

KNOWLEDGE MANAGEMENT STRATEGIES WITHIN A CORPORATE ENVIRONMENT: AN AFRICAN PERSPECTIVE.

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ABSTRACT

Accumulation of information and knowledge has been the basis of societal transformation since time immemorial. The acquisition and diffusion of knowledge not only leads to new ways of doing things, it provides the impetus for human and social evolution. More than four centuries ago, Francis Bacon, the English philosopher noted that "knowledge is power". Similarly, about a century ago, Alfred Marshall wrote "knowledge is the engine of growth". These two statements still hold true today. What has changed since the time of Bacon and Marshall is the pace and rapidity of change, the intensity, and the profound nature of the impacts of these developments on business and research and educational organizations, and indeed on our ways of life.

Driven by the phenomenal developments in information and technology applications, led by visionary leaders of relevant business executives, governments and communities, the knowledge-based strategies are gaining increasingly competitive advantages over their rival competitors in significant ways. This paper explores the knowledge management and opportunities it presents particularly for Africa and its peoples. The paper further argues that in the present disposition knowledge has become the key factor in economic competitiveness and more important than raw materials, capital, labour, and exchange rates. Static comparative advantages are no longer enough for countries to be competitive.

Countries and organizations that want to compete must become as it were, LEARNING NATIONS; they must continuously learn, upgrade, and seek to get to the future first. To paraphrase Aries de Geus (1998), "knowledge has become the only sustainable competitive advantage". The 21st century is a knowledge – based century. The paper provides, based on the author's experience, a glimpse of what can and should be done in terms of developing and managing knowledge in selected sectors of the economy; the use of technology as a catalyst to create value in the African knowledge economy. Equally, the paper points to the undervalued assets of Africa, in the form of tacit and explicit knowledge, which could be harnessed. In above context, the paper also analyzes the importance and the use of knowledge in developing corporate strategies, as well as advocates the need for sharing best practices across research and development institutes and think tanks.

Introduction

Everybody seems to agree with Bacon and Marshall when they noted, respectively during their times, "knowledge is power" and "knowledge is the engine of growth." But what is knowledge, and what is the difference between knowledge and information. There has been considerable philosophical debate going back to Plato in ancient Greece about the nature of knowledge without an agreed definition of what constitutes knowledge or any prospect of one (Blackburn, 2003). There is a substantial grey area between what is "opinion" and what is "knowledge" so that absolute certainties in our understanding of the world around us are often not as common as we would like to think. Knowledge can be tacit or explicit and it can exist on a number of different levels. Formalized group knowledge which is the sum total of what is known about a particular field or subject area, usually recorded in a variety ways and publicly. Personal knowledge which is the expertise or skills of an individual acquired through experience and education; and informal knowledge shared by a discreet number of individuals about a particular topic and often not recorded.

Over the years, particularly in service and consultancy organizations, knowledge management has come to be regarded as the prime source of competitive advantage. Hence, the collection and dissemination of knowledge around the organization has become a top strategic priority. In recent years, knowledge management has been used to share best practice across organizations.

This paper examines the reasons why knowledge management is important and also how effective knowledge management can enable corporate renewal, learning and transformation to take place. The paper also defines and explores the implications and opportunities of explicit knowledge for relevant African countries in the knowledge economy. Furthermore, the paper argues that the African indigenous knowledge should be integrated into mainstream analytical science in pursuit of solutions for many of the continents problems.

Defining knowledge, knowledge management and its importance

As noted in the introduction there has been considerable philosophical debate going back to Plato in Ancient Greece about the nature of knowledge without an agreed definition of what constitutes knowledge" or any prospect of one (Blackburn, 2003). For example, what is "opinion" and what is "knowledge"? It is not easy to pin down a definition of knowledge but if we are to use the concept of knowledge in strategy development then we need to recognize it, so some form of definition is important. For our purpose we will adopt the definition of knowledge proposed **by Davenport and Prusac (1998)**.

Knowledge is a fluid mix of framed experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information. it originates and is applied in the minds of knowers. In organizations, it often becomes embedded not

only in documents or repositories but also in organizational routines, processes, practices and norms. (Davenport, T.H and Prusack, L, 1998, p.5)

The keys to this lengthy but helpful definition lie in such words as 'fluid mix... embedded . . . practices'. The most useful knowledge in many organizations is often the most difficult to understand, codify and replicate. Just as it is difficult to pin down simple definition of knowledge, it is also problematic to identify knowledge of an organization. Importantly, the above definition also indicates what knowledge is not:

..Knowledge is not just data – a set of discrete, observable facts about events, e.g. the market share data on a company's market share. The weakness with such data is that it only describes a small part of what happened at a particular company and gives little idea of what made the company so successful.

- Knowledge is not just information - the information message, often in a document of some other form of communication, certainly has meaning but it has little depth from a strategy perspective.

More generally, a company's experience of dealing with its customers and suppliers cannot be usefully summarized in statistical data and information, although this might form part of a broader whole. A company's knowledge will have two main parts:

1. A range of manufacturing contracts, procedures and practices built up over time-- the 'routines and processes' part of its knowledge;
2. A whole series of working experiences, personal friendships and other activities also developed over time that are much more difficult to summarize - the 'framed expedient values' part of the definition above.

Because it is difficult to define knowledge, most organizations have taken a broad view of what should be included. This has the disadvantage of possible information overload avoids pre-judging what will be important for individuals in developing new areas of purpose. Whatever view is taken of knowledge, the information age will certainly mean that it will be central to corporate strategy. Knowledge will go well beyond basic market financial data and management accounting information and involve people and unquantifiable assets. For example, Madonna may have been the material girl but what sets her apart are her immaterial assets - her knowledge-based copyrights, recording deals, television and film contracts and so on. In addition, her reputation, her life and her relationship with her audience will also represent important assets. Many of these items are less easy to measure, but represent the real wealth and knowledge at the centre of the global information environment. They are Madonna's sustainable competitive advantage. (Hamel, G.1993).

Tacit and Explicit knowledge and their examples in a company

There are two types of knowledge: tacit and explicit knowledge. The distinction between the two types was first drawn by Nonaka and Takeuchi (Nonaka, I and Takeuchi, E. 1995, p27). Tacit knowledge is difficult to specify, often complex and unrecorded. After such knowledge has been carefully analyzed, it is often possible to define it more precisely; they called this explicit knowledge.

All organizations have tacit and explicit knowledge; it is the tacit knowledge that often delivers the sustainable competitive advantage because it is this part that competitors have trouble in replicating. For example, competitors would never discover the real secrets of a complex production system if much of the knowledge was tacit and impossible to observe on one quick visit. However, explicit knowledge may also provide sustainable competitive advantage - for example, a company's patents will be recorded for other companies to examine, but remain exclusively owned by the originating company. Although both types may contribute to the sustainable competitive advantage of the organization, tacit knowledge may be particularly important because it is less easy for competitors to comprehend and therefore copy. Examples of tacit and explicit knowledge in a company are shown below. Importantly the description of the interrelationship between tacit and explicit knowledge shows that one can lead to the other. Thus, a mechanism is provided for emergent strategy development.

Examples of tacit and explicit knowledge in a company

Tacit Knowledge	Explicit Knowledge
<ul style="list-style-type: none">• <i>Practical and unwritten procedures for unblocking production stoppages</i>• <i>Informal networks and procedures for sales order processing</i>• <i>Multifunctional team working on new projects that rely on informal contacts</i>• <i>Experience of what has worked in practice in branding development over a number of years</i>• <i>Specific company treatment of some detailed aspects of management accounting</i>	<ul style="list-style-type: none">• <i>Costing procedures codified in company accounting manuals</i>• <i>New product development through formal company review procedures</i>• <i>Company patents and legal contracts</i>• <i>A company's written history of its past events and experiences, successes and failures often very limited</i>• <i>Training schemes and apprenticeship programmes that develop and teach best practice</i>

Adapted from Lynch, R. 2006, p376.

Knowledge Creation and Purpose

Knowledge creation can be considered as the development and circulation of new knowledge within the organization. Although the knowledge audit helps to define the starting point; its role is essentially static. Knowledge creation arguably requires a more dynamic approach and offers a new strategic opportunity. The full mechanisms for knowledge creation remain to be resolved but some key elements can be distinguished, according to Lynch, R ;(2006, p385).

- conversion and communication of existing knowledge;
- knowledge creation and acquisition processes;
- Knowledge transfer processes.

Conversion and communication of existing knowledge

The creation of new knowledge in an organization can usefully start from an exploration of the existing knowledge base of the organization, especially how this is converted and communicated within the organization. One useful method is to structure this using Takeuchi and Nonaka's Model of Knowledge Conversion as shown below. This concept starts from the assumption that there are two main types of knowledge in any organization - tacit and explicit - as explored in the previous section. If this is the case, then it follows that there are only four ways that these two types can be communicated and shared within the existing knowledge base:

1. From tacit knowledge to tacit knowledge: socialization. One way that companies can share unwritten knowledge across the firm is to socialize, sharing unwritten experiences and information, perhaps in informal meetings or working together. For example, a sporting company will have informal contacts between their sponsored sports stars and the company's marketing and advertising agencies that can be used to develop specific sponsorship timing opportunities, work on topical campaigns, etc. None of this is necessarily written down but may be helpful in increasing the company's brand awareness and loyalty.
2. From tacit knowledge to explicit knowledge: externalization. Companies can also exchange unrecorded knowledge and other vague concepts by making them more formal. This may mean conceptualizing and modeling vague ideas - perhaps again in meetings, but this time attempting to record and structure what was previously hidden. For example, a chocolate-producing company in Ghana, this approach may involve an unwritten idea for a ' healthy 'chocolate which is then turned into experimental model or designing for market research.

To tacit knowledge

To explicit knowledge

Socialization	Externalization
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From tacit knowledge	Internalization	Combination
From explicit knowledge		

Fig. Four modes of knowledge Conversion', from the knowledge Company: How Japanese companies, Create the Dynamics of Innovation by Ikujiro Nonaka and Hirotaka Takeuchi (1995)

3. From explicit knowledge to explicit knowledge: combination. Companies can also take written recorded explicit knowledge and share this more widely within a company - perhaps using an intranet system or some other company-wide means of communication. For example, a company could use its web-based communications to distribute the company's customer data between different parts of the world
4. From explicit knowledge to tacit knowledge: internalization. Companies can also take written and recorded information and use this as a starting point for further shared experiences which are not necessarily written down.

While the above four areas are helpful, they do rely on a rather simplistic assumption about the tacit/explicit nature of existing knowledge in an organization. There will be many variations in the range and type of information and knowledge. Yet they need to be forced into only one of the four boxes of the matrix. Such knowledge may benefit from a broader view of their usage. However, the underpinning concepts of sharing, conceptualizing and communicating both unwritten and recorded knowledge more widely are useful when it comes to knowledge creation.

Knowledge creation and acquisition processes

Beyond exploring and sharing the knowledge already in the organization, there are also processes for creating new knowledge. Davenport and Prusak (1998) recommend six mechanisms that will assist in knowledge creation. They are:

- 1 *Acquisition*. New knowledge does not necessarily come from inside the organization British Petroleum is reported by Davenport and Prusak to award a 'Thief of the year award to the employee who has 'stolen' the best ideas in applications development from other companies.
- 2 *Rental*. Knowledge can also be rented or leased in the sense that it can be sponsored and developed by an outside institution such as a university or a consultant. It is important in this case for the sponsoring organization to retain the ownership of its use.

- 3 *Dedicated resources.* Typically, in many organizations, special groups or task forces are set up with the objective of generating new knowledge in a specific area. For example, a task force might be used by a private university to develop new areas of sponsorship.
- 4 *Fusion.* For certain complex problems, some organizations bring together people from different functional backgrounds and with differing personalities. They are fused together in the sense of forcing interaction in order to develop totally new approaches to a task. For example, the Matsushita bread machine required bakers, engineers and software developers. This is a well-proven method of knowledge development as reported by Nonaka and Tacheuka (1995).
- 5 *Adaptation.* Many external pressures will force organizations to adapt to new realities otherwise they will not survive. An example is the adaptation of new knowledge (telephone and Internet banking) offered by all the major banks so that there is no competitive in this area of banking market.
- 6 *Networks.* Formal and informal communities of knowledge sharing exist in many organizations. Such networks of knowledge are now being supplemented by such electronic mechanisms as the intranet, a formal computer network inside an organization for the exchange of knowledge. For example, Heineken set up a new company-wide intranet site in 1998 under the heading 'Knowledge is Power' (Lynch, R. p3).

Knowledge transfer processes

New knowledge is unlikely to deliver its full potential if it remains with the originators in an organization - it needs to be transferred to others. Knowledge transfer is related to the areas explored earlier on knowledge conversion and communication but the process is taken further by the proactive decision to share knowledge. Knowledge transfer is not a simple task because such a process involves people and groups. People may not understand each other, may feel threatened by new developments and may be unwilling to tolerate the mistakes or ambiguity that will surely occur during the process of transfer. In addition, groups of people may judge themselves to be the main owners of certain types of knowledge and also judge that their status will be lowered if such knowledge is shared (Davenport and Prusac, 1998). These matters need to be addressed if the knowledge transfer process is to be successful. They may involve changes in the culture of the organization, which cannot be achieved quickly. For example, the introduction of new quality systems in the production process and training of employees in new methodologies and processes

The advantages of this approach TO ANALYSING AND STRUCTURING

innovation are that it provides a common approach throughout the organization and a common language globally.

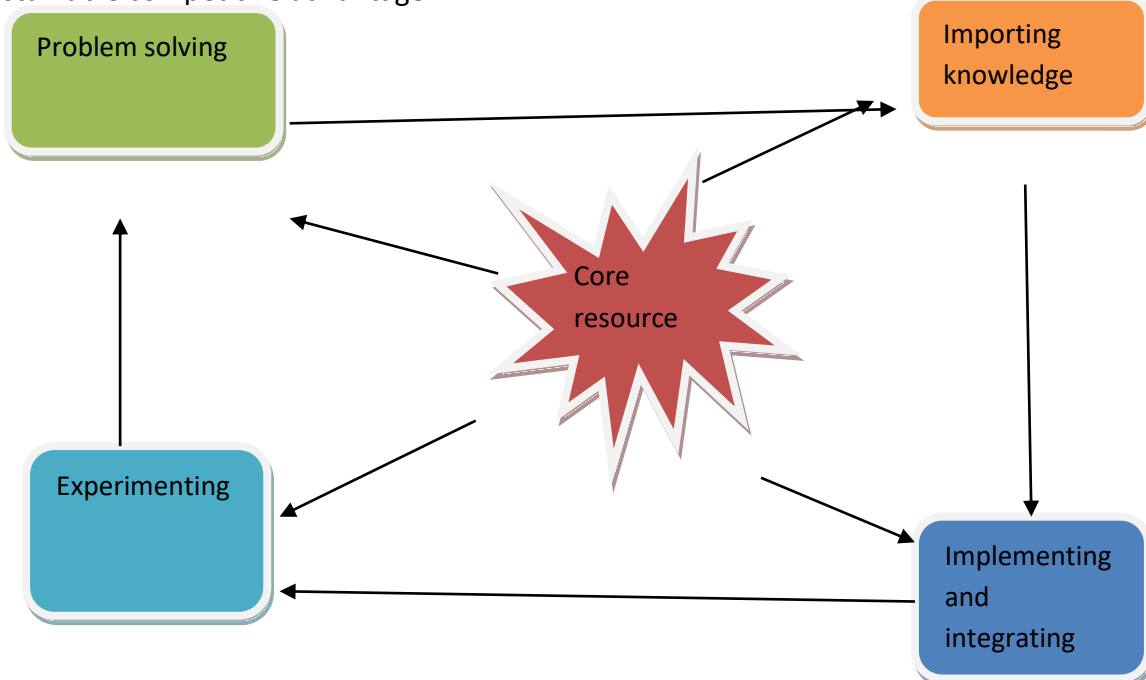
How Knowledge Creation Can Change Purpose of Organizations

If new knowledge is significant in its impact, then it may well change the purpose of the organization, perhaps providing the opportunity for global market leadership, as happened at many organizations, perhaps threatening the survival of a business, as occurred with the mechanical calculator companies which were overwhelmed by the new electronic machines. The important point here is that the purpose of the business will only be changed after the new knowledge has been developed and made explicit. In this sense, a new definition of purpose emerges from the new acquisition of knowledge and cannot be easily defined in advance. This has not stopped companies attempting to define purpose in advance of a specific breakthrough in their knowledge: Hewlett-Packard (US) and Glaxo- Wellcome (UK) are examples. But the attempt is usually made to focus minds and energy inside the company, rather than anything more explicit. It follows that the success rate can be positive or negative. Within this caution about the emergent nature of purpose, it is possible to be more explicit about the way that knowledge management will contribute to the purpose of the organization. It is generally argued that fundamentally, the purpose of an organization is to add value and that this is assisted by the development of sustainable competitive advantage. It is therefore appropriate to explore how knowledge contributes to these two areas. Knowledge is essentially a resource of the organization, so these two issues can be explored by considering the resource-based view of the organization. Teece (1998) has argued that knowledge can contribute to competitive advantage through two related mechanisms:

1. **Replicability.** As outlined above, knowledge is often only useful when it is transferred and replicated in other parts of an organization. This is particularly difficult where tacit knowledge is the main asset. Even where knowledge is explicit, organizations may have difficulty in replicating it where such knowledge is complex, relies on local cultures and faces other impediments.
2. **Imitability.** This simply means the ability of competitors to replicate the knowledge of the first organization. If replication is difficult for the original owner, then it will surely be more difficult for competitors. However, when knowledge becomes explicit and published, then it is more likely to be imitated. This is particularly possible where the organization has failed to defend its knowledge through the acquisition of intellectual property rights, such as patenting.

THE CREATION AND DIFFUSION OF KNOWLEDGE

Note: 'Core resources' refers to those resources that are particularly likely to possess sustainable competitive advantage



Source: Adapted from Leonard, D (1995) *Wellsprings of knowledge*, Harvard Business School Press, Boston, MA.

Finally, knowledge adds value through a circular mechanism that will impact on purpose at various stages of development. This is best seen in DOROTHY Leonard-Barton's model of the creation and diffusion of knowledge, Figure above. This makes a clear distinction between the current and future tasks of an organization: in the present, the organization can problem-solve, whereas in the future it can experiment without being clear about the outcome. The model also separates two mechanisms for the acquisition of knowledge: internally through discussion, implementation and integrating mechanisms, and externally through the knowledge acquisition.

- Conversion and communication of existing knowledge can take place through four mechanisms: socialization, externalization, combination and internalization. All four processes relate to the basic distinction between tacit and explicit knowledge existing in any organization.
- Knowledge creation - the development and circulation of new knowledge - offers, a dynamic strategic opportunity. There are three mechanisms: organizational learning, knowledge creation and acquisition, and knowledge transfer.
- If new knowledge is significant in its impact on the organization, then it may well change the purpose of the organization. Importantly, the purpose will only change after new knowledge

has been developed. In this sense, the purpose of the organization emerges from knowledge creation.

Knowledge audit and management: Intellectual Capital and Other capitals

If knowledge creation is important for purpose, the question arises as to whether it is possible to draw up an inventory of existing knowledge and renewal capacity as a starting point for future development. In this regard, it is the Swedish company SKANDIA that provided a lead in this area. In the early 1990s, it argued that many of the accounting laws and rules developed after the Second World War were outmoded because they did not measure a company's intellectual assets, only its physical assets such as land, plant and raw materials. Skandia defined the intellectual capital of its operations as its:

future earnings capacity from a deeper, broader and more human perspective than that described in [its financial reports]. It comprises employees as well as customers, business relations, organizational structures and the power of renewal in organizations. Visualizing and interpreting these contexts can provide better insight into future development at an earlier stage (Skandia Annual Report and Accounts.1997, p62).

The basic concept of intellectual capital can be divided into a number of components, each of which contributes to the creation of market value; in traditional economics only one of these aspects is measured - the financial capital - but, in reality, there are many other contributors to a company's future profits summarized in its intellectual capital. Intellectual capital has two main components: human capital, which is similar to the tacit knowledge, and structural capital, which is similar to the explicit knowledge. Structural capital can then be divided into two further elements related to the customer capital and the organizational capital of a company. The organizational capital includes information systems, databases, information technology solutions and other related knowledge areas. The company has then developed a method of exploring the implications of this knowledge valuation exercise that lays particular emphasis on the future value of knowledge (Lynch, R., p381)

Over the last few years, similar approaches to knowledge assessment and its transfer around the organization have been adopted in varying ways by many other organizations. Rather than concentrating on the calculation of the total sum of knowledge in an organization - the intellectual capital approach - such efforts have focused on the gathering and sharing of knowledge around an organization - the knowledge management approach. But they cover similar areas.

Particularly in service and consultancy organizations, knowledge management has come to be regarded as the prime source of competitive advantage. Hence, the collection and dissemination of knowledge around the organization has become a top strategic priority.

Factors contributing to success in knowledge management include building a knowledge-sharing community inside the organization, both in technical terms and in terms of a willingness to share

knowledge; contribution of knowledge to economic performance and value, e.g. profits and cost savings; technical and organizational infrastructures, which need to be wide-ranging to succeed; the need to gather both the tacit knowledge, which is difficult to record, and the explicit knowledge, which is easier to record and circulate; clarity on the background history of how the knowledge was derived, its context in relation to other areas and the learning that has resulted; recognition that many channels are needed for knowledge gathering and transfer; and senior management support and encouragement

In recent years, knowledge management has been used to share best practice across organizations. For example, Unilever's subsidiaries in South America had considerable knowledge of the management of companies in high-inflation economies, after the experiences in the continent in the 1980s. The company used its knowledge management intranet to transfer management practices to some Asian subsidiaries when they were faced with similar problems in the late 1990s (Lynch R. 2006. p. 381).

From a strategic perspective, knowledge management has become important. However, no single concept or process has yet been devised that will capture all the main elements (Boshy K, 1999.) The audit and its implications remain to be fully developed. Moreover, in spite of the enthusiastic reception for auditing knowledge, it has three disadvantages in strategy development: The approach may lend itself to what can be easily audited and circulated - explicit knowledge - rather than the tacit knowledge that will also deliver competitive advantage but remains, by definition, less easily defined and audited.

An audit makes little attempt to distinguish between what is merely interesting and what is vital to strategy and purpose. Companies run the risk of being swamped by the irrelevant in the name of knowledge management. The knowledge audit is backward-looking while strategy development is forward-looking, its value may therefore be somewhat limited (Lynch R. p382).

The importance of knowledge management

Santosus and Surmacz (1999) suggest that a 'creative approach to knowledge management (KM) can result in improved efficiency, higher productivity and increased revenues in practically any business function'. A substantial number of benefits have been identified by researchers of KM which no doubt has contributed to the surge of interest. Kerr (2003) identifies seven reasons why KM is an important area. These include business pressure on innovation; inter-organizational enterprises (e.g. mergers, takeovers etc.); networked organizations and the need to co-ordinate geographically dispersed groups; increasingly complex products and services with a significant knowledge component; hyper-competitive marketplace (decreasing life cycles and time to market); digitization of business environments and IT revolution; and concerns about the loss of knowledge due to increasing staff mobility, staff attrition and retirements.

One of the key points therefore is for organizations to know how to share knowledge *and* to learn from the experience of others. Various interests and routes have drawn different organizations to knowledge management; diversity in actual practices is broad. A holistic approach is taken in the aerospace industry towards KM research. Kerr (Ibid) explains that it is necessary to complement social with technological solutions for managing knowledge in the engineering design process. Not only the know-why (design rationale and reasoning - best practice) but the know-who (mapping expertise and skills) and know-how (promoting communities of practice for learning in a dynamic context). For example, the Business Processes Resource Centre at Warwick University has distinguished four different types of knowledge management practices (<http://bprc.warwick.ac.uk/kmweb.html>)

- Valuing knowledge: seeing knowledge as intellectual capital and recognizing its worth.
- Exploiting intellectual property: organizations which have a strong research and development base may look for new and unconventional ways of using their existing knowledge base.
- Capturing project-based learning: ensuring that knowledge gained from working on one project is captured and made available for others to use.
- Managing knowledge workers': recognizing the needs of knowledge workers and identifying new ways of managing to release creativity and positive outcomes.
- Particular attention has been drawn to the use of information systems for capturing knowledge and helping to multiply its effects. No longer are the province of universities and colleges, many different kinds of companies involved in the management and dissemination of knowledge. IT and in particular web-based technologies are the engines of change.

Making use of knowledge and its difficulties

Many organizations are using the Web to share information and foster learning. Web technology is changing the way in which people communicate and their expectations of the scope, nature and type of knowledge and information. As *Cohen (1998)* has said:

Information no longer filters from the top down; it branches out into every imaginable direction and it flows away from the information creators and towards information users. Employees can now access information that was once only available to a few key people (Cohen, S. 1998, pp 50-7)

The move to using the Web network outside the organization to communicate with suppliers, customers and other firms has grown considerably (Rockart, J.F. and Short, J. E, 1996). Net worked companies are able to form linkages with partners and to have transparency about processes which would not have been conceivable a decade ago. A change in the way knowledge is shared often

comes hand in hand with other changes in the organization. Traditional functional line structures have been replaced with a spider's web design. This had the impact of breaking down barriers between groups and allowing new lateral relationships to be formed. A knowledge infrastructure was developed to enable project information and learning to be captured. However, of key importance to the success of this and other knowledge management projects is the willingness of individual employees to participate and share their experiences. As organizations become more and more dependent on each other, the need for effective procedure becomes evident and with them the potential problematic issues of sharing of responsibility, accountability and trust. The different process and ways of working can bring their own stresses and problems (Mullins L. J. p397)

Although much recent management literature commends and encourages organizations to become learning organizations and extols the benefits to be found in viewing knowledge as an essential business asset, the work of 'managing knowledge' is not without its difficulties. The truism that knowledge is power means that those people within the organization who wish to retain their power and control may feel very disconcerted. Some writers have produced kits to help organizations manage their information²⁶ and offer advice. Others like *Harrison* (2000) are skeptical about the ease with which knowledge can be managed:

..... knowledge develops in different ways in individuals and in organizations according to processes and variables that are only imperfectly understood ... No consensus has been reached on how knowledge does in fact form, grow and change; or on the exact nature of the process linking data, information and knowledge, or on the relationship between individual, group and collective learning and how it can or does affect the knowledge base of an organization, its competitive capability, its performance or its advancement, (Mullins L. J. pp. 405-6)

Different organization sectors will have their own particular knowledge problems to deal with and harvest. What constitutes intellectual property rights is a thorny issue which universities are trying to resolve as their knowledge' is being sought by commercial is welcomed by many, but there are problems to be overcome not least in terms of cultural conflict and ownership of ideas. Whereas academics would wish to publish their research, industry would wish to maintain secrecy. Lack of awareness as to the value of 'knowledge equity relative to finance equity' is a further difficulty as is the ownership and protection of intellectual property. McBrierty and Kinsella (1999) present ways in which some of the problems can be resolved and advance the many benefits that collaboration between university and industry can bring to both parties.

The new term 'knowledge management' strikes a harmonious chord with the view of people as human assets in an organization. It captures the essence of people's experience and wisdom and declares that companies need to use the knowledge available to them. For Harrison, communicating a coherent vision is a major principle for managing knowledge productively. She believes that frequent dialogue and a culture which allows challenge and innovation are crucial principles for benefits to occur (Harrison, R, 2000). Mayo (1949) suggested that five processes are

necessary for an effective knowledge management system: managing the generation of new knowledge through learning; capturing knowledge and experience; sharing, collaborating and communicating; organizing information for easy access; and using and building on what is known. The success of many of these processes would depend on the culture of the organization and its priority in sharing learning and knowledge. Many of the ideas and concepts now being used in the new term 'knowledge management' have their roots in the learning organization.

The learning organization: The roots of KM:

The term learning organization, **according to** Peter Senge (1990) is defined as a place: *where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together.*

Pedler, Boydell and Burgoyne's (1998) definition is one most often quoted: *an organization which facilitates the learning of all its members and continuously transforms itself.*

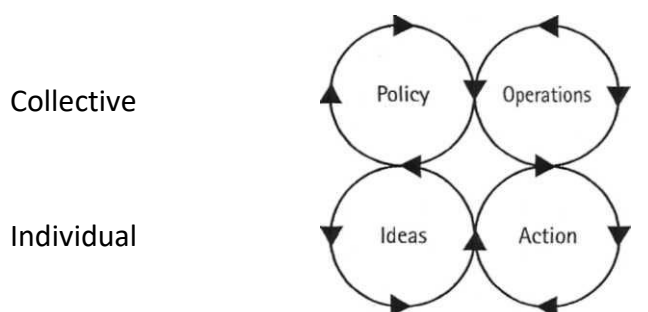
The learning organization is able to continually transform itself and learn from experience and thus always be ready to take advantage of changing external conditions. Such an organization values individual development, open communication and trust. It lends itself to flat, open and networked structures. Rather than occurring as separate and sometimes accidental activities, learning is a deliberate and central process in the learning organization. Joseph Lampel has identified five basic principles:

1. Learning organizations can learn as much, if not more, from failure as from success.
2. A learning organization rejects the adage: 'if it ain't broke, don't fix it' as they are constantly scrutinizing the way things are done.
3. Learning organizations assume that the managers and workers closest to the design, manufacturing, distribution and sale of the product often know more about these activities than their superiors.
4. Learning organization actively seeks to move knowledge from one part of the organization to another, to ensure that relevant knowledge finds its way to the organizational unit that needs it most.
5. Learning organizations spend a lot of energy looking outside their own boundaries for knowledge.

Rather than claiming to be learning organizations, many suggest that they are working towards becoming a learning organization. (Mintzberg et al., 1998)

The outcome of the learning organization is generally discussed as being positive, indeed in some texts as being almost Utopian. Garratt, for example, views learning organizations as essentially liberating and energizing and as crucial for organizational survival and growth. Burgoyne suggests that the learning company offers a new focus for organizations and in particular identifies agenda items for HRM as a key contributor of corporate strategic planning. He believes there are four new roles: to continue to manage the employee stakeholder - but to view employees as customers and partners; to look for new stakeholders and develop new links and alignments particularly with regard to development processes; to be the focus of new organization development (OD) initiatives and the source of collective learning processes; to inform policy formation and the implementation of strategy for the employee stakeholder.

The 'learning organization' (LO) approach came from academic sources at roughly the same time as training practitioners were promoting CD. This school of management thinking moves several theoretical notches further than socio-technical and contingency models. LO theory makes an important distinction between the 'adaptive' organization (in which change is managed by 'reading' opportunities and constraints, and training plans are created to produce improvement, and a higher level of 'generative' organization that aspires to take the lead in controlling its environment. LO proponents argue that people's ideas and behavior do not have to be subordinated to corporate strategy and centrally-defined working procedures; policy, operations, ideas and action are all viewed as being in the ideal evenly balanced and linked (Figure below).



Adapted from J. Burgoyne's article "Feeding minds to grow the business in People Management, 21 September 1995." The diagram is based on the concepts of "Ideas, thoughts, plans" and "Action, doing, behavior".

Burgoyne's article "Feeding minds to grow the business in People Management, 21 September 1995.

In this ideal 'learning organization', learning is seen as the process element that links the other four essentials - but the process is two ways, with people and practices continuously influencing each other, with learning and change management following naturally.

Garratt (1994, 1995) has described the historical flow of management thinking that has led to this conceptual position. He maintains that as early as 1947 a convergence of disciplines (e.g. psychology, -sociology, cybernetics, and economics) established basic ideas about:

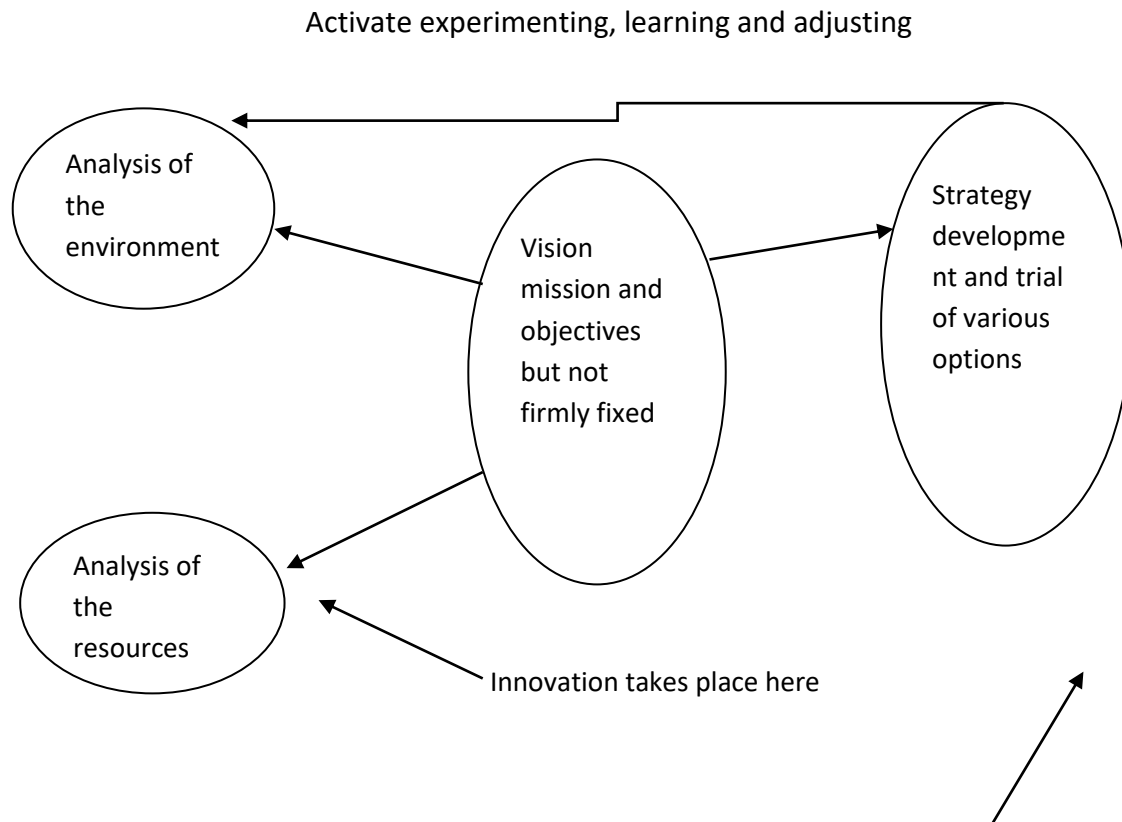
The key role of people as the only source of organizational learning; learning having both an intrinsic (personal development) and extrinsic (organizational asset-creating) value; the necessity for multiple feedback loops of learning to create continuous organizational learning (Garratt, 1995) Senge (1990) calls the learning organization 'an organization that is continually expanding its capacity to create its future'. His four basic management disciplines are: personal mastery; mental models; building shared vision; team learning; and systems thinking. Systems thinking, which is the discipline that integrates the others, the pay-offs of integration being immense-put simply, creating the fused ensemble prevents the individual disciplines from being gimmicks or fads.

According to Senge (1990) these five disciplines allow the 'learning organization' to be built systematically and not just to happen.

Innovation and knowledge-based theories of strategy the value of radical new strategic thinking. Innovation and knowledge-based theories of strategy privilege the generation of new ideas and the sharing of these ideas through knowledge as being the most important aspects of strategy development (Lynch, R. 2006, p61). Innovation here does not just mean inventing new products or production processes: it means, according to Professor Kay (1993) the development and exploitation of any resource of the organization in a new and radical way. Similarly, 'knowledge' here does not mean data so much as the collective wisdom and understanding of many people in the organization developed over many years. The figure below shows where such an approach fits into the emergent strategic process (Lynch, R., 2006, p61)

According to those favoring innovation and knowledge theories, their advantage is that they begin to tackle a problem that has arisen with other, existing theories. The argument goes that the widespread study of existing theories - like resource-based competitive advantage, for example - means that every company knows about such thinking and therefore there is less chance for such theories to deliver new competitive advantage. By emphasizing the new and evolving nature of knowledge and innovation, such theories help to overcome this difficulty. Innovation by its very nature moves forward the traditional thinking of the organization and thereby delivers the possibility of new competitive advantage. Virgin Group in the early 2000s focused its strategy on geographical expansion of its existing product portfolio rather than adding products. For example, Virgin took its highly successful concept of Virgin Mobile telephones to other countries beyond UK base. The strategy continues to emerge but in a geographical rather than a product sense. (www..irgin.com; Jackson, T; 1995)

THE EMERGENT STRATEGIC PROCESS: THE POSITION OF INNOVATION AND KNOWLEDGE-BASED THEORIES



Source: Lynch, R. {Corporate Strategy, 2006; p61}

Africa and the Knowledge Economy: Challenges, Opportunities, and Strategies

An important development in the 1990's has been the treatment of the knowledge of the organization as a key resource (Nonaka, I, 1991 Harvard Business Review). It has been argued that the knowledge possessed by an organization (its procedure, its technical secrets, its contacts and alliances with others outside the organization) will deliver significant competitive advantages to many organizations. Related to knowledge has emerged the concept of knowledge economy, which is a loosely used term to capture the essence of the fourth stage of economic development which most developed economies are now entering or have entered already. This phenomenon is stimulated, facilitated and driven by science and technology (S&T). Over the last few years, we have witnessed the widespread disappearance of service bureaucracies as they struggle to come to terms with the demands for competitive efficiencies, both in terms of cost and flexibility to respond timely to changing demands of an informed consumer, prompted by the opportunities afforded by

technological innovation. In knowledge economy, the commodity which is being traded is knowledge, in a variety of forms (Wilson, P.,1991)

The knowledge economy is characterized by several factors, including the following:

- The shift from physical efforts to mental effort.
- The substitution of place by interest as the defining characteristic of communities-indeed a person can identify with several communities of interest in their daily life, some of which may be global.
- The collapse of distance, and the growing importance of time as the dimension of interactive activity.
- Networks become the assets upon which the economy is built.
- Less emphasis on ownership and control and more on influence.
- Greater emphasis on quality of life.
 - Greater acknowledgement of responsibility for community and environmental well-being; search for higher quality of experience, and greater capacity for individualization.

Key to much of what has been described above has been the exponential growth in Information Technology, Communications and Electronics capabilities, which have transformed the way in which information can be assembled, sorted, managed, manipulated, analyzed, accessed and communicated-from an individual scale to a global scale. This has redesigned the manufacturing processes; redesigned the market exchange process; is redesigning the administration process; will redesign the boundaries of business; and will open up new sources of value for the creation of economic wealth. The trend is towards having access to whatever information one wants, whenever you want it, where you want it, and in what form you require it- a real time information service at rapidly diminishing cost. But information is only a raw material of the knowledge economy. One needs to be able to convert the information into knowledge, and apply that knowledge as useful intelligence in the wealth creating process. Society as a whole will be classified along the lines of knowledge rich and the knowledge poor – both within countries and between countries and communities. The knowledge rich will be those members-of the global community who have already access to sources of knowledge, both formal and informal, can exploit that knowledge to create wealth, whilst the knowledge poor will be those who have limited access to sources of knowledge and/or find it difficult to exploit their knowledge. The requirements for becoming a knowledge – rich society include facilities which promote easy, reliable and affordable access to information; the ability to effectively utilize the relevant technology; capability to efficiently convert the information into knowledge and useful intelligence.

The ability to convert information to knowledge and then to useful wealth generating intelligence arises from a combination of formal education and training, experience, and an entrepreneurial spirit which sees and seizes opportunities. Entrepreneurial spirit is not absent in Africa. However, the “ghost of fear of failure “seems to be still present among many talented potential

entrepreneurs in the continent. Moreover, there seems to be a lack of adequate entrepreneurship education which encompasses a wide range of information and many different styles of study.

In the sections that follow the paper discusses the constraints that need to be addressed in order for Africa to seize the opportunities offered by the knowledge economy.

Constraints and Opportunities for the Knowledge Economy in Africa.

Education has rightly been given high priority in most African countries, but the question must be asked whether it is right education for the 21st Century Africa. One needs to have a critical look at the education curriculum. More emphasis should be on scientific and technologically oriented education and on the ability to access and apply knowledge as a key source of competitive advantage. African countries, less encumbered by the baggage of massive investment in physical infrastructure and entrenched systems, can “leapfrog” their counterparts in the adoption of modern technology and its application in a modern style knowledge based economy.

The necessary conditions for Africa’s successful adoption of opportunities afforded by the transition to a Knowledge Economy include affordable, accessible, state of the art of Communications Infrastructure; appropriate technological and management education and training; and enabling and motivating economic environment.

If this strategy adopted and focused, application of specific knowledge domains can certainly bring rewards, particularly where there is a distinctive competence which an African community can develop and market at either the local, regional or international level. These opportunities exist more widely than believed, and can certainly be grown, but their successful recognition and development will require a re-orientation of thinking and self-belief, and a commitment to improving the enabling environment, particularly in addressing the issue outlined above. Central to being able to take advantage of the opportunities of the burgeoning knowledge economy will be:

- a) Significantly improved, “state of the art” communications service at an affordable cost, accessible anywhere in the country and “Leapfrogging other countries will require digital communications service, interactive and provide data, voice and video communications, media and information services.
- b) Refocused and improved technical education and training, particularly in those areas which will support the development of knowledge based opportunities. Information and digital technology and communications are key technologies, but communities should also strive to become centers of expertise in specific knowledge domains where they have distinctive competences, with restructured education and training to support this. This could be as diverse fields as wildlife conservation, adventure tourism, forestry, medicinal plants, drought resistant agriculture, labour intensive manufacture, more administration or financial services etc. Too often our own scientific and technical expertise goes unrecognized, because it is “different” from those of the west.

- c) An enabling economic and fiscal environment which creates the incentive for and rewards initiative. It should encourage the development and application of advanced technological expertise, as well as the transfer of technology and knowledge from knowledge rich communities. Foreign corporations with specific technological expertise should be given every encouragement and incentive to establish joint ventures with local businesses.

Technology is both an enabler in the transition to knowledge economy and extraction of value from it (Knowledge economy). It is a key to the ability of nations to extract value from the knowledge economy at the local and global level. It is also the enabler of the key driving forces behind the transition to the new economy, which can be illustrated in figure below.

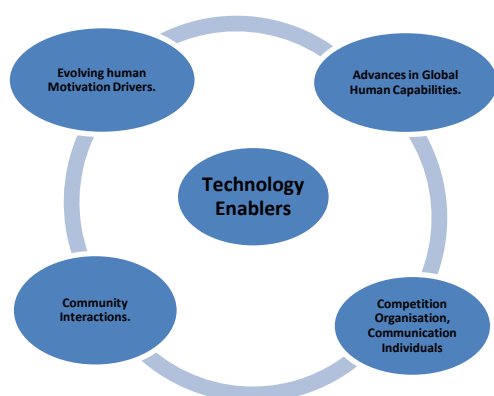


Figure.....Transition to the Knowledge Economy: Driving Forces

The Experience Industry

Technology as a major driver of the knowledge economy, is enabling more people to improve the quality of their life's' experiences, leading to the growth of what one can term "the Experience Industry", of which tourism is the most obvious example. Africa offers an enormous range of unique experiences which the rest of the world lacks and herein lies a tremendous source of value which is only partially being exploited. It is not only new, untried experiences which are being sought, but also those which stimulate the senses and emotions, or which contribute to a sense of fulfillment or achievement. African culture, music, food, dances, sounds, traditions, are experiences which are new and fascinating to outsiders, along with the normal tourist package of sunshine, scenic beauty and wildlife. There are also abundant opportunities to experience adventure, excitement, achievement, peace and solitude, warmth and harmony, unspoiled nature, charity and contribution.

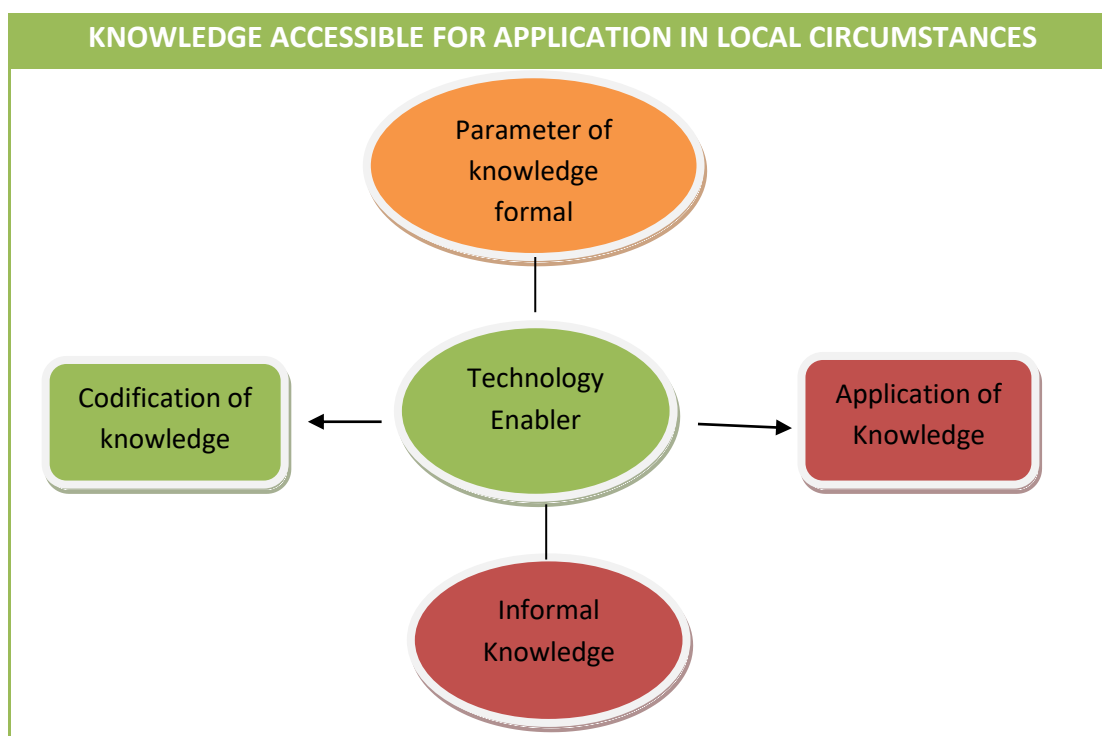
As indicated earlier, tourism is the immediate beneficiary of the growth of the experience industry in Africa, and its future success can be improved by the application of modern technology to enhance these experiences and make them more accessible and memorable.

The challenge will be for African countries to create the technologically enabling environment for modern technological advances to be exploited.

Parameters of Knowledge, and the Implications and potential for Africa

A technique to map the parameters of knowledge and explore how technology is shifting domains of knowledge was developed by Business Futures Networks (BFN) in the 1990's (Wilson P. 1989). The figure below shows the axes used to map the parameters of knowledge, both formal and informal. On the vertical axis we have at one end, the formal development of knowledge (education, training, research, etc.) and at the other end the informal development of knowledge (experience, wisdom, proverbs, tacit, local, etc.). On the horizontal axis, at one end is the codification of knowledge, and at the other end, the application of knowledge.

In most communities the focus of attention lies in the top half of the diagram, and more specifically close to the vertical axis. In other words, the development of formal knowledge through education, training, and research is a primary activity. This is particularly true of many African countries, and it is argued that the development of appropriate formal knowledge in science and technology is vital for the future success of these communities. At the same time, technology is increasingly enabling easier and more beneficial application of knowledge for a wider cross-section of people. Technology is not only facilitating greater economic productivity of the nation, but it is also enabling knowledge to be applied in a wider geographical domain, in real time. Thus, African businesses can develop economic opportunities by tapping directly in real time into knowledge resources in external domain in cooperative alliance. Similarly, technology is enabling the codification of knowledge which previously was considered too complex to record. For example, the development of expert systems for the diagnosis and treatment of diseases, that is appropriately packaged knowledge accessible for application in local circumstances.



Source:
Informal Knowledge – The Hidden, Unique, and Undervalued Resources and Assets of Africa.

The bottom half of the above diagram is of particular interest in the African context. The essence of formal knowledge in Africa has been influenced *and* steered largely by Europe and America, and as a result the informal knowledge which has been built up over decades, and sometimes centuries in Africa is regarded as not very useful. When local knowledge is even partly based on a belief system, which to the scientist is not rational, he/she dismisses it as a curiosity, an object of study but not useful knowledge. Scientists have conveniently prefixed ordinary people's common knowledge with the prefix 'ethno'. We have ethno-science, ethno-botany, ethno-technology, etc., indicating different forms of local knowledge or indigenous/ endogenous knowledge, knowledge of the people. (Swantz, Marja-Lisa, 2003:2). Clearly, there is credibility gap between local knowledge and scientific knowledge. Some of this informal knowledge may only be of relevance in the local or regional context but with sufficient development and recognition, some of them could attain international significance. The Eastern medicines and treatments is an example. There is a scientific philosophy which legitimizes Eastern medicine, but there has been little attempt to develop the scientific foundation of the informal knowledge which underpins African medicines. Science and technology inevitably have a western connotation, and the implication is that Africa needs to absorb and apply this knowledge which has largely been developed and codified in the west. However, the lack of self-belief in the value of our own, largely informal knowledge resources is undermining Africans' ability to extract greater economic potential from our own resources. Africa needs to have the confidence to recognize and build upon the fact that they are the world's experts in a wide variety of knowledge domains. The fact that in most cases this knowledge has not been codified, is largely informal and regional/local in its application has undermined its perceived value and legitimacy. Some examples may illustrate the point – regional/local well developed traditional care methods for psychiatric patients in southwest Nigeria, regional agriculture and forestry, natural resource and environmental management, low cost traditional architecture and housing, self-reliant living, etc.

The message of the bottom half of the above diagram from a science and technology perspective in Africa, is that there is a vast store of informal knowledge in Africa which is not being given its rightful status because it does not conform to norms derived from western values. There is a need to recognize the scientific value of this informal knowledge, and institute programmes **which consciously** develop and codify the knowledge in a scientific fashion, and seek to apply it in an economically productive manner, perhaps integrated with other technologies. The technological advances which have underpinned the transition to a knowledge economy will facilitate this process. And Africa's relevant R&D institutes/ centres, universities and Governments and the private sector have a leadership and complementing roles to play in this process.

A major constraint that Africa faces is the lack of an overarching and authoritative national strategy on science and technology, irrelevant curriculum, inadequate funding, under-utilization of local capacity, etc. Simply, there is a lack of coherent S&T strategy and policy, which is linked to uplifting the lives of the people. Despite the fact that most African countries created planning structures and

/or ministries to manage their S&T policies and their innovation systems, most of these policy organs are extinct or ineffective, at best. (Adegun, A. A., 1998). Even in the case of South Africa, one of the better cases in Africa, Mario Scerri noted that the problem with its national innovation system “is the absence of a coherent national plan for the development of the country’s innovation system” Similar sentiment was expressed by Kojo Asiedu nearly two decades ago (Asiedu, Kojo, 1998. In *Science and Technology Policy in Africa* ed. Senghor). In the words of Professor Thomas Odhiambo, an aura of fear and untouchability surrounds science in the body of politic of present day Africa”. For a number of reasons, most of the continent’s higher education institutions are merely producing graduates and not research outputs. The concepts of knowledge management and learning organization have to be part and parcel of our institutions. Just recognizing the value of accumulated Knowledge or wisdom is not enough. Managers of these academic and commercial organizations must deliberately manage that base and wellspring of knowledge. For some organizations, their uniqueness is difficult to imitate because it lies in the tacit knowledge of a number of individuals and groups. In other words, the capability of the organization is found in personal competence and is not formally owned by the organization. This is true in many knowledge-based organizations, such as software companies and biomedical labs and institutions, particularly where technology and product cycles are short. Although the organization may have patents or copyrights, it is impossible to own the tacit knowledge which underpins the next generation of developments. Therefore, the retention of those individuals or groups with this knowledge becomes a KEY IMPLEMENTATION ISSUE: for example, through the development of suitable policies on pay, promotion and working conditions. (Kojo Asiedu, “Valuing the value of our brains and minds....A THINK PIECE” forthcoming.

IN LIEU OF CONCLUSION

Knowledge management (KM) has been defined as the retention, exploitation and sharing of knowledge in an organization that will deliver sustainable competitive advantage. The recognition and growth of KM has come with the development of information technology, which has dominated technological progress across the world since the mid 1980s. In recent years, knowledge management has been used to share best practice across organizations. For example, UNILEVER used its KM intranet to transfer management practices to some Asian subsidiaries when they were faced with problems of operating in high inflation economies as witnessed in South America in the late 1990s, (Lynch, R. 2006). Also, particularly in services and consultancy organizations, KM has come to be regarded as the prime source of competitive advantage. Hence, the collection and dissemination of knowledge around the organization has become a strategic priority.

One of the several factors that is most likely to contribute to the success of KM include building knowledge--sharing community inside the organization, both in technical terms, and in terms of a willingness to share knowledge. Science is one component of the codified and organized knowledge that has existed in all societies at all times. Similarly, technology, viewed as the mix of knowledge,

organization, procedures, standards equipment, and human skills which are combined appropriately to produce socially desired products and services has also existed in all societies in all times. What has not been done in many African countries is the systematic pursuit of scientific knowledge and its use in meeting concrete human needs. The existence of science and technology haves and have-nots in developing regions raises the question as to what alliances, strategies and mechanisms are best suited to harnessing S and T for development throughout the developing world. Cooperation and partnerships are key, especially in Africa where the perception of being left behind and marginalized still exists, where the perceived irrelevance of 'traditional' science still prevails.

The essence of cooperation and partnerships among willing countries is that the wealth of knowledge and capacity in developing regions including Africa, when systematically mobilized and shared, can facilitate developing countries' effective participation in the global economy (King-Akerele and Kojo Asiedu, 2016). There is much useful and practical knowledge generated in the developing South that can be shared beyond the body of knowledge formally declared as science including traditional and tacit knowledge of medicines, ecosystems, knowledge of food security, tropical diseases, social formation and sustainable use of resources. Cooperation and partnerships can take many forms and involve various types of actors, such as producers, suppliers, universities and research institutions, in different combinations for different purposes. Such cooperation efforts can increase transaction costs but, if well managed, can increase the rate of successful outcomes and innovation. Finally, it is important to stress that the future belongs to "knowledge societies" in particular technical and scientific knowledge which are mostly concentrated in the industrial countries of the North and the newly emerging countries. The elements necessary for this knowledge are not completely absent from African science, but they are often scattered and are in danger of becoming extinct. In that regard, the importance of, and the need for knowledge management and learning organizations for sustainable development in Africa cannot be overemphasized.

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