Role of the Big Data in developing Egyptian SMEs

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ABSTRACT:

The study aimed to describe the role of the big data in developing Egyptian SMEs, especially on The Kerdasa region. Moreover, the sample size was 100 owners of SMEs. Where they answered a questionnaire about the role of the big data in their small projects and how can they benefit from big data analysis. The results showed that big data is necessary for SMEs & governments need to pay attention to big data and access it to SMEs owners.

Keywords: Big Data, SMEs.

1. INTRODUCTION

The term "big data" is ubiquitous. With Exabyte of information flowing across broadband pipes, companies compete to claim the biggest, most audacious data sets. Moreover, businesses of all varieties — old and new, industrial and digital, big and small are getting into the game.

Masses of social, weather, and government data leveraged to predict supply chain outages. Enormous amounts of user data harnessed at scale to identify individuals among a sea of website clicks. Moreover, companies are even starting to leverage huge quantities of text exchanges to build algorithms capable of having conversations with customers. (Wessel, Maxwell, 2016)

Government agencies collect, create, and manage information as part of their core mission. This information takes on many forms. In addition, when taken collectively, can be a powerful and useful resource for public and private sector consumers who leverage the data for nearly limitless purposes. Today, thanks in large measure to faster and more available tools and technologies, there is keen interest in tapping this "big data" and using it effectively. (Cloudera,)

Big data is a collection of data sets so large and complex that it becomes difficult to process using on-hand database management tools or traditional data processing applications. Big data is data that exceeds the processing capacity of conventional database systems. The data is too big, moves too fast, or does not fit the strictures of your database architectures. To gain value from this data, you must choose an alternative way to process it. The value of big data to an organization falls into two categories: analytical use, and enabling new products. (Abdul Raheem Syed,2013)

Georgia research sheds light on three fields: Online Marketing, Customer Segmentation, and Big Data Analytics. The three terms combined into one framework, which attempts to show how online marketing objectives can supported by an effective online customer segmentation that can be implemented by techniques and tools applicable to extremely large datasets. (Georgia Fotaki, 2013)

Big Data is a new term used to describe the data sets that are so large and complex, that they require advanced and unique storage, management, analysis and visualization technologies (Chen et al., 2012).

Big Data Techniques

Classification
Regression
Association
Visualization

Generally, most of business organizations are aware of how important knowledge is in their daily business life. It could help them learn from the past, understand customer's needs, reduce cost, improve working efficiency and make leader become a thought leader (Handzic, 2006).

Big Data based on cloud computing is an upcoming area in computer science and many vendors are providing their ideas on this topic. The combination of Big Data technologies and cloud computing platforms has led to the emergence of a new category of technology called Big Data as a Service or BDaaS.(Benoy Bhagattjee,2014).

1.1 BENEFITS OF USING BIG DATA FOR SMALL BUSINESSES

Business data has existed for ages. However, mostly it just sat hopelessly trapped in handwritten ledgers, filing cabinets, and floppy disks, a precious resource untapped. Software from past decades helped only so much. Many such applications could work only with individual databases and were often costly and unwieldy to boot. Until very recently, only the giants could use such data. Smaller companies can unlock many more secrets from data. Company's databases can be cross-referenced with the expanding galaxy of information drawn not just from the likes of social networks, government databases, and usage patterns on mobile devices, but also from increasingly specialized information sources such as digitized transcripts of call-center interactions and sensors sending updates from various steps within a supply chain, and do so affordably. (Kevin Kelleher, 2014)

Today's Knowledge Bases represent their data mostly in RDF-style SPO (subject-predicate-object) triples. and the most salient KB projects, which include KnowItAll , BabelNet, ConceptNet, DBpedia , DeepDive, Freebase, ImageNet, NELL , Wikidata, WikiNet, WikiTaxonomy , and YAGO .(Fabian M. Suchanek & Gerhard Weikum, 2014)

Most small business owners assume that "big data" is for "big business." However, it's not true. If you are able to improve the way your business looks at its metrics, you can make better decisions. You can avoid taking actions that waste time and money. In the end, a better business intelligence strategy will make your company more effective. Figure 1 (Dimensions of Big Data)

1.2 CHALLENGES TO SMALL BUSINESSES

One of the biggest challenges to small businesses that are developing data analytics and business intelligence strategies is the way in which data insights presented. Complicated excel sheets and poorly designed dashboards make it virtually impossible for non-IT professionals to use their data.

Self-service solutions are working to use better designing practices to help solve this problem. "By making data sets visual, business owners can start asking the right questions and making decisions based on hard facts rather than speculation." Hegde explains. "The result is often better allocation of crucial technology, people, and resources." The key is making data presentable so all stakeholders can use it.(Jeff Charles,2017)

2. OVERVIEW OF THE SMALL AND MEDIUM INDUSTRIES IN EGYPT

The Small and Medium industries in Egypt does not represent more than 4% of the total volume of production in Egypt. The researcher believes that a large part of this problem is the size of the available information on the market, the product and production ways and Quality. Moreover, that the manufacturer does not know the way to solutions for issues related to sustainability, and quality of production, and the skill of the labor force and methods of access to this information, and so the problem is determined to identify the extent of small-scale industries affected Kerdasa & Nauman area events in Egypt

over the past years and how they can support and assist these industries are directly and indirectly next to identify the size of the information and its sources, quality and impact of failure or the presence of this available information to the manufacturer and marketer who is responsible for quality in these industries,

Micro, small and medium sized enterprises (M/SMEs) are a dynamic force for sustained economic growth and job creation. They are a valid, crucial component of a vibrant industrial society. SMEs stimulate private ownership and entrepreneurial skills; they are flexible and can adapt quickly to changing market demand and supply conditions; they generate employment, help diversify economic activities and make significant contribution to export and trade.Many small projects stalled, especially in light of a great revolution of January 25, 2011. The role of small and medium-sized enterprises in the industrial development of Egypt.(Elasrag, Hussein, 2013)

Following are the major driving force to strengthen SMEs in the Egypt:

 (1) SMEs are the important vehicle in terms of employments and poverty alleviation. SME employs a large share of the labour force in Egypt and many Arab countries.

(2) SMEs make significant contributions to the national economy of the country; and can be a tool to accelerate the growth of exports.

(3) SMEs foster an entrepreneurial culture and make the economy more resilient to the global fluctuations.

Despite remarkable progress in a many Arab countries, the majority of the developing countries have found that the impact of their SME development programs on enterprise performance has been less than satisfactory. However, it has acknowledged that Micro enterprise and SMEs are the emerging

Private sector and these form the base for private sector led growth

Egyptian experience

The number of Egyptian SMEs projects is more than 2.5 million projects, adding about 39,000 projects annually

- Its contribution in the total Egyptian exports is 4%, although it is a weak ratio compared to many economies of the world

Law No. 141 of 2004, called the Small Enterprise Development Law, provides the legal framework for such projects. The law referred to small projects in each individual company or enterprise that carries out productive, service or commercial economic activity whose paid capital is not less than fifty thousand pounds and does not exceed one million pounds and the number of employees does not exceed 50 workers

The establishment of the Social Fund for Development, which works to finance all small productive, service, commercial and crafts projects that provides soft loans at return rates of 7-15% depending on the size of the loan.

The Central Bank of Egypt (CBE) has decided to exempt banks that provide loans and credit facilities to companies and small and medium enterprises from 14% as of January 1, 2009. In addition, the bank contributed to alleviating the debt burden of small enterprises by exempting defaulters whose debt is less than LE 1 million from 75% of total debt and 70% to defaulters whose debts are less than 1 million LE

3. SCIENTIFIC RELEVANCE

Based on the literature review conducted for the purpose of this research, as well as on the interviews and general discussions with the experts of SMEs, it can claimed that most SMEs are currently in a transient state; organizations are aiming to put aside traditional marketing techniques and focus more on online marketing and OCE. It is apparent that customer segmentation plays an important role for traditional marketing and the management of relationship with the customer. Therefore, there is enough literature about customer segmentation, describing segmentation types and techniques that are able to support marketing goals. It is apparent that there is a need to look deeper into the role of big data SMEs that gathered from online sources and identify role of big data that can support the achievement of online marketing goals.

4. AIM OF THE STUDY

The purpose of this study was to describe the role of big data n SMEs

5. STUDY SAMPLE

100 SMEs owners

6. STUDY DESIGN:

This study was a descriptive study

7. RESEARCH QUESTIONS

RQ1: "What are the role of big data in Egyptian SMEs?"

RQ2: "Which big data approaches and techniques can be used for Egyptian SMEs?"

8. RESULTS & DISCUSSIONS

The study conducted in Kerdasa region at Giza, in Egypt. In this descriptive study, 100 SMEs owners was taken as Sample size with 5% confidence coefficient and the test power of 2%..(Table 1) Data collection tool was a personal information questionnaire based on demographic characteristics (age, sex, marital status, education, number of children, occupation, income and income sufficiency, type of technology support) Data were analyzed by SPSS 17 Software using paired t-test and ANOVA.,

Big data analytics for SME growth in this paper we selected five Big Data solutions for Small and medium Enterprise regional growth, we provided an insight on how they can help grow SMEs.

8.1. IBM's Watson Analytics

While many Big Data solutions built for extremely knowledgeable data scientists and analysts, IBM's Watson Analytics makes advanced and predictive business analytics easily accessible to small businesses. The platform does not require any requisite skills of using complex data mining and analysis systems, but automates the process instead. This self-service analytics solution includes a suite of data access, data Implementing big data

analytics for small and medium enterprise (SME) regional growth refinement and data warehousing services, giving you all the tools you need to prepare and present data yourself in a simple and actionable way to guide decision-making. Unlike other analytics solutions that focus on one area of business, Watson Analytics unifies all your data analysis projects into a single platform — it can used for all types of data analysis, from marketing to sales, finance, human resources and other parts of your operations. Its "natural language" technology helps businesses identify problems, recognize patterns and gain meaningful insights to answer key questions like what ultimately drive sales, which deals are likely to close, how to make employees happy and more. Watson Analytics takes the complex math and coding of analytics and does it for you. Smart data discovery gives you predictive modeling, data preparation, dashboards and visualizations, all in a few clicks. It can be a spreadsheet on your computer, relational data in a database, report data or data you've stored in a cloud storage service. Below are three major activities in IBM Watson Analytics.

8.1.1. Search

Watson Explorer's search combines content and data from many different systems throughout the enterprise, and presents it to users in a single view; dramatically reducing the amount of time spent looking for information and increasing their ability to work smarter. Watson Explorer's 360-degree information applications deliver data, analytics and cognitive insights relevant to the user's role, context and current activities.

8.1.2. Analyze

While structured analytics can provide insight on the what, where and when of a business challenge or opportunity, content analytics provides insights to answer why and how. Watson Explorer's content analytics allow enterprises to extract meaning and insight from natural language content such as customer comments and research reports, and to use those insights to streamline business operations, uncover risk, gain a better understanding of customers and make better decisions.

8.1.3. Interpret

The IBM Watson Developer Cloud provides a portfolio of content and services through application programming interfaces (APIs) to help create a new generation of cognitive applications to enhance, scale and augment human expertise. The services make direct participation in the era of cognitive systems available to everyone who shares the goal of a new partnership between people and computers. Watson Explorer provides the ability to integrate a growing list of these services for an enhanced experience by leveraging the combined strength of search, analytic and cognitive capabilities.(Ogbuokiri, B.O.,2015)

8.2 Apache Hadoop is a 100 percent open source framework that pioneered a new way for the distributed processing of large, enterprise data sets. Instead of relying on expensive, and different systems to store and process data, Hadoop enables distributed parallel processing of huge amounts of data across inexpensive, industry-standard servers that both store and process the data. With Hadoop, no data is too big data.

The Apache Hadoop framework comprises:

• Hadoop Common – Contains libraries and utilities needed by other Hadoop modules
• Hadoop Distributed File System (HDFS) – A distributed file-system that stores data on commodity machines, providing very high aggregate bandwidth across the cluster
• Hadoop YARN – A resource-management platform responsible for managing compute resources in clusters and using them for scheduling of users' applications
• Hadoop MapReduce– A programming model for large-scale data processing
The study results showed that Big data play an important role In SMEs , as a knowledge platform that benefit for gaining a characteristics for exports markets and for reaching to clients with good services & attractive services. In General, smaller firms may lack the extensive IT infrastructure and support structure that larger organizations have, and they may experience pressures for extensive training and retraining of older employees. (Riemenschneide,Cynthia, & Peter P.,2000).

With application of structural equation modeling (SEM) techniques, we found that there were progressive improvements in fit as the models become more fully integrated. The results indicate that a "Collected" model representing the underlying categories of cognitions from the TPB and the TAM provided a better fit (Riemenschneider ,Cynthia,2003).

Internet adoption by small business is important to the generation of critical mass for Internet commerce, in Simpson's study he found that the small business Internet commerce (SBIC) phenomenon is still in its infancy, although small businesses are finding e-mail useful for business communication and document transfer (Poon, Simpson.1999).

9. Conclusion

Big data represents data alternative style to overcome the massive accumulation of data resulting from governments, ministries, small and medium-sized enterprises and global markets target zones for export. It is important that Egypt has kept pace with the boom especially with the presence of numerous parties related to small and medium-sized projects, which represents a large amount of data and information that require Analysis and selection of the most appropriate data to take advantage of information in small and medium enterprise development. Figure (2)

The big data make a difference to the owners of small and medium-sized enterprises; it provides detailed information on employees and customers and allow increased sense of satisfaction and loyalty as well as excellence in the field of competition.

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Table (1) sample characterization according to demographic variables

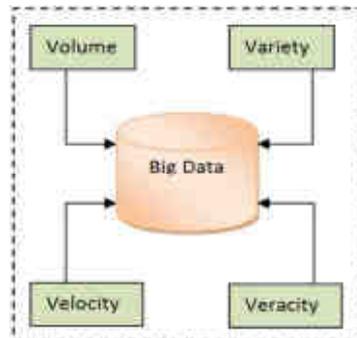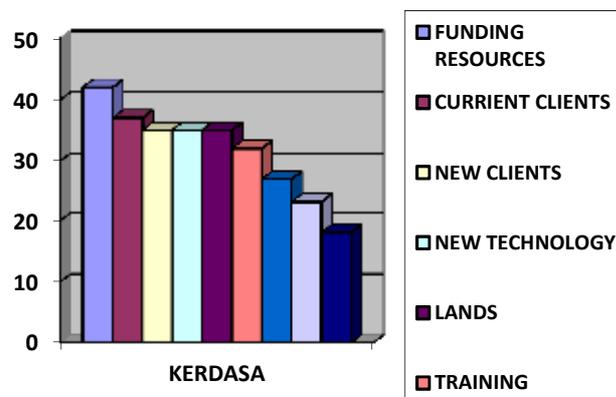|	Kerdasa	
Distribution	No	Percentage
Gender		
Male	77	77
Female	23	23
Total	100	100
Age		
Less than 20	12	12
20 to less than 30	8	8
30 to less than 40	6	6
40 to less than 60	46	46
60 and above	28	28
Total	100	100

Figure 1 (Dimensions of Big Data)

Figure (2) big data for SMEs