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INFORMATION RETRIEVAL AND KNOWLEDGE MANAGEMENT SYSTEMS

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Introduction: Purpose of the topic

The main purpose of this course is to bring the comprehensive understand on how different retrieval systems help to solve problems of Knowledge Management in providing massive data stores and ranking the results by relevance, and also to give the general idea of how it provides organizations with immediate values of information already existed in the electronic information. Firstly, there will be presented some definitions of the terms regarding the Information Retrieval and Knowledge Management.

Information retrieval can be defined as the art and science of searching for information in documents, searching for documents themselves, searching for metadata which describes documents, or searching within databases, whether relational stand-alone databases or hypertext networked databases such as the Internet or intranets, for text, sound, images or data¹.

The main aim of Information Retrieval is to obtain the useful data and leaving the data that is not needed at the particular moment.

Taking an example of the education system, today is different from the last two decades. It consists today in electronic data many schools and universities use very little the physical library, most of the books, magazines and journals are all in the electronic format. Therefore there is a need of having a discipline in the retrieval and usage of this data.

Lúrio University will be used as the case study in this matter focussing on the SIGUL (Sistema Integrado de Gestão da Universidade Lúrio). This system has the data of all the

¹ Kumar, Human computer interaction

students and the faculty members of Lurio University. The students can also access their digital library, the moodle and their grades through it.

Description

This course will introduce the students in how to solve the problems of Information Retrieval (IR) using the knowledge Management System (KMS). This problem comes in due to the rapid growth of potential of the educational applications. Today, students all over the world are able to obtain both textbooks in physical format as well as the libraries located in the World Wide Web. Learning material far way the imagination but the most relevant are easily accessible to everyone. Just like other parts of the world, many academic institutions in Mozambique are being connected to the national wide network service known as MORENET.

MORENET is a project of the Mozambican Government with the aim of interconnecting the academic institutions both Public and Private in Mozambique with the aim of sharing the digital resources among the universities. With this project, teachers and students will be able to get learning materials from any server, textbooks, especial internet learning forums. They will be able to communicate with their colleagues or specialists of a particular area of study and exchange information. I have been involved in MORENET project since 2003, when the Ministry of Science and Technology started to disseminate the information of this project to various universities both public and private.

SIGUL

SIGUL – Sistema Integrado de Gestão da Universidade Lúrio was created under my supervision in 2013. This data base has the capacity of introducing all the information of the students at the time of registration, all the information concerning the human resources of the university as well as the financial situation of the student. It has also the component of the

digital library and Moodle. It allows to retrieve the data of the students. The students as well as the staff are able to retrieve and share the information such as digital books, assignments, research results and the university journal. This page can be accessed on “<http://ciul.unilurio.ac.mz>”

Before going into the details, there is a need of understanding how the information is structured or organised.

Structured and Unstructured Information

According to Vangie Beal, Information Retrieval covers both unstructured data and structured data. ²

UNSTRUCTURED INFORMATION

Vangie Beal says that unstructured information represents data that doesn't have clear structure such as text, paragraphs, images, sounds, etc.

STRUCTURED INFORMATION

Vangie Beal still defines the structured information as the data which has structure such as table of data in a database, sometimes a document can also be a structured data which has header, footer etc.

KNOWLEDGE MANAGEMENT

After defining the Information Retrieval, there is a need of also defining the Knowledge Management. According to the Wikipedia, Knowledge Management (KM) defined as a process to acquire, develop, share, and effectively using organizational knowledge. It refers to

²Vangie Beal, Structured and Unstructured data

a multi-disciplined approach to achieving organizational objectives through the effective usage of knowledge.

KM was set up as a subject to be taught in schools in 1991, comprises subjects ministered in areas of business administration, information systems, management, and library and information sciences. Lastly, a number of areas of study began to give their tribute to the research of Knowledge Management. They include information and media, computer science, public health, and public policy.

The main purpose of Knowledge management at UniLurio (Lurio University) is to focus on the University's goals as a way of improving the performance, competitive advantage, innovation, and to share the learning material, integration as well as the ongoing progress of the University as the whole.

General Analysis

According to AtulGupta in the Journal of Knowledge Management Practice published in October 2002, says thatKnowledge is the key to effective competition. Taking as an example of a developed country such as South Korea, which has emerged from the poorest countries in the past sixty years today is one of the most growing economy countries in the world.

Watching at the reporter on BCC on 31 of May in the program entitled “working lives”, showed in his report that the key to the fast growing economy is due to the desire the people of South Korea have on seeking knowledge and innovation.

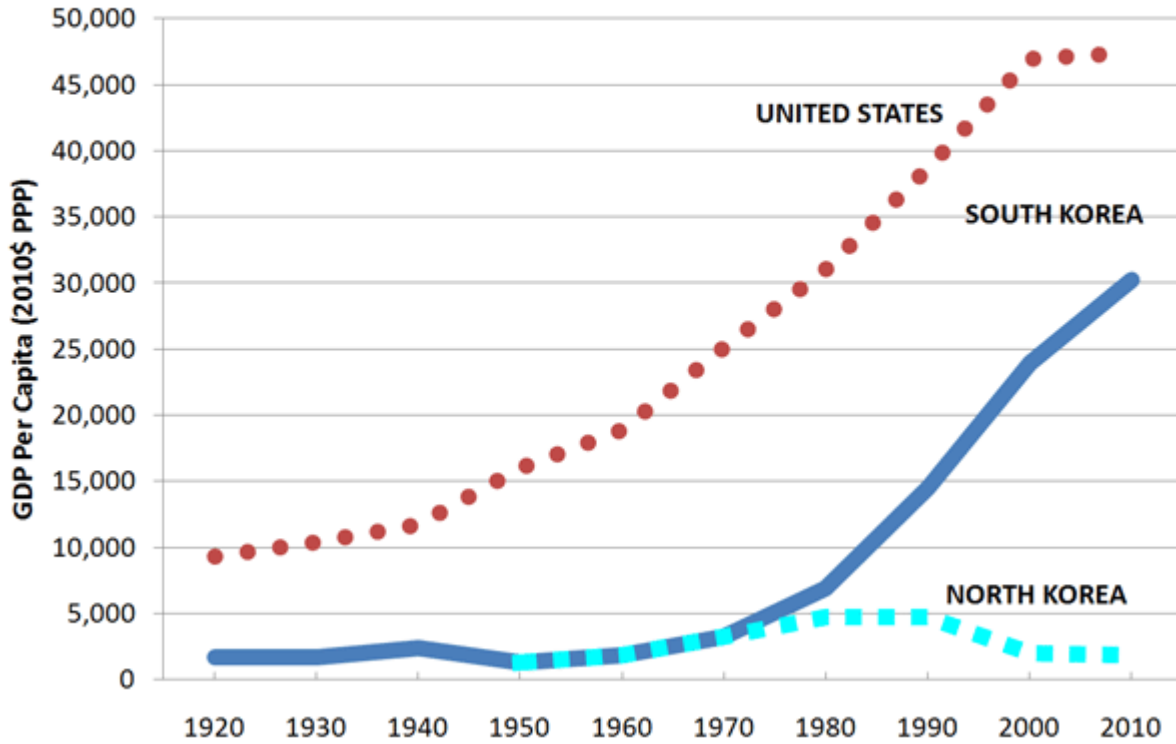
Different from other countries,the reporter showed many statues of piles of books and of people reading books. This captured a lot of my attention, reflecting on the need of acquiring knowledge and how to use it effectively.

In order to get the knowledge, there is a need of creating a relevant Information Retrieval system. When the population are able to get the relevantinformation at the right moment, they are able to gain the necessary knowledge that will lead them toinnovation.

The following chart compares the economy growth between Korea and US. A critical look at this chart, after the Korean War in the 1950s, South Korea dedicated in gaining knowledge and innovation as a result its economy started growing very fast.

Economic Growth: Korea & US

1920-2010: GROSS DOMESTIC PRODUCT PER CAPITA



Actualization

SIGUL – Integrated Management System of Lurio University

SIGUL is system which is still in its implementation stage. In this system there are four modules with different levels of access as well as purposes. Here are following modules:

Academic Registration

Under this module the University registrar, registers the students for the first time as they come to the university whereby they compile the initial data of students. After that, every semester the students are registered and are attributed into their respective classes.

So in this module, it is possible to search for all the registered students as well as the students per class, course, year and sex. It gives the entire report of all the registered students in the system.

Human Resources

In this module, only the department of Human Resources have access. It is where the lectures are registered as well as the entire university staff members. The human resource personnel are able to retrieve the report of the staff by category, the admission data or year, as well as the personal data as such age, academic level, nationality etc. This report helps the Human Resources Management to proceed correctly with the promotion of the staff and the change of category of the staff.

Finance.

Under the finance, the department of finance controls the student who pay their school fees and the respective report. They also manage the salaries of the staff registered by the Human resources department.

Moodle

The moodle module, the lecturers interact with their students. They have discussion forums, the assignments are posted by both lectures and students. The lecturers also post the corresponding text books or learning materials relevant for their classes.

Therefore in SIGUL we have the knowledge being managed and the information being retrieved in different levels, for different purposes according to the needs of an individual.

Discussions

Knowledge Management and Information Retrieval: *issues, challenges, and benefits*

Knowledge management, as an academic area, is in the process in growing progress; nevertheless, there are some difficulties related to the difference between the variety of the academic base as well as the concept and its applied application.

It is commonly said that if the human effort is applied into the Knowledge Management projects, the output will be better. Especially looking at the quick access of information, the organization and the structure of the information. Taking as an example of SIGUL, students and the staff are able to get the information they need just at a click. There is a dramatic reduce of paper work and its subsequent storage.

However, there is a need of obtaining the well trained IT technicians who can deal with the everyday issues of maintenance of the system. The end users also need to be trained.

Reasons Why Knowledge Management Fails

Information Retrieval and Knowledge Management is good when it is well handled, there a number of reasons why this good subject fails in many institutions.

Firstly, fails when there is lack of knowledge to action link, commonly verified when there is a replacement of leadership with knowledge management.

The second reason has to deal with bad habits, thirdly is lack of sharing knowledge with others.

General Recommendations

Knowledge management and Information Retrieval should be comprehended as a good manner of to keep, share, and maintain the data.

Therefore, the information system managers in particular, should do their best keep this principle in mind. For in so doing they will be able to disseminate the information to the right people at the right moment.

The end users also have to be incentivised to use the data available in the digital format. However, some institutions do not have enough computers in their offices for everyone. Not all the public institution in Mozambique have the computers for everyone in the office.

The challenge is how and where to get affordable computers? Apart from the computers, the other main obstacle to the access of digital information has to do with the limited access to the internet. Just as an example, the cost of the 1 MBPs leased line of data in Mozambique costs above a thousand dollar. An average Mozambican lives per day with less than fifty cents.

The government has a lot do in order to create mechanisms to reduce the cost of internet especially to the academic institutions in order to improve the learning process of the universities.

Conclusion: A new perspective

Knowledge Management and Information Retrieval are important for the growing process of the institutions, therefore it is important to use the available resources and methods in the institutions. Lurio University for the past seven years has engaged in creating models and methods for the implantation of the Knowledge Management and Information Retrieval System.

It has been integrated under the “Digital University Project”. The first step in this project was the building of the connectivity between the campuses; Pemba (Pemba Campus) - Nampula (Marrere Campus) and Niassa (Sanga Campus) - Nampula (Marrere Campus). The links converge to the Campus Data Centre in Marrere, and Gateway to the Internet is made through the TDM (Telecommunication of Mozambique) network.

The second step was the configuration of data base servers, Default Gateway Sever, Mail server, PBX server for the Voice over Internet Protocol Phone systems in Marrere main campus.

The third step was to organize on job training for the end users of the system, both the staff and the faculty members in general. The students also are informed and trained in how to get access to the information found in the system as well as how they can communicate with their

lecturers through the system. The training the students is done once in the year, usually at the beginning the academic year.

The main purpose of this project is to help the students and lecturers have free and reliable access to the digital data, consequently, there is a need of having available workstations for all the students and lecturers. The number of students has increased to about 2500 in this year of 2015, and not all of them are able to have conditions of purchasing laptops at the normal market price since most of them come from very humble families.

The university will need to provide the laptops equipped with the Microsoft operating system licensed by the Microsoft to the students and lecturers at an affordable price affordable.

In 2013, most of the students and lecturers, were able to get a free sim card from Movitel (Mobile Telephone company) with a free 50 MB of data every month, unfortunately, not all of them are able to use these sim cards due to lack of laptops.

Expected results with the implementation of the Knowledge Management Systems and the Information Retrieval are as follows:

Strengthening and modernization of communication infrastructure in the faculty campuses, so they can meet the challenges of contemporary society and the demands of the academic community, including the combination of classroom learning with distance learning;

Adoption of optimal conditions for the development of academic activity and teaching, contributing significantly to the improvement of teaching and learning and the promotion of research and development (R & D);

Provide Data Centre operating conditions at the level required of users of the academic community and staff of Lurio University;

Improving quality and widening of access cover on the Internet on all public space on campus;

Improving the level of technological literacy of faculty, students and staff;

Increased production and availability of materials to support teaching, learning and assessment activities;

Feasibility of direct contact of video, voice and data among the campuses of Pemba and Sanga and the units of administration and management at the University in Nampula;

Enrichment of electronic platforms to support teaching and management, such as the digital library system of records, e-learning, Intranet, among others;

With the technological and industrial capacity will be possible to establish links in real time with other universities and research institutions at national and international, which will contribute to the development of knowledge, as well as the rapid internationalization of the institution.

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