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Exploring the Usage of Big Data Analytical Tools in Telecommunication Industry in Oman

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ABSTRACT

Big Data has recently become a very hot topic in the field of Information Technology and Data Management. Data generated by the company's daily operations through different resources such as social media, etc. is very important because it can bring a value that will lead to a competitive advantage. The objectives of this research are to: 1) Explore the analytical tools used to manipulate Big Data in Omani telecom industry, 2) Present the benefits of using these tools, the extent of use, and the features specifically promoted these tools, and 3) Highlight the challenges/obstacles that the telecom industry in Oman facing in adopting/using Big Data analytical tools. To achieve the research objectives two case studies were conducted among the main telecom operators in Oman. This research concluded that both studied telecom operators in Oman are not ready for the DBAs. Both operators need to invest in developing the capabilities that enable them to use these tools. Once that is satisfied, then other components like the infrastructure, tools, and data can be managed very well.

KEYWORDS

Analytics, BDA, Big Data, Big Data Analytics, Oman, Telecom

1. INTRODUCTION

Big Data is now a buzz word in organizations. It is being presented as the new 'oil' of the 21st century. The benefits that can be derived by businesses from the data they possess can be huge, but as the volume of this data grows, it will become increasingly difficult to extract the required information for good decision-making (Dumbill, 2012). Using conventional techniques to extract valuable information from that huge amount of data is not efficient and is now obsolete. For the business to be able to dig into this huge amount of data it requires special infrastructure of hardware and software tools. Analytical tools should be able to deal with the amount of data and can accommodate the business objectives in order to actually help the business (Bloor, 2014).

Big data is now greatly impacting business strategies and organizations are paying good attention to this data because it could provide them with insights that will enable them to solve an existing business problem or expose a possible business opportunity that would enable them to grow larger. Some organizations are building their own analytical tools to dig into such big data and gain these insights. These tools were built in-house and have very small features, but they serve the purpose for which they were developed. Others use ready-made tools to analyze the generated Big Data. Organizations in Oman need to jump on the bandwagon and start investing in the BD and in particular in Big Data Analytics (BDA).

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Telecommunications companies generate an immense volume of data in their networks. This data can be very useful to them if it is analyzed effectively. The Omani telecommunications industry has improved in recent years and there have been major developments in the infrastructure that have been designed to accommodate the demand of the users. The awareness among the Omani community of social networking and the use of the Internet, along with the boom in Smartphones, has contributed greatly to the increase in traffic in the provider's networks. What the telecommunications industry in Oman needs to do is to leverage the analytical tools available to dig deep into their data in order to be able to compete with new products and services, thus allowing them to retain their existing customers (Fox et al., 2013).

This paper is organized as follows: Section 2 investigates the definition of the term Big Data and its characteristics and benefits to organizations. It then explores the existing analytical tools used for Big Data, determining the features that should be included in these tools in order to make them useful and beneficial for the Telecommunications organizations. Thereafter, it investigates the Big Data concept in the Telecommunications Industry and how it could help such an industry model their business for better competitive advantage. Finally, it will shed some light on the analytical tools used in the telecommunications sector. The adopted research methodology is highlighted in Section 3. Research findings are discussed in Section 4. Finally, Section 5 concludes with a conclusion, limitations of the research and future work. Furthermore, Section 5 provides a set of recommendations drawn from the literature review as well as from the conducted survey that could be useful to the Telecom industry in helping them to make better use of Big Data Analytical tools.

2. LITERATURE REVIEW

Oman had two main telecom companies – Omantel and Ooredoo, but recently a third operator called Awasr has joined the telecom market in Oman. To further enhance the broadband connection a new company has been formed called 'Oman Fiber Optic' (OFO). OFO is dedicated to its goal of providing fiber optic cabling to every house and every commercial unit.

The introduction of social media, 'Internet of things', cloud computing, Big Data and many other emerging data sources put a great burden on the telecom operators who are trying to manage the huge amount of data being channeled through their systems. This huge data is called 'Big Data', which is the target of our investigation in this paper. In particular, this research is focusing on investigating the use of Big Data analytical tools in the Omani telecom industry.

2.1. Big Data

The term 'Big Data' has been defined differently in different studies, research, and expert understanding. The common understanding of Big Data is a massive amount of events, traffic, alerts, transactions, or interaction logs which occur due to the installation of devices, or through providing services (Hsu et al., 2014). IDC defines Big Data as a set of technologies and architecture that enable the generation of large amounts of data (Gantz and Reinsel, 2012).

Big Data requires a specific architecture for storage, security, and manipulation. The processing of the accumulated data such as the capturing, storing, and retrieving cannot be performed using the traditional processing capabilities. From this perspective, there was a need for a different architecture to process this large amount of data. These architecture changes involved changes to the network links to transmit data, storage capabilities, servers, security frameworks, and the tools to retrieve and manipulate the data. Special tools were developed in order to handle the analytics of this large amount of data. These tools became smarter as time passed, and the intelligence embedded in them allowed organizations to find valuable information in specific areas (Schoenborn, 2014).

Bughin et al., (2010) discussed in their paper that Big Data is ranked as number five out of ten trends that can be applied across the organization that will encourage it to venture outside its traditional boundaries in order to create new opportunities or solve business problems (Bughin et al., 2010).