Benchmarking Knowledge Management in Developing Countries: Case of Research Organizations in Nigeria, The Gambia, and India

Adekunle Okunoye, email: adeokun@cs.utu.fi
Erkki Innola, email: erkki.innola@cs.utu.fi
Helena Karsten, email: eija.karsten@cs.utu.fi

Turku Center for Computer Science,
University of Turku / Department of Information Technology
Lemminkaisenkatu 14 A, 2nd floor
20520 Turku
Finland

Telephone Number: +358 50 374 8788
             Fax: +358 2 333 8600

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Abstract

Even though knowledge organizations, such as research institutes, have only a minor role in the economies of the developing countries, they nevertheless are becoming increasingly important for development. Appropriate knowledge management could contribute considerably to their effectiveness and efficiency. We examined the state of knowledge management in eight research organizations: three in Nigeria, three in The Gambia, and two in India. Each organization was visited for two weeks and several data gathering methods were used. One of these, the Knowledge Management Diagnostic, appeared not to be very suitable for use in developing countries. Therefore, it was modified for the Indian organizations, but comparability was maintained by supplementing it by interviews and observation. Here we present a summary of our findings in Nigeria and The Gambia and compare them with the preliminary results of the study in India. Our study shows that organizations in developing countries are also aware of the knowledge management issues but that there are variations in the capability of each organization in knowledge processes. In general, the tactical processes have more emphasis than the strategic processes. It also appears that, on the average, international organizations are paying more attention to knowledge management than the national organizations and therefore act as benchmarking partners.

Introduction

The debate about the importance and position of knowledge among the factors of production – land, labour and capital – currently favours knowledge as the main source of sustained competitive advantage (Leonard and Sensipar 1998, KPMG 1998). Grant (1996) claims that knowledge is a scarce resource that is not easily replicable and accessible. Knowledge could therefore be more important than other resources in a turbulent business environment. Grant argues further that the primary role of the firm is integration of knowledge. In the light of this knowledge-based view of organizations, managing knowledge appears as not only an issue of a knowledge economy or organizations that sell knowledge-based services and products, but a concern for all organizations (Davenport and Grover, 2001).

Knowledge management (KM) is a broad field and knowledge management solutions span across several organizational and technical issues. For this reason, projects that require technology implementation to address some operational issues could be reported as KM projects. Likewise, providing feedback to customers to get their views or disseminating knowledge to a community could be tagged as KM projects. Choosing what to consider as KM is thus a challenging endeavour.

Organizations in Western industrialized countries have been seeking the best way to effectively manage knowledge work and thus embrace knowledge management. The efforts have focused on these organizations, with major KM practices, principles, and academic orientations addressing their needs. To make further progress, after understanding the rudiments of knowledge creation and transfer within organizations and between individuals, groups and organizations (Nonaka and Takeuchi, 1995; Hedlund, 1994) and the basics of managing this knowledge, organizations have began to use benchmarking to determine the effectiveness of their approach and to learn from the leading practitioners (O'Dell et al. 1999; Al-Athari and Zairi, 2001; APQC, 1996). Most organizations involved in these benchmarkings are Western business organizations. This leaves out the huge proportion of organizations that are in developing countries. Furthermore, we lack the understanding of the relevancy of these findings in other than business organizations.

KM has been a recognized issue in developed countries for more than a decade. In developing countries (DC), it was not until KM matured and became seen as almost essential for continued existence and survival of organizations, before any attention was being paid to it. Several international agencies, such as the World Bank, UNDP, CIDA, IDRC, SIDA, Bellanet, and Benton Foundation, are all working to help developing countries to manage their knowledge (World Bank Group, 1998/99). However, most of these efforts are at national and community levels with emphasis on public sectors. Not much interest has been paid in managing knowledge at the organisational level in developing countries.

The issue of KM in DC could be likened to the issue of IS research and practice in DC. According to Avgerou (2001), most of the efforts in this regard have been directed towards developing general knowledge for the implementation of information technology innovations without considering the variation in organisational and broader contexts within which the innovations are embedded. This could be partly due to there having been only few studies that focus on IS issues in developing countries, although the situation is becoming much better with various conferences and publication outlets committed to this cause. The dynamic nature of the IS field is also a problem, as this can turn a development obsolete within a short period. For instance, on the course of understanding a particular IS issue that has already been well known about in a developed country, other changes will occur and thus perpetually put DCs to play catch-up.

Also, the influence of multinational corporations and international organizations compound the way to look at KM in DC. For example, most of the big six consulting firms have offices also in DCs, and these are similar to their other branches in other parts of the world. Any initiative in the headquarters will be effected in their DC offices. The same goes with most international organizations. We can therefore assume that the national and international organizations in DCs are likely to be different, regardless of the particular developing country.

All these make reporting the state of KM in DCs more complex. In our attempt to address these shortcomings, we initiated a study of KM efforts in research organizations in developing countries. We started with research organizations in Nigeria and The Gambia, using a questionnaire originally designed from the outcome of earlier benchmarking. We deliberately did not amend the instrument to avoid basing this on wrong assumptions. The outcomes of the study and the experiences gained thereof were used to design another study in India.

In this paper, we begin by outlining the fundamentals of benchmarking and its significance in KM. We present a summary of our results in Nigeria and The Gambia (a more detailed exposition can be found in Okunoye and Karsten 2002a) and the preliminary results of our study in India. We conclude by discussing the main issues in KM in developing countries, in light of our and other studies.

Benchmarking in Knowledge Management

According to Watson (1994), benchmarking is a business practice, which stimulates process improvement by determining best practices across organizations through performance measurement, thereby helping understand those factors that enable the higher performance of leading organizations. In a similar vein, Camp (1989) defines benchmarking as the search for industry best practices that will lead to superior performance.

For our purposes, we find the definition of Bemowaski (1991) very relevant. He sees benchmarking as the plain and simple learning from others by accessing an already

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existing pool of knowledge so that the collective learning and experience of others could be used by those who wish to improve their own organizations. According to Nath and Mrinalini (2000), such an understanding opens up the possibility of applying benchmarking to any organization, including research organizations.

While there are various activities involved in benchmarking, the following five are common in all benchmarking:

- Identify the object of study.
- Select the superior performer (benchmarking partners).
- Collect and analyse data.
- Set performance goals for improvement.
- Implement plans and monitor results.

The benchmarking partners may include other units of the same organization, competitors in the same or different geographical markets, and organizations in related or unrelated industries, in the same or different countries (Capinetti and Melo 2002).

There are several classifications of benchmarking in literature, but all these can be categorized as either competitive or cooperative. Competitive benchmarking refers to collecting specific information about competitors, products, services, processes, strategies and business results and comparing these to those of the benchmarking firm. Cooperative benchmarking focuses on sharing experiences with cooperating organizations and identifying best practices with them (Ramabadron et al., 1997).

Benchmarking provides critical information about knowledge and best practices to remain competitive. However, as the basis of competition is shifted towards how well knowledge is being managed to improve organizational performance, it becomes evident that the mere possession of knowledge is not enough but its identification, sharing and application within and beyond the organization is very essential. It was this realization that led to the first knowledge management benchmarking effort carried out by the American Productivity and Quality Assurance (APQC) International Benchmarking Clearinghouse (O'Dell et al., 1999). The data was collected using the knowledge management framework developed by APQC and Arthur Andersen (APQC 1996). The analysis of this data revealed six primary strategies that the best-practice companies use to address their KM needs (O'Dell et al. 1999):

1. Knowledge management is seen as a business strategy, central to the ability to grow and compete.
2. The transfer of knowledge and best practices is approached in a systematic way, to improve operations or include them in products, services, and processes.
3. The firm focuses on capturing knowledge about customers, to understand their needs, preferences, and business.
4. The people have a personal responsibility for knowledge.

5. Intellectual assets are managed, with the emphasis on attaching financial measures to organisational knowledge assets and linking them to the enterprise's current and future performance.
6. Innovation and creation of new knowledge through basic and applied research and development is a key focus.

Apart from this formal benchmarking, various organizations have begun to carry out internal benchmarking to assess their state of KM and to focus on necessary improvements. This effort is supported by the cases of leading organizations in KM. For the study reported in this paper, we use the Knowledge Management Diagnostic (KMD) developed by Bukowitz and Williams (1999). The knowledge management processes in this model are similar to the processes in the APQC model.

As we do not yet have any superior performers among research organizations in DC that could act as benchmarking partners, our study is exploratory and descriptive. Nevertheless, this study can contribute to identifying and sharing best practices. Our purpose here is to present our exploratory research to form a basis for selecting benchmarking partners for research organizations in DCs and to provide sources of learning for others.

Research Methods

The case organizations

We carried out our study in eight different research organisations (Table 1) in three countries, two in West Africa – Nigeria and The Gambia – and one in South Asia – India. The organisations studied were chosen because they are all research organisations, broadly in the same fields and as such, in business of creating new knowledge and making the use of this knowledge possible in production and delivery systems. The major differences among research organisations are in their focus of research, funding level, and operating environment.

Organization	Full name	Country	National or international	Staff
ICRISAT	International Crop Research Institute for the Semi Arid Tropics	India	International	> 500
IITA	International Institute of Tropical Agriculture	Nigeria	International	> 500
ITC	International Trypanotolerance Center	The Gambia	International	100-200
MRC	Medical Research Council Laboratories	The Gambia	International	> 500
NARI	National Agricultural Research Institute	The Gambia	National	100-200
NIMHANS	National Institute of Mental Health and Neuroscience	India	National	> 500
NIMR	Nigerian Institute of Medical Research	Nigeria	National	> 500
NISER	Nigeria Institute of Social Economic Research	Nigeria	National	100-200

Table 1. The case organizations

By population, Nigeria is representative of countries in Sub-Saharan Africa and organisations there can possess the characteristics of other organisations in the sub-region. The Gambia, on the other hand, as a small country, provides a good comparison for Nigeria with a better infrastructure, a more stable business environment, and a consistent government policy. The advances of India in software business and the commitment of government in knowledge-based activities make it a strategic place to study KM. However, these industries are in the minority and could not be viewed completely as indigenous. India epitomizes a developing country as well as well-established practices in some sectors.

Of the eight organisations, four are international: International Institute of Tropical Agriculture (IITA, Nigeria)), Medical Research Council Laboratories (MRC, The Gambia), and International Trypanotolerance Center (ITC, The Gambia), International Crop Research Institute for the Semi Arid Tropics (ICRISAT, India). Four are national: National Agricultural Research Institute (NARI, The Gambia), Nigeria Institute of Social Economic Research (NISER, Nigeria) and Nigerian Institute of Medical Research (NIMR, Nigeria), National Institute of Mental Health and Neuroscience (NIMHANS, India). The national organisations are mainly dependent on the national government for their basic funding. Usually the international organisations have a substantial number of expatriates working in them for the duration of their project.

Five of the organisations are large (IITA, MRC, NIMR, ICRISAT and NIMHANS), with more than 500 staff. The smaller three (NARI, NISER and ITC) have 100-200 members of staff. All of the organisations carry out their research within several sites. Also, all of them have in-country and international collaboration with other institutions. Thus they all work in a wide network of sponsors, customers, and cooperating institutions.

Data gathering and analysis

The state of KM processes and enablers were examined through an exploratory case study and analysis (Yin, 1994), with multiple cases. We used several methods of data gathering which were then triangulated. Semi-structured interviews were complemented with short time on-site observations and surveys with quantified responses. Organisational documentation and presentations by senior management about their KM-related initiatives were also collected and analysed. The interviews were recorded on audiotape and in a field diary and later transcribed. As the visits were brief and as all instruments had to be filled out with the researcher present, the time was only sufficient for observation of some KM practices, as others may appear only periodically.

Visits were made to all these organisations for a minimum period of two weeks each. Between January and March 2001, one of us visited all the six organisations in Nigeria and The Gambia, and between May and June 2002, visits were made to the two

organisations in India. Some of the research sites of each organisation were visited and as many as possible of the people were interviewed, especially the heads of sections, the IT managers and the librarians. We asked them to fill out the questionnaires and to provide relevant documents. Individual researchers provided valuable insight into the actual work processes. We addressed the issue of under- or over-reporting that could result from imbalanced selection of the informants (Gold, Malhotra, and Segars, 2001) by including people at various cadres.

In Nigeria and The Gambia, a total of 48 people participated in the study, 29 of them were interviewed and did the questionnaire, 8 did the questionnaire only, and 11 were interviewed only. However, only 31 out of the 37 questionnaires were included in the final analysis, because six of them had to be eliminated due to low response to the questions.

In India, 26 people participated, 16 people were interviewed and completed the questionnaire, 6 did the questionnaire and 4 were interviewed only. Only 19 out of 22 questionnaires were included in the final analysis when three had to be eliminated due to low response to the questions.

The Knowledge Management Diagnostic

The main instrument of focus in this paper is the Knowledge Management Diagnostic (KMD) created by Bukowitz and Williams (1999). KMD enabled us to learn about the KM efforts of an organisation, also when these efforts were not called 'KM'. The KMD is presented in a book (Bukowitz and Williams 1999) where a detailed framework for thinking about the KM processes is given. The knowledge management processes are broadly categorised into tactical and strategic processes: get, use, learn and contribute are categorised as tactical while build and sustain, assess, and divest are strategic. In the discussion of each process, several examples of organisations in the Western countries are used. The original KMD diagnostic contains 140 questions, 20 questions for each of the seven knowledge management processes. The respondents are expected to choose from three options of whether the statement is strongly, moderately or weakly descriptive of the organization. The more strongly the statements in the section are descriptive of the organisation, the higher is the score. The maximum total score is adjusted to be 100.

The KMD includes several assumptions that might not necessarily be relevant to developing countries. We used this questionnaire in Nigeria and The Gambia with full understanding of these limitations and provided for these shortcomings with the qualitative data. This was needed, as many questions were left unanswered, especially in the strategic processes of assess, build and sustain, and divest. Our enquiry revealed the reason being the irrelevance of these questions to the nature of their organization or that the respondent was not in the right position to provide a genuine response.

After this, we decided to modify the original KMD using the response rates to each of the questions and whether the question could be consider relevant to research organisations.

All seven KM processes remained but some questions were removed, especially from the sections of strategic KM processes of assess, build and sustain, and divest. Most of the removed questions were addressed to the more senior people in the organization during the interviews.

We eliminated eight questions from the original 140 and we restricted responses to another 25 questions to only management and senior staff. This reduced the total number of questions in the instrument to 107. Where necessary, we also changed the wordings of the questionnaire and added some phrases to others. We recognized the activities of research organizations which include also project and service development in addition to product development, which was the only emphasis is the original questionnaire. We also provided for the role of partners and collaborators to extend the narrow emphasis on customers. Thus the main purpose of the amendment exercise was to reduce ambiguity and to avoid low response rate by including only relevant questions. In calculating the percentages, the changes were taken into consideration. With the preliminary results of our study in India we find these modifications to be successful and to result in more accurate data.

Even though we still had to eliminate three questionnaires from the India study for low response, we could not associate the low response to any problem with the questions. The questionnaires eliminated were under-filled in all of the seven processes. This could only be due to lack of interest or time to complete the questions. The number of questions answered per questionnaire is higher in India than in SSA. However, we could not completely associate this performance only to the amendments in the questionnaire, as more of the respondents in India were familiar with KM, when compared to their colleagues in SSA.

Knowledge Management in Research Organizations

Findings from Sub Saharan Africa (Nigeria and The Gambia)

The assessment (see Table 2 and Table 3) revealed that the research organisations in SSA generally performed well in their efforts in creating, finding and collecting internal knowledge and best practices (GET and LEARN). They averaged in sharing and understanding those practises (USE, CONTR, and SUSTAIN) and were weak in adapting and applying the practises to new situations (ASSESS and DIVEST). The highest score was received by IITA for information gathering (GET), but it was only average in assessing and divesting knowledge (ASSESS and DIVEST). The lowest score was won by NIMR in getting rid of obsolete knowledge (DIVEST). However, NIMR fared well in getting knowledge (GET) and learning (LEARN). NARI's performance was similar to IITA, with the highest score from getting knowledge combined with the lowest score in divesting. MRC and NISER showed a similar pattern in most of the processes. Thus there appears to be many similarities in these organisations. IITA had the best overall performance in the assessment, while ITC, NISER and NARI were in the same range.

NIMR and MRC were at the end of the assessment scale. Out of all the six organisations in SSA, only IITA expressly has a KM initiative as a part of their strategic plan.

	GET	USE	LEARN	CONTR	ASSESS	SUSTAIN	DIVEST	*AVG.*
MRC	72.75	65.25	69.50	67.00	63.25	68.75	66.00	*67.50*
NARI	80.83	73.75	77.64	71.53	71.94	68.06	66.67	*72.92*
ITC	75.94	75.31	80.94	77.19	79.06	81.56	78.44	*78.35*
Average	*76.51*	*71.44*	*76.03*	*71.91*	*71.42*	*72.79*	*70.37*	*72.92*

Table 2. KMD results in The Gambia

	GET	USE	LEARN	CONTR	ASSESS	SUSTAIN	DIVEST	*AVG.*
IITA	91.25	81.67	82.08	87.92	75.42	85.83	76.25	*82.92*
NISER	77.14	74.46	75.89	79.46	71.07	68.57	75.71	*74.62*
NIMR	80.00	67.50	73.33	68.33	57.50	68.33	54.58	*67.08*
Average	*82.80*	*74.54*	*77.10*	*78.57*	*68.00*	*74.24*	*68.85*	*74.87*

Table 3. KMD results in Nigeria

If we compare the countries, the average for the three organisations in The Gambia was 72.92 and for the three organisations in Nigeria 74.87. Thus there is a slight difference between the countries, but not in the direction we expected. If we compare international to national organisations, the average for the international organisations is 76.26 and for the national organisations 71.54. Here the difference is larger and in the expected direction. IITA in Nigeria ITC in The Gambia showed similar outcomes. The exception is MRC, with only 67.50 in average. This can be attributed to present management and IT crises, that may well be temporary.

The KM processes are required to be supported by enablers. In SSA, we confirmed the necessity of the enablers that have been identified in earlier studies, although the assumptions about them require some local considerations. We also found some influences that are not often reported as enablers of KM. While most studies have established the influence of the organisational culture on KM, our study revealed that also other spheres of culture, such as the national culture, could also affect organizational KM We also found that social infrastructures such as the educational system, financial infrastructures such as banking, and economic infrastructures such as transport and communication systems that are often taken for granted as influences on KM, are crucial and problematic in SSA.

Preliminary findings from India

In this section, we present the KMD results for the two India organizations (Table 4). Overall, the averages are considerably lower than those in Nigeria and The Gambia, even though the scores were adjusted. This is a surprising outcome, since with the international reputation and with our observations on site, we would expect to get higher scores in India because the respondents are more knowledgeable about KM. However, with the amended questionnaire; they might have answered the questions more carefully than was done in SSA. The lower scores may also be attributable to the amended KMD instrument, but we can only make this conclusion after the final analysis. Due to this issue, we will restrict our comparisons between SSA and India to trends only.

	GET	USE	LEARN	CONTRI	ASSESS	SUSTAIN	DIVEST	AVG
ICRISAT	71,93	69,96	68,26	69,91	55,68	73,66	61,11	67,22
NIMHANS	66,73	61,09	63,45	59,33	49,03	60,21	46,83	58,09
Average	69,33	65,52	65,85	64,62	52,35	66,93	53,97	62,65

Table 4. KMD results in India

The two research organisations in India gained their highest scores in getting knowledge (GET). Their scores were average in using, learning and sustaining the knowledge (USE, LEARN, SUSTAIN). Like the organizations in SSA, ICRISAT and NIMHANS also had a relatively high score of SUSTAIN. Like the research organizations in SSA, they were weakest in adapting and applying the practises to new situations (ASSESS and DIVEST).

ICRISAT, an international organization, had higher scores in each of the knowledge processes and on average than NIMHANS, a national organization. ICRISAT, like IITA, has a KM initiative as part of its strategic plan and this could account for their performance in the assessment. It is important to note that ICRISAT and IITA both belong to the same CGIAR network (Consultative Group on International Agricultural Research). Via CGIAR, their strategies are being influenced by system-wide initiatives, for example in information and knowledge management. In these two institutions, the chains of influence were thus easily noticeable.

The additional questions on strategic processes were addressed to only the senior and management staff. The preliminary analysis is presented in Table 5. The results are similar to the figures for these processes in Table 4, which are the results of the staff overall. ICRISAT still leads in general performance except that senior and management staff seem to understand the state of divest better than the staff overall. The impact of addressing these questions to the senior and management staff was reflected in their responses as they were likely to have the information requested.

	ASSESS	SUSTAIN	DIVEST	AVG
ICRISAT	65,63	67,26	74,35	69,08
NIMHANS	46,88	55,56	58,33	53,59
Average	56,25	61,41	66,34	61,33

Table 5. KMD in India: strategic processes answered by management

During our discussion with interviewees in India, we were able to confirm the influence of national and other spheres of culture on KM. We learnt how the strong professional culture could interact with the national culture, to support effective KM. For example, the concept of "guru" is still well known in India and exists in the minds of many people. It is not impossible for subordinates to see their seniors as a gurus and treat them accordingly. However, the professional culture of researchers that encourages knowledge sharing seems to neutralise the effects of any possible "guru thinking" in Indian research organisations.

We also found that the investment of the Indian government in infrastructures is having a positive effect on the knowledge management efforts in the organisations we studied. Unlike in SSA, there are hardly any difficulties in getting experienced IT experts, when there is a need to approach KM technologically. The technologies that could support KM are a given in Indian organisations. For example, no researcher personally pays for the Internet connectivity, unlike what we found in SSA.

Discussion and conclusions

Overall, the smallness of differences in the scores overall could be attributable to the nature of research work itself and to the qualifications of the researchers themselves. The KMD results presented above show that research organizations in both SSA and India generally get higher scores in the tactical processes and lower scores in the strategic processes. However, one common strategic knowledge process, where all the organizations did well, is build and sustain (SUSTAIN), a process that involves building knowledge through relationships with employees, suppliers, customers and the community in which they operate, even with competitors and collaborators, and subsequently deriving value from it. Probably due to the nature of research, which makes knowledge sharing fundamental and basic to their work, they are able to do these processes well enough.

The results also show that international organizations generally have higher scores than the national organizations. The national organizations could learn from the international organizations, especially regarding the strategic knowledge processes. All knowledge management processes are supported by a number of enablers (which have been identified as strategy and leadership, technology, measurement and culture) and the differences could be traced to these. It could mean that the international organizations provide better enabling environments for the knowledge processes. Also, the international organizations tend to spread their policies and operating procedures globally. Since most of the international research organizations have their headquarters in Europe or in North America, the longer history of KM there is likely to have influenced them.

The organizations that explicitly have a KM project as part of the medium term plan, IITA and ICRISAT, gained high scores in the strategic process of build and sustain.

Davenport and Prusak (1998) suggest that explicit labelling of KM projects could increase their success and our findings support this. Since it is a general practice in benchmarking to take the best practices from several organizations (Nath and Mrinalini 2000), we can suggest that research organizations look beyond one organization for ways of improving their knowledge practices.

Even though we have excluded detailed discussions of the enablers, due to the still ongoing analysis, we can readily report that the knowledge processes are dependent on various contextual factors that, when adjusted, result in different outcomes. As we have argued earlier (Okunoye and Karsten, 2002b), the support and commitment of government to provide appropriate infrastructure could have a significant influence on KM also within organisations.

Based on these preliminary findings, we will continue our analysis to see the influence of the enablers especially the operating environment, which we have found to have influence on KM in organizations in SSA. After this analysis, we would have basis for comparison of all eight organizations and could then talk about the general state of KM in developing countries.

With this paper, we have been able to show that organizations in developing countries are also aware of the KM issues but that there are variations in the capability of each organization in knowledge processes. We are able to conclude that international organizations appear to be paying more attention to KM than the national organizations and could then be useful for benchmarking purposes.

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