Competitive Advantages of RDMS, Tacit Knowledge, Big Data in Organizations: A Literature Review

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Abstract-Competitive advantage in organization mostly depends on how their employees use their tacit knowledge. The tacit knowledge approach emphasizes understanding the kinds of knowledge that individuals in an organization have, moving people to transfer knowledge within an organization, and managing key individuals as knowledge creators and carriers. This paper reviews literature in the area of RDBMS technologies using big data to bring out the importance in the organization. The paper is able to demonstrate that analyzing big data is a key driver of organizational performance and a critical tool for organizational survival & competitiveness. Therefore analyzing, managing, sharing and utilizing big data effectively is vital for organizations to take full advantage of the value of knowledge extracted from big data. The paper also contributes that, in order for organizations to manage big data effectively, attention must be paid on three key components - people, processes and technology. In essence, to ensure organization's success based on big data, the focus should be to connect people, processes, and technology for leveraging knowledge.

Index Terms- **Competitive advantage, Big Data, Big Data Analytics, RDBMS methods and tools.**

I. INTRODUCTION

A competitive advantages is what makes your better than your rivals in your client view [1]. As for every IT experts more or less 75 percent of all category of data is generate in simply before just a bit. It has occurred for the reason that the MNC are constantly saving amount of data from data on the internet i.e. internet fora. Every day 3 quintillion bytes of facts are produced as estimated by MNC. Particularly Social Media is producing large amount of data every day.

Big data is a collection of data from traditional and digital sources inside and outside your company that represents a source for ongoing discovery and analysis [2]. Knowledge economy is use of knowledge to generate tangible and intangible values and services based on the actions and activities assigned to, required, or expected of a person or group. In recent times, increasing dependence of economy on knowledge has been propped up by quick pace of innovation in

technology and revolution in IT [3]. This has consequently fueled the surfacing of new knowledge-based industries and improved sharing of knowledge as a reserve in financial input in most conventional industries. Knowledge, now, is renowned as a pillar of modernization, a source of economic advancement and a main element in an organization's competitive gains [4]. Various techniques used in organizations are:

II. RDBMS TECHNOLOGIES

A Relational database management system is a database management system that is based on the relational model invented by Edger F.CODD of IBM's San Jose research laboratory [5].

Relational database management system has three data models [6]

- Object based data model
- Physical based data model
- Relational based data model

Hierarchal and network data model and database management systems are used for handling only structured data which is only transaction states i.e. run, ready, wait and execute [7]. In RDBMS transaction has ACID (Atomicity, Consistency Isolation, and Durability) properties which means that all the transactions are consistently processed. And run time entities are called objects in the relational databases and they are structured [8]. It has connectivity and cardinality. Table data is stored in the form of attributes and tuples.

Each attribute name is unique and has a Certain data type. Relational database there is a normalization i.e. 1st normal form, 2nd normal form, 3rd normal form, Boyce code normal form and 4th and 5th normal form. Tuples in a table and the table is mostly normalized up to 3rd normal form at least [9]. Structured Query Language (SQL) Fundamental are (DDL, DML, DCL, EMBEDDED AND TCL) [10]. It is appropriate to relational databases to manipulate data in a structured way. Queries are commands i.e. (fetch, decode and execute). It has always certain number of attributes. Even though extra attribute can be inserted later which actually should not be done as on the basis of this design the front end technology is already coded so changing the number of attribute may affect the design. In RDBMS has constraints i.e. (check, integrity, default, unique and referential constraints). Most of the tables are related to each other with Referential Integrity constraints primary and foreign keys. The

various database packages their sellers are ORACLE, SQLServer, MySQl, PostGreSQL, ORACLE 9, ORACLE10g, and 11 etc [11].

2. Knowledge concept

Knowledge is organizational science differs from the classical epistemological view of knowledge as "justified true belief" (Nonaka and Von krogh 2009) [12]. Knowledge required four conditions (such as knowledge, wisdom, information,data). It has two concepts

- Knowledge representation
- Knowledge manipulation

Knowledge science drives from Polanyi's concept of tacit and explicit knowing (Polanyi, 1962) [13]. Tacit and explicit knowledge are two types of knowledge continuum (Nonaka and Takeuchi, 1995).

Explicit knowledge is articulated in formal language, grammer, code. It is fully transferable and share (Nonaka 1991). Tacit knowledge is a personal knowledge. It is subjective and informal (Nonaka, 1995) [14].

III. BIG DATA TECHNOLOGIES

Big data refers to a process that is used when traditional data mining and handling techniques cannot uncover the insights and meaning of the underlying data [15]. Data that is unstructured or time sensitive or simply very large cannot be processed by relational database engines. This type of data requires a different processing approach called big data, which uses massive parallelism on readily-available hardware. Big data is the growth in the volume of structured and unstructured data, the speed at which it is created and collected, and the scope of how many data points are covered. Big data often comes from multiple sources, and arrives in multiple formats. It refers to the efficient handling of huge amount of data that is impossible by using traditional or non-traditional methods [16]. Big Data does not mean that some large storage and processing Centralized powerful Server to manage and process the large sized data but it is distributed storage and processing connected through Cloud Technologies to increase the parallel computing on Structured data such as Relational data, Semi Structured data such XML data and unstructured data such as Word, PDF, Text, Media Logs etc.

V's of Big Data Principle of Big data is based on 5 V's which are shown below:[18]

- *Volume:* It represents the quality of how much data we have and usually it is measured in Gigabytes is now measured in Zettabytes (ZB) or even Yottabytes (YB). The IoT (Internet of Things) is major contributor in growth in data.
- *Variety***:** Mainly Big Data aim at storing Variety of the data.In This variety may be in terms of type of data such as structured, Semi structured and unstructured data from XML to video to SMS and in many other forms.
- *Velocity***:** Velocity is the speed in which data is accessible.
- *Veracity***:** Veracity is all about making sure the truthfulness of data, which requires processes to keep restraining the bad data from accumulating in your systems.
- *Value:* The name 'Big Data' it is related to a size which is enormous. Size of data plays very crucial role in determining value out of data you want to be sure that your organization is getting value from the data otherwise this variety is of no use. Every form of data should produce value for the organization so that accurate decision making should be possible.

IV. RESEARCH METHODOLOGY

Main motive of this research paper, we have reviewed various information and research papers available online. Also, insight of organization and educational specialists and is also required for making the comparison. Deliberations with persons concerned in database areas is carried out and are transformed into results and negotiations related to comparisons of the three technologies: RDBMS, tacit knowledge, BIG DATA

V. RESULTS & DISCUSSION

The three techniques discussed in the sections before have led to the requirement of a study of thorough study of comparisons to comprehend the perspective and usability of these technologies in suitable situations. Choice of the technology depends upon the requirements of the institution or organizations. If the data is, conventionally business oriented and is more ordered in nature then RDBMS is the clear choice but if the variety over powers need of storage and dispensation of structured data then knowledge and Big Data technologies are needed.

VI. ANALYSIS OF COMPARISONS

While comparing the type of computer technology based on centralization versus Distributed/ Parallel computing architecture. In other words, RDBMS is based on the theory of centralization. Since RDBMS is lacking in accessibility of procedures, tools and methods to manage the volume, velocity, and variety of data therefore it appears that Big Data systems were introduced for managing such situations. RDBMS is quite useful on the volume aspect, but its concept is based on velocity and variety

As a solution to manage the hold up of variety, velocity and veracity if we insert ability to a relational database then it would simple mean bigger load of more memory, disk space, allocation, deallocation and computer booting, but only for that single centralized warehouse. In the context of big data, by relying on NoSQL database methodologies to manage data, we part the facts among many servers, each one hosting a smaller piece with every server inserter via the cloud computing model. On the other hand Consistency, integrity accuracy are the main merits of the relational database.

VII. ISSUES OF RDBMS

In conventional RDBMS computing example scalability is an issue to achieve. In order to achieve scalability Users have to scale relational database in terms of creating on powerful servers which in turn termed out to be expensive and difficult to manage. The ultimate solution to relational database it has to be distributed on to one tier, 2 tier architecture and further distributed database management system DDBMS and client server architecture is required [19].

RDBMS approach is more stressed on security and integrity. There is Authorization and authentication to secure the database .it is scalable in nature. It is Less Expensive as data is distributed on multiple servers of reasonable configuration; more stress on Map Reduce algorithm to support high level of parallel/distributed processing. Knowledge is a power-Reaping the benefits of Big data(McAfee 1854)

1. Big data are important for number of organizations to manage future big data challenges.
2. It handle external data and report data in real time.
3. It is more operationally efficient.
4. Focus on 5 V's.

VIII. CONCLUSION

In this paper the characteristics of three giants of methods namely. RDBMS, tacit knowledge and Big Data were compared in terms of the types of data, volume and veracity, velocity each approach has to deal. Consequently, we have found that database is progressively gaining more reputation and widely suitable viable substitute to relational databases, especially for Big Data applications. As four-fifths of data generated in today's trade organizations is in the form of amorphous formats and particularly in the form of text so a schema -less data model is regularly preferable for the variety and type of data captured and processed today.

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