AGENDA AND OUTLOOK: HUMAN RESOURCE DEVELOPMENT FOR ICT IN NIGERIA

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One of the obvious gains of the economic reform programmes has been the vast improvement in telecom infrastructure[1] over the past few years. However real development goes beyond infrastructure; people come first. How well is Nigeria developing the manpower and human resources required to apply Information and Communications Technology (ICT) for development? What should the agenda be for developing human resources that can compete globally in the digital economy? The nation certainly has a lot to do to get citizens to where they should be. A nation of 140 million people[2] must know how to harness this strength. Forget about the summits making headlines, or paper policies. Such strategies may make sense on paper; in most cases this has not translated to any real development on the ground. Such projects and noise seem to mean more of "growth without development".

Setting the Human Resource Development (HRD) agenda requires identifying ICT capacity and education (skills, knowledge) needs. Which existing avenues are being used to close such expertise gaps? The demand for ICT-related skills is not limited to the ICT sector but arises in all areas of economic activity and society. In fact for an inclusive information society, digital literacy skills are now life skills required by all. In addition to basic digital literacy, the human resource needs gap in ICT clearly indicates the demand for ICT professionals, such as software engineers, telecom engineers, web developers, support technicians and other technical specialists, as well as people equipped with e-business skills and ICT/e-business entrepreneurs.

ICT is a knowledge industry that offers a variety of ICT learning opportunities in the public and private sectors. The wide range of educational routes for developing ICT skills include training courses, formal degree programmes, certification programmes, e-learning (web/computer-based "Self-Learning"

programmes) and work experience opportunities.

IT Education – Basic, Academic, Certification

Basic Information Technology (IT) education (often called computer appreciation) is provided in some schools (primary and secondary). But most people acquire their digital literacy skills either on the job or through courses offered by private training companies. Formal degree and diploma education via higher education institutions (universities, polytechnics and colleges (public and private) is the traditional route many travel to begin their career as ICT professionals. Traditional academic programmes include those in computing, telecom, communication and electrical/ electronic engineering. Computer Science is the most popular route for many. The emphasis of formal education programmes is deep understanding of key technologies (core conceptual foundations) through theory, design, development, applications, assessment and practical exercises.

Private sector training centers, however, dominate in the supply of work-based ICT training and certification. In such institutions, admission requirements are not as stringent as in the formal setting. Though this can be a mixed blessing, the availability of such training centers opens up opportunities for those traditionally excluded in the formal environment. Duration for private sector training and certification courses, outside the formal education sphere, is often shorter, unlike lengthy academic

programs. Attention is on imparting in-demand skills in specific areas. IT certifications[3] fit neatly into this area. Instead of the traditional academic focus, globally recognised certification in an area is meant to be an external validation and measurement of technical work-based skills and knowledge.

Though professionals with formal education background in technology use certifications to enhance their career opportunities, many who also invest are in fact school leavers, unemployed graduates and career changers. These individuals see better prospects in ICT and use training and certification to get into the ICT profession. Even though e-business expertise is becoming a key requirement for management and leadership because of the critical role ICT plays in business, very few institutions offer comprehensive e-business programmes. Opportunities for acquiring e-business expertise are not as well known and organised as education for other ICT areas. Most people who acquire e-business knowledge do so not through well-structured programmes but through individual research, the Internet and a wide variety of self-learning efforts.

Issues, Challenges, Environment

Formal education broadens the mind and exposes students to a wide spectrum of concepts - theoretical and practical. It challenges the student with academic theories, experimentation, research and a broad knowledge of technology. However, in using ICT for development and building the manpower required to develop the

knowledge-driven economy, the issue is beyond acquiring degrees, having a good intellectual background and passing exams. Can the graduates of these institutions compete globally? Can the products meet today's industry and academic needs? Will they be able to use such knowledge to uncover new business and social value?

What is Competence?
Competence is measured in terms of meeting identified ICT human resource needs for development. In this regard formal education sector's massive disconnect with industry is a major challenge. Most academic programmes lack solid workplace/ business fundamentals and focus.

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Linkages with the private sector for the development and exploitation of relevant research are also missing. Formal education has to do more with improving the availability of skills necessary to compete globally as well as skills demanded by industry. Presently graduates are not equipped to contribute from day one. In addition, the entrepreneurship culture and attitude is lacking as most graduates still prefer white collar jobs. This certainly constitutes significant hindrance in closing the work-based skills gap in public and private sector organisations. Unfortunately rather than concentrate on improving the students' ability and capacity to contribute, worship on the altar of qualification is commonplace. Too many of such institutions and their students are bogged down by the "education-means-certificate-meal ticket" mentality.

Training and certification have become popular educational routes not only because of opportunities provided for those with or without the formal educational background in ICT, but because they are work-based. In addition such credentials are valued and recognised by industry (locally and globally). Unfortunately though the certification emphasis is on acquiring practical ICT skills and knowledge, cramming to pass certification exams is common. The "Paper certification" syndrome is an offshoot of the earlier mentioned mindset about education and qualifications.

The Barrier called Access

Whichever educational route is employed, the impact of education in addition depends on other HRD issues such as career counseling, work experience and other important non-tech skills. Existing educational options are able to meet ICT educational needs for computer literacy, software development, Web design, Technical support and similar

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basic requirements. But the coast is not clear – access is a major hindrance for the majority. Let us face it ICT is nothing without access. We cannot underestimate the importance of access. To get the benefits of ICT, you must have access. Availability or physical access is not enough. Access means usage - ability to utilise it, ability to work, learn, interact and create with the information and resources provided.

In addition, ICT skills are generally unevenly spread in society – some areas experience shortage, while others experience oversupply. For example, there are shortages of experienced professionals with the right combination of technical and soft skills (including team work, project management, business development, entrepreneurship and leadership). And there are huge gaps where exposure and experience in complex areas are required.

Due to infrastructure and personnel limitations, most educational institutions cannot provide

learning for the use and deployment of specialised complex and technologies and applications. Organisations (public and private), for example GSM companies and Government agencies, with such needs recruit experienced personnel from abroad or conduct in-company training programmes. Recruiting experts from abroad in a "cut-and-paste" manner is not helpful for the growth of the local ICT sector and indigenous human capital development. Furthermore, it should be noted that though legal and regulatory issues and the application of best practices are important in attracting investment, the absence or low availability of required ICT skills in the environment erects barriers preventing local and foreign investors from setting up ICT and ICT-driven enterprises.

In this light the brain drain is a human capital development problem in most African countries, and Nigeria is no exception. In developing countries even with the right skills life can be tough and the future unpredictable for the professional. The world is a global village with massive demand for ICT skills. People will always move to countries with promising prospects. Having such skills can serve as "passports" to more lucrative and satisfying international job opportunities.

The Divides

Various educational avenues have no doubt produced growth in the area of human resource development for ICT. But how widespread, how far reaching, how inclusive has human resource

development been? Internal divides in society affect human resource development. In assessing ICT human resource needs and setting the HRD for ICT agenda, these divides must be taken into account.

Rural/Urban. For instance most real ICT training and acquisition of skills takes place in the urban areas. How many in the rural areas use ICT or have any knowledge of ICT? Are rural folks not invited to the party? How much ICT infrastructure is in the rural areas? It is an urban affair.

Illiteracy. The present educational options cannot open roads for the illiterate. Where illiteracy is widespread, ICT human resource development starts with quality basic education. Illiteracy makes it impossible for many to appreciate or take advantage of the benefits introduced by ICT.

Informal sector. The small business/informal sector is also not involved in the massive development and acquisition of ICT skills. How many in the informal sector - market men and women, small and medium-scale enterprises (SMEs), cottage industries, etc - use ICT, other than mobile phones, to drive their business? Since the informal sector make up the majority in the economy, can Nigeria truly develop a knowledge-based society if there is no development of ICT human capital in the informal sector?

Women in ICT. There are also gender issues. In many societies, women are still unable to realise their potentials. Goal 3 of the Millennium Development Goals (MDGs)[4] is to: "Promote gender equality and empower women".

Because of its unique benefits, ICT has been recognised as a tool for empowering men and women. However, is ICT hurting or helping women? Fewer women are developing the ability to access and utilise ICT. Representation of women in ICT is quite poor. Less than 20% of women account for ICT roles and represent less than 5 per cent of the total female employed population[5]. There is the gender digital divide - why are so few women working in the ICT sector, how many women use ICT in their business or profession? Without proactive measures ICT may actually be furthering gender inequality.

Poverty. It is impossible to tiptoe around the poverty trap. Developing the ability to access and utilise ICT for development requires the investment of resources. Costs are coming down but ICT still is not cheap for the vast majority. For people who continually battle to make ends meet ICT is a luxury. Penetration of ICT and the development of quality human resources will remain a mirage if ICT resources and education remain affordable only to the urban rich. In addition to capacity building issues mentioned, the outlook for HRD for ICT in Nigeria will depend on how the divides are addressed. In developing the knowledge society in Nigeria, the agenda should ensure that a sizable number (the majority) of the populace are developing the skills and abilities that will enable them learn, live and work to their full potential.

Agenda and Outlook

Nigeria must develop and implement proactive and pro-people HRD for ICT policies. In Nigeria the National Information Technology Development Agency (NITDA)[6] is responsible for developing and implementing ICT policies. Such policies should be based on realistic and meaningful ICT for development goals. There is a need for clear policy direction on HRD for ICT. Learning opportunities and capacity building initiatives should not be dictated by globalisation fads or by the commercial concerns of training providers.

Setting ICT for development goals is about taking advantage of digital economic opportunities to meet national needs. Priority areas to consider include Software development, ICT services, ICT enabled services, business process outsourcing, and hardware. HRD policies should identify the skills required to meet such goals, as well as programmes for promoting and enhancing opportunities in capacity building. The agenda will only make sense by addressing issues such as cost of ICT education, infrastructure, brain drain, women in ICT, open source, research, etc. For example, it should contain measures to encourage and support local software development and provide incentives for investing in software development training. Creative financing should be used to support students, teachers and educational institutions in such areas.

Multi-stakeholder collaborative initiatives are required to make the policies meaningful and grounded in reality. In particular private sector providers in ICT education and employers need to have more input into policy formulation and critical strategy areas (licensing, regulation, certification, research) that affect ICT

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education. Though active private sector participation is required there must be genuine commitment and leadership on the part of government to follow through on plans and implementation of policies. Initiatives should focus on areas with the greatest potential for immediate and long-term socio-economic growth – the knowledge gaps, the uneven spread of skills, the divides, attracting investment, as well as opportunities in domestic and international markets.

Awareness

How can ICT support poverty eradication, wealth creation, education and job generation? Enhancing public awareness and understanding of the benefits of ICT should be high on the agenda. The knowledge culture gets people interested in thinking, learning, and facing issues with ICT and knowledge. The agenda should invest in developing a culture that embraces constant change, knowledge hunger, lifelong learning, creative thinking and entrepreneurship.

Lifelong learning is imperative because of the fast pace of change

associated with ICT. There is no fullstop in learning as everyone needs to improve skills or acquire new ones on a regular basis. Awareness should also highlight the linkage of ICT with poverty reduction, job and wealth creation, as well as career opportunities in ICT, career counseling, opportunities and challenges associated with ICT. There is a need to drive focus learning away from the "qualification/certificate" mentality. Opportunities and reward in ICT are based not just on qualifications but also on merit - skills and achievement. Attractive, realistic and creative conditions for professionals should be used to stem brain drain. Specific policies should address tapping the talents of Nigerians in the Diaspora.

The best way to change the thinking and culture is to pay attention to local needs and the reality of the people. The needs of SMEs in particular should be addressed. Local language approaches, content and ICT localisation should be employed. This promotes inclusiveness, while reducing the impact of illiteracy.

Increasing awareness should be through the use of popular figures, sharing of best practice, media campaigns, public campaigns, public and private-sponsored training, and workshops and conferences. Putting critical Government services online also plays a major role in stimulating awareness and demand.

Educational System

Nigeria's educational system needs to be restructured and refocused to meet the HRD for ICT needs – the immediate and the long term. Working with the appropriate

curricula is imperative. Capacity building in education (students, teachers, administrators, infrastructure) is paramount. Educational institutions should be equipped to use ICT not just for imparting ICT expertise but for learning, teaching, research, contribution, creativity, social networking and administration.

It is important to enhance existing ICT training capacity by supporting education providers and encouraging new entrants. The agenda must encourage massive local and global ICT skills acquisition. Support can help in widening the scope of programmes offered; especially to include programmes for specialised complex applications and those combining business and technical skills. In addition creative e-learning options should be promoted.

At all times policy makers should keep their eyes on the ball – concentration should be on initiatives and incentives for meeting identified HRD for ICT needs. In particular formal sector educators must have an understanding of work-based research and learning needs. Partnerships and regular communication between employers and educational institutions offering ICT programmes, through work study, research and similar programmes, make the courses more relevant. Employers in the private and public sectors should work with educational institutions to provide work experience opportunities such as apprenticeship schemes, industrial programmes and internships. Collaboration between R&D Institutions and the private sector

will in addition help in exploiting research findings.

Rural

Improving ICT presence and infrastructure in the rural areas will assist in closing the rural-urban divide. Bringing the rural populace into the digital loop can best be

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achieved with Public-Private partnerships. The right incentives encourage the establishment of telecentres, training centres and technology parks in the rural areas. Incentives should include funding, patronage, constant power supply, subsidised office space, security, reduced cost of infrastructure and tax benefits.

Software Nigeria

Software is high on the knowledge economy's value chain with low entry requirements. Using its large populace Nigeria should capitalise on the Software opportunity to promote development. Ways of stimulating interest and demand of the local market for software products and services need to be explored. Organisations and initiatives, such as the Nigerian Software Development Initiative

(NSDI) and the Institute of Software Practitioners of Nigeria (ISPON)[7], should be involved in such moves. In the knowledge economy the software presents interesting high value opportunities that can have widespread benefit within society and the economy. Exploiting global software opportunities will depend on the support received by Local software industries. Opportunities and strategies in open source offer possible cost benefits and local ICT capacity development.

Content, e-business

More individuals and businesses need to embrace e-business[8]. SMEs and traditional manufacturers need e-business knowledge to perform better and be globally competitive using ICT. E-business means applying new innovative ways of reducing costs, earning revenue, expanding market reach, managing information, participating in value networks and promoting products or services.

New "born-online" opportunities are created through the electronic delivery of products and services (such as publications, software, music, video, consulting, education, etc). There are tremendous opportunities for innovative startups and entrepreneurs. Women, youth and small businesses need to develop the knowledge and skills required to tap into these opportunities. For example, online digital content (such as films, TV, publishing content, radio, music and games) is a big, untapped market attracting global attention and growth for the promotion of culture and market opportunities. Creative, online content is expected

to grow by over 400 per cent in five years in Europe alone, according to a 2007 European Commission[9] study.

The Right Approach

The agenda for better human resources in Nigeria should be focused. Implementation of specific policies and initiatives must be combined with commitment at the highest levels of government. It is about improving people's lives. It is about enabling people to realise their potentials. As human resource initiatives are being encouraged, coordination is also necessary to avoid waste, duplication and

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contradictions. Comprehensive human resources development planning is important. Accurate and up-to-date statistics aids planning and decision-making. Furthermore, evaluating the impact of HRD for ICT policies requires constant monitoring.

HRD for ICT requires the right approach. This is key for real growth. The agenda for HRD for ICT is about fostering the development of people and knowledge societies. In the words of, Mwalimu Julius Nyerere, "Development is for Man"[10]. ∎

Notes

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