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BUSINESS ANALYTICS - TRANSITION TO HRANALYTICS

Karan Mahajan,
Research Scholar, School Of Business & Commerce
Glocal University Mirzapur Pole , Saharanpur (Uttar Pradesh) India.

Dr. Anand Kumar ,
Research Supervisor, School Of Business & Commerce
Glocal University Mirzapur Ploe, Saharanpur (Uttar Pradesh) India.

***ABSTRACT*:**

Advancement of technology has helped business organizations capture data in all the business operations. Emergence of powerful computing capabilities has driven the outgrowth of business analytics as a function in organizations. Business analytics can create insights from data and forecast with higher accuracy and help in decision making. Business analytics gained strategic importance with the use of bigdata. Emergence of more sophisticated analytical tools increased the credibility of business analytics. Gradually all organizations are making use of analytics. From being confined to the operations, marketing and finance fields; analytics is fast moving in the HR domain. It is important to develop thought on the way analytics can shape the decisions made in the HR field. The present paper discusses the context through which business analytics has emerged and provides an overview of its functioning and the entry of business analytics into the domain of HR and its prospects.

Keywords: Big data, Business analytics, Digitalization, HR analytics

1. INTRODUCTION

Data has always been the important factor to define the level of certainty and corresponding success in business decision making. With the abundance of data, there is an increased emphasis on data-driven decision making in the past two decades. Coupled with analytical methods, data-driven decision making has led to the emergence and popularization of business analytics. Advancement of technology has helped business organizations capture data in all the business operations. To make use of the available data, researchers are compelled to delve on new approaches to handle massive data. Added to this, emergence of powerful computing capabilities has driven the outgrowth of business analytics as a function in organizations and as a separate academic discipline. Business organizations are also looking ahead to get the best results by utilizing business analytics. The present paper discusses the context through which business analytics has emerged and provides an overview of its functioning. The first section focuses on the tools prevalent before the actual business analytics came into

focus. The second section throws light on „what", „why",
„how", „when" and „who" in handling business analytics in organizations. The third section brings out the phases through which business analytics has moved and adapted by organizations. The last section brings the entry of business analytics into the domainof HR and its prospects.

PRECURSOR TO BUSINESS ANALYTICS

The popularity of Information systems grew with the introduction of computer technology into organizations. Basic forms of Management Information Systems (MIS) and in the next level, the Decision Support Systems (DSS) have been the tools that business decisions were relied upon. Executive Information Systems (ESS) provided the necessary data support for top level managements. In all these forms of information systems data existed in different forms, types and many places. The data integration and handling approach surfaced with the emergence of ERP (Enterprise Resource Planning) packages. ERP packages helped in improving the routine and semi-structured decision making. Some of the ERP packages began offering business intelligence as one of the modules of the ERP package. Business intelligence played key role with more organizations embracing the ERP technologies for increased business agility. However, with the advancement of software and corresponding data technologies such as data warehousing, data mining, and OLAP (Online Analytical Processing), business intelligence came into limelight and occupied predominant place until recent times.

Business Intelligence: Business intelligence uses data and statistical methods and develops metrics to measure the past performance of business and lead the direction for business decisions. According to Hoboken, N.J. "Business intelligence (BI) is aset of theories, methodologies, processes, architectures, and technologies that transform raw data into meaningful and useful information for business purposes." Business intelligence uses tools such as online analytical processing (OLAP) to report, query,and summarize the frequency, quantity, location and trends of the business actions and the counter actions that need to be taken. One of the key limitations of business intelligence tools is their high reliance on pre-determined metrics and feeble interaction with business actions and outcomes. This led to the development of business analytics as a separate field.

DEMYSTIFYING BUSINESS ANALYTICS

3.1 'What' is Business Analytics?

In the context of decision making, uncertainty makes it the most intriguing. Decision making based on gut instinct will lead the business nowhere. With more data, the level of uncertainty can be reduced to some extent. However, data alone is not the trigger. In many business decisions, it is observed that there are lots of alternatives to a decision, yet, all of them cannot be evaluated. Business analytics looks at addressing this issue. Business analytics has the capability to evaluate all possible alternatives and decision outcomes. The key is to create an organization that runs on more than intuition and guesswork (Bell, 2012). Intuition and guesswork

are dangerous to be acceptable in the era of high volumes of data availability and sophisticated technologies in place. Business analytics is oriented towards adopting a purely fact based and data-driven approach to decision making. Business analytics helps in reducing the „chance failures" in business context.

Business analytics uses scientific processes to transform the data into useful insights enabling better decision making. The term "Business Analytics" refers to the extensive use of data, statistical and quantitative analysis, explanatory and predictive models and fact-based management to drive decisions and actions (Davenport and Harris, 2007). Business analytics from this definition,is the data-driven approach for developing and using models that can help in decision making and predict the likelihood of success of such business decisions. Business analytics makes uses a combination of skills, tools, and technologies on acontinuous basis to study organization"s past business activities that would lead to develop insights into future business. Business analytics is not solely based on probabilistic approach, but adds the power of data to increase the level of certainty and accuracyin judgment for business decisions.

3.2 The 'How' Part of Business Analytics

Business analytics is initially focused on understanding the business performance by applying statistical methods on data. This understanding helps in developing new insights about the business and generates alternatives for decision making. Business analytics systems draw on the vast explosion of "big data" in recent years, which is projected to continue in the future (Gillon, Griffin, & Brynjolfsson, 2012). Big data has come as buzz word with the dramatic increase in the Volume, Velocity, Variety and Veracity with which data is flowing in organizations. Strongly backed by management science, analytics supports individuals in decision making, as well as develops patterns to make completely automated decisions. Business analytics is supportive in reasoning out the trends, and their probability to continue, and the possible future outcomes that may emerge along with their corresponding business impact.

To perform analytics, tools such as R, Hadoop, MapReduce and Python are being employed. Besides the traditional statistical techniques, structural equation modelling, least squares, correlation, and regression, some analysts are using Bayesian methods, semantic methods, neural networks and machine-learning. Computer based modelling has made several transformations and emerged as a supportive tool for business analytics. There are a wide range of modeling techniques that predict and interpret actions and outcomes. Game theory is used to assess settings involving comingled Where objectives and outcomes are mixed, game theory can help in assessing the settings. Use of Bayesian networks for decision support is popularly acclaimed. In addition, they can also serve static, or time averaged scenarios. Also, to enable business analysis, system dynamics models can be used. In other way, agent based methodologies also have been used for modeling (Riensche & Whitney, 2012).

3.3 'Who' is to handle Analytics?

Analytics is not just for the few boys of Information Technology (IT). Though Chief Information Officers (CIOs) are concerned and are instrumental in bringing analytics to the organization, the implementation is not the sole job of IT department. Moreover, the utility and applications of analytics cannot be handled solely by the IT practitioners. Analytics has transcended across the disciplines of business administration. Analytics technologies can be applied to translate the data based evidence into useful insights and thus leading to better decisions (Holsapple, Lee-post, & Pakath, 2014). Initially, trained Ph.D.s who have worked on behavioral sciences have done the analytics work. The trend has been changing gradually. People from various backgrounds like computer programming, statistics, engineering, and data scientists are entering as analysts.

3.4 'Why' Business Analytics?

More and more organizations are embracing business analytics. Organizations can resolve some of the hard and difficult decisionsusing analytics. Analytics techniques have the power to deal with complex decisions by providing new insights, by generating a continuous demand for improved tools and techniques that would leverage big data and business analytics in enterprise success (Mithas, Lee, Earley, & Murugesan, 2013). Availability of voluminous data and the surge in use of big data has compelled the analysts to derive new analytical tools and techniques that were not previously available. Business analytics has become an inescapable mashup of big data and powerful analytical techniques. This use of business analytics takes the level of automation in decision making to a new level. Automation has got enhanced capabilities and not just limited to the traditional task of handling transactions. Many of the areas where human judgement has been playing pivotal role, are being replaced with automation (Brynjolfsson and McAfee, 2011). Data being the key to increase the certainty of decision outcome, with more data and analysis being done, analytics becomes more reliable. Though not a complete replacement to the human judgment, business analytics can offer the best alternative.

3.5 'When' Business Analytics will work?

Traditionally, analytics models are framed to rely on past data that can be used by predictive models. Meaning that, analytics is more effective with more data. Hence, organizations cannot expect the results to flow out from the business analytics function immediately, but over a period in which more data can be tracked and stored. Initially there will be differing opinion in the organization on the success and efficacy of the analytical tools when the analytics tools are being adopted newly. Making the use of analytical tools on a regular and habitual basis would significantly increase the perceived efficacy of using analytics across the organization (Xavier, Srinivasan, & Thamizhvanan, 2011). It is also important to increase the perceived efficacy of the analytical tools among the managers. If analytics is viewed as a function associated with theIT department, perceptions

of managers about analytics as an effective measure to deal the talent management decisions will not be improved.

THE EVOLUTION OF BUSINESS ANALYTICS

The traditional business metrics were of simple reporting nature and mostly based on numbers that were represented in summarized forms. This kind of data presentation does not serve any purpose of decision making in the complex business environment. Hence, a transformed version of these metrics was formed; wherein descriptive statistics were used. Business organizations used these analytics to substantiate their earlier decisions and modify the future decisions. This form of analytics is labelled as „descriptive analytics". Descriptive analytics presents data through statistical functions such as measures of variability and central tendency that served the basic purpose of summarizing the available data. All business functions and their ongoing trends can be monitored through this available data in the form of descriptive analytics to make effective business decisions.

The next phase of business analytics blends the past and present data analysis to forecast the future trends, labelled as **'predictive analytics'**. At this level the predictions are made by comparing the nature and characteristics of historical and present data to find the extent of occurrence of similar probabilities in future. Predictive analytics reason out the past trends and provide ideas on whatcan be anticipated in future in the given scenario. Predictive analytics could help find the similarities or dissimilarities that the organization may have to face in the future.

Predictive analytics confined in providing the alternatives, yet the business impact of the decisions could not be assessed. Prescriptive analytics offers the solution. Huge volumes of complex data sets are analyzed to surpass mere prediction and add higher levels of certainty by presenting results of different business scenarios in this form of analysis labelled as **'prescriptive analytics'**. The core strength of prescriptive analytics lies in assessing the corresponding business impact for the different decision alternatives that business functions make.

Table 1: Summary of phases of business analytics, methods, technologies, and tools used

Phase ⇨	**I**	**II**	**III**	**IV**
	Basic Reporting	**Descriptive/ InferentialAnalytics**	**Predictive Analytics**	**Prescriptive Analytics**

Metrics / Methods used	Rate, Ratio, Composition, Index, Volume, Cost, Time, Quality, Satisfaction	Frequency distributions, Cumulative distributions, Measures of central tendency, Measures of dispersion, Correlation, Hypothesis testing	Regression: Linear, Non-linear, Factor Analysis, Cluster Analysis, Statistical modeling, Machine learning, Data Mining	Simulation, Optimization, use of mathematical and computational models combined with business rules that are actionable and providing feedback
Scope of Application / Presentation	Presentation of past data in summarized forms	Presentation of highly summarized data with indicative trends and relations	Presentation of predicted/future data based on highly summarized past data, Sentiment analysis	Presentation of future outcomes along with decision implications on business
Type of Reports	Standard Reports	Ad Hoc reports, Queries, Drill down,	Alerts, Statistical Analysis, Predictive models	Optimization, Stochastic optimization,
Software / Tools	Dashboards, Microsoft Excel based tabulations, Business Intelligence reporting tools, ERP reporting tools	Microsoft Excel based analysis, Business Intelligence reporting tools, Statistical Software like SPSS, SAS, R etc.	Statistical Software like SPSS, SAS, R etc.	Statistical Software like SPSS, SAS, R etc. along with the integrated tools to Model business scenarios

BUSINESS ANALYTICS INTO HR DOMAIN

HR functions took longer time to adopt big data and analytics. Analytical tools that are more familiar and used widely in functions such as marketing, logistics, finance and sales have slowly emerged in the HR field too. The last ten years or so has seen tremendous growth and sophistication in data-driven HR decisions (Ryan Hammond, Analytics Magazine). Ryan is of the opinion that people analytics is not comparable with the age-old HRIS, yet, people analytics draws several useful insights from a variety of sources.

It is vital for HR analytics teams to have a wide variety of skills sets to handle the analytics function besides the conventional HR knowledge. To make the best use of HR analytics, creative techniques are to be applied by the HR teams. HR analytics is spanned to several functions of HR and has several range of measurements to

cater to all the functions (Arrowsmith, 2014). Applying the analytics to the field of HR can help the HR managers in resolving many of the people problems that they face at the workplace. The kind of digitalization and dashboards that HR analytics can offer, reduces the burden of risky people decisions, by live and updated analysis of organization‟s talent needs. With the use of evidence-based decision making, credibility of HR function in organization will be more quantitatively presentable through the analytics.

5.1 The Use of digitalization in HR Analytics

Business organizations need to catch up the pace and improve their operational efficiency to gain competitive advantage. Use of technology and digitalization of the business operations is vital for the business success. Businesses across the globe have overcome the limitation of time horizons. Organizations work on a continuous basis to meet their global business needs. Hence a digital HR platform that is always functional and dynamic in updating itself will be handy in developing insights gained through business intelligence.

Digital insights that are always available, will address the limitations in existing traditional business reporting. Particularly, while dealing with the current and future talent needs, business organizations, through predictive analytics, can act proactively. With highly integrated systems and high responsiveness as a key feature, HR analytics will be very useful in locating the needy talent and predicting the likelihood of their entry and progression in organization.

5.2 What's on offer from HR digital insights?

HR analytics can offer two forms of insights. One set that looks at the process analytics, where individual process related insights are available and can be used to take decisions in the corresponding area. Process analytics may look at the areas such as recruitment, selection, on-boarding, performance management, employee opinion surveys, competencies, work-life balance etc. The second set looks at the integrated analytics. Here the focus is on combination of several individual HR processes leading to a business strategy that is important for business functioning. The integrated analytics include the areas such as succession planning,strategic HR management, people dashboard for CEO etc. To fulfill the organizational needs, all the individuals dealing with the digital information are to be brought on to a common collaborative platform where the necessary information and tools can be used and shared. Bringing all possible stake holders and associates onto the digital ecosystem will increase the ability to work closer and integrate among themselves. These integrated, connected digital platforms offer advanced workflow management, and strong insights into market for recruiting, retaining and developing employees.

5.3 Limitations/challenges of functional HR analytics

The applications of analytics in HR are of great save for the people related decisions, as HR is an important

cost overhead in organizations. Use of analytics can bring down the problem. But implementing HR analytics is not an easy task. There are several challenges that are to be addressed. Some are listed below.

HR data is present with multiple stake holders across the organization.

The data is not always consistent and ready-to-use. Data is not standardized.

Integration of data into unified system is a troublesome task.

Many vital insights related to people behavior are not captured by the HR information systems.

- Also, much of employee‟s latest and reliable information is on external systems such as professional employmentwebsites and not available within the company.

HR Managers may under-estimate their capabilities to handle the analytics tools and data.

- As the applications are being developed by software professionals, analytics is viewed as belonging to IT domain than asa business-wide function. HR managers seem to disown analytics.

5.4 What defines success of HR analytics?

Use of evidence based decision making should be increased in HR decisions. This will give a strategic advantage to the HR function in organizations. Mere reporting of the facts and incidents about HR functions is not sufficient. Using the available HR data and analytics tools more accurate predictions are to be made. These predictive analytics should be helpful in making strategic decisions in the organization about the people functions.

Use of analytics should help organization reduce the costs involved in handling HR functions. Also, the analytics function should be suggestive in building the talent pipeline for the organization. Timely availability of competent workforce needs to be ensured through these analytics systems. The application of analytics should be extended to increase the employee satisfaction and engagement areas. HR department needs to continually update itself with the data fed by the analytics systems. This would enablethe HR function to anticipate the future challenges and make the necessary workforce adjustments and preparations to meet the long-term business needs.

6. CONCLUSION

The field of business analytics has become a strategic tool to gain competitive advantage for business organizations. Studies reveal the high emphasis placed by CIOs to bring in more business analytics functions into organizations. Business analytics is being focused more than any other technology in the past decade. The popularization of bigdata and the subsequent development of analytical tools has greatly influenced the growth of business analytics. With more organizations adapting business analytics, organizations are obsessed to spread the application of analytics into all domains. Use of analytics in the field of HR has also gained momentum.

Digitalization of HR dashboards has helped in producing updated insights about the organizations workforce status. The future developments of workforce analytics are going to provide more power to the talent leaders. Highly insightful decision alternatives about people and ability to predict the employee behaviors can change the way people resources are being managed.

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