Framework for Growing Businesses in Nigeria through Knowledge Management

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Abstract

During the course of transactions, organizations generate large amount of data. They also spend a lot of resources trying to transform these data into information and consequent knowledge. Storing and applying knowledge empowers organizations to succeed in the competitive environment. Data stored in various databases of the organization must go through the processes of extraction, transformation and loading into the data warehouse. Data in the data warehouse can be processed to observe trends and behaviors that can help build business intelligence. This paper is a framework that describes the techniques and tools for building and using knowledge warehouses that will enable organizations in Nigeria to management and apply repository of knowledge that will insure organization's growth and survival.

Keywords: Data warehouse, Data Marts, Knowledge management, Database, Operational data, Query, On-Line Analytical Processing, Data mining, Reporting.

1.1 INTRODUCTION

There has always being a major driver of the economy in any given era as Man attempts to better his lot. In the agricultural era, the major driver was labor. In the industrial era it was capital. Today, it is information. The production and distribution of information has really helped in making quality decisions. According to Kenneth And Jane Laudon (2007), "About 55 percent of United States labor force consists of knowledge and information workers, and 60 percent of gross domestic product of U. S. comes from knowledge and information sectors, such as finance and publishing".

Since the recognition of information systems as a vital tool in the production process, organizations have come to realize the importance of managing knowledge. Knowledge is a component of company's intangible asset which sometimes determines the market value of such companies.

As Companies and organizations in Nigeria do business, they collect large amount of data relating to the business operations. The data that are collected needs to be consolidated for future reference especially during planning process. Interpretation and analysis of these data can provide valuable insights into their business operations. This would help to identify areas that need improvement. Most third world countries including Nigeria, lacks the ability to convert data into knowledge. This is evident in the way and manner we run our systems. It is the purpose of this paper to develop an information technology framework on which business organizations in Nigeria can grow their businesses and make profit using tools of knowledge management.

1.2 What is Knowledge?

According to Bipin C (2010), "knowledge is an abstract entity that can be characterized according to its use. We consider knowledge to be a justifiable belief. We use a pragmatic rather than the philosophical approach in a knowledge base system" Knowledge is a component of information. It is a component that has gone through the processes of extraction and filtration. There are different types of knowledge such as: common sense knowledge, scientific knowledge, and knowledge derived from information. Common sense knowledge is information that has been validated by common sense experience. Scientific knowledge is information (hypotheses and theories) validated by the rules and tests applied to it by some scientific community. Generally, when we talk about knowledge we tend to mean knowledge derived from information which is subjected to some tests of validation.

Data captured by organizations as a result of various transactions are not useful unless organizations use additional resources to organize them into groups of understanding (information). Companies spend additional resources to discover patterns, contexts and rules where the knowledge can work. Wisdom is the collective and individual experience of applying knowledge to the solution of problems (Kenneth and Jane Laudon, 2007). From the above, we can see that knowledge is a type of asset to an organization such as building, financial assets etc. This is why managers in developed countries of the world strong to the view that information systems is an integral part of production systems.

Accumulation and storage of knowledge in specific discipline or business function area assists managers take quality decisions that affect the future of their organization.

In business world, we can have knowledge that describes business models and procedures, business rules are often used to capture how activities are performed within an organization. Best practices capture the knowledge and behaviors of skilled employees.

The knowledge base stores all relevant information, data, rules, cases, and relationships used by expert systems. Knowledge base is a natural extension of a database (Raiph M and George W, 2003).

2.1 The role of Data warehouse in knowledge creation and Management

Databases of different business functions are used to store and track transactions, such as payments and purchases by organizations. These organizations in most cases will acquire tools for analyzing data from multiple systems located at their different sites. The tools will include data mining, Query, data mart and Online Analytical tools.

Figure 1: Data Warehouse
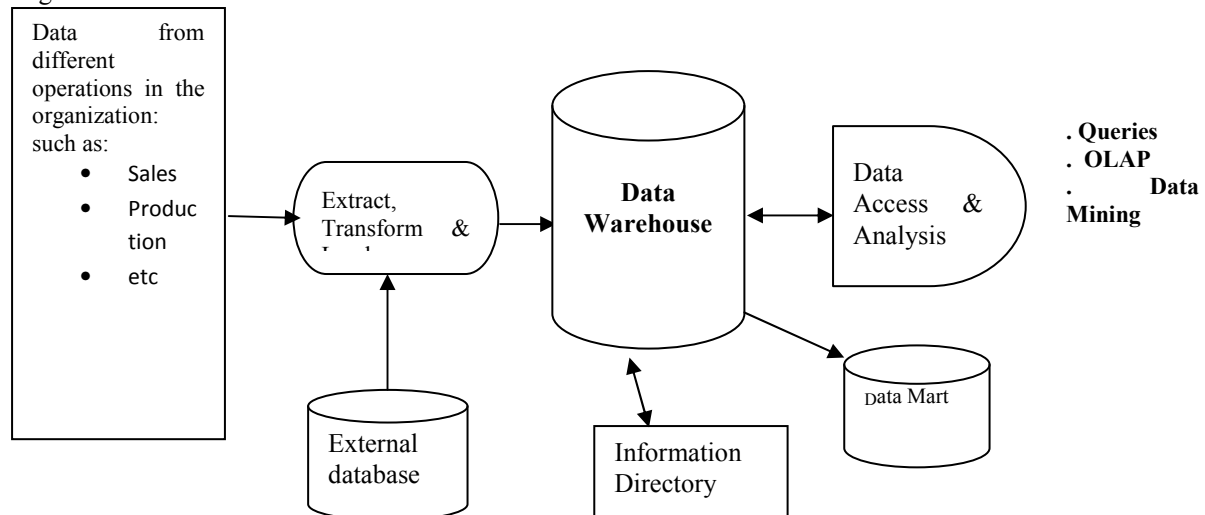
A data Warehouse contains historical data of vital interest to decision makers in the organization. The data is vital because it originates from different transaction systems in the organization, including data from the web sites. Tools for extraction, transformation and loading of data are applied to the various data bases to create a data warehouse.

A dataware house is built using tables (fact table) and is organized by subject. The table contains the records and is located in a place that is central to all users. The columns are the variables while the rows are detailed activities

A data warehouse is built and maintained by professionals to support business and assist managers in making intelligent decisions. Some of the advantages of data warehouse over production databases are:
- Data analysis can be done within several domain at the same time
- Data can be categorized into dimensionality, time variant and granularity.

2.1.1 Data Marts and Data Warehouse

A data mart is a subset of a data warehouse in which a summarized or a highly focused portion of the organization's data is placed in a separate database for a specific population of users. Data mart typically focuses on a single subject area just as the knowledge base. It is faster and easier to construct than the enterprise data warehouse.

Once data are captured in data warehouse and data marts, they can be further analyzed to discover new patterns, trends and relationships that are useful for guiding decision makers. Data mining is an information analysis tool that involves the automated discovery of patterns and relationships in a data warehouse.

2.1.2 On Line Analytical Processing (OLAP) and Data warehousing

Analyst use tools of OLAP to provide various reports to support decision-making. These tools are used on historical data in the data warehouse to support managers at different levels of decision-making. The technology of OLAP provides effective use of the data warehouse by providing on-line analysis, and complex analytical queries. OLAP provides multi-dimensional presentation or view of data in the data warehouse.

2.1.3 Business Intelligence, Multidimensional Data Analysis and Data Mining

The tools for consolidating, analyzing and providing access to vast amounts of data to help users make better business decisions are often referred to as Business Intelligence. Business intelligence provides firms with the capability to collect large amount of information; develop knowledge about customers; competitors and internal operations; and change decision making behavior to achieve higher profitability and other business goals.

Figure 2.1: Business Intelligence
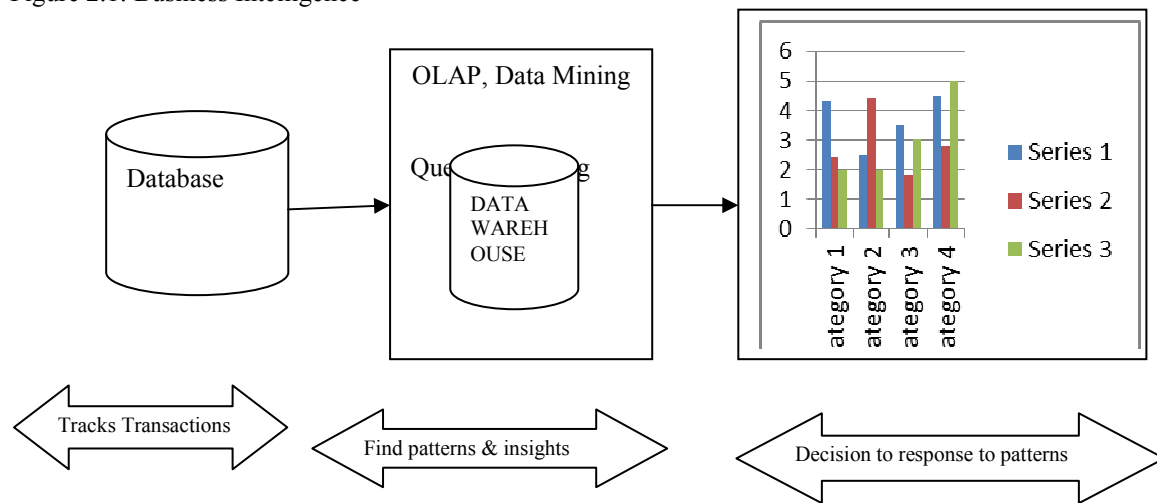
Data Mining
Data Mining is more discovery driven than OLAP. It provides insight into corporate data by finding hidden patterns and relationships in large database and inferring rules from them to predict future behavior. Types of information obtainable from data mining include:

- Associations
- Sequences
- Classifications
- Clusters
- Forecast

2.2 Data warehouse, Knowledgebase and Knowledge management:
A knowledge base management system (KBMS) is a computer system used to manage and manipulate shared knowledge. The manipulation facility includes reasoning facility, which normally includes one or more of the following forms of reasoning: deductive, or inductive reasoning. In addition to reasoning facility, a knowledge based system may incorporate an explanation facility so that the user may verify whether the reasoning used by the system is consistent and complete. Data mining tool is used in capturing information from the data warehouse that has been proven to be knowledge, and it stored in the knowledge base. The knowledge is retained and refreshed periodically in the knowledge base. It can also be transferred or applied, and all these are the objectives of knowledge management.

There is no consensus on the difference between a knowledge base system and a database system. In a database management (DBMS), the starting point is a data model that represents the data and the relationships between them; in the same manner, the starting point of knowledge base management system (KBMS) is a knowledge representation scheme. The scheme provides some mechanism to organize knowledge in appropriate hierarchies or categories in the knowledge base, so that the associated concept may be accessed. According to Bipin C (2010), the first generations of commercial KBMSs are just beginning to emerge and its integration with DBMS is a current research issue.

2.3 Framework for Growing Business in Nigeria Through Knowledge Management
The author wishes to use the DIKAR model in figure 3 to demonstrate how business can grow in Nigeria through knowledge management.
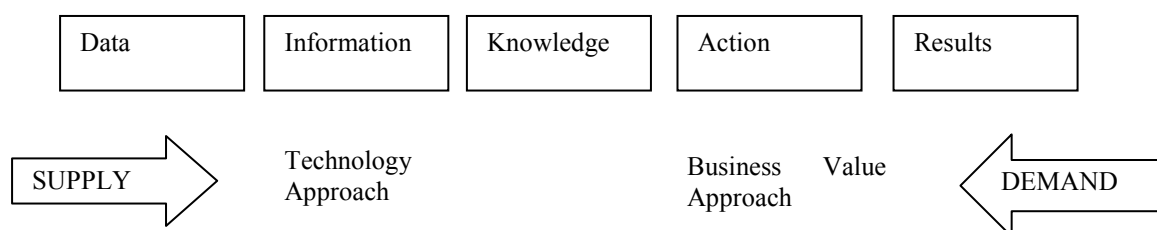

Figure 2.2 The DIKAR model (after Venkatraman, 1996)
Source: Peter Murray (2002)

The DIKAR model tracks relation between data, information, knowledge, action and reactions (Peter Murray, 2002). If we view the model from left-to-right, we will be viewing knowledge from supply-side perspective. As we get closer to data stage procedures and technology are applied. Towards the end emphasis is laid on people. Technology cannot deliver benefit that grows business rather it enables people to work better. It then means that knowledge management works better when people do things differently in a better way.

Viewing knowledge from the demand-side requires us to move from right-to-left. This is another way of growing businesss using knowledge management The movement from right-to-left in the model is called RAKID. RAKID allows organizations to use their resources in new value-adding ways thereby using their capabilities to establish their intended goals. RAKID drives knowledge from results perspective. Once organizations identify results to aim for, they must ensure that knowledge management remains focus on them. Demand side driven RAKID model can be implemented using the following techniques or their combinations:

1. Driver Analysis
2. Balanced Scoreboard Card
3. Critical Success Factors

Drivers' analysis include: Competition, Government regulations and Stock market opinion. All these drivers cause business to change over time. It is therefore the business of executives to determine the drivers that cause changes to occur in business. If any organization uses balanced scoreboard card, the objectives derived from drivers analysis can be regarded as "goals" (Peter Murray, 2002). As balanced scoreboard card has no formal statement to support how the goals are achieved, the success factors are applied to each goal.

3.1 CONCLUSION AND RECOMMENDATIONS

The knowledge warehouse is an extension of the data warehouse. It provides a facility to capture, store, and access knowledge. Combination of techniques can be used to capture knowledge. Organizations in Nigeria should realize that globalization, liberalization, and deregulation have increased the number of products seeking for customers attention. If this is true, it all means that companies must develop and use knowledge management systems as a strategic competitive tool

On the basis of this work, the author wishes to emphasis that organizations in Nigeria should embrace knowledge management as knowledge wealth can drive organizations to higher profits. It reduces organizational decision-making risk and increases chances of success.

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