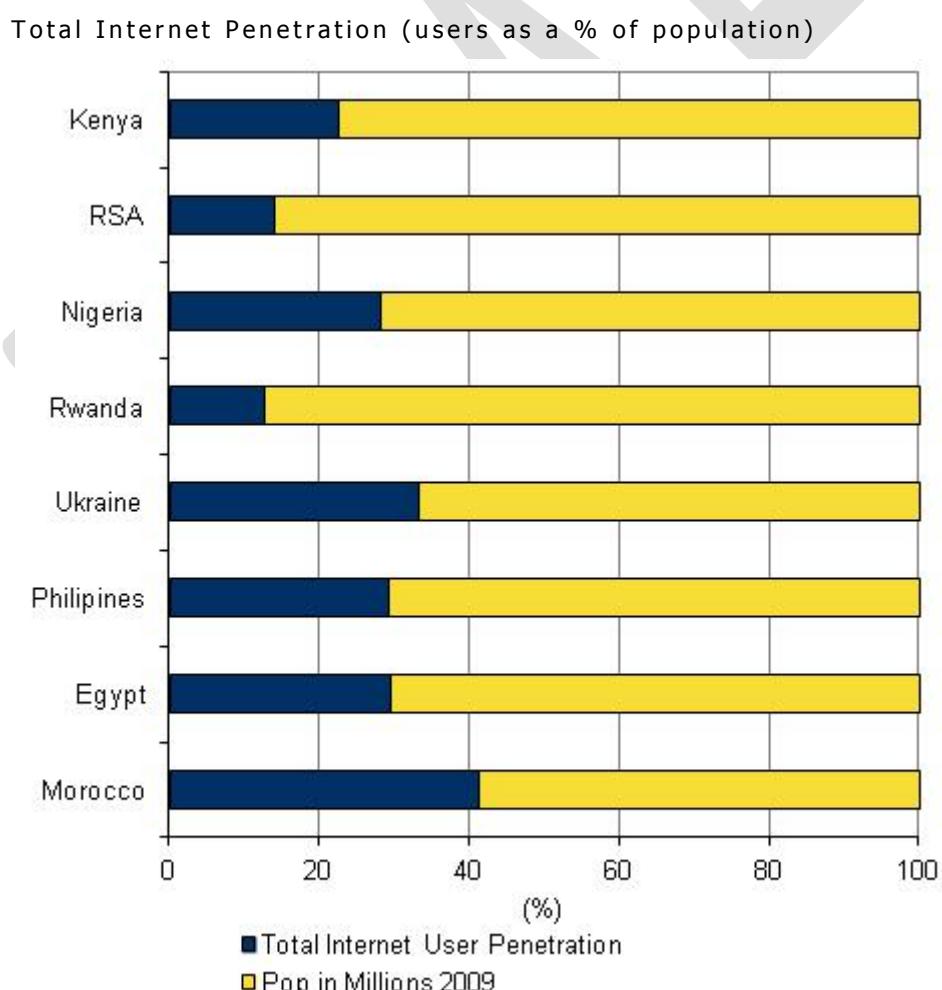
The factors considered while identifying these countries were

1. Population.
2. Economic Indicators such as GDP.
3. Focus on IT sector as an engine of economic growth.
4. Perceived competitiveness to Kenya (e.g. South Africa, Rwanda, and Nigeria).

In order to benchmark the countries, indicators were chosen that provided insights on the level of penetration and adoption of technology in day to day life of the country.

The sections below highlight various comparisons on different ICT indicators.

FIGURE 4



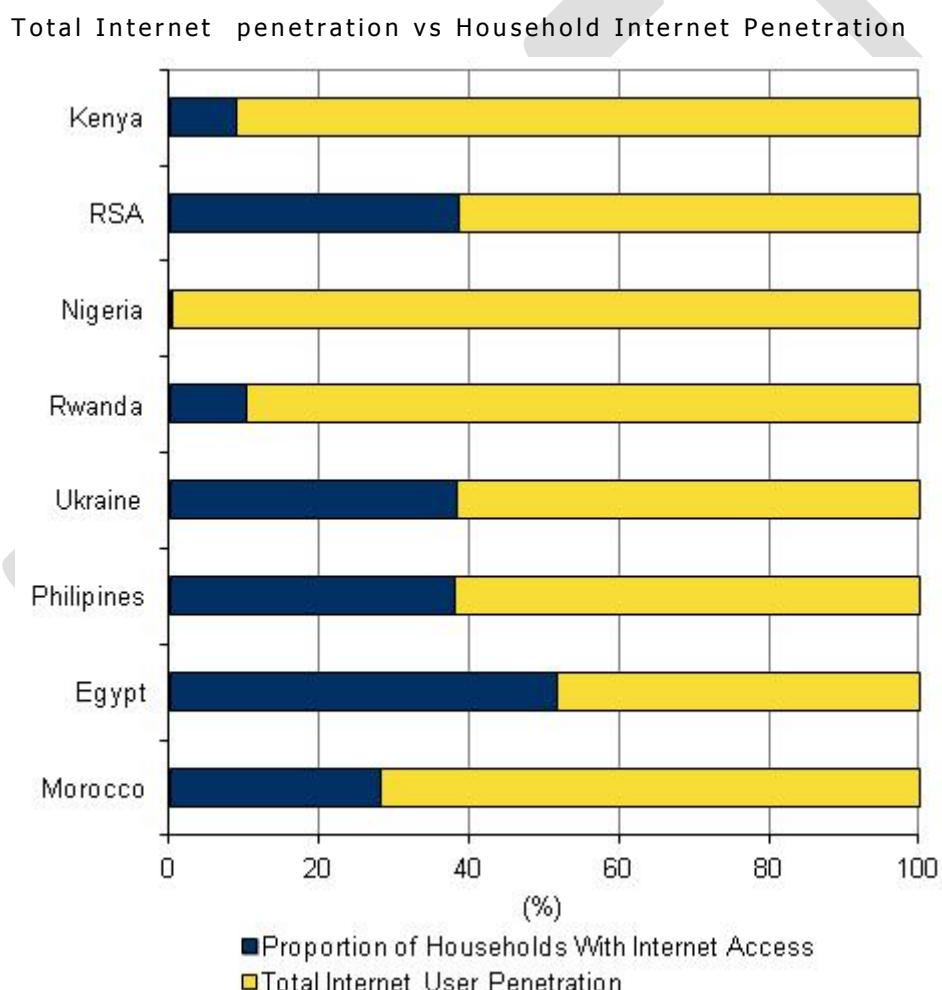
Source: IDC, 2011

Comparatively speaking, Kenya is not very far behind in terms of the number of internet users in the population, and surprisingly posting better penetration rates than South Africa which is perceived to be more advanced, and only slightly lower than Egypt and the Philippines.

Owing to infrastructural developments, Kenya is ahead of neighboring land-locked Rwanda which relies on its bandwidth both from satellite providers and terrestrial providers in Uganda and Kenya thus presupposing higher bandwidth rates and therefore lower consumption.

It can be expected that with positive developments in the Kenyan market which are yet to manifest fully, that Kenya's internet penetration will increase in the coming years to become even more comparable or exceed countries like Morocco and Ukraine.

FIGURE 5



Source: IDC, 2011

Internet penetration is one of the most compelling indicators of technology adoption in a nation, as it can be safely assumed that once people are comfortable with the use of the internet, there is a greater probability of adoption of other technologies. In addition several studies indicate that the level of internet adoption on a country almost often signifies the economic development of the nation as it helps stimulate new growth areas. If judged on this parameter, the findings of the research suggest that there is definitely a lot of room for improving the internet penetration rates in the

countries studied. The reasons for a low internet penetration rate could be cost of accessing the internet (internet affordability) as also could be regulations that prevent Internet service providers from entering a country. Kenya, with just over 20% internet penetration, stands among the countries with lower penetration in comparison to countries such as Morocco and Ukraine. Though it is understandable the costs of internet access could be a major contributor to the widespread uptake of internet, it could also be worthwhile to investigate other aspects such as regulations governing Internet Service providers etc.

To further validate the point of shared internet connections, household penetration of internet was considered as a proportion of total internet penetration. This matrix revealed important facts about the use of internet in addition to its availability. In Kenya, it was found that, in comparison to the total internet penetration rates (which touched 23%), only 2% of the households had internet access. This shows that internet uptake is most prevalent at the business, education and government levels and not so much in households.

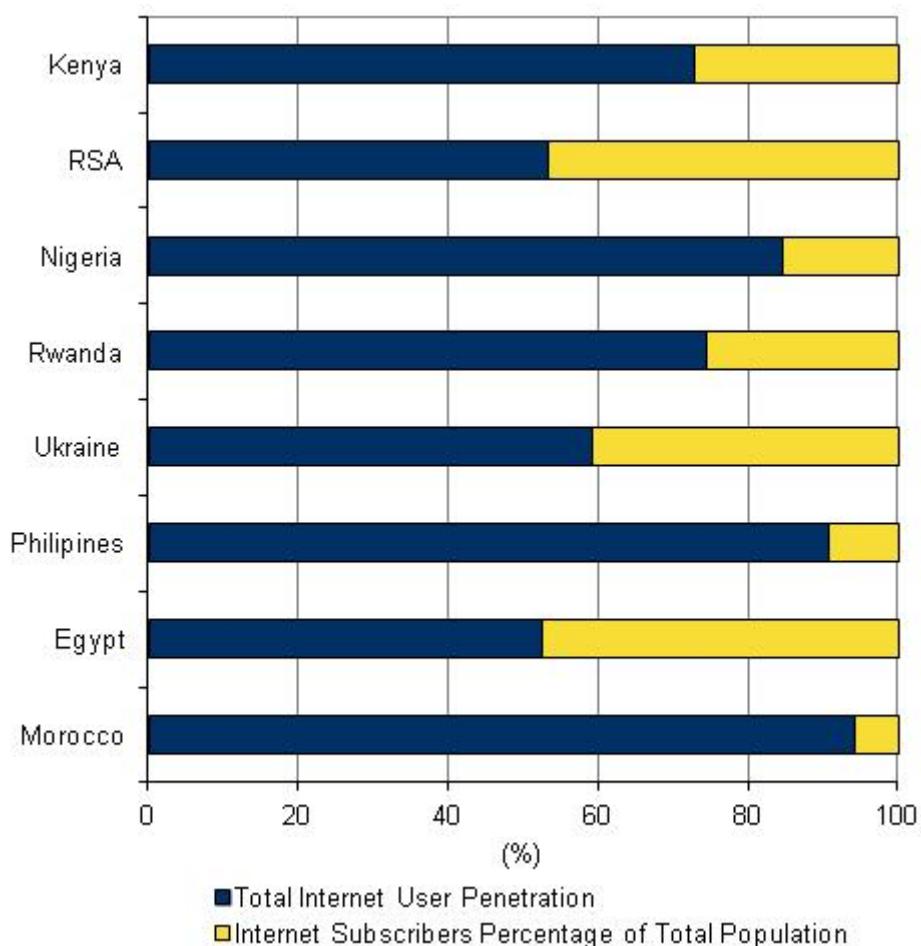
Kenya has a higher internet penetration vis a vis South Africa but mainly bolstered by mobile internet connections though with a lower proportion of households connected owing to a declining fixed network and poor development of DSL based services.

Kenya compares much better than both Nigeria and Rwanda on both counts.

Egypt has a much higher overall and household internet penetration with a huge gap of almost 25 percentage points at household level.

FIGURE 6

Internet Users vs. Connections as a % of Population



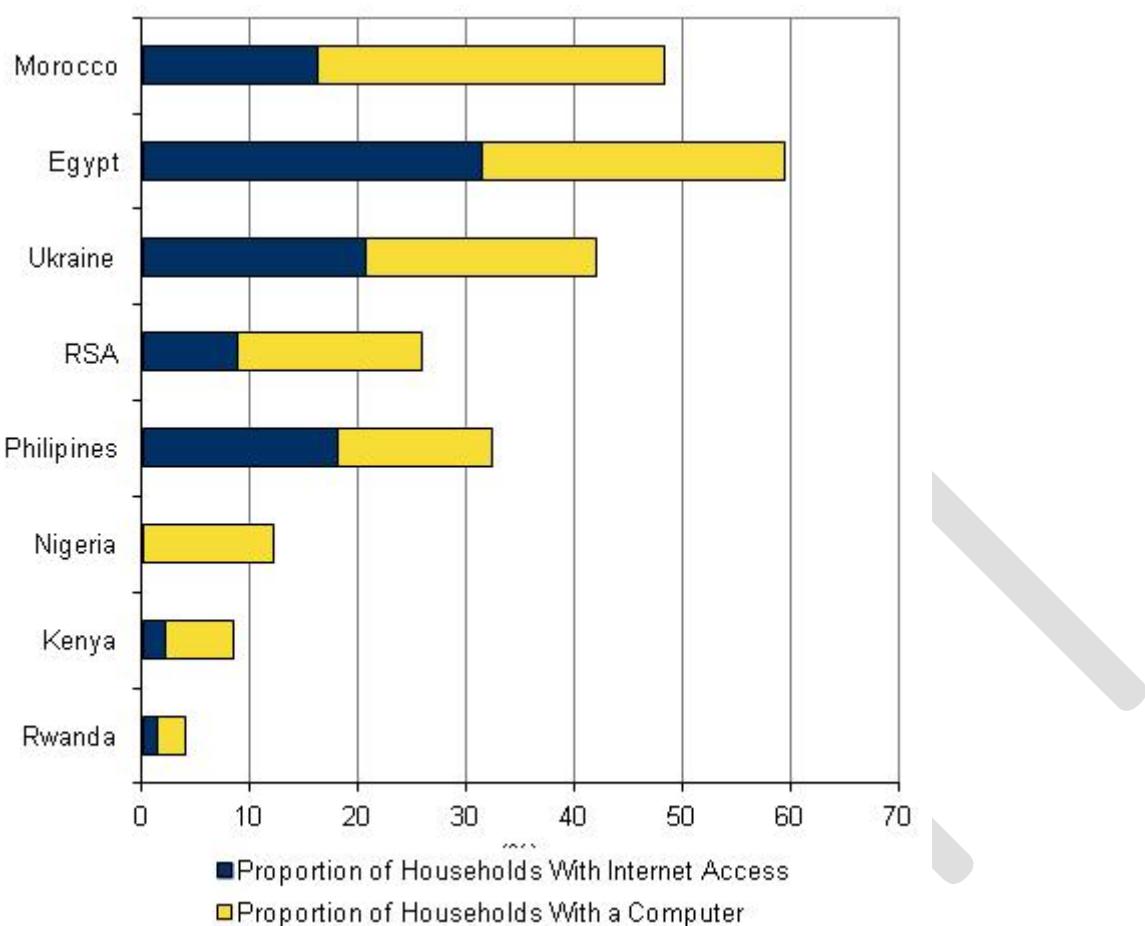
Source: IDC, 2011

In countries with historically more developed fixed line networks and therefore a considerable user base, the total number of connections vis a vis the number of users are evenly spread.

In countries like Kenya, Nigeria and Morocco, there are lower numbers of connections but higher number of users indicating most connections are shared connections and largely comprise business connections (including publicly accessible connections like cyber cafes, education institutions). Also, a good number of the connections in these countries are mobile connections.

FIGURE 7

Total Internet Penetration Vs. Proportion of Households with a computer



Source: IDC, 2011

Further investigation was carried out in this manner to identify if the internet penetration at a household level was owing to the lack of suitable infrastructure. Taking into account the number of computers per 100 populations, it was found that Kenya ranked among the bottom three among the countries studied. While RSA had 8.4 computers per 100 population and Philippines had 7.2, Kenya had 1.4 computers per 100 populations, only marginally better than Nigeria and Rwanda. This corroborates the finding that out of the 6% of the households that had a computer only 2% had access to internet. Therefore it can be safely assumed that internet or technology affordability in general should be addressed so that it is made available to a larger proportion of the population. Another approach could be to emulate countries such as Egypt that nurture private public partnerships, wherein private sector companies lends support in providing the hardware to get more people to use the internet.

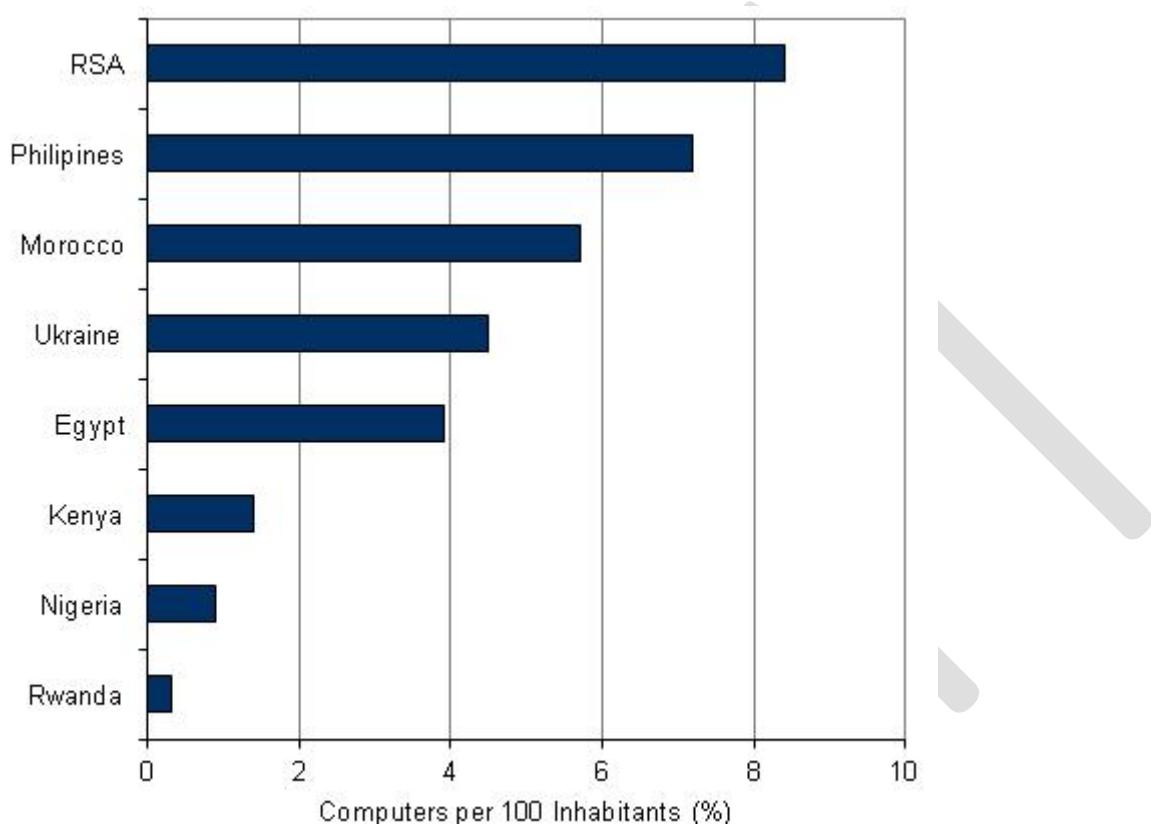
Overall Kenya has a slightly higher PC penetration rates than Nigeria and Rwanda but still very far behind South Africa and Morocco, mostly owing to lower disposable income than these countries.

In terms of PC Access at the household level, Kenya is only better than Rwanda and more attention should be given to this aspect.

It should be noted that Nigeria as a manufacturer of PCs (Zinox brand) that are locally affordable, accounts for much higher PC penetration at household levels but negligible household internet penetration given infrastructure issues (submarine cables arrived way after they did in East Africa)

FIGURE 8

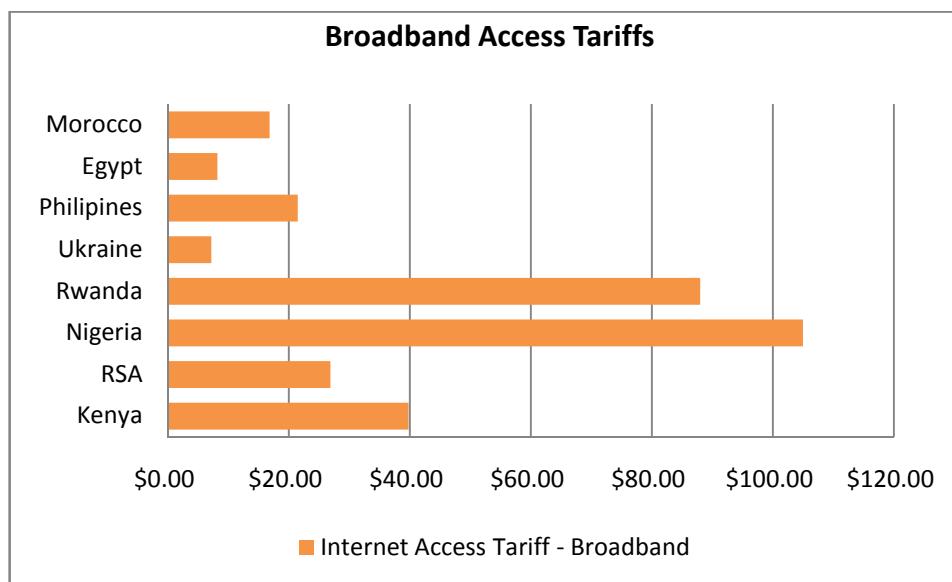
Business Internet Usage



Source: IDC, 2011

Moving on from households to businesses, and using a WEF indicator that measures the extent of business use, it was found that Kenyan businesses use internet to a large extent and is comparable to one of the more developed business nations in Africa namely Republic of South Africa. This is an important determinant in the future of Kenya as an outsourcing hub as this indicator is a silent endorsement of the fact that Kenyan businesses have reasonably robust technology support.

Overall all that may be needed in this segment is greater sophistication and direction towards more solid online presence over and above websites and use of email to electronic trading. Given that mobile technology is very pervasive, this platform offers the most ideal way for businesses to engage more with their consumers.

FIGURE 9**Broadband Access Tariffs - \$**

Source: IDC, 2011

A comparison of internet access rates in the region and internationally, shows that Kenya features among the top 3 most expensive countries for internet access but it should be borne in mind that these are among the countries that only recently received lower cost bandwidth via submarine cables.

Nonetheless this is an important factor that needs to be addressed to achieve the level of internet penetration the country desires. Internet affordability and penetration move hand in hand and suitable regulations on internet pricing and monitoring the activities of internet service providers could help move things in the right direction.

Despite additional capacity, cost of broadband is still a factor for business vis a vis other countries.

Nigeria has recently got a lot of international bandwidth but constrained somewhat by the lack of a well developed national backbone, last mile access and electricity challenges.

Landlocked Rwanda largely relies on bandwidth from operators in neighboring countries.

NOTE: The full list of benchmarking indicators,in tabular format, can be found under Appendix I

ICT Skills Analysis

ICT Skills Overview

The present supply of skills does not meet business requirements in various ways including the currency of the courses taught as well as the need for business specific training (soft skills).

There is little visibility,at the academic level, on the demand for specific skills, suggesting that greater and closer collaboration is needed between education institutions, businesses and government to determine the exact mix of skills needed in the market.

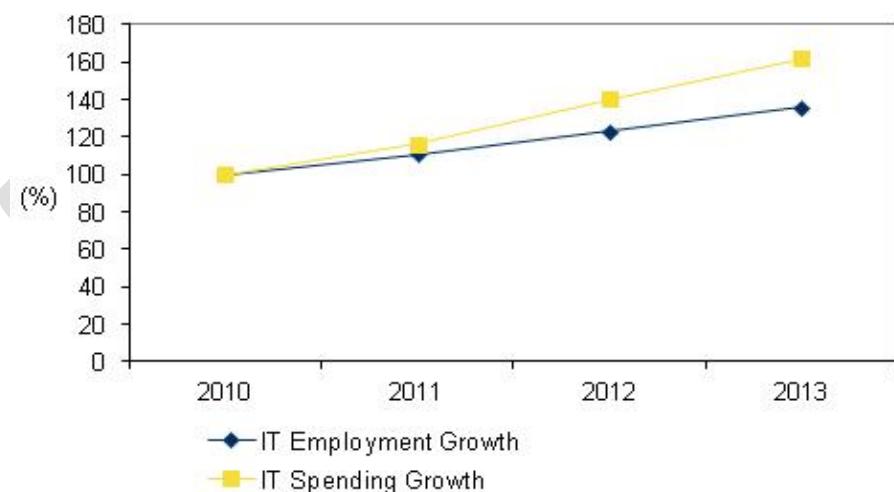
Presently some skills gaps are temporarily met via expat labor though it does not always translate into skills transfer to locals. Thus when projects are completed, a void is left in the market.

IT Employment Highlights

- ☒ IDC estimates the total IT employment in 2010 was approximately 27,000 IT professionals.*
- ☒ Over the next three years, ~9600 new IT jobs will be created and the total IT workforce will increase by 36%.
- ☒ The drivers of growth are increased investment in IT services by companies, increased demand for specific IT skills particularly project management and software development skills and expansion efforts in ICT companies.
- ☒ The growth rate per year overall is expected to be in the 10% to 11% range.
- ☒ IT employment is expected to grow at a CAGR (compound annual growth rate) of 10.8% over the next five years. The total employment is expected to increase by 36% by the end of 2013.
- ☒ IT spending is projected to grow faster, at a CAGR of 17.4%. This will result in a 62% increase in IT spending between 2010 and 2013.

FIGURE 10

IT Employment vs IT Spending

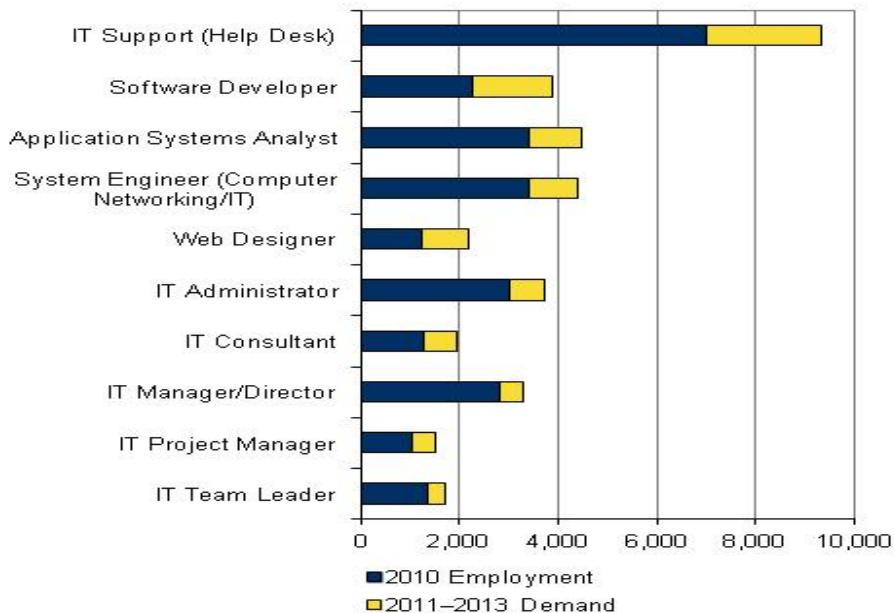


Source: IDC, 2011

IT employment is expected to grow at a CAGR (compound annual growth rate) of 10.8% over the next five years. The total employment is expected to increase by 36% by the end of 2013. Meanwhile, under the present circumstances, where there is lack of IT skills, IT spending is expected to grow a little faster indicating that while skills play a major role in supporting an IT environment, business needs and consumer demands will supersede any inadequacies inherent in the issue of skills.

FIGURE 11

Demand Prediction by Professionals



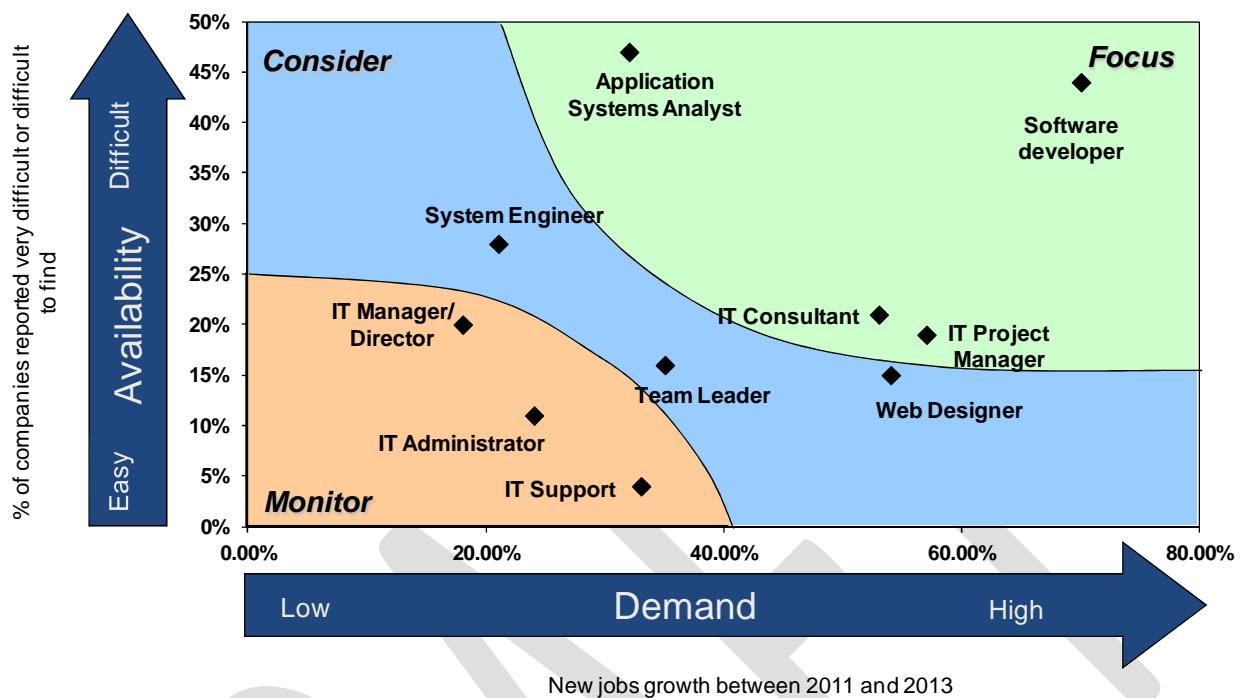
Source: IDC, 2011

Nearly 10,000 IT professionals are expected to join the IT market between 2011 and 2013 with the biggest demand being for IT support professionals followed by software developers and project managers.

These growth rates help depict the current make up of the IT market where expansion in IT set up is taking place (and therefore needs more support for more users), new projects being implemented (project management) and existing systems needing customization or enhancement (development). With such characteristics, it can be expected that the tide will turn in the next couple of years with more emphasis in areas like ICT consulting and administration but dependent on different sectors and how much ICT supports their business needs.

FIGURE 12

Demand/Availability Matrix by IT Professions



Source: IDC, 2011

Bearing in mind the expressed demand, present focus needs to be placed on IT professions that are both immediately in high demand and hard to acquire by businesses and vendors.

The diagram above plots these different professions based on what end users and vendors have indicated in terms of ease of filling such positions vis a vis demand for these positions.

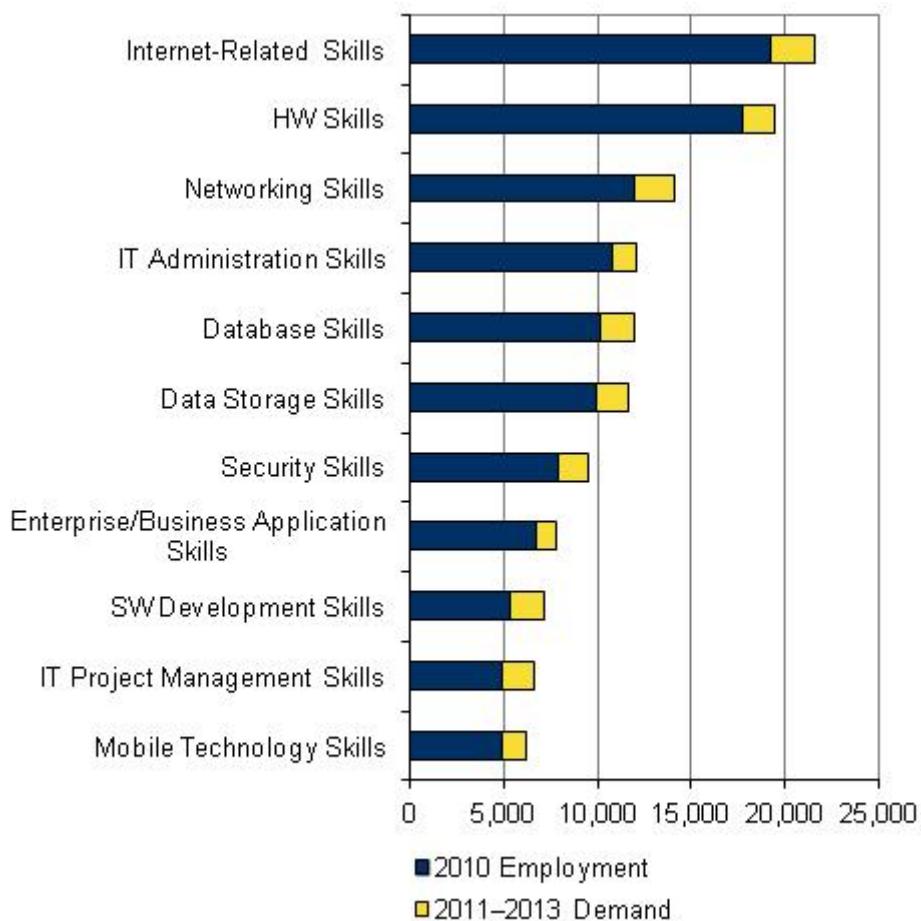
Therefore greater focus should be placed on; IT Project Managers, Consultants Application Systems Analysts and Software Developers, being the professions in highest demand and hard to fill.

While there is difficulty in filling positions with Systems Engineers, the demand is not very high presently thus some thought should be spared to include plans for such positions.

Overall a close tab should be kept on positions that are in low demand and presently easily filled in order to track developments in IT set up across the board.

FIGURE 13

Demand Prediction by IT Skills



Source: IDC, 2011

Away from broad categories of IT professionals and looking at specific skills that these professionals hold, the survey indicates that the greatest demand will be for IT Project Management Skills (136%) and Software development skills (135%).

Again this is indicative of positions articulated earlier i.e. the growing need to implement new projects and enhance or integrate existing systems via customized application development.

Presently the lowest growth is expressed for IT Administration and HW skills at less than 12%.

ICT Skills market trends**Drivers**

- ☒ **Increased Connectivity makes for more sophistication** – With increased connectivity options in the enterprise segment, and the resulting technology options these avail, it is expected that more advanced skills in terms of integration and deployment will be needed in the market e.g. for WAN, networking, Virtual Private Networks, multiple site implementation, etc

- Multinational Corporations** – Multinational corporations will dictate IT strategies that trickle down from their hubs and thus compel their local subsidiaries to adopt the same systems in order to have seamless global integration. This will compel the market to acquire and avail the required skills sets needed for such implementations locally.
- Increase in ICT players** - Over the last ten years, there has been significant growth in the number of companies operating in the ICT sector, including telcos, hardware and software providers. This exponential growth has fuelled the need for more locally qualified staff. In addition, a number of companies are starting to invest in IT services which calls for locally available staff to be on hand.

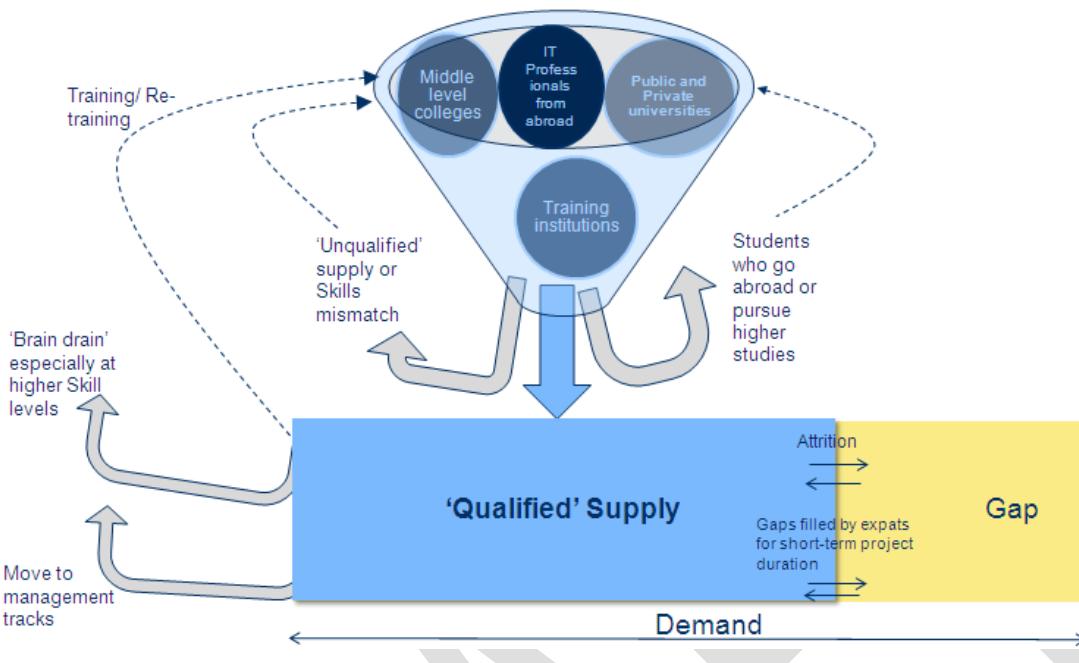
Inhibitors

- Imported Labor** – The importation of skilled ICT Labor by some players, without commensurate methods to ensure the transfer of skills to local IT professionals, especially for the implementation major projects, only serves present needs but leaves a void in the market. With appropriate intervention, such imported skilled labor can be leveraged to impart skills and enhance the profile of local IT professionals.
- Imported Labor Competition** - Availability of lower cost imported ICT labor (e.g. India) for big implementations where the charge out rate is even lower than for local ICT Professionals. This causes some lost opportunities and results in brain drain to the region where local professionals seek "greener pastures" elsewhere since they are unable to compete on price locally.
- Frequency and size of projects** - There are not adequate big projects that result in a big pool of skilled personnel especially given the number and size of local companies and the kind of projects that they implement. Big projects are few and far between and the cycles between these are long, leaving little room to build up enough skilled and experienced resources.
- Training standards and curriculum** – In most cases, the majority of graduates need to be re-trained or undergo apprenticeship before they can contribute properly to an IT environment.
- Ethics** – Given the shortage of experienced staff and the small pool from which businesses can fill positions (and also bearing in mind that large projects are few and far between), there is emerging a trend whereby skilled IT resources migrate from company to company (vendor or business) seeking outlets where they can utilize their skills and gain economically. To a large extent this is a cause for disquiet among employers that try to place a premium on loyalty.

IT Skills Gap Analysis Framework

FIGURE 14

IT Skills Gap Analysis Framework



Source: IDC, 2011

Key market highlights

- ☒ There is relatively decent skills availability in the market and of good caliber. However, there are issues to do with ethics on both the part of employees (greener pasture seekers) and industry players (head hunting staff trained by competitors). Thus the pool is small and most players keep drawing the same people out of the same pool
- ☒ There is a limited supply of good skills coupled with requisite experience across hardware and software types.
- ☒ Ethics is wanting - loyalty to employers - both within the supply side and demand side - is lacking - thus IT professionals largely tend to be migratory and green pasture seekers.
- ☒ There is little international exposure - those with advanced skills leave the market and the Kenyan market cannot really attract experienced professionals owing to the "glass ceiling" in IT (bearing in mind the overall maturity levels in the market).
- ☒ There is a limited supply of good skills coupled with requisite experience.
- ☒ Ethics is wanting - loyalty to employers - both within the supply side and demand side - is lacking - thus IT professionals largely tend to be migratory and green pasture seekers.
- ☒ There is little international exposure - those with advanced skills leave the market and the Kenyan market cannot really attract experienced professionals owing to the "glass ceiling" in IT (bearing in mind the overall maturity levels in the market).
- ☒ Most university students readily dabble with application development using mainly open source software and do have considerable skills in that regard but come into a market place where the uptake of open source operating systems and applications are not very pervasive. .

Outlook

Seeing that various factors are at play in determining the skills base in Kenya, including the opportunities presented by businesses to help nurture skills, the number and size of projects, the cyclic nature of IT projects, a delicate balance needs to be attained in order to address shortages while at the same time creating more employment and encouraging more sophistication in ICT adoption.

Among the key areas expressed by vendors, businesses and academic institutions, to address this issue include:

- ☒ Integrating IT studies early in the educational curriculum to attract more interest and therefore talent to the sector and demystify the industry.
- ☒ Engaging in partnerships with higher education facilities with greater involvement by the government and continually vet and incentivize participants in the education sector to include more technical skills in their curriculum.
- ☒ Given Kenya's rising status as a budding innovation hub in the region, developing an enabling environment for the sector will be critical to its success.
- ☒ Increasing globalization will also push countries like Kenya to lean more heavily on IT to participate on the same economic field as its competitors.
- ☒ Mainstreaming of basic ICT training at a large scale e.g. MCSE, CCNA, etc
- ☒ Find ways to help create work experience rather than rely purely on credentials and certification - attachment programmes/apprenticeships

USAGE AND PENETRATION ANALYSIS

Overview

IDC conducted two end user studies that included 150 businesses and 750 residents and polled them on various issues relating to ICT set up, device usage, ICT staff (business), professionals (business) ICT technical skills (business) and general ICT end user skills (residential) among many other areas.

Note: In this section IDC will not cover ICT skills as the feedback is treated separately under a different section. Thus the following are highlights of feedback obtained from the residential and business survey results.

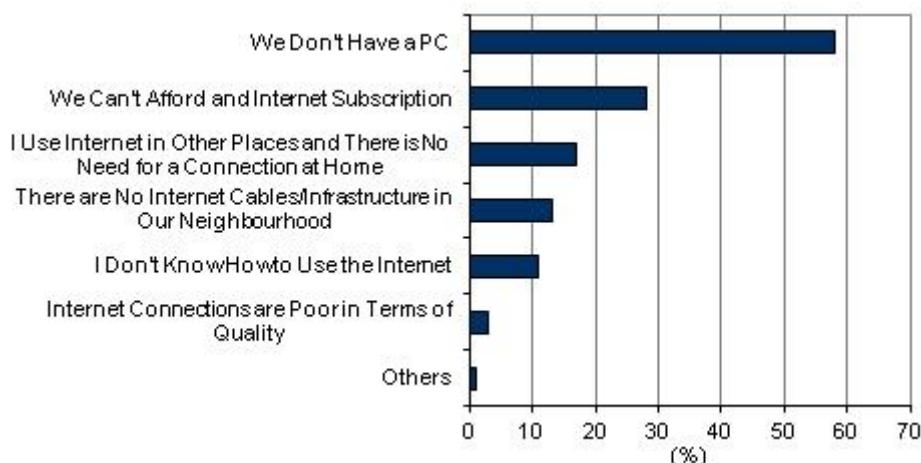
Residential

In this part of the survey, a total of 750 residents across five towns (Nairobi, Kisumu, Nakuru, Mombasa and Nyeri) were polled at a household level with feedback solicited on various ICT related issues. Respondents ranged from the age of 15 to over 45 years and were drawn from three main social classes.

Given the selection of urban areas for the survey, the uptake and usage of ICT, the level of skills (end user) demonstrated and overall usage of ICT was relatively high as outlined in the highlights below.

FIGURE 15

Reasons for not having an internet connection



Source: IDC, 2011

Feedback received from end users polled, on their reasons for not having an internet connection at home were mainly associated with the cost of devices (computers) and the cost of services. However, it should be noted that a good number also indicated that they already access the internet at work or publicly shared connections which to a certain extent implies that residents who have access at work may not necessarily be prompted to acquire or invest in connections at home, especially where cost and level of use are factors.

13% of the respondents cited lack of internet infrastructure as the reason for not having a connection which helps confirm earlier assertions that last mile access is a major issue that needs to be addressed.

The main issues that were immediately apparent, which could be justifiably inferred to apply to rural populations, had to do with cost of devices and services, and in many cases, to access to services and quality of services. On that note, given that access and cost are already issues in urban areas, it goes without saying that these are also very real issues in rural areas, more so on cost of devices and services.

Another aspect that may also be safely assumed to inhibit uptake in rural areas has to do with literacy (just above 10% indicated that they do not know how to use the internet), awareness and relative need of services. While there may be need for certain services in urban areas, the same cannot be said for rural areas where culture, economic activities and ability play a major role in ICT consumption.

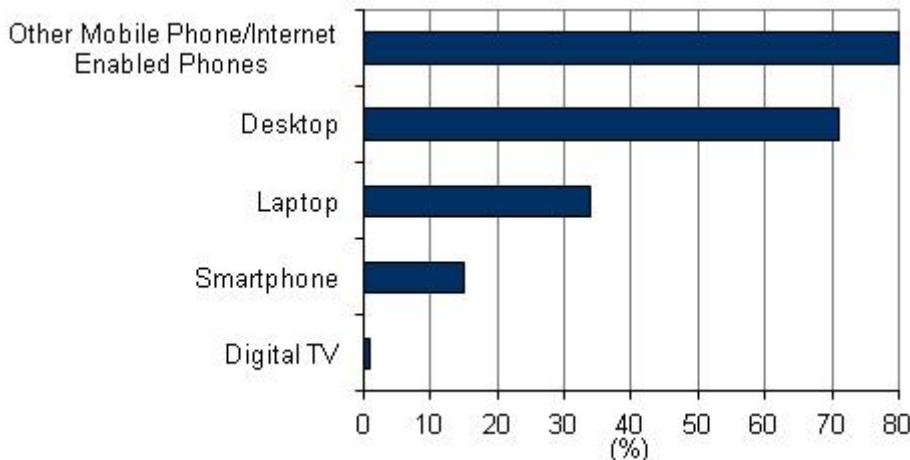
Highlights on Detailing PC, Internet & Mobile Phone Usage

- ☒ Mobile usage among respondents (99%) prevails over internet (79%) and PC (69%) usage
- ☒ Internet and PC usage is heavily concentrated among young respondents (especially the 15-24 yrs) and males
- ☒ Main reasons for not using a PC or internet are common and correspond mostly to the inability to buy them or not knowing about their functions

- ☒ Using PC and internet at public places is a prominent feature , explaining more the weak internet access from homes
- ☒ 89% of respondents use PC mainly at public internet facilities (at varying frequencies per week). On the other hand, their internet usage is mostly done through mobile at varying frequencies per week (85%)
- ☒ Young respondents (15-24 yrs) tend more to use PC for entertainment (77%) and educational (57%) reasons; while older respondents (especially 35+ yrs) specify most of their PC time for personal (76%) and work obligations (59%)
- ☒ Internet and mobile usage is centered over basic tasks, with the advanced features still not quite well explored
- ☒ The main purposes for using the internet are communication via email or social networking (86%) opposed by a low preference for doing online voice or video calls
- ☒ While 97% of respondents use mobiles mostly for the normal calling and texting, internet-based functions like web browsing, chatting etc. are dominated by young residents (15-24 yrs)
- ☒ Time spent on PC and internet have similar distribution among different age groups and is a resultant of the general purposes that these age groups use PC or internet:
- ☒ Respondents (15-34 yrs) allocate most of their PC/internet time for personal or education reasons
- ☒ Respondents (35+ yrs) are heavily consumed by work obligations while using PC or internet
- ☒ On average, 12 hrs per week are spent using a PC and/or internet
- ☒ Males tend to spend 2.2 hr more than females on PC every week. They also spend 3.4 hrs every week more than females for internet usage
- ☒ Males' consumption of the mobile service is also much more than females. This is clear in the amount of weekly SMS, MMS and their total spending on mobile services
- ☒ Respondents are more confident in using basic PC functions (text processing, working with spread sheets, etc.) as well as basic internet functions (email communication, search engines, etc.)

FIGURE 16

Devices Used to Access the Internet



Source: IDC, 2011

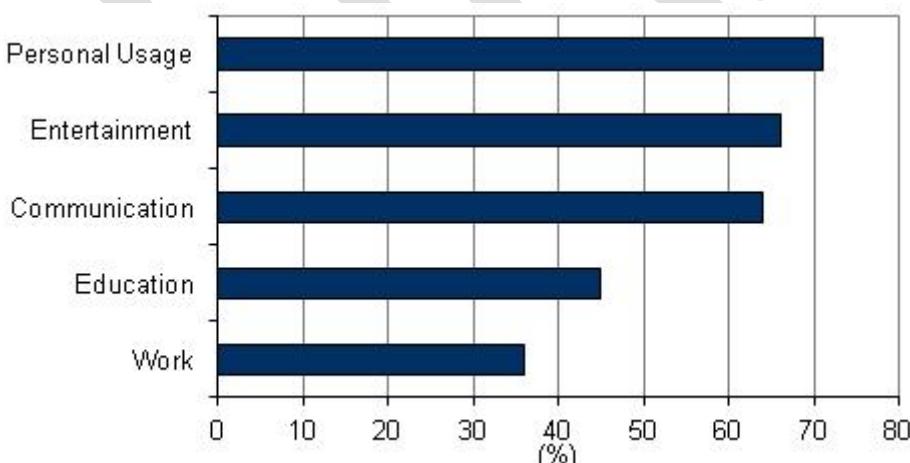
Mobile phones remain the most used device to access the internet. Out of the nearly 4.7 million connections, at least 95% are mobile based connections. In this feedback it is apparent that any strategies to engage with residents needs to be deployed on mobile platforms (and which is later confirmed when looking at the number of internet transactions vis a vis mobile transactions).

Confirming earlier feedback about cost of devices, laptops and desktops have much lower usage in the market,

There is growing usage of smart phones in Kenya, partly attributable to initiatives by equipment vendors and mobile operators to avail low cost or subsidized devices into the market. Chief among these are Android based phones from reputable Chinese manufacturers. IDC in its research on mobile handsets sees a growth of xx% (FH - check with Simon Baker) in this market segment.

FIGURE 17

Primary purpose for using a PC



Source: IDC, 2011

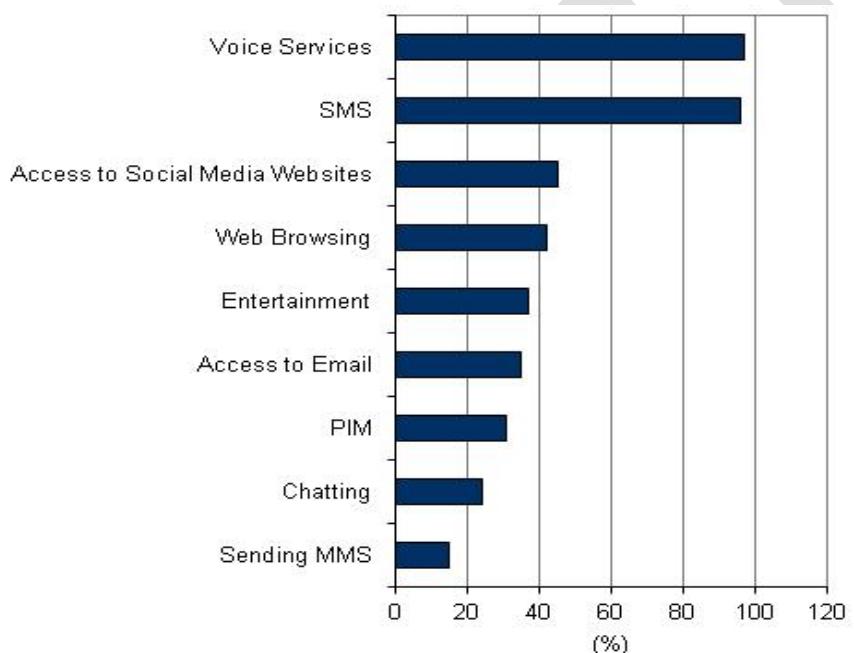
Responses on primary usage of computers confirms that computers have more or less become very commoditized items with personal use cited as the biggest use, followed by entertainment (still personal usage technically speaking) and communication.

Just over 35% cited use of their computers for work which largely comprises of the self employed or teleworking demographic of the survey.

It should also be noted that nearly 45% cited the use of computers for education, which in itself underscores the importance of computers as a medium to acquire education and learning materials. When looking at content later, we will see that education still plays a crucial role and can get a better understanding of this issue.

FIGURE 18

Services actively used on a mobile device



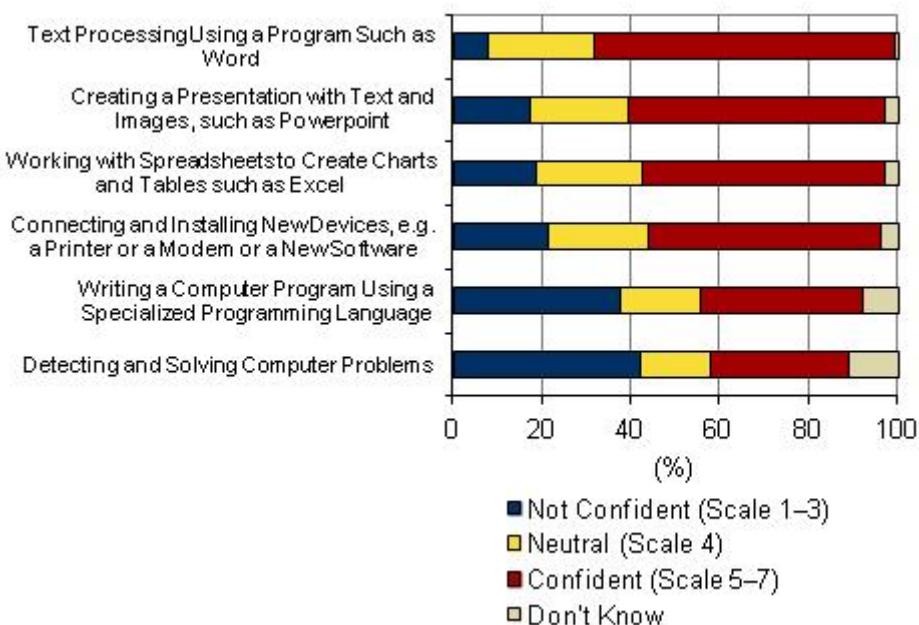
Source: IDC, 2011

Confirming IDC's market sizing on telecommunications services expenditure, feedback from residents shows that the biggest use of mobile devices, at nearly 100% is for voice services followed by texting at about the same level and at a much lower usage level, access to social media and web sites, mainly by the younger population.

IDC believes that should more locally developed content be availed for mobile, specifically for social networking, websites and entertainment, plus higher bandwidth speeds be availed, a greater appetite can be realized. Presently such consumption is via computers and mainly at shared access points or work places.

FIGURE 19

Confidence in Using a PC



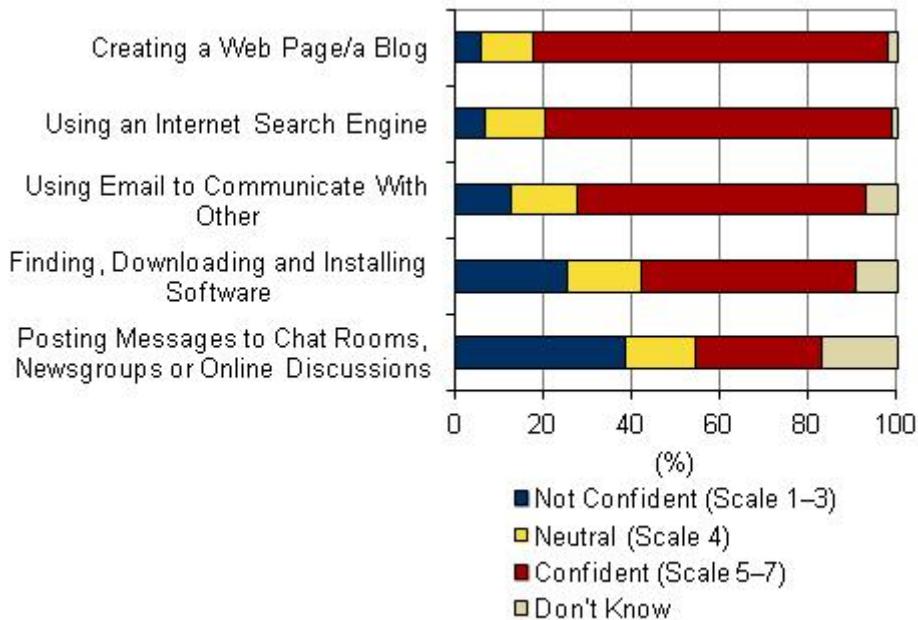
Source: IDC, 2011

By and large, and thinking of basic end user skills, residents who use computers are confident users of PCs and only citing difficulties with infrequent uses such as problem solving and writing programmes. This in itself, more so when looking at text processing, creating presentations, etc shows that the use base is already fertile for development of local content and that the missing link to enhance or later realize this would lie in connectivity.

Out of all the respondents, only 31% have never used a computer and the majority possesses fairly solid basic computer usage skills.

FIGURE 20

Confidence in Using the Internet



Source: IDC, 2011

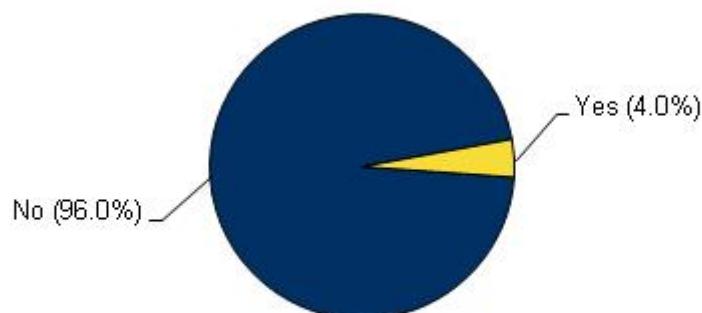
Compared to online skills (i.e. internet usage) offline skills (i.e. computer usage alone), are higher confirming feedback that fewer residents have access to the internet as they do to computers and therefore less experience or need for internet skills.

Thus if internet penetration was higher, the requisite skills needed online e.g. for creating blogs and downloading content, could be enhanced and in turn also lead to greater local content and an increased online community available for the business enterprises that wish to target them via that medium.

The high usage of search engines demonstrates that there is a high demand for information and perhaps a study on what type of information sought could inform any initiatives to develop and avail local content.

FIGURE 21

Residents' Online Presence
Do you Have a Personal Website or Blog?



Source: IDC, 2011

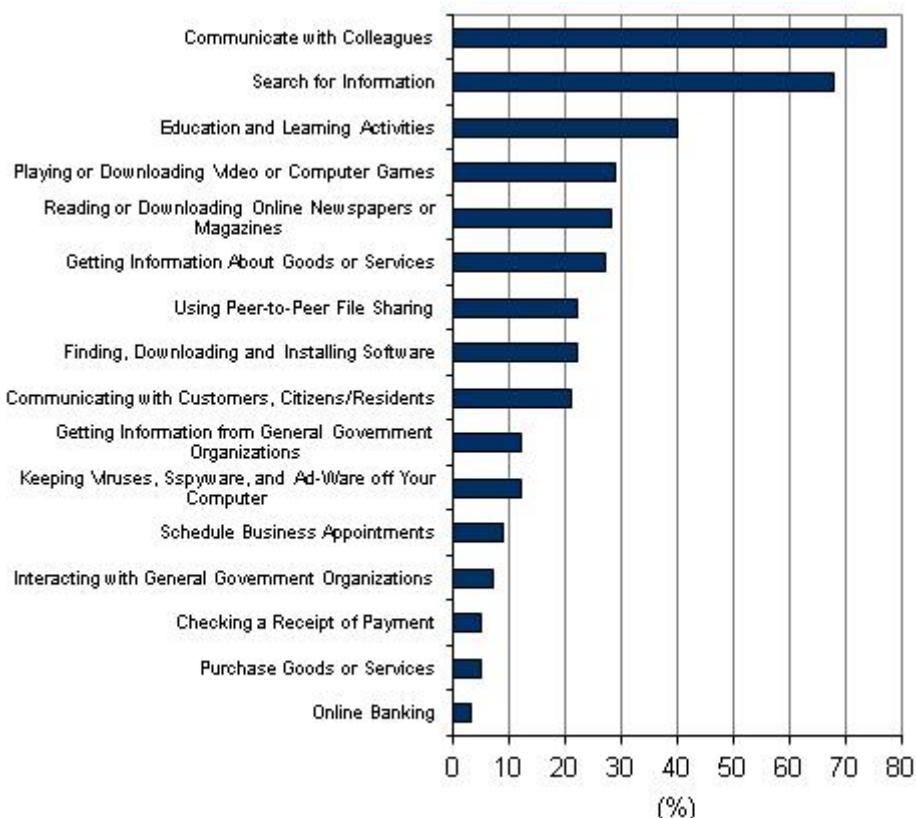
Only 4% of residents disclosed they have a personal website or blog and may simply reflect personal preferences and perhaps also dependent on their type of occupation. It cannot be inferred that low online presence by citizens is owing to low confidence in internet related skills.

The previous figure confirms this, with a good number of respondents with fairly high levels of confidence in creating websites, posting to discussions groups among others.

However, this is still an opportunity to engage with residents at different levels on the creation of relevant local content, not necessarily personal websites or blogs, but other content that may be relevant to their immediate community e.g. for activism, information sharing, crowd sourcing, etc.

FIGURE 22

Internet usage



Source: IDC, 2011

Given the level of awareness cited elsewhere, about online government services, and coupled with the possibility that government websites remain rather static and perhaps hard to navigate, there could be increased usage of the internet to get information from government organizations. Aside from websites, and despite rather widespread adoption of email in different government departments, anecdotal information suggests that email is the least effective way of corresponding with government and perhaps it may also be rooted in the culture and norms in government.

In terms of using the internet to communicate with customers, citizens and residents, greater usage could occur with greater adoption and penetration. Presently only 21% of the residents polled use the internet for this. Thus, increased overall internet penetration among residents would result in an increase in this use (as customers/consumers of other residents).

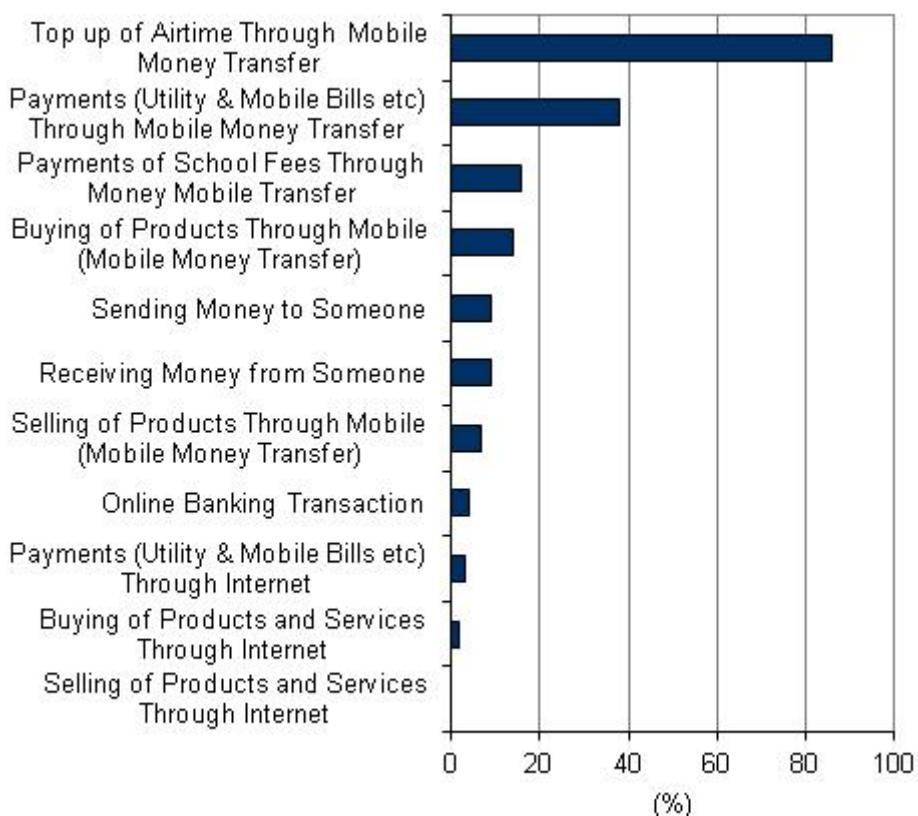
IDC believes a greater number of users, above the current 40%, would engage in using the internet for online learning if more education institutions, including secondary level (given that the biggest number of internet users includes the 15-24 segment) had relevant content to allow PCs and the internet to become an additional medium to access courses and learning curriculum.

Purchasing goods online shows a rather low usage rate but it must be borne in mind the users of such services would be the ones with access to an online payment medium (PesaPal, PayPal, credit card, etc). With recent developments among

mobile operators allowing such payments to be made via their mobile money platforms and coupled with some awareness creation about this service, online commerce can only be marginally enhanced for certain demographics inclined to do so but without much information about how it works. As it were credit card users for offline transactions are few owing to economic reasons. Thus for online payments, only a marginal increase can be effected with interventions like using mobile operators mobile money platforms.

FIGURE 23

Financial Transactions on the Internet and Mobile



Source: IDC, 2011

Given that mobile devices are most widespread, it is hardly surprising that most transactions are made via this device.

The feedback suggests that both accessibility to mobile devices, as well as the relative ease of use of such mobile services, contributes largely to the high levels of usage. At the backdrop of this is a citizenry that have been isolated from traditional banking services – and therefore cannot migrate to traditional online internet transactions backed by formal banking systems.

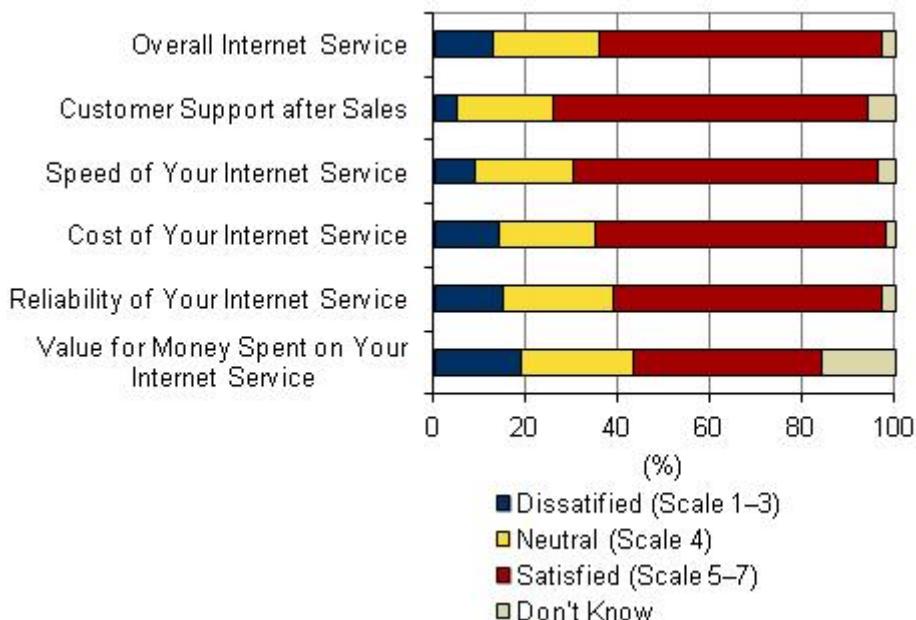
Thus innovations in mobile transactions have surpassed internet transactions owing to myriad reasons, chief among them being the background with traditional banking and access to mobile devices and services.

To help increase more internet transactions will require more payment platforms to be accessible for existing users, aside from credit cards whose usage in Kenya is much lower than the number of internet users. Mobile payment platforms, interfaced with

internet banking could provide the missing link to promote internet transactions. The recent service launch by Airtel is a good example.

FIGURE 24

Satisfaction with Internet Services

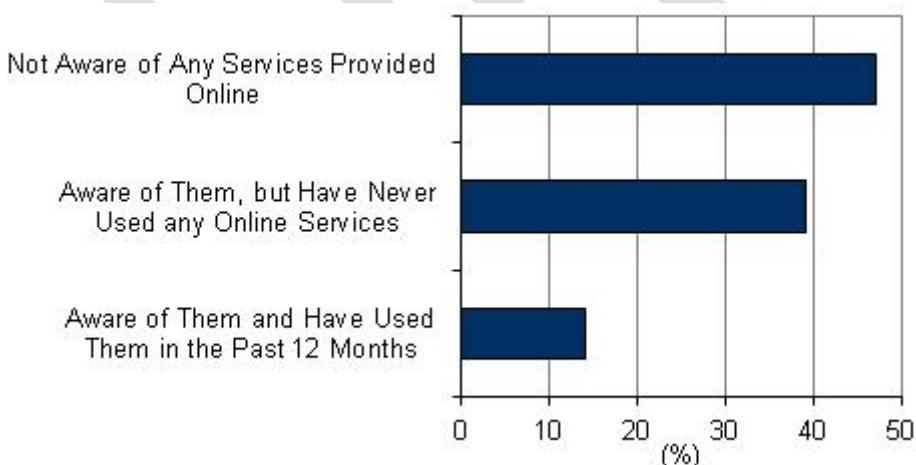


Source: IDC, 2011

When polled about satisfaction with internet services, a good number of respondents were satisfied with their overall internet service as well as the support they receive. Issues of speed were among the areas where residents were not satisfied and hardly surprising the issue of value for money where at least 20% indicated dissatisfaction.

FIGURE 25

Awareness of online government services



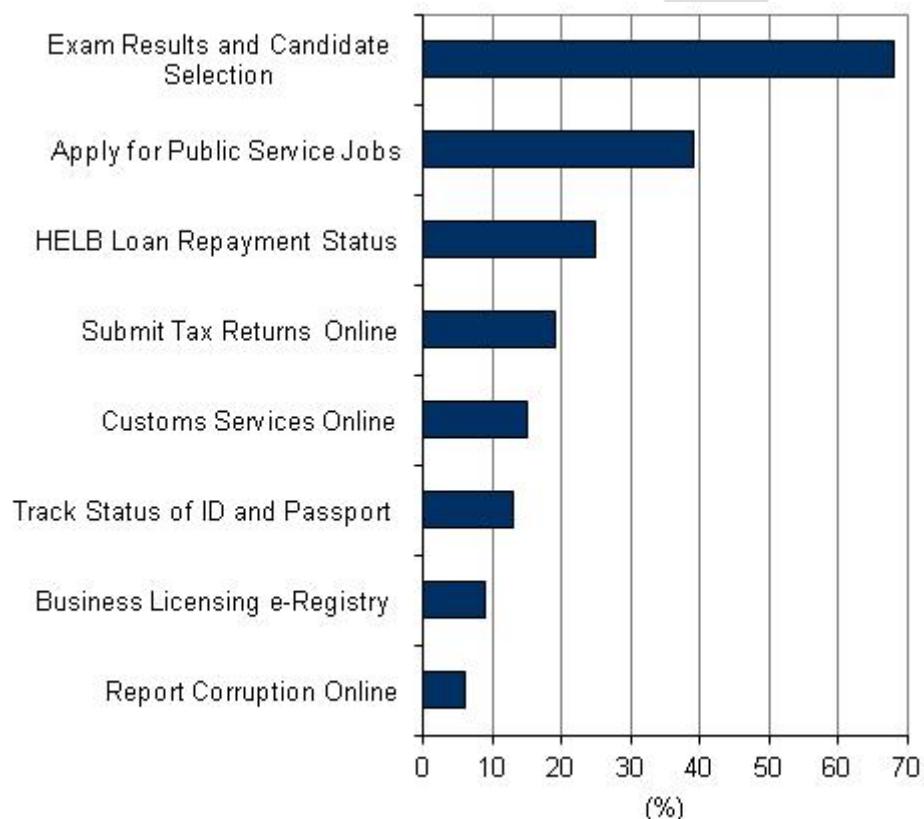
Source: IDC, 2011

Whereas 53% of the respondents were aware of the e-government services offered on 23%. Indicated they have used these services.

As indicated elsewhere in the research, low usage may be as a result of concerns relating to constant availability, security concerns and generally trying to contend with a bureaucratic culture where the most effective transactions are offline however tedious.

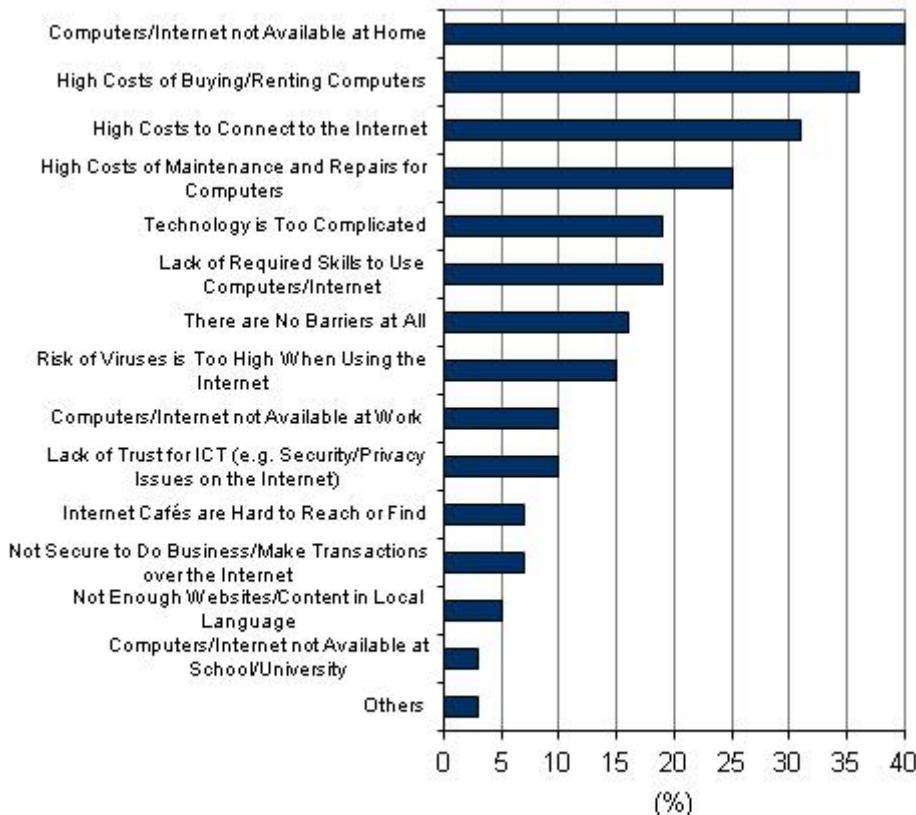
FIGURE 26

Online government services used



Source: IDC, 2011

Out of the 23% of e-government services users, the majority sought to obtain examination results online, followed by applications for public service jobs.

FIGURE 27**Barriers to ICT usage**

Source: IDC, 2011

Access to computers, the high costs of computers and unaffordable internet access are the three main barriers to ICT usage in Kenya and while this is a serious challenge, it also presents an opportunity to increase penetration through various means including asset financing, cost subsidies and toll free dial up rates for remote and rural areas.

It should be worth noting that the level of complication to technology as well as the lack of skills are not major inhibitors as issues of cost, again confirming that the ICT literacy levels among residents is adequate to allow them to consume more and move to the next level.

Among the least cited barriers include lack of local content, security concerns and lack of trust of ICT.

Residents' Survey Highlights

- ☒ Acquiring ICT skills in Kenya is significantly affected by the overall social status of households and respondents
- ☒ The unavailability of PC and internet at homes due mainly to their high cost and the inability of respondents to purchase them emerges as the main barrier against ICT knowledge

- Another barrier is the absence of internet infrastructure in some neighbors which is prohibiting those who are financially capable (SCL AB) from enjoying this service
- This is leading to the fact that most internet access is done via mobile or from places outside home where respondents are satisfied by its cost, speed and reliability
- Usage of PC, internet and mobiles is generally limited to basic features
- The same main barriers (cost and unavailability of PC and internet) that are reducing the use of internet and PC are also preventing respondents from taking ICT training courses
- With these factors pressing, only 16% of respondents have been trained on ICT skills in the last year
- Respondents are aiming to increase their general basic skills for using mobiles, PC and internet. They reflect less desire to learn advanced features

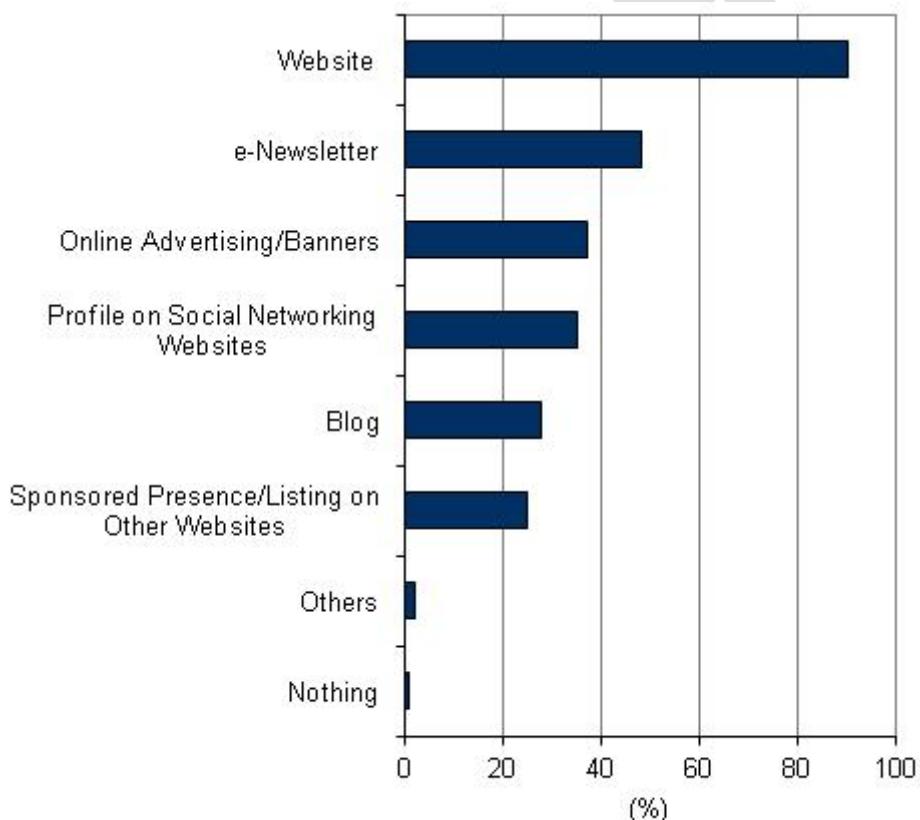
Business

In the business survey, a total of 158 respondent organizations from five towns (Nairobi, Kisumu, Nakuru, Mombasa and Eldoret) were polled on various aspects, including ICT skills. Respondents were spread proportionately depending on their sectors share of ICT spend and included government departments and agencies.

Overall ICT usage in business is fairly high though some issues remain and which if addressed can result in heightened levels of usage.

FIGURE 28

Business Online Presence



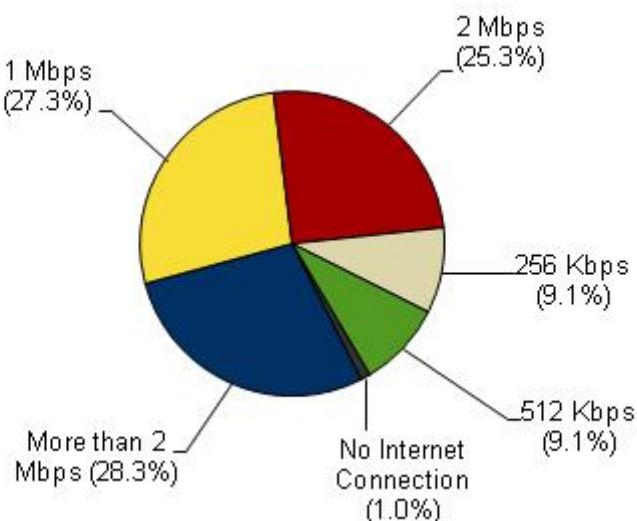
Source: IDC, 2011

There is considerable usage of websites among businesses in Kenya and a good number are leveraging on other online presence including online adverts, e-newsletters and presence on social networking sites.

In this regard, the Kenya business community can be considered to be at par with developed countries with all that remains being the level of presence in terms of online trading/transactions which is one aspect that this survey did not expressly measure but which, given other areas cited as concerns, might be preventing more Kenyan businesses from adopting a more wholesome online presence. Chief among the concerns cited elsewhere include security.

FIGURE 29

Internet Connection (Business Internet Speeds)



Source: IDC, 2011

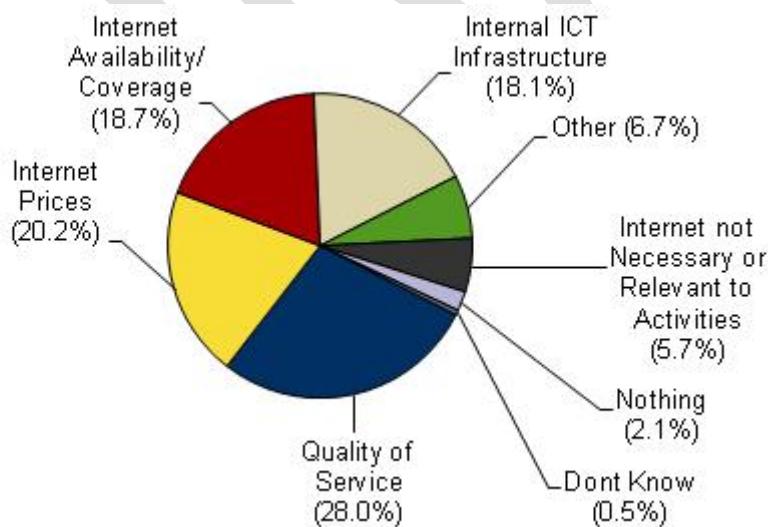
Given recent developments in availing high speed bandwidth, a good number of organizations have connection speeds higher than 1Mbps but also dependent on the number of end users that they need to provide access to.

Looking at the maturity of the market, which should be denoted by the types of speeds, less than 20% had speeds less than 512kbps and only 1% were not connected.

Overall, access among business stands at 99% which is a very positive indicator for organizations in Kenya.

FIGURE 30

Constraints for Internet Usage



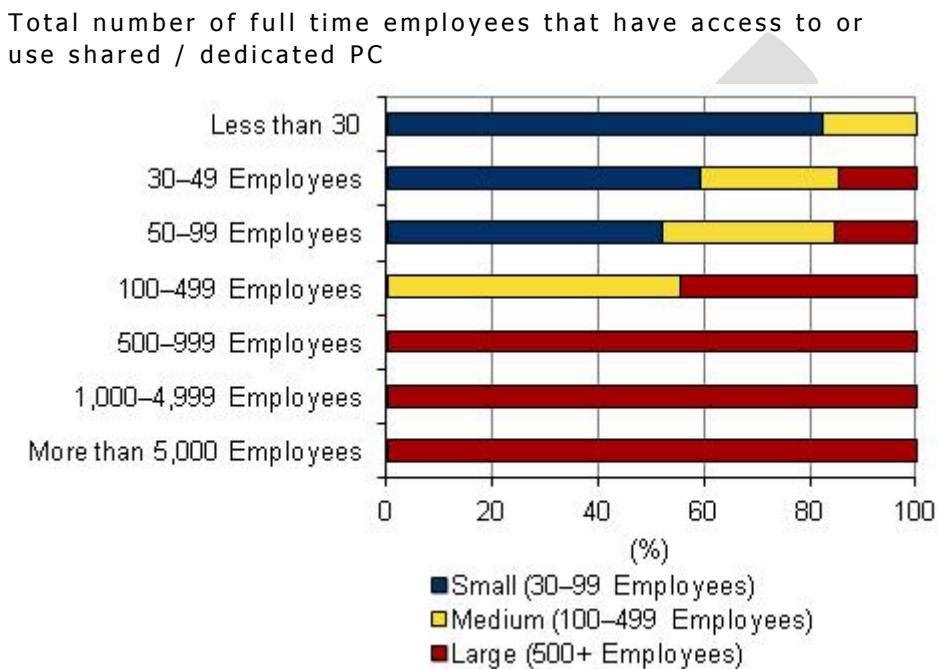
Source: IDC, 2011

Various reasons were cited as constraints in terms of internet usage, chief among them being availability and coverage – which helps re-state the issue of last mile

access. Other key constraints include pricing and quality of service – both illustrative of a discerning nature of organizations.

It's worth noting that only less than 6% indicated that the internet is not relevant or necessary to their business.

FIGURE 31



Source: IDC, 2011

In terms of computer usage at organization level, in the Medium segment (100-499) employees, a greater number of staff had access to computers – with at least 50% of them having between 100-499 employees – which is the segment size – having access to a PC. This underscores the importance of the SME segment in Kenya which is largely made up of companies that are services oriented and therefore invest considerably in computing.

Inversely, the majority of the bigger organizations have a lower proportion of staff that use ICT and most of these organizations are in sectors that are not expressly ICT dependent for a majority of users and include agriculture, mining and some government bodies.

Online Government Services

There is fairly good awareness on government services offered online though with lower levels of usage. A systematic and consultative approach could be adopted to sensitize users on services available as well as act on feedback on the kind of services needed.

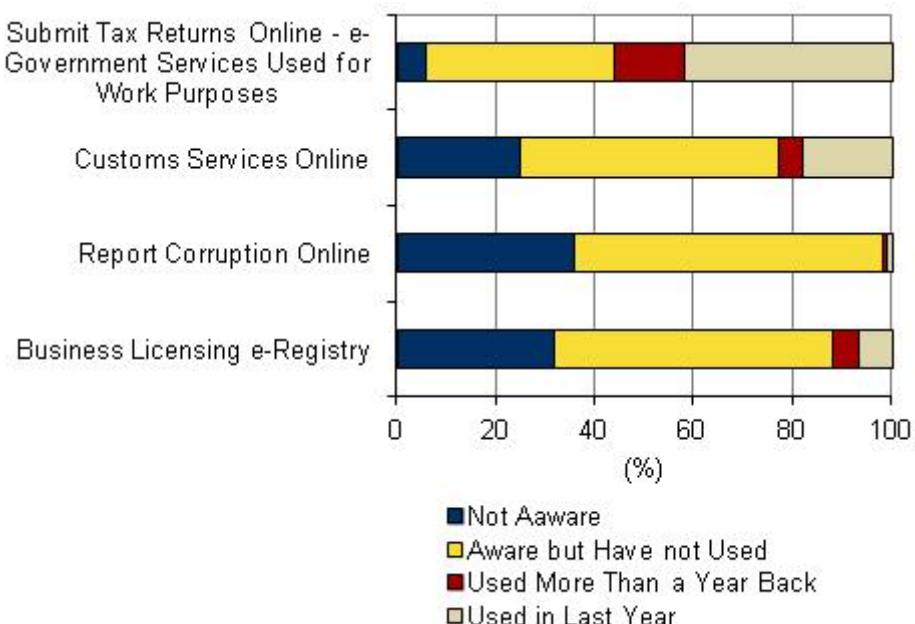
Among citizens, while there are low levels of connectivity, for those that have connectivity, there is fair knowledge of the type of government services offered and some usage of services.

There is presently demand for various online services like driving license application, birth certificate application, etc.

Among citizens, the mobile device is the most common method of accessing the internet and should more government services be issued for mobile platforms, a greater uptake can be achieved.

FIGURE 32

Usage of e-government services



Source: IDC, 2011

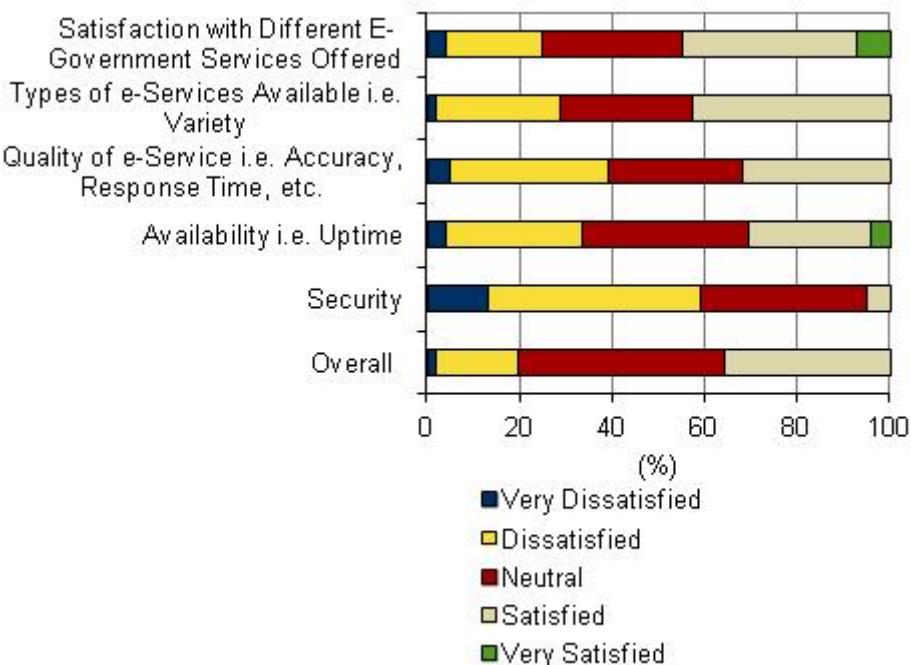
There is more awareness of services like customs, business license registry and reporting corruption online, but comparatively usage of these services is rather low and just like with the residential segment, issues relating to culture, bureaucracy and ease of doing business are probable reasons for low usage among the business community.

To a certain extent, the awareness and usage of these services is contingent on the awareness campaigns undertaken by the providers of the various services. Kenya Revenue Authority is most notable in this regard and the results confirm this. Their annual campaigns to encourage tax payers and importers to utilize their online services is indicated positively here.

Overall should there be similar levels of publicity about other government services, there could be greater adoption.

FIGURE 33

Satisfaction with e-government services



Source: IDC, 2011

Security is a chief concern among businesses, followed by quality of service and government response time to online transactions. With regard to quality, if the level of service is poor then the likelihood of repeatedly using such services diminishes. Thus some emphasis should be placed on ensuring consistently available quality e-government services.

The highest satisfaction rating is about the variety of government services offered and should more services be rolled out, this can only increase the delight experienced by organizations. The core issues here for businesses that would drive greater adoption would be the savings on time expended, effort and the ease of interacting with the government on a wide range of issues.

FUTURE OUTLOOK

Forecast and Assumptions

ICT Market Expectations for 2011–2015

ICT spending in Kenya is expected to rise to \$868.7 million in 2012 reflecting year-on-year growth of 16.3% and to US\$ 1.53 billion by 2015 representing a CAGR of 15.5% over that period

Hardware spending is expected to decline from 78.4% in 2011 to 77.7% in 2015, ceding some share to IT services which will increase from 12.4% in 2011 to 13.6 in 2015.

Telecommunications services revenue will grow from US\$3.2 billion in 2011 to US\$ 3.8 billion in 2015, with data services growing at 16.5% for fixed data and 13.7% for mobile data.

In total the combined IT and Telecoms market will grow at a CAGR of 8.9% from US\$ 4.08 billion in 2011 to reach US\$ 5.41 billion in 2015.



Forecast Tables

ICT Spending



TABLE 2

Total ICT Spending (US\$M) by Technology 2010–2013

	2010	2011	2012	2013	2014	2015	CAGR
Services							
IT consulting	10.13	11.53	13.51	15.69	18.07	20.75	15.4%
Implementation	41.07	46.20	53.38	61.50	70.26	80.06	14.3%
Support services	26.19	32.73	41.21	49.24	58.54	68.46	21.2%
Operations management	9.24	12.13	16.07	20.52	25.76	31.45	27.8%
Training and education	4.57	5.06	5.86	6.58	7.36	8.30	12.7%
Services total	91.20	107.65	130.04	153.52	180.00	209.04	18.0%
Packaged software							
System infrastructure software	29.82	34.48	38.95	44.27	49.72	55.74	13.3%
Appl. development and deployment	13.06	15.16	16.56	18.94	22.18	25.24	14.1%
Applications	26.25	30.42	33.40	38.51	45.02	51.41	14.4%
Packaged software total	69.12	80.06	88.91	101.72	116.92	132.40	13.9%
Hardware							
Systems							
High-end servers	5.69	10.72	16.40	13.79	21.31	26.21	35.7%
Midrange servers	6.18	10.34	6.81	7.76	6.08	6.35	0.5%
Volume servers	11.68	15.09	18.51	21.94	24.32	26.11	17.4%
Personal Computers	288.69	308.20	371.02	409.47	450.96	478.82	10.6%
Media Tablet	0.65	3.13	5.13	8.41	10.88	16.21	90.2%
Systems total	312.89	347.48	417.87	461.37	513.56	553.69	12.1%
Storage							
Disk Systems	3.54	3.98	4.54	5.26	6.07	6.57	13.2%
Tape	1.25	1.38	1.66	1.74	2.00	2.22	12.2%
Storage total	4.79	5.37	6.20	6.99	8.06	8.80	12.9%
Peripherals							
Printers & MFPs	75.70	87.23	102.42	111.99	124.07	140.90	13.2%
Smart Handheld Devices	108.99	136.00	184.10	239.00	287.40	326.97	24.6%

TABLE 2

Total ICT Spending (US\$M) by Technology 2010–2013

	2010	2011	2012	2013	2014	2015	CAGR
Other HW	30.06	38.82	42.67	55.59	62.83	69.18	18.1%
Peripherals total	214.75	262.05	329.19	406.58	474.30	537.05	20.1%
Networking equipment	53.98	66.11	76.00	81.00	83.00	92.57	11.4%
Hardware total	586.40	681.01	829.25	955.94	1078.92	1192.11	15.2%
Packaged software total	69.12	80.06	88.91	101.72	116.92	132.40	13.9%
Services total	91.20	107.65	130.04	153.52	180.00	209.04	18.0%
Total IT	746.72	868.72	1048.20	1211.18	1375.83	1533.54	15.5%
Hardware total	0.79	0.78	0.79	0.79	0.78	0.78	
Packaged software total	0.09	0.09	0.08	0.08	0.08	0.09	
Services total	0.12	0.12	0.12	0.13	0.13	0.14	

Source: IDC



TABLE 3

Total ICT Spending (US\$M) by Vertical Markets 2010–2013

	2010	2011	2012	2013	2014	2015
Agriculture, Construction, and Mining	21.01	24.44	29.49	34.08	38.71	43.15
Financial	96.63	112.41	135.64	156.73	178.04	198.44
Business Services	20.36	23.69	28.58	33.03	37.52	41.82
Communications	153.19	178.21	215.03	248.47	282.24	314.60
Consumer	111.39	129.59	156.36	180.68	205.24	228.76
Discrete Manufacturing	16.63	19.35	23.34	26.97	30.64	34.15
Education	22.51	26.19	31.60	36.52	41.48	46.24
Government	109.86	127.81	154.21	178.19	202.41	225.61
Healthcare	13.45	15.64	18.88	21.81	24.78	27.62
Other	28.69	33.38	40.28	46.54	52.87	58.93
Process Manufacturing	53.78	62.57	75.49	87.23	99.09	110.45
Retail	28.34	32.97	39.78	45.97	52.22	58.20
Transport	26.57	30.91	37.30	43.10	48.96	54.57
Utilities	28.16	32.76	39.53	45.68	51.89	57.84
Wholesale	16.15	18.78	22.66	26.19	29.75	33.16

Source: IDC

TABLE 4

Total ICT Spending (US\$M) by Business Size 2010–2013

	2010	2011	2012	2013	2014	2015
1–10	22.41	27.36	34.66	42.06	50.16	58.71
10–99	89.60	106.85	132.16	156.51	182.24	208.20
100–499	171.75	204.80	253.30	299.98	349.30	399.07
500–999	313.62	355.74	418.50	471.50	522.21	567.51
1,000–4,999	126.93	143.99	169.40	190.83	211.37	229.71
≥5,000	22.41	29.98	40.19	50.29	60.56	70.34
Total	746.72	868.72	1048.20	1211.18	1375.83	1533.54

Source: IDC



Key Forecast Assumptions

TABLE 5

Key Forecast Assumptions for the Kenya ICT Market 2012–2015>

Market Force	IDC Assumption	Impact	Accelerator/ Inhibitor/ Neutral	Certainty of Assumption
Macroeconomics				
Political Stability	Elections expected in 2012 will stymie government spending in the latter half of 2012.	Progress with existing and planned ICT investment and shared services may grind to a halt during this period.	↓	★★★☆☆
Economy	Currency stabilization can be expected to shore up imports of goods, including oil, and overall help alleviate inflation and resulting effects on consumers (spending power and price of goods).	Improved ability to maintain imported inventory by channel partners. Lower Kshs cost of goods can be passed on to consumers	↑	★★★☆☆
Labor	ICT Skills will remain a serious challenge	The survey shows there are gaps in demand and small wins can only be made in terms of soft skills and awareness among under graduates about the direction they should take to be able to fit in the market.	↔	★★☆☆☆
Market Characteristics				
Inflation	Inflation will affect consumer ICT Spending	Despite the fact that communications services comprise a considerable portion of household spend, increased costs of food, transport, electricity and others, will eat into overall budgets and diminish priorities for non essential ICT spend among the lower cadres of the citizenry.	↓	★★★☆☆
Regional Integration	Ongoing initiatives to develop the East African Community	Ongoing developments among the East African Community countries will help ICT further along the road in terms of free movement of goods and services. Kenya can play a pivotal role in this, especially in the provision of skills and ICT related services.	↑	★★★☆☆
Vertical Focus	Increased sophistication among SMEs will graduate them to the next level of applications	Presently SMEs, which form the bulk of businesses in Kenya, and who are largely in services related industries,	↑	★★★☆☆

TABLE 5

Key Forecast Assumptions for the Kenya ICT Market 2012–2015>

Market Force	IDC Assumption	Impact	Accelerator/ Inhibitor/ Neutral	Certainty of Assumption
		have considerable ICT usage (even in terms of end users) and will soon be ripe to adopt more sophisticated ICT applications.		
Technology				
LTE/4G Networks	Government plans for a shared 4G network	Proposed roll out of shared 4G network may not have a significant effect on the consumption of data services but will help operators address QoS and other provisioning issues	↔	★★★☆☆
Cloud Computing	Cloud Services will start to take root	Given the changes in the channel, more so with telcos entering the enterprise ICT Services space and modeling most offering around a cloud model, businesses will have greater confidence working with telcos on their cloud strategies	↑	★★★★☆
Market Ecosystems				
Channel	There will be distribution channel challenges as vendors seek to have unique channels.	The limited pool of distributors and Tier I VARs will compound the ability of vendors to enter markets more competitively	↔	★★★☆☆
Residential	More low cost smartphones will be acquired in the market.	Smart phone usage will encourage increased data services consumption in the residential segment	↑	★★★★☆
Business	Businesses will gradually leverage the mobile platform to reach consumers.	Gradual efforts by businesses to deploy enterprise mobility and mobile applications will also foster more online trade and interaction with consumers	↑	★★★★☆

Legend: ★☆☆☆☆ very low, ★☆☆☆☆ low, ★☆☆☆☆ moderate, ★☆☆☆☆ high, ★☆☆☆☆ very high

Source: IDC, 2011

ESSENTIAL GUIDANCE

Actions to Consider

Promotion of locally owned distributors - There need to be efforts to grow the distributorship pool in the market, possibly with local and regionally owned players to offer greater diversity to any vendors that feel the need to have product and service exclusivity. As it were, the dozen or so distributors already handle products of various vendors who are simply keen to leverage their market reach, but should alternate players join the market, the distribution channel can undergo some transformations. Incentives for such players may go a long way in fostering greater local participation.

Foster Innovation: The present initiatives to incubate SMEs in ICT and provide seed funding for startups is yet to be measured but IDC believes that these initiatives will certainly help foster innovation especially in the younger population and more could be done by way of awareness creation as to how young people can start participating in a knowledge economy.

Thus a multi faceted approach, involving incubation, sensitization on technology trends and opportunities, coupled with relevant syllabi that provide the stepping stones to attaining this, will go a long way in providing a solid foundation for innovation.

Growth of Tier 2 players: While incubation initiatives may foster up starts to make an entry into the market as ICT players, perhaps the impact may be greater should Tier 2 players be suitably engaged to help them undergo consolidation by them acquiring smaller players, increasing their resource and skills base as well as their geographic presence.

Thus given the limited pool of players from which large enterprises, multinational companies and government can draw from in terms of expertise, resources and experience, there is need to nurture more local players to compete effectively with more established players that currently dominate the market. Such measures will both help create employment and nurture requisite skills.

Thus some focus should also be directed towards existing Tier 2 players, more so Kenyan owned ICT companies, to allow them greater access to business opportunities in large enterprises, government and multinational companies. As it stands, their limited resources, ability to retain skilled staff and limited geographic reach, serve to limit how much they can grow as businesses and employers.

Tier 2 companies, by virtue of not being foreign majority owned, if nurtured well and helped to become more robust players, can make good candidates for foreign direct investment by multinational MNCs and other global ICT investors that seek to grow their markets by investing in or partially acquiring local companies in order to enter the market and compete favorably with Tier 1 companies.

Protection of local jobs: In the survey that IDC conducted, more so to do with the issue of ICT skills and gaps, a common thread running through most discussions relates to a somewhat relaxed and unregulated stance towards foreign workers, more so when the required skills are locally available already. Such has been cited often as a reason that some positions are not accessible to Kenyans leading sometimes to brain drain when Kenyans seek better opportunities in neighboring countries or farther beyond.

Skills transfer: While in reality there may be various positions and skills that are not easily available locally, for those instances where foreign workers arrive in Kenya to

undertake various ICT tasks, there is need to monitor whether actual skills transfer takes place while at the same time ensuring a favorable environment for ICT investors and end users that require such services.

Last mile access and quality of service: From the results of the business and residential survey, as well as interactions with vendors, even though so much has been done to develop ICT infrastructure via international connectivity, national backbones, public access centers, the issue of reliable and affordable last mile access will continue to inhibit the propagation and usage of ICT.



Summary Recommendations

TABLE 6

Recommendations

Macro Area	Details	Action	Broad Recommendations
IT Skills	Increase output of number of skilled staff	Focus	<ul style="list-style-type: none"> • Awareness programmes at education institutions on: • business needs vis a vis courses taken; • type of skills in high demand for the next 3-5 years • current MIXTURE of skills needed • attract more people (especially youth and females) via promotional campaigns • Include middle & lower tiers of educational institutions to get connected
IT Skills	Enhance quality of skills	Focus	<ul style="list-style-type: none"> • Bridging programmes to involve academia, graduates and ICT Business leaders • Curriculum refresh and plan to do this regularly • Inclusion of basic soft skills courses as part of the curriculum • Establishment of Industry Standards, Accreditation and Ethics body • Specialized funding for ICT courses • Partner with training/ICT companies and ensure training availability
IT Skills	Protect local jobs & stem brain drain	Consider	<ul style="list-style-type: none"> • Mechanism to balance the need for expat labor vs skills transfer value • Incentivize Diaspora to reverse brain drain • More attachment programs and internships with technology companies to learn and apply
Residential Usage	increase e-government services awareness	Focus	<ul style="list-style-type: none"> • Awareness programmes on services currently offered and follow up on suggested online government services
Residential Usage	increase e-government services usage	Focus	<ul style="list-style-type: none"> • Leverage mobile operators to update citizens on government services vis SMS (subsidized cost for government for bulk SMS). • Deploy relevant USSD driven services for citizens
Residential Usage	ICT Adoption	Consider	<ul style="list-style-type: none"> • Content - solicit feedback on content of interest, especially from non-users • awareness on other content and services (business services, online trade, etc) • Content - review feedback on content most used and share with beneficiaries of digital content funds to take action/innovate/respond • Close collaboration with media to pursue the internet as a channel for delivery. • Address costs - See macro item COST below

TABLE 6

Recommendations

Macro Area	Details	Action	Broad Recommendations
			<ul style="list-style-type: none"> Access - see macro item INFRASTRUCTURE and COST below
Residential Usage	Cost of services/Devices	Focus	<ul style="list-style-type: none"> Prioritized subsidies of public access centers after evaluation Provide infrastructure support and services subsidies Re-animate local assembly initiatives through vendor PPP and with political will
Business Usage	e-government services awareness	Focus	<ul style="list-style-type: none"> Awareness creation on existing content and services Leverage on high internet adoption to interact with businesses more via various databases (e.g. customs, taxes, registry, immigration etc)
Business Usage	e-government services usage	Focus	<ul style="list-style-type: none"> Roll out more services and solicit feedback on what is needed
Business Usage	Skilled Staff	Monitor	<ul style="list-style-type: none"> See SKILLS macro
Business Usage	ICT Adoption	Monitor	<ul style="list-style-type: none"> Cost of services and Quality of Services - need to sensitize business users of their rights in collaboration with the sector regulator. Collaborative campaigns.
Channel	Vendor confidence & investment	Monitor	<ul style="list-style-type: none"> See Skills Macro Above
Channel	Foreign Investment	Focus	<ul style="list-style-type: none"> See SKILLS Macro above More focused marketing and local promotional events that explicitly illustrate strengths Nurture Tier 2 players as possible partners through capacity building, seed funding, preferential treatment in government procurement
Channel	Distributors	Consider	
Channel	Tier 1 VAR	Monitor	
Channel	Tier 2 VAR	Focus	<ul style="list-style-type: none"> Develop plans to help elevate Tier II players into Tier I players Business Incubation Initiatives Capacity building outside urban areas and create employment
Infrastructure	Last Mile Access	Consider	<ul style="list-style-type: none"> Pursue CCK about USF plans and enjoin KITCB in discussions on ICT Access Gaps Collaborate with CCK to sensitize operators on USF
Infrastructure	Backbone/Backhaul - remote areas		<ul style="list-style-type: none"> Develop a framework under which PPPs can be started and depart from the present scenario where PPPs are covertly commercially oriented, ad hoc, bereft of synergies

TABLE 6

Recommendations

Macro Area	Details	Action	Broad Recommendations
			<p>and leveraging value.</p> <ul style="list-style-type: none"> Consider wireless/satellite technology elements in national infrastructure plans for economically unviable areas to mix with Wi-Fi and other technologies for last mile access
Infrastructure	Power		<ul style="list-style-type: none"> Offer subsidies (and reward schemes) to operators with renewable energy focus or innovation that address power issues
Cost	Internet Services	Consider	<ul style="list-style-type: none"> Further subsidize public access areas, secondary schools
Cost	PC Costs	Consider	<ul style="list-style-type: none"> Revive local assembly initiatives (e.g. Nigeria with Zinox)
Cost	Handset Costs (Smart/WAP)	Consider	<ul style="list-style-type: none"> Partnerships with vendors of low cost devices, tap into local application community

Source: IDC

TABLE 7

Actions by Macro Areas

Intervention Type	Macro areas addressed					
Financial	Infrastructure	Skills		Residential	Channel	Cost
Private Public Partnerships	Infrastructure	Skills		Residential		Cost
Regulation	Infrastructure		Business	Residential	Channel	
Awareness		Skills	Business	Residential		
Content		Skills	Business	Residential		
Curriculum reform		Skills				

Source: IDC

LEARN MORE**Related Research**

APPENDIX I – INTERNATIONAL BENCHMARKING

TABLE 8

Benchmarking

	Kenya	RSA	Nigeria	Rwanda	Ukraine	Philippines	Egypt	Morocco
International Internet Bandwidth - Mb/sec per 10000 population	4.2	0.7	0	0.035	2.1	1.1	12	16
Computers per 100 inhabitants	1.4	8.4	0.9	0.3	4.5	7.2	3.9	5.7
Proportion of households with a computer	0.063	0.17	0.12	0.025	0.212	0.144	0.28	0.32
Total Internet user penetration	0.225	0.14	0.2834	0.12719	0.333	0.291749	0.295	0.414201
Internet subscribers percentage of total population	0.084	0.123	0.0515	0.04332	0.23	0.02947	0.267	0.025078
Internet Access Tariff - Broadband	39.8	26.9	105	88	7.2	21.5	8.2	16.8
Internet Usage Tariff - Dial Up	\$29.5	10.9713	63.29	61.25	\$13.4	10.23	NA*	18.33
Price of Internet Access for 512 Kbps	\$22	\$51	83	1050	NA	10.5	\$43	24
Proportion of households with internet access	0.022	0.0883	0.001	0.0147	0.207	0.18	0.314	0.162
Extent of Business Internet Use - WEF Indicator	4.77	5.14	4.5	1.75	4.72	4.5	4.72	4.6
ICT Use and Government Efficiency - WEF Indicator	4.35	4.07	3.8		3.56	3.6	4.43	4.2
Government Online Service Index - WEF Indicator	0.24	0.31	0.1	0.17	0.35	0.39	0.53	0.24
Laws Related to ICT - Laws relating to the use of information technology (electronic commerce, digital signatures, consumer protection) - WORLD BANK Indicator	3.9	4.8	3.4	NA	3.4	3.6	3.4	3.6
Number of BPO jobs	12,500	38,300-40,000	NA *	NA *	NA *	600,000	NA *	100,000

TABLE 8

Benchmarking

	Kenya	RSA	Nigeria	Rwanda	Ukraine	Philippines	Egypt	Morocco	
Government Success in ICT Promotion - WEF Indicator	4.44	3.94	4.2		3.81	3.8	5.02	4.2	
Pop in millions 2009	41.1	49.01	155.2	11.4	45.1	101.8	82.18	31.9	

Source: IDC

APPENDIX II – KEY PERFORMANCE INDICATORS

TABLE 9

Key Performance Indicators

Description	Indicator
Volume of international traffic (Mbps)	20,209.56 Mbps
International Internet bandwidth, Mbps per 10,000 population	4.2
Computers per 100 inhabitants	1.4
% of households with a personal computer	0.063
Total number of Internet Subscriptions	4716977
Total number of internet users	10199836
% of population with Internet Access	0.259
Internet subscribers as % of total population	0.115
Total number of main fixed lines (fixed lines plus fixed wireless)	380748
Total Fixed line penetration (per 100 inhabitants)	0.97
Total number of mobile subscriptions	24968891
Total penetration of mobile services (per 100 inhabitants)	0.632
Total teledensity	0.642
Number of .Ke domain names	18000
% of organizations with a website	0.9
% of full time employees who use internet for work at least once a week	0.5214
Satisfaction of residents with government services received through electronic delivery	46% satisfied or very satisfied
Satisfaction of organizations with government services received through electronic delivery	36% satisfied or very satisfied
Intellectual property protection (Out of a 1–7 (best) scale)	2.9
Software Piracy Rate	0.79
Commercial value of unlicensed software	US\$ 85 Mn
Intellectual Property Protection Ranking	94 (out of 130 countries)
Are Kenyan laws adequate to address legal matters related to electronic transactions such as cybercrime and online dispute resolution?	52% of Organizations Disagree
Is enforcement in Kenya with regards to intellectual property and electronic transactions adequate?	59% of Organizations Disagree

TABLE 9**Key Performance Indicators**

Description	Indicator
Organization is comfortable with transacting online for business purposes from the point of view of privacy and data protection	65% of Organizations Agree
Number of operators buying capacity at the landing station or Number of operators with access to the landing station	11 major operators & others
Global Networked Readiness Index 2011 Ranking	81 (out of 139)
Price of Internet Access for 512 Kbps	US\$ 22
Fixed broadband Internet access tariff (\$ per month)	US\$ 39.8
Dial up Internet tariff (\$ per Month)	U\$ 29.5
Number of BPO jobs	12500
Number of BPO seats	5000
Number of educational institutions connected to national network	60
Number of educational campuses connected to national network	74
Number of students connected to broadband	176000
Number of universities connected to broadband	15
Number of networked PCs per 100 students	6
Number of Government institutions connected to the government virtual network	64 Ministries and departments connected to a capacity of 80Mbps
% of Government organizations connected to Government virtual network	0.56
Share of documents with security classification in Government Organizations	0.34
% employees with email account in the Government Organization	0.43
ICT use &Government efficiency (Out of a 1–7 (best) scale)	4.3
% of archived High Court registry digitized	0.2
Volume of work digitized in the Judiciary	216,000 case files or 60,000,000 pages
% employees with email account in the Judiciary	0.5
Number of government domain names (.go.ke)	344
High-tech exports as % of goods exports	0.021
Government Success in ICT Promotion	4.4
Government Online Service Index, 0–1 (best)	0.24

TABLE 9

Key Performance Indicators

Description	Indicator
E-Participation Index, 0–1 (best)	0.23
Computer, communications, & other services imports, as % of services imports	0.263

Source: IDC, CCK, e-Gov, WEF, World Bank, Kenic

DRAFT

APPENDIX III- PROJECT BACKGROUND

With an aim to improve service delivery, transparency and efficiency, the project wishes to conduct a two phased survey (an initial phase I and a follow-up by phase II, one year later)as per the scope of the services below, as part of the overall monitoring and evaluation plan to:

- ☒ Establish data based information for assessing equity of ICT access, penetration and usage;
- ☒ Establish the baseline data for the M&E ICT indicators tracked by the KICTB;
- ☒ Identify the current size of Kenyan ICT market for 2009, broken down by sub-segment such as PC/Servers/Storage/Software/Services/Telecom Services;
- ☒ Understand the growth trends of the ICT market and the role of Kenya as a hub of ICT in the region;
- ☒ Understand the role of Local Kenyan IT companies in the growth of ICT in the country and key challenges towards their development;
- ☒ Identify criteria to create a benchmark for the development of ICT in Kenya in comparison to surrounding region;
- ☒ Understand the current and planned usage of various ICT technologies in critical industry sectors;
- ☒ Understand the current supply, usage and future demand of different types of IT skills by organizations in Kenya; and
- ☒ Analyze the current fulfillment strategy employed by organizations in Kenya of their IT skill needs, evaluation of the supply of IT skills in the country and thereby the expected gap in the coming years.

Project Benefits

The project deliverables will engender a range of benefits supporting the primary and secondary project objectives. The major benefits can be summarized as:

TABLE 10**Project Benefits**

Level	Benefit
Benefits to the IT Industry	Understanding the current usage and penetration of the IT within Kenya
	Identifying lucrative IT industry opportunities for Kenya and developing a strategy to increase adoption of progressive IT technologies within the country
	Contributing to development of information society in specific and Kenya as a hub for ICT in general.
Benefits for Kenya ICT Board	Understanding the current state with regards to ICT barometers and growth trends
	Understanding major challenges and opportunities for these areas
	Understanding Kenya's position with regards to its peer countries
	Gaining ownership of key IT topic areas and spearheading the implementation of initiatives in these areas in conjunction with Government empowered and private sector associations
	Understanding the current availability of ICT skills and the gaps
	Reinforcement of Kenya ICT Board's thought leadership and custodian role
Benefits for other IT stakeholders	Understanding the state of IT within Kenya
	Understanding the key challenges of ICT in Kenya and analyze how to develop Kenya as the ICT Hub in the region
	Creation of programmes (based on the results of the study done by IDC) to augment the local Kenyan ICT industry and the ICT skills available.

Source: IDC

Project flow

IDC proposes a structured research-based consulting engagement to address Kenya ICT Board's specific requirements. As per IDC's interpretation of the RFP, we propose the following flow for this engagement:

- Stage 1: Project Kick Off
- Stage 2: Creation of Inception report
- Stage 3: In-depth Market Analysis and Research
- Stage 4: Analysis of results and creation of the final report
- Stage 5: ICT Board Results Workshop
- Stage 6: Phase I project review and Phase II finalization.

Project Outputs

The major outputs of the Project will be the following:

- Inception report

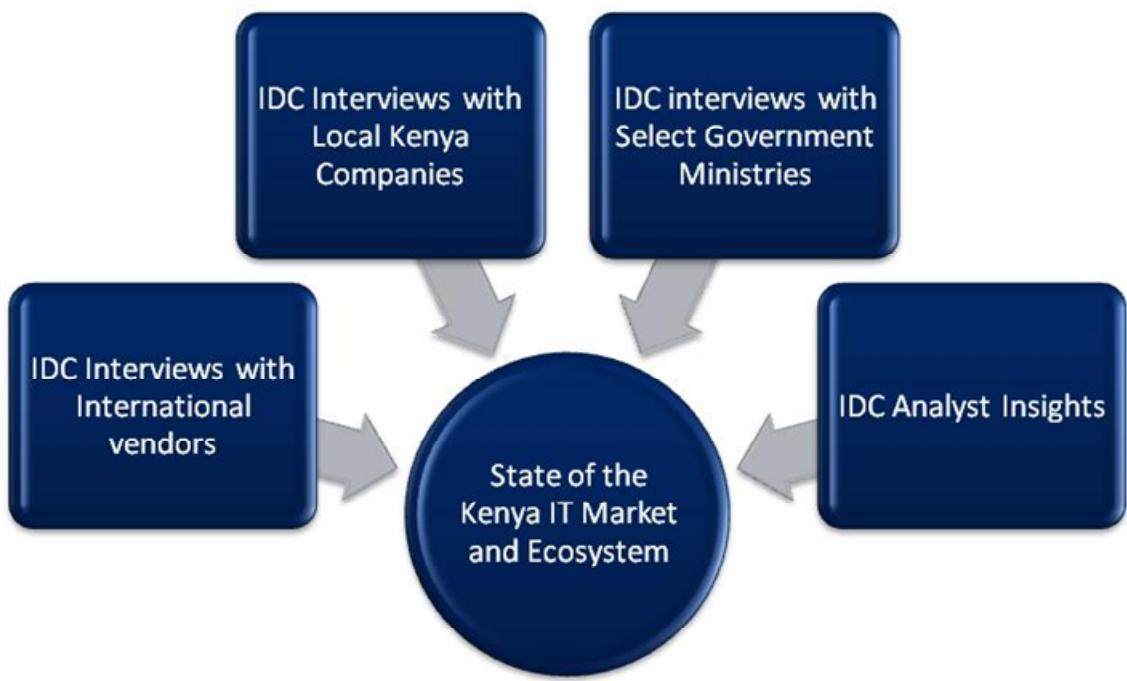
- ICT Ecosystem report
- Benchmarking table
- KPI table
- IT skills report
- Final reports
- Delivery workshop



APPENDIX III- METHODOLOGY

FIGURE 34

Ecosystem



Source: IDC, 2011

In-depth Market Analysis and Research

3 A: Understanding of the State of IT in Kenya and Local Kenya IT ecosystem

Description: The purpose of this module is to understand the current state of IT in Kenya and the role of Kenya as an ICT hub in the region. This module consists of two distinct components:

Kenya ICT ecosystem analysis

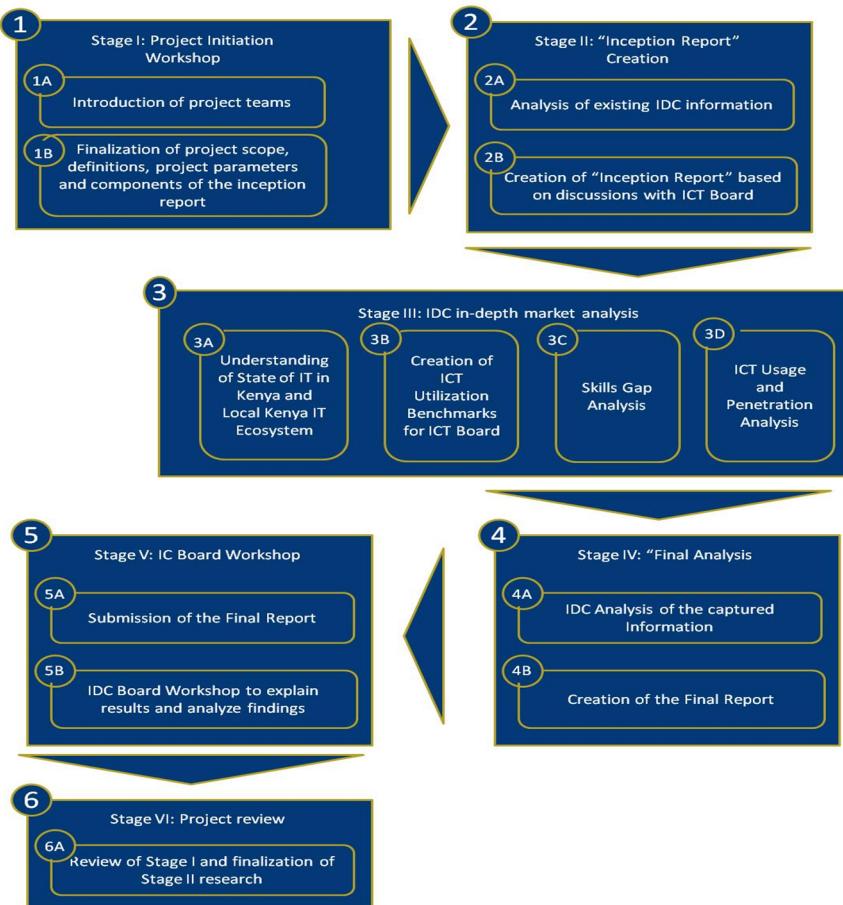
Scope: The objective of this module is to understand the following:

1. Analyze the size and 5 year growth forecast for the Kenyan ICT industry.
2. Breakdown of the ICT industry by multiple categories such as Hardware(PC's/Servers/Storage)/Software/Services/Telecom
3. Understanding the drivers and inhibitors of the ICT investments in Kenya
4. Understanding the key sectors driving ICT investments
5. Understanding the role of local Kenya ICT companies within the Kenyan ICT market ecosystem
6. Understanding the key challenges faced by Kenyan ICT Companies in developing and support needed from the government

Methodology: The analysis will be derived from the following sources:

FIGURE 35

Methodology



Source: IDC, 2011

- ***IDC Analysts Interviews:*** IDC Analysts will conduct a large number of interviews with all the key players in the Kenya IT market as showcased below:
 - **ICT Vendors:** IDC Analysts will conduct interviews with all the major vendors for ICT Products and Services to derive a comprehensive understanding of the Kenya ICT Market.
 - **IDC analysts** will conduct in-depth interviews with Kenyan ICT Providers (expected number of interviews 7-10) and Channel Players. The objective will be to understand the value proposition of the local Kenyan companies and identify the challenges being faced by them to grow within the industry. Another key aspect for the discussion with the Kenyan companies would be to understand the support they would need from the government. The questionnaire to be used for these interviews would be prepared by IDC and approved by the ICT Board before being launched in the market.
 - **Government Ministries and ICT Bodies:** In addition to the vendors, IDC will be also be having detailed discussions with the various government ministries and ICT bodies charged with the development of ICT in the country
 - **Existing IDC Research:** IDC has a significant amount of information on the Kenyan IT Market. IDC Analysts will use the available information in addition to the additional information being derived from the project to provide The Subscriber with a comprehensive analysis

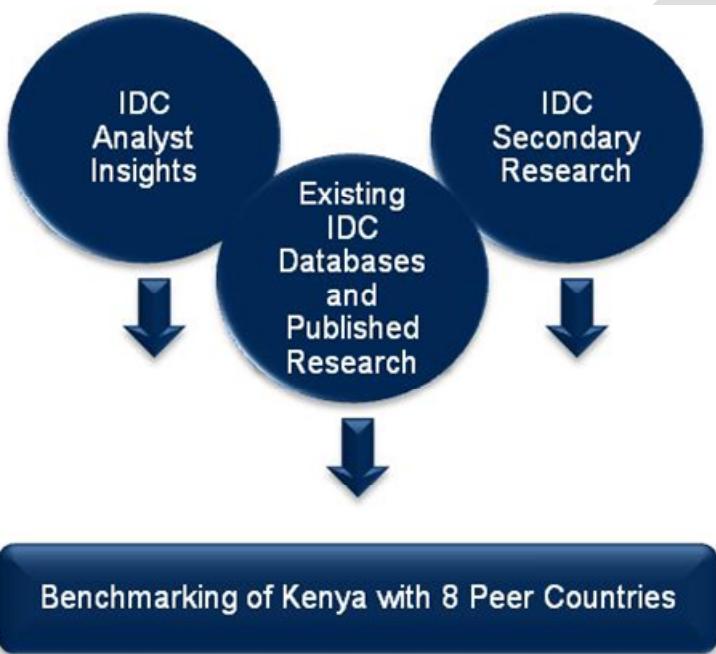
Benchmarking of Kenya with key peer countries

Scope: The objective of this module is as follows:

1. Benchmarking of Kenya with regards to key peer countries.
2. The countries to be selected would be Kenya, Nigeria, Uganda, Tanzania, Ethiopia, South Africa, and 1 additional country

FIGURE 36

Benchmarking



Source: IDC, 2011

Methodology: The analysis to be derived from the benchmarking study would be:

To provide Kenya ICT Board with a comparative analysis of Kenya with its peer countries such as Kenya, Nigeria, Uganda, Tanzania, Ethiopia, South Africa, Egypt and 1 additional countries (to be discussed) with regards to the ICT industry. IDC will benchmark key parameters such as installed base of PC's, IT market developments, comparative analysis of the local markets and growth projections. The objective would be creating a SWOT analysis of Kenya in comparison to these countries. The parameters to be used for the benchmarking will be based on available IDC research and additional secondary research as necessary.

3 B: Benchmarking of KPIs of Kenya ICT Board

Description: Establish baseline data for M&E ICT indicators to be tracked by KICTB

Scope: The scope is to create quantitative indicators/data points for the list of parameters as listed in Appendix H of the RFP shared by ICT Board.

Methodology: IDC proposes to derive the requested information using a combination of secondary research and interviews with identified bodies in Kenya. These would be bodies such as e-Government Directorate (Lands, Judiciary and Company Registry), Kenya Education Network Trust (KENET), Communication Commission of Kenya (CCK), Business Processing and Outsourcing (BPO) Industry and the Ministry of Information (MoI). IDC will also conduct comprehensive secondary research to

derive the requested information from international accepted resources such as ITU, UN, World Bank etc. Identification of a quantitative parameter for each point listed on Appendix H will happen in a mutually agreeable manner during the Stage 1 and Stage 2 of the proposed project. The deliverables would be limited to information available with IDC Knowledgebase, information derived from interviews with the stated government bodies and add on secondary research.

Note: For this module, IDC requests the assistance of the Kenya ICT Board for the following:

1. Sharing of key contacts in government ministries from the Kenya ICT Board
2. Provision of a letter indicating your support and thereby a request to share information by the reader of the letter

3 C: Skills Gap Analysis

Description: A key initiatives of ICT Board is to understand the current usage, availability of ICT Skills in the country.

Scope: The objectives for this stage are:

1. Understand the current demand of ICT skills in the country
2. Analyze the current fulfillment of ICT Skills in the country and breakdown between local Kenyan nationals and expatriates
3. Identify the supply of IDC skills in the country and assess the key gaps

Methodology: IDC proposes to conduct a comprehensive analysis using a multitude of resources to derive the requested information. These are identified as follows:

Insert Figure – **SKILLS GAP ANALYSIS**

FIGURE 37

Skills Gap Analysis



Source: IDC, 2011

End-user interviews: IDC will conduct in-depth research with a representative number of end user companies to understand the following:

- Current usage of IT Skills and future demand
- Plans given the influx of managed and cloud services
- % of National Kenyans providing IT Services as compared to expatriates
- Understanding of preferences of choosing IT specialists
- Understanding IT training budgets and areas of investments
- Key challenges and pain areas when it comes to IT support

IDC will be interviewing ~150 organizations across identified (top 3-5) sectors in Kenya. IDC will prepare the questionnaire which will be approved by ICT Board before being rolled out in the field.

- Interviews with Educational and Training Institutions: Analysts will also interview the educational institutions at a university and vocational level to understand:

- Current student strengths and enrolment trends within technology areas
- Mapping the demand of specific skills and imparting of the same to students
- Availability of required trainings and drivers/inhibitors/pricings for the same

IDC will be interviewing ~10 universities and vocational institutions

- Interviews with IT Vendors and Special Programs: Analysts will also interview key IT vendors such as Microsoft/Cisco/Oracle etc to understand:

- Programs for providing specialist trainings to IT professionals
- Understanding of the gaps in terms of skills availability and impact on business

IDC will be interviewing ~5 technology companies

3 D: ICT Usage and Penetration analysis

Description: With a view of understanding the ICT Usage and penetration within the country, IDC proposes to conduct extensive and statistically representative number of interviews to derive the required results.

FIGURE 38

Usage and penetration Analysis



Source: IDC, 2011

Scope: The objectives for this stage are:

1. Understand the current usage and penetration of ICT products and services in the country
2. Familiarity of ICT Products and services and perceptions with regards to the benefits to be derived from the same.
3. Understand the key drivers and inhibitors towards usage of IDC products and services
4. Analyze the breakdown of ICT usage and penetration broken down by demographic parameters such as Region/age/income etc
5. Understand the current level of satisfaction with regards ICT spending and prices being charged.

IDC proposes to conduct 1000 telephonic interviews. IDC will prepare the questionnaire for the research which will be approved by ICT Board before being rolled out in the field.

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