



Distribution: GENERAL
E/ECA/CODI/4/7/Add.2
E/ECA/WSIS.2/2

25 April 2005

**UNITED NATIONS
ECONOMIC AND SOCIAL COUNCIL**

Original: English

ECONOMIC COMMISSION FOR AFRICA

Second phase of the
World Summit on the Information Society (WSIS II)

Tunis, Tunisia
16-18 November 2005

**WHAT MAKES INFORMATION A STRATEGIC ECONOMIC RESOURCE:
THE ROLE OF LIBRARIANS AND OTHER INFORMATION PROFESSIONALS
IN AFRICA***

* Paper originally presented at the Fourth Meeting of the Committee on Development Information (CODI IV), Addis Ababa, Ethiopia, 23 – 28 April 2005

Introduction

1. The purpose of this paper is to analyse the factors which make information a strategic economic resource in the African context. The discussion is conducted against the backdrop of the role of librarians and other information professionals. The paper is subdivided into the following main sections: the information and knowledge pyramid, information as an economic resource, bridging the knowledge deficit facing Africa, innovation and knowledge production, and the role of libraries and information centres in economic development. The analysis raises the issue of the relationship between information and knowledge and the value adding process required to convert the former into the latter. The transition of Africa to an information society is also discussed and it is noted that there may be two models on how this can be achieved, the evolutionary model dominated by information workforce which takes time to evolve, and the Internet centred model which may allow leapfrogging to occur. African libraries can play a more pivotal role in the second model than in the evolutionary model.

2. The paper argues that the use of information and knowledge as an economic resource has to be anchored to a strong innovation and knowledge production programme in respective African countries. At present, most African countries spend very little of their GDP on innovation and knowledge production. It is stressed that Africans must think for themselves, to produce relevant knowledge that will address current and future development problems. The paper concludes that libraries and information professionals need to reposition themselves to enhance their role to manage the transition process to an Information Society, and some practical suggestions are made on how the paradigm shift can be achieved to enhance the role of libraries and information centres.

The Information and Knowledge Pyramid

3. This section starts with an interrogation of the concepts of data, information and knowledge and establish their meanings in the context of information as a strategic resource. Davenport and Prusak (1998) assert that data is not information, and the latter is not knowledge. The conceptual relationship (data, information and knowledge) can be visualized as a pyramid of interdependent layers on top of each other, sometimes called the information pyramid (Marco 2003). The bottom layer of the pyramid is data defined as symbols, facts and figures which are the raw materials to be processed to information. When data has been processed into a meaningful form, it becomes information (Feather and Sturges 2003:341). It has also been noted that knowledge is information which has been evaluated and organized in the human mind so that it can be used purposefully (Feather and Sturges 2003:341).

4. Knowledge has been subdivided into two sub-categories – tacit and explicit knowledge. According to Nonaka (1998:28), explicit knowledge is formal and written down, tacit knowledge is personal knowledge based on an individual's experience, insights and intuition. He asserts: "tacit knowledge consists partly of technical skills –

the kind of informal, hard-to-pin-down skills captured in the term 'know how'. A master craftsman after years of experience, develops a wealth of expertise 'at his fingertips' but he is often unable to articulate the scientific or technical principles behind what he knows. It is recognized that tacit knowledge does have a cognitive dimension, made up of mental models, beliefs, and perspectives so ingrained that they are taken for granted and cannot be easily articulated. The introduction of the concept of tacit knowledge by Nonaka (and others) has profound implications on the production of knowledge in society as we shall attempt to show in a later section of this paper.

5. Embedded within tacit knowledge is creativity, including use of figurative language and symbolism to articulate and share insights and intuitions. Nonaka (1998) explains how creativity (and lateral thinking) has been used by Japanese companies to spur the creation of new products such as cars, electronic products, and others because it enables the sharing of complex insights among the workforce.

6. The recognition of the high value of experiential knowledge (tacit knowledge) has led to a new awareness about the need to reassess how human resources are managed in organizations, and the need to revisit the cultural content of knowledge. Joseph Stiglitz the renowned former World Bank Chief Economist, has noted that the shift towards a knowledge based economy involves a shift in organization structures away from top-down hierarchical systems to horizontal structures such as networks, and semiautonomous teams, and other forms of matrix organizations. Stiglitz emphasizes the need for giving employees/citizens incentives to develop their own capacities, and confidence in using their own intelligence to empower change and learning activities. He makes a call for countries to shun external agencies which impose "best practices" imported from elsewhere because this only reinforces impotence. For countries to succeed in applying knowledge management to development, according to Stiglitz, they should rely on their own internal understanding, wisdom and culture. As Stiglitz would have it, Africans are the best suited to change their own culture in order to transform the continent into a viable, knowledge based economy.

7. Relating libraries to knowledge management, Vaagan (2004) claims that library and information sciences find it difficult to accommodate knowledge management because knowledge is more difficult to control/manage compared to information which can be treated as measurable units onto which one may apply the classical skills of cataloguing, classification and reference and bibliography. However, it is my contention that libraries and information centres, can operate in both the domains of information management as well as knowledge management. Data management is more suited to computer centers. However, it is important to recognize and plan for operating in the different domains, as they require different approaches, skills and roles.

Information as an Economic Resource

8. The concept of information as an economic resource can be approached from several angles. First, is an approach which divides the economy of a country into four sectors: This four sector approach may have first been popularized by Porat (1977) who carried out a landmark study, titled "*The Information Economy*" which replaced the

three traditional sectors of the national economy – agriculture, industry and services with four sectors – by adding an information sector to them. The information sector itself was divided into several sections – the primary information sector whereby the primary product was information (publishing, libraries, telecommunications, insurance, computing) and a secondary information sector whereby the information component comprises a sizeable proportion of output (service sector, maintenance of ICT equipment, education etc.). Machlup (1962) is another important researcher closely associated with the concept of defining the information sector of the economy to determine its size relative to other sectors of the economy.

9. The relevance of this concept to our discussion is that many of the countries of Africa have come up with Vision Statements (*Botswana 2020, Namibia Vision 2030, Tanzania 2025 – just to cite a few examples*) most of which envisage a rapid growth of the information sector of their economies, rapid economic growth and competitiveness, and increased use of ICTs. This growth is seen in the context of transition into an information society which is a broader concept than the information economy discussed above. But in some cases, the concept of information society is seen narrowly in terms of diffusion of computers in society. According to Dick (2002:24/25) the various sections are as follows (table 1):

Table 1

Dimensions of Measures of an Information Society

1 Economic activity/labour

- a) Percentage of labour force in computer hardware, software and services industry

2 Economic output/productivity

- a) Percentage of contribution of computer industry to GDP

3 Organization/structure

- a) Computer companies as percentage of total business corporations
- b) Number of employees per company in the computer industry
- c) Use of information technology in business
- d) Computer literacy among employees

4 Technology infrastructure

- a) Computer power per capita
- b) Investments in telecommunications as percentage of GDP
- c) Internet hosts per 1000 inhabitants
- d) Digital main lines as percentage of total main lines
- e) Adequacy of technology infrastructure

5. Technology innovation

- a) Computing R & D as a percentage of total manufacturing R & D
- b) Computing professional and technical workers as a percentage of all professional and technical workers

- c) IT patents granted as a percentage of total patents

6 Technological diffusion

- a) Computer per capita
- b) Percentage of houses holds with personal computers
- c) IT spending as percentage of GDP

Original source: Sources of measures of the information society: World Competitive Report, OECD, 1996.

10. How a society leaps from an industrial economy to an information society has not been clearly explained. The implied strategy is the increased use of computers in all spheres of society (Webster 1996). The issue has been further complicated by the infusion of a heavy dose of ideology, which is behind such terms such as globalization, free flow of information, information superhighway, the information market place, deregulation, and privatization (Dick 2002:24).

11. The impetus towards defining an information society from an ICT perspective has received added force from some United Nations documents. The UN has set 2015 as a target date for attaining the Millennium Development Goals of halving the the number of people living in extreme poverty by building digital opportunities and putting ICT at the service of development. In his speech, Annan implored African leaders to mould their economies to become active participants in the global economy by adopting ICT. He said "unless African countries become full actors in the global information revolution, the gap between the haves and have-nots will widen, opening the possibility of increased marginalization of the continent. On the other hand, participating in the information society offers tremendous opportunities for Africa to leapfrog ...into the future" (Richardson 1996). Many other leaders in Africa, including Presidents Mbeki of South Africa, Museveni of Uganda, Mkapa of Tanzania, and former President Nujoma of Namibia have spearheaded the expansion of ICT in their countries with the hope that this will accelerate development.

12. Vaagan (2004:234) and other social scientists have cautioned that "a country's high percentage of "online" inhabitants mean little when the sheer amount of information cannot be assimilated into knowledge". Vaagan calls this the "ICT trap" which highlights the danger of a one-sided ICT driven process where explicit or codified knowledge is made available through ICT but not optimally shared or used by others. A case in point is that when BP undertook to introduce its knowledge management programme, a decision was taken to put the programme under an independent group rather than the IT division because "it was believed that the program would be less likely to fall into familiar IT patterns if a group drawn from different parts of the company ran it. Also the intentional absence of IT control would make clear that the project was about communication, business change, and corporate behaviour, and not technology for its own sake." Davenport and Prusak 1998:20)

13. A study by Shifflet (2001) would certainly appear to support the view that the information society phenomenon is broader than increased ICT usage. Shifflet advances

the view that two factors can be used to measure the information sector (and how much a country has become an information society); firstly, is how much information activities contribute to the gross domestic product (GDP) and secondly, the rise in information activities within the workforce of a country.

14. The classification of information activities is achieved through a division of a country's economic sectors into three sectors; namely primary, secondary and tertiary (table 2). The main data set used to achieve this classification is the census data of a country because of its comprehensiveness.

Table 2.

Classification of economic sectors

Primary Sector

Agriculture

Forestry

Secondary Sector

Manufacturing

Construction

Mining

Utilities

Tertiary Sector

Trade

Transportation

Communications

Finance

Social Services

Source: Shifflet, Mark. Information Sector Growth in Market and Nonmarket Economies, 2001.

15. The above study claims that the transition to an information society, is based on progression from an agrarian society to an industrial society and ultimately an information society. Several distinguished authors have pointed out that the information society represents an advanced form of industrial society but concede that information activities played an important role in the industrial revolution process (Bell 1973, Drucker 1993) However, data from the Shifflet study shows that although the majority of information workers are found in the tertiary sector, both the secondary and primary sectors also have relatively smaller numbers of information workers, with the primary sector having the smallest proportion of information workers (Shifflet 2001:168).

The question which is still open to debate however is whether informatization of society represents a fundamental change in the pattern of society, specifically whether information has replaced industry as the major economic activity or whether it is an

incremental process incorporating both new and old elements found in the earlier stage of development (Bell 1977).

16. An African perspective to this debate concerns whether African countries can move from an agricultural economy to an information society without an established industrial society stage. A Ghanaian researcher on African information communication issues noted that *"a dream of transforming an agro-based economy into an information society must either be a flight of fancy or a thinking hardly informed by the industrial economic background of developed economies that are on transition to informational economies. For an economy with about half of its adult population engaged in food production sector, and about 70 percent of its development budget sourced from donor support, any talk of transition into an information society sounds like a far-fetched dream."* (Alhassan 2004)

17. The views of Alhassan and others would seem to indicate the need for Africa to research carefully its own path towards the information and knowledge economy rather than simply copying what has happened in developed countries without much effort to look critically at alternative approaches. The conditions, culture and level of industrialization of developed countries differ from those of Africa and the outcomes from using technologies to achieve development might not bear the same results (Whyte 2000, Menou and Mchombu 2004)

18. A more unitary way to analyse the knowledge economy phenomenon is to view it as combining both the old and the new in one economy and the Internet being the platform for the economic fusion process, similar to Druckers (1993) thinking. Proposing this view, Prime Minister Tony Blair (2000) noted that the knowledge economy is really one economy. He asserts *"there is no new economy, there is one economy, all of it being transformed by information technology...it is a profound economic revolution."* He further notes that *"in this new environment the most important commodities of a nation are information and knowledge.."*

This thesis would appear to suggest that libraries and information centers should work towards harnessing the power of the Internet for their communities, and train users in information/knowledge literacy and the use of ICT in order to facilitate the transformation of their nations.

Bridging the Knowledge Deficit Facing Africa.

19. The second approach views information and knowledge as a resource and commodity and key determinant in the progress of society. *The World Bank Development Report of 1998* subtitled Knowledge for Development points out that knowledge is needed to transform the resources we have into things we need, and to raise standards of living, improve health conditions, provide better education, and preserve the environment, and do all these in the most optimum way possible. All these value addition requires knowledge. The report concludes that *"for countries in the vanguard of the world economy, the balance between knowledge and resources has shifted.. [and]..knowledge has become ..the most important factor determining the*

standard of living – more than land, than tools than labour. Today's most technologically advanced economies are truly knowledge based" (World Bank 1998)

20. A critical dilemma for African (and other developing) countries is that the past 20 years have witnessed the most massive accumulation of knowledge and information in human history. Digital information and communication technologies, and new ways of thinking on knowledge management, have revolutionized the ways in which knowledge and technical know-how move around the world. According to Whyte (2000:4) among others, this proliferation of knowledge has widened the gap between rich and poor countries. She gives the example of USA where it is claimed 75 percent of the population have access to the Internet, and Africa where the Internet penetration is below 1.2 per cent. The African local content is also very low, because of lack of ability to produce, transfer, and disseminate information. It is concluded that African countries and their institutions such as universities, research centres, library and information centres, service organizations and private enterprises are at a major disadvantage in the current knowledge economy. She calls on countries to change how they think about training, organizational management, and interaction in order to take advantage of the soaring knowledge economy.

21. Preceding the World Bank Knowledge for Development report and its recommendations by some eight years, was a report from the Island state of Singapore titled *Library 2000: Investing in a Learning Nation* (Singapore Ministry of Information and the Arts 1994) noted that the future belongs to countries whose people make the most productive use of information, knowledge and technology. Singapore had recognized that these were the key factors to economic success, not natural resources, of which she had very little.

22. In the knowledge intensive society of today, knowledge production is taking place at a frenetic pace through out the world. Both knowledge and information are also becoming obsolete quicker – hence for African countries to compete internationally, they need to have access to the latest knowledge and information similar to the countries African nations are competing with. Unfortunately, many libraries are often known for their huge stocks of out-of-date materials rather than the current information they possess, because of lack of financial resources and lack of awareness of the critical importance of information and knowledge to a country's competitiveness and development.

23. Another key challenge here is that libraries and information centres handle mostly print-based information rather than knowledge and hence have to find innovative ways to convert their vast resources of information to knowledge if they are to play a prominent economic development role in respective African countries.

24. How can African countries address the knowledge deficit that separates them from technologically advanced countries is a crucial challenge for libraries and information centres. The World Bank report referred to above proposes four steps to address the existing knowledge deficit which are:

- i) To acquire knowledge developed elsewhere rather than "reinvent the wheel" so as to save time and resources and adapt the imported knowledge to address information/knowledge deficits/gaps in a country
- ii) Create knowledge locally through research and development (R & D) programmes. In fact, the report proposes an investment of at least 1% of a country GDP in research and development activities. (South East Asian countries are investing at least 2-5% of their GDP in R & D) The creation of knowledge locally also including tapping into indigenous knowledge resources that the population has to assist in development activities.
- iii) Build the capacity of the population to absorb and apply knowledge through universal basic education, adult literacy and life long learning, tertiary education and an emphasis on science and engineering education.
- iv) Create a capacity to communicate knowledge throughout the country through the use of cheap telecommunications, mass media, and extension literature and services.

25. The role of government policies is critical in the success of addressing knowledge gaps that African countries face. At continental level, structures such as NEPAD and AU are addressing economic development and business development concerns so one needs to keep up to date on programmes and activities of NEPAD and the AU, although these are relatively young institutions.

26. However, in taking the steps identified by the World Bank report, libraries and information centres can play a major role – from R & D to supporting the creation of learning nations in Africa, to build the capacity of the population to absorb and apply new innovations. The main challenge will be in the area of managing indigenous knowledge (and other forms of tacit knowledge) because libraries have traditionally looked down upon this form of knowledge because it has not been produced through the established scientific and publishing system. The key question is what can librarians do in the area of managing indigenous knowledge? This could be a fertile area for collaboration between librarians, archivists, historians and community experts who have such indigenous knowledge. Recent work by Southern Africa Governments hoodia plant

27. The role of libraries in converting information to knowledge is one of the issues touched upon in the Singapore Library 2000 report. The report recommends that instead of merely providing access to information available in formal sources, libraries should provide opportunities for users to gather information and social intelligence through informal channels and social interaction. Libraries and other information centres were tasked to host various events such as talks, lectures, forums, exhibitions, demonstrations and performances so that participants can interact with and learn from other participants, and speakers of the events (Ministry of Information and The Arts 1994: 35).

Innovation and Knowledge Production

28. In order to convert information and knowledge to a strategic economic resource, Africa needs to have a clear plan to engage in innovation promotion and knowledge

production. Several reports point at the knowledge gap facing Africa at a time when it has to compete globally (World Bank 1998, Whyte 2000).

29. The importance of innovation and knowledge production in building a successful knowledge economy is widely acknowledged. The World Bank has advocated for an investment of at least 1% of GDP in knowledge production if developing countries are to make headway in today's global economy. However, the experience of South East Asia indicates Africa's investments in research and knowledge production should perhaps be much higher in the region of 2-5% of GDP, given that she starts from a much lower base (Ryu 1998). At present, most African countries spend less than 0.01% of their GDP on research and development (R & D) programmes. It is clear that knowledge production is not yet a priority and there is no political will to tackle this area.

30. The discussion above indicates there are two routes to innovation and knowledge production. One route is through research and development (R & D) programmes in individual and regional bodies in Africa. The second route is innovation and knowledge production through tapping into the tacit knowledge and creativity within enterprises and communities as part of a strategic knowledge management process (Nonaka 1998). Indeed one could recommend here that there is urgent need for Africa to also tap into the vast indigenous knowledge resources which are widespread in most parts of Africa for purposes of commercialization and national development (Mosimege 2005, Kaniki 2004)

31. Innovation and knowledge production in Africa, particularly research-based knowledge production, requires strategic links with global knowledge resources, to make researchers productive and up-to-date so that they do not reinvent discoveries already available elsewhere (World Bank 1998). Such links should provide timely, cost effective access to the global stock of knowledge. Librarians and information managers have a strategic role to play to ensure that such access to global knowledge is achieved, at enterprise, national, and community levels. For libraries and information centres to fulfill this role they need to form partnerships with other stakeholders such as researchers, information technology and communication experts, university experts, and government agencies.

32. The production of tacit knowledge requires a slightly different approach to that of formalized research-based knowledge. Nonaka (1998), Stiglitz (1999) and many other writers have pointed out that in the knowledge economy tacit knowledge is as important as formal, codified, structured and explicit knowledge. In Africa, and most other developing countries, one should include indigenous knowledge as part of tacit knowledge. While Stiglitz recommends for changing organization structures to flat structures and a new culture of sharing knowledge to stimulate production of knowledge within the firm, Nonaka suggests several ways tacit knowledge production can be done which include: tacit to tacit when tacit knowledge is shared between two individuals in an organization, for example in the master apprentice transfer of knowledge. Second, is from tacit to explicit (or articulation) – when tacit knowledge is recorded and can be made more widely available, eg. manuals, work books and best practices which was part

of the experience of experienced workers. Third, is from explicit to tacit (or internalization) when employees internalize explicit knowledge and make it part of their tacit knowledge through a form of internalization so that it can be applied by workers to do a better job in the organization.

33. Researching indigenous knowledge can also produce new forms of knowledge, for example, researches on medicinal plants which have uncovered additional usages of plants such as the hoodia cactus plant used by the San communities of Southern Africa to keep away hunger in the desert until they are able to get something to eat (Mosimege 2005). It is now being developed as a pharmaceutical product to address overweight problems, and various other products. Similar researches are being carried out at the Mhimbili University of Medical and Health Sciences in Tanzania.

34. One major issue for knowledge production and access to global knowledge resources in Africa is the fact that global knowledge is now regarded as a tradeable commodity in the global information and knowledge marketplace. There are now many international agreements to protect producers of knowledge – such as TRIPS, Copyright, and Intellectual Property Rights (IPR) as well as WIPO/WTO. The knowledge economy is based on the principle of a competitive environment, but this principle does not seem to apply when it comes to intellectual property laws, so that monopolies do not develop. Diversity, creativity, and innovation abhor a one-sided knowledge management system.

35. All of these require careful monitoring so that Africa countries are not given a raw deal as most of these instruments tend to favour developed countries over developing ones. There is high risk that unless Africa is proactive, she may become marginalized further in terms of accessing the global stock of knowledge particularly in critical areas of survival such as health, agricultural/livestock production, educational information, and knowledge of key technologies (Prabhala 2005). Indeed two researchers (Drahos and Braithwaite 2002) have noted that the intellectual property regimes pushed by GATT/WTO in the TRIPS agreement are entrenching new inequalities. They argue that although access to information is fundamental to human development, patents and other IPR agreements are being used to lock up vital educational, software, genetic and other information. The result is a global intellectual property order dominated by a multinational knowledge elite – an elite which can lock up vital information to manufacture AIDS drugs, seeds for agricultural development in the developing world, as well as information on the human genome. The book, appropriately titled “*The Information Feudalism: Who owns the knowledge economy*” raises some key issues which African countries need to be wary of in international negotiations (Drahos and Braithwaite 2002).

36. At the risk of stating the obvious, it is important to realize that knowledge production is derived from human thinking. One of the basic definitions of knowledge (and information) is that it is a human construct and that every human society engages in knowledge production as part of the effort to address basic questions of survival and development. When we discuss questions of Africa’s lost decades in terms of economic development, we need perhaps to recapture the experience and knowledge which led

Africa to become lost, so that we are not lost again, and can reclaim the 21st Century for Africa. There is a contradiction arising from the fact that ancient Africa was the cradle of humanity and human knowledge production. We hear of the thriving empires of Ghana, Malinke, Songhai, Ethiopia, Sudan, Egypt, Great Zimbabwe, and Timbuktu. President Mbeki of South Africa, and President Wade of Senegal, have championed the programme of African Renaissance to rediscover this past and use it as a bridge towards the future.

37. In one of President Mbeki's speeches, he points out that Timbuktu, in Mali was an ancient University city, ahead of Europe in learning during the 12th Century. That a manuscript was more valuable than gold or silver (Mbeki 2002). So the question for our conference should be, if Africa was ahead of the rest of the world in learning in the ancient times, what stopped that learning? As noted by Muhububani (2001) in his publication titled "Can Asians Think?" we too in Africa must ask ourselves "Can Africans Think? Why did Africa experience the lost decades/millennium? Leading African thinkers such as Mkandawire and Soludo (1999) have urged Africans to produce their own knowledge or subject incoming development knowledge to rigorous examination in order to ensure it benefits Africa. In calling for production of African development knowledge, Mkandawire and Soludo(1999:xii) urge, African scholars to enter the debate and assume leadership role in defining the continent's development agenda in order "to think ourselves out of the present crisis"

Role of Libraries and Information Centres in Economic Development

38. The keynote speech of this Conference has profound implications for libraries and information centers in Africa. Some of the implications are of a conceptual nature, while others are of a practical nature, all aimed at the repositioning of these information facilities in society and enhancement of their role in society. Certainly, the way librarians and information centre managers are educated and trained has to change radically. However, it is not only libraries and information center managers who need to carry out a paradigm shift, other sectors in African society also need to reassess their positioning and role in society, for example: human resources management and the theory of management sciences, basic, secondary and tertiary and continuing education, as well as policy framework to enable the efficient communication, sharing and free flow of knowledge within an African country.

39. The need for a paradigm shift that libraries and information centers have to undergo is supported by Orna (1999), who recommends that they shift from "...a store of information to a source of knowledge and innovation.. a business intelligence service converting information to intelligence service by means of expert filtering, editing, archiving, and researching" She also concludes that the skills and focus of librarians and information workers will change radically. The Information Advisor (1997) believes that such skills will include the ability to understand organizations as a whole and how the parts work together, the ability to comprehend and elaborate on information and knowledge needs, the ability to identify inefficient and improper uses of information,

and the ability to add value to information products by evaluating, filtering, abstracting, and providing a broader organizational/industry or national context

40. Most countries in Africa have a weak economic base (except parts of South Africa, Botswana and parts of North Africa) with high unemployment, low productivity in industry, a weak agricultural base, and economies dependent on one or two products for survival. African countries are responding in different ways to these economic challenges, and libraries and information centres should be part of their countries' search for a solution to this economic development struggle, both at national and local authority levels.

41. Traditionally, libraries of all descriptions have had strong links with the education and cultural establishment of society; in other words, the elite in society. Hence, most of the services are geared towards serving educational, recreational, and broad information needs. However, a new role now beckons – to provide information services which address economic and business development needs on which all these other needs can be further developed, because without economic development, recreational, cultural and educational pursuits become very difficult.

42. A look at the general state of organizations in most countries in Africa reveals that most of the decision makers act with little information particularly about the challenges and opportunities they face, and have to make uncertain strategic decisions in a volatile, new and resource poor environment. These challenges have become even greater as Africa is competing in a global economy with other countries which have operated in the context of a market economy for several decades.

43. The key question here is how can African librarians/information workers be prepared to play a new role in the national and local economic development of their country? We need to unpack this new role first, before discussing how librarians/information workers can change to take on the economic development and business information responsibilities.

44. The Singapore Library 2000 report discussed business and economic development information needs for Singapore which are of relevance to African countries. The report noted that currently business rely on informal sources of information, partly owing to lack of readily available sources of information. Most of the business people surveyed said they would use a business library if one was set up. Business people are interested in having answers to their questions rather than having lengthy reports. The report concludes that having the right information at the right time will give businesses competitive edge they need to help in the regionalization efforts. African librarians thus need to survey business people and other groups engaged in economic development and find out what are their information needs and seeking behaviours, and what sort of information centres could be designed to meet those needs and business information use behaviors.

45. Information needs for business and economic development under a competitive market driven environment include – information on economic, political, and operating environment of various countries which trade with African countries, as well as sharing such information among all African countries to support the process of regionalization and globalization. The business and economic development collections should include market reports and economic reports of various countries, industry surveys, reports of study missions and Embassy reports. Embassies/High Commissions should be involved in the collection of business intelligence reports from the countries in which they are based and transfer the information to the business information centres as part of the effort to build a comprehensive business and commercial information and intelligence system to make Africa competitive. Mkandawire and Soludo (1999) have termed this role economic diplomacy.

46. Most African countries have a large contingent of informal business people, entrepreneurs, and SMEs operating, and they too need information on how to improve their business, legal information on how to protect themselves from harassment by police and askaris, financial information, and market information. Some need information on enhancing business skills so that they become profitable and avoid bankruptcy.

47. Apart from establishing the information needs and seeking behaviours of the various business and economic development groups, there is need to analyse the skills and subject knowledge required by information workers to provide business and economic development information. It would also be useful to study the attitudes of librarians and information workers towards providing information to groups engaged in small and medium enterprises and their feelings towards providing services to the new groups. It is important to gauge their preparedness to embrace change and see this as a priority above the traditional groups they are used to serving.

48. Models from Scandinavian countries, Singapore, China and USA indicate a number of activities which libraries can undertake to support business and economic development (Walzer and Gruidl 1996; Liu 1996; Singapore Ministry of Information and The Arts 1994; Marco 2003).

- 1) Making presentations to business groups (SMEs, and informal business groups) about business information services in the library and how they can use them.
- 2) Providing facilities for the business and economic development groups to hold their meetings in the library . This facility can provide opportunities for networking with the groups and increase the involvement of the library.
- 3) Attend meetings of the business and economic development groups and the Chamber of Commerce and seek to become members of such groups
- 4) Provide access to equipment such as fax machines, computers, and Internet for the business and economic development groups to communicate and find key

information. Public Internet Access Points is a useful way to provide the business community with a presence in the net.

- 5) Provide training on how to use computers, Internet, and business information and intelligence. Such training should also cover topics on entrepreneurship, and economic development.
- 6) Survey business and economic development information needs in the nation/community as well as information seeking behaviours of the various groups involved in business and economic development
- 7) Set up a specialized business library/information centre for the business and economic development community. This could include not only business information (local and international) but government development plans, and other government information relevant to business and economic development of the country
- 8) Production and distribution of information materials of a practical nature on business and economic development topics to facilitate adoption of innovations and new ideas by the business and economic development groups
- 9) Arrange public lectures, talks, and forums to discuss topics on business and economic development in the library/information centre for various groups engaged in business and economic development
- 10) Provide training to library staff to acquire new skills, change their attitudes, to serve the economic development and business community
- 11) Provide training on researching, recording, storage and dissemination of indigenous knowledge resources
- 12) Establish NEPAD and AU focal points in each African country to provide an in country identity and presence for NEPAD and AU by providing access to all their information output, and information about NEPAD and AU.
- 13) Provide training on knowledge and information literacy to the business and economic development community to build their capacity to seek and apply new knowledge and business intelligence.

Pilot Projects

49. The paper has highlighted several critical issues concerning information as a strategic resource for African countries. It is important for libraries and information centres to view information as an economic resource within the information/knowledge pyramid framework, and address the need for converting information into knowledge as one of their responsibilities. For both National Libraries and Associations of librarians and information workers, there is need to play a more active part in policy formulation

geared towards turning African countries into an information society continent. One of the concerns is that information workers need to acquire new skills so that they can operate efficiently in the area of knowledge management which is demanded by programmes aimed at turning information/knowledge into a strategic resource.

50. Specifically, the following three recommendations are made from the paper on the role of librarians and information professionals concerning i) pilot projects ii) researching business and economic development needs iii) retooling and training of information workers.

1) Pilot Project:

This would concern setting up of pilot economic and business development libraries and information centres in respective countries in Africa either as part of the National Library or other designated institutions. This should be preceded by a needs assessment for business and economic development information. Such a facility should act as forum for discussions on business and economic development themes/topics, and disseminate business and economic information to target groups in a proactive manner.

2) Researching needs:

This would involve baseline studies to establish existing business, small businesses, and economic development information needs in a country and the type of information they have access to at present, and the knowledge gaps which exist. This should include use of ICT and the internet and the skills the business and economic development communities require. This research could extend into studying local content information available on the net, as well as the use of the mass media to disseminate business and economic development information and knowledge. Interdisciplinary research could also be carried out with archivists and historians concerning indigenous knowledge and how to capture and utilize it as a development resource. An important area to research is to have baseline data on national business and economic development information needs for the country to be competitive.

3) Retooling and retraining of information workers:

To play the new role, capacity building is required to enhance the skills of librarians and other information workers to provide business and economic development information and intelligence to users. There is also need to know the legal framework which govern the exchange of knowledge products throughout the world such as WIPO, copyright, as well as IPR. Digital librarianship is also becoming an important area of concern for the retooling of librarians and information workers if they are to perform in the new economy. But first of all, one needs to establish what are the exact training and capacity building needs of the information workers before starting to run workshops, seminars and other forms of training. Within Schools of Information and Library Science, there is need to build capacity to teach ICT courses, knowledge management, and database creation and management. Indeed, it should be noted that there is need to review the curriculum so that some old courses that are no longer relevant are demoted to create space for the new subjects.

Conclusions and Final Remarks

51. This paper has attempted to address the question of information/knowledge as an economic resource in Africa and the role that professionals can play in achieving the full potential of applying information and knowledge to the development of firms/nations. The paper highlights some of the challenges facing Africa in the transition towards an Information Society and knowledge economy. One of the issues highlighted is that information society is viewed mainly as an ICT driven process, and does not pay enough attention to the aspect of knowledge management which should go hand in hand with the ICT process. The role of libraries and information centres will become more pronounced in an approach which takes ICT and knowledge management as the two sides of a coin than in an approach which views ICT infrastructure as the only requirement to achieve development.

52. The concept of knowledge management as a valuable resource for development requires better understanding of the fact that KM is made up of tacit and explicit knowledge components. Explicit knowledge is codified, recorded, and available to all whereas tacit knowledge is experiential in nature. It would seem from the nature of knowledge management, that libraries and information centres will find it easier to manage explicit knowledge rather than tacit knowledge. Given that tacit knowledge is now regarded as of equal value to explicit knowledge, it is important for libraries to have more system in place which attempts to tap into knowledge networks in society and organizations, as well as managing explicit knowledge. Many aspects of managing tacit knowledge however, require improved knowledge sharing culture in respective organizations and a paradigm shift in the style of human resources management and organization restructuring. An important aspect of tacit knowledge is indigenous knowledge which libraries and information centres in Africa have to be more actively involved in than in the past.

53. Another issue concerns whether African countries can leapfrog from agricultural societies to information societies without the interim industrial society stage. There are at least two models of how societies evolve through the different stages – one being sequential in nature which would imply that one cannot leapfrog any stage. The second model which centers on the Internet usage for business and economic development would appear to support the leapfrog approach. However, even in an Internet dominated approach, to achieve national development, both industrial products and knowledge products are required so that they can be exchanged over the Internet. In developed countries, where industrialization is already achieved, this is not an issue any more, but in developing societies where industries are not yet established, this can be an issue, as it can lead to an Internet market place without any products for sale, or local knowledge content to exchange. Hence efforts to create wider use of the Internet in which libraries and information centres should be fully involved in, must be coupled with business and economic development capacity building (including entrepreneurialship) among the various groups at national and local level so that they can create products for sale over the Internet.

54. The final section of this paper attempts to provide some practical recommendations on what libraries and information centres can do to ensure that information and knowledge become a vital development resource. Such practices are based on the theoretical considerations of information science, but they now will in turn inform the theory of information science to create an African information science bred from the problems of African development.

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