A Review on Data Analytics for Business Intelligence

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Abstract - *This paper examines the role of data science in business intelligence and asset management, in recent years the data has grown significantly due to end-to-end purchasing management practices. We have found a growing level of activity over the past 10 years and a focus on experimental research methods. We noted that many of the methods were invisible or non-existent in the BI research pool.*

And the use of data analytics in Business Intelligence and asset management is growing rapidly due to its wide range, in terms of asset management data can be analyzed to predict customer purchasing behavior, market demand and asset management. We also identified a number of study areas that needed further testing. The study contributes to both academics and the field by providing for the first time evidence of direct and indirect determination of developmental support decisions related to the scope of BI solutions and effective BI management.

Key Words: Data Science, Business Intelligence, Big Data Analytics and Big Data, Analytics, Decision Making.

1. INTRODUCTION

Business Intelligence is shaped in a way that organizations can make analyse the historical and current data on certain parameters to get some useful insights which help them to survive them in fast growing market and global economy and keep the organisation ahead from the compotators. Information can be drawn from a wide variety of sources including reading history, geolocation, online media, purchase history and clinical records. Data contains complex data that can override traditional simple data systems.

Big Data is a collection of large hard data sets in volume ranges from terabytes to petabytes and grows rapidly in multiple sources and is sometimes difficult for hardware and software to interpret process and manage data sets. If we take example of New York stock exchange which generate Terabytes of new trade data every day, Big data analytics has enhance organization performance in terms of increasing sales and revenue, creating new products, providing better customer services, healthcare, logistic and finance.

Many sources from where we can extract Information which including sensors, GPS, social media, purchase behaviour and health records. Data contains complex data that can override traditional simple data systems. Business Intelligence is a very important technology which increases the potential of business in organizations and help in developing business, e-services, e-commerce. It is also a Momentum for developing organizational intelligence, business intelligence, intelligence management, and marketing intelligence.

This continuous analysis and thinking using BI data science provides a deeper understanding of market response to your company's products and services. By looking at how your product is most used, you can rethink your model to make sure you provide the solutions your customers need.

BI intelligence should at least be human intelligence in terms of business. Intelligence is all about learning and understands the facts derived from business data, and information about the business process, product, services and customer feedback operation of a business and the environment or a product or service.

2. Big Data Analytics and decision-making

From the decision maker's perspective, the value of big data depends on the provision of information and value information, on which the decisions depend. Our urban decision-making process has been an important and well-covered topic in research for years. It offers the opportunity to offer great blessings to organizations with a wide range of records from asset extensions including scanners, mobile phones, loyalty cards, the Internet and social media. This can only happen when the data is relevant

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- song analysis to reveal key details, which allows investors to take advantage of historical and real-time data resources - with supply chains, production processes, customer behavior.

In addition, companies are now accustomed to analyzing internal information such as sales, exports and asset creation. There is a need to analyze the data of customer purchase, patterns in a supply chains and with the help of big data analysis we can uncover hidden patterns and trends. With increasing numbers and types of unplanned data, more information needs to be obtained based on sound conclusions from the data As such, There are different framework , which combine different data tools and technologies like Hadoop ,R programming, Tableau, SAS, PASW for make decision .The purpose of such a framework is to enhance the quality of the decision-making process in terms of dealing with big data. Intelligence phase is the first step towards the data driven decision making. At this stage, it is necessary to identify the main data sources, and the data should be collected from different sources, processed, stored, and deleted from the end user. Such large data needs to be managed properly, so after defining the data resources and data types required for analysis, the selected data is stored and stored in any large data storage and management tool, as discussed earlier. After big data has been acquired and stored, then edited, processed and processed, this is achieved on a high-speed network using ETL / ELT or large data processing tools included in previous sections.

The next step in the decision-making process is the design phase, where potential work lessons are developed and analyzed by the concept or repetitive model of the problem. The framework divides this category into three categories, model planning, data analysis and analysis. Here, as discussed earlier, a data analytics model is selected, edited, and then used and finally analyzed.

As a result, the next step in the decision-making process is the selection step, in which the methods are used to evaluate the results from the proposed steps or in the design stage of the action. Finally, the final step in the decision-making process is the implementation phase, in which the proposed solution is implemented from the already implemented phase.

As we all know that big data is growing rapidly, Today every organization is becoming more interested in storing the data for the current and future use to understand the meaning of data, big data analytics enable them to make data driven decision based on historical data and visualize the data with different form of charts and bar graphs which help to uncover insights, hidden patterns and relationship between entities for financial benefits and make decision. Therefore, there is a tendency to go for large data analytics to quickly analyze large amounts of data or to reveal unprecedented patterns, feelings, and customer intelligence. This section focuses on other proposals as well.

Implement a variety of big data analysis systems and how these systems can help organizations in different fields to obtain important information and improve decision-making.

2.1 Customer Intelligence

Big Data Analytics is having good customer understanding capabilities and this is very beneficial for industries such as fashion industries, banking, telecommunications and e-commerce. Big Data Analytics empowers companies to provide customers with profiles and segments based on a variety of social and economic factors, as well as increasing customer satisfaction and retention rates. Additionally, companies can use social media to tell their customers what they like. Even those who do not like them, by analyzing feelings about this data, companies can be warned in advance when customers turn to them or switch to different products and take appropriate action.

In addition, the use of SNA to monitor customers' perceptions about products and identify influential people can help companies respond to trends and conduct direct marketing. Large amounts of data can also trigger the development of models of customer behavior speculation and buying habits, thus maximizing total profits, Companies now days mainly focus on more sophisticated methods which is real time analysis of customers to target them for promotions and advertising .As a result, large data sets can help companies better launch targeted marketing campaigns, define and analyze trends from market perspectives, and analyze and understand fraud and other customer behavior.

2.2 Procurement and performance management

Procurement management, large amounts of data can be used to measure changes in demand and compare their supply accordingly. It will benefit the manufacturing, retail and transport and transportation industries. By analysing stock usage and geospatial data in delivery, companies can make automated decision-making, reduce lead time and reduce costs and delays and disrupt the process. In addition, decisions can be made by changing suppliers based on quality or price competition by

analysing supplier data for objection reviews. In addition, alternative pricing mechanisms will be implemented soon, which will lead to a reduction in innovation and increased profitability. Likewise, larger data can identify cost sources and provide better planning and evaluation.

Another important area in data analysis is performance management, where public and health care industries can easily benefit. With the need to improve productivity, employee performance information can be viewed and evaluated using the existing analysis tools.

This allows departments to combine their strategic objectives with service or customer outcomes, resulting in increased capacity. In addition, data acquisition and performance and access to data managers, as well as performance managers, utilize existing KPIs, launch balanced scorecards and monitor the performance of the dashboard within the organization.

2.3 Improving quality and management

Big data is use for improving quality management to gain maximum profit while reducing cost and also improve the quality of product and services, especially in the supply chain, manufacturing, energy and telecommunications industries. By analyzing historical data we can mitigate the risk in business and understand early warning alerts. This can reduce the amount of waste disposal and reduce the marketing time, as it can be stored before obstacles are found in the production process.

In addition, effective leadership can improve on big data analysis. In addition, real-time data analytics and machine monitoring allows managers to make faster quality management decisions. In addition, large data sets can measure bandwidth by responding to customer behavior, as well as allowing real-time monitoring of network demand.

In addition, with the help of technology, health care systems improve quality and services of care by communicating and collecting patient data from multiple departments while maintaining data security and efficient access to the data. Therefore, with the advancement of diagnostic tools, the use of electronic health records, the patient's information is displayed to assess the quality of health care, as well as the management of disease and health services.

In addition, in health care system big data play an important role, where sensors can be used to provide continuous monitoring of patients in hospitals and homes and to perform real-time analysis on patient data distribution. It will inform the user and health care provider if there is any abnormal situation arrives. At diagnosis, the patient should seek medical help. Patients can be viewed from a distance to check their adherence and improve treatment and treatment strategies.

In addition, updated sensors from portable devices, sensors distributed across roads and vehicles, can modify and improve transportation by providing real-time traffic information. Traffic jams can be avoided and prevented and drivers can work safely with minimal disruption to traffic. Such a new type of traffic organism with "smart" connected cars can bring back traffic and how to use the roads. According to real-time data analysis of traffic information based on personal data, big data optimize the route. In addition, such applications automatically need help when they are experiencing a sensory problem and notify users of real-time accidents, scheduled road works and congested areas.

In addition, large data can be used to better change the position and frequency, as well as the intensity of the atmosphere. It benefits climate-dependent citizens and buses as well as tourism and transport companies such as farmers. Also, with the development of long-term weather patterns and weather forecasting with new sensor and analysis methods, weather natural disasters can be predicted and preventive or positive measures taken in advance.

2.4 Risk Management and Detection of Fraud

Risk management and fraud detection is very important for industries like investment or retail banking and insurance. Since risk assessment and liability are an important component of the financial services sector, large amounts of data can assist in selective investment by analyzing profit potential for losses. In addition, large internal and external data can be analyzed to obtain a complete and robust exposure to risk. Therefore, companies can benefit by starting to maximize significant data losses. It can also perform high performance analysis

Comprehensive business risk profiles are used to integrate individual risk profiles into specific categories. This helps to reduce risk, as it gives decision makers a complete view of the different types of risks and their interpersonal relationships.

In addition, large data tools and technologies can reduce data performance problems by maintaining a clear growth of network-generated data, as well as increasing the ability to measure and capture required data. With the growth of cyber analytics and data solutions, companies can incorporate more data and automated analytics to protect themselves from cyber-attacks and the network.

Large amounts of data can be used to detect and prevent fraud, particularly in government, the banking and insurance industries. Analysis is already being applied to automated fraud detection, but companies and sectors want to use the power of big data to improve their systems. Big data allows the comparison of electronic data across multiple resources between the public and private sectors and can provide faster analysis.

In addition, Customer Intelligence can be used to generate overall customer performance and to detect suspicious or disruptive activity with accurate external flags. In addition, providing systems with more information about rampant fraud patterns allows these systems to learn new types of scams and to operate more efficiently, as fraudsters adapt to older systems designed to detect them. In addition, the SNA can be used to identify a network of fraudulent participants, as well as to seek proof of insurance payments or services, leading to fraudulent activity not available. Therefore, large data tools, methods, and management processes all improve the prevention and recovery of fraudulent transactions by significantly increasing the speed of detection and acceptance of compliance patterns within available data sets.

3. VARIOUS DATA ANALYTICS METHODS USED FOR SUPPLY ASSET MANAGEMENT:

3.1 Descriptive analytics:

Descriptive analytics is a common method of data analysis in which historical data is collected and summarized so that patterns can be seen and easily understood. This is very much based on what happened in the past. This is the first mathematical step in which many organizations apply this strategy for a better future. Descriptive analytics uses simple mathematical tools and visual chart charts, bar charts used to present important information.

The main purpose of descriptive analytics in Supply chain management is to identify opportunities and problems in marketing with the help of an online analytical processing system (OLAP) which helps business and institution to measure performance to ensure that goals and objectives are met and to report similar technologies, provides real-time location of goods. Descriptive statistics increase the effectiveness of an organization to identify changes in annual sales, and the quantity of assets in stock, this information from descriptive analyses helps to quickly identify areas where improvements need to be made.

Some examples of descriptive analytics used in asset delivery
1. Track sales records per customer
2. Record what service was used and how often
3. Find the time needed to complete the task
4. Customer feedback analysis
5. Track order date and delivery date
6. Analysis of uncertainty arising from demand diversity

3.2. Predictive analytics:

As its name implies, forecasting statistics mainly focus on future forecasts, forecasting statistics use historical data and current data to create statistical models that will predict future events and predict results. These types have different mechanical learning methods to provide future trends.

1. Decision trees
2. Back-to-back strategies
3. Neural Networks

Guessing statistics enable managers to make decisions based on business data, the Organization uses forecasting statistics to predict sales trends, customer purchasing behavior, performance and asset requirements, as we all know that no algorithm can predict the future with 100% accuracy but we can increase the accuracy of our model.

3.3 Prescriptive Analytics

This is the third, last and most advanced stage in data analytics, Prescriptive analytics is not about what will happen next, or what has happened but prescriptive analytics tells about what you should do next, predictive analytics gather all the information from previous analysis from both descriptive analytics and predictive analytics to produce solutions or automated recommendation for the better growth of business , it is understood that result from predictive analytics may or may not happen but in prescriptive analytics the element of risk is always there because of automated recommendations and solutions .

Prescriptive analytics use techniques like:
1. Neural network
2. Decision tree

4. CONCLUSIONS

In this article, we reviewed and learned about data science, big data and where it works in the real world. The time in which we live produces so much data. This data contains too much hidden information to be used. It can be used to change business and improve profitability and decision-making. The literature has been updated to provide an overview of the main concepts of the data being analyzed, as well as its relevance to decision-making.

This are many new technology in the market, if we used properly it has many benefits and innovations. It requires proper maintenance, management, integration, alliance, cleaning, processing, analysis, etc.

This study provided individuals and organizations with examples of large data tools, methods, and technologies that could be used. This gives idea to the developers that what are the necessary technical requirements which helps to provide highly efficient and advanced data analytics solutions to support decision-making

We believe that data science and big data analysis play a very important role in this data age, and can provide very useful insights and benefits to industry in various fields. With the growing need for new business start-ups through the BIA and the many challenging research issues waiting to be solved, we believe that more models of research collaboration between industry and academics will emerge, accelerating research discovery and technology transfer.

REFERENCES

[1] Nada Elgendy and Ahmed Elragal - Big Data Analytics: A Literature Review Paper department of Business Informatics & Operations, German University in Cairo (GUC), Cairo, Egypt

[2] TechAmerica: Demystifying Big Data: A Practical Guide to Transforming the Business of Government. In: TechAmerica Reports, pp. 1–40 (2012)R. Nicole, "Title of paper with only first word capitalized," J. Name Stand. Abbrev., in press.

[3] The impact of Business Intelligence on the quality of decision making – a mediation model Bernhard Wieder, Maria-Luise Ossimitz - University of Technology Sydney, POBox 123, Broadway, NSW 2007, Australia

[4] Hsinchun CH, Chiang, RHL, Storey, VC. Business Intelligence and Analytics: From Big Data to Big Impact.

[5] Coronel C, Morris S. Database systems: design, implementation, and management (11th Ed). Boston, MA: Cengage Learning; 2015.

[6] Russell S, Norvig P. Artificial intelligence: a modern approach(3rd Ed). Upper Saddle River, NJ: Prentice Hall; 2010.