



A STUDY ON BUSINESS ANALYTICS: A BUSINESS ENABLER

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Abstract: Business Analytics has come out as a potential business enabler in both public as well as private sector and is one of the rapid growing fields. By implementing Business Analytics inventiveness in their organisations, decision makers can integrate different data sources, predict trends, improve performance, key performance indicators, identify business opportunities, and make superior and informed decisions. The importance of this study is based on two aspects that is one is it provides a working definition, background, and a review of Business Analytics (BA), or Business Intelligence (BI), or Big data (BD) theory and practice. Second one is it discusses about current trend of Business Analytics, Business intelligence and Big data.

Index Terms - Business Analytics, Business intelligence, Big data, Decision making and Trend analysis.

I. INTRODUCTION

All over different public and private sector companies illustrate and maintain vast amount of data on their customers, product and services provided by the companies. To leverage the data stored and maintained in various digital platforms like data base, data warehouse, and to convert the data into actionable insights a new field called Business Analytics, or big data, or Business intelligence has emerged in recent periods. Business Analytics has evolved and become a part of each and every business decision making process, and it has the potential to transform business as it empowers decision makers with data and supports them to make strategic, operational as well as tactical decisions.

II. Importance of the study:

Business Analytics gives decision makers the power to integrate multiple data sources and discover more insights in them, thus enabling them to gain a holistic view of their business and customers improve operational efficiency, move towards a data driven decision making environment, and delivery business vital solutions. Business analytics also helps to companies exploit on the value of historical and real time data by harness the power of statistical and mathematical models. By using such models, managers can monitor key metrics and operational data and measure and manage corporate performance. Decision makers can integrate disparate data sources. Predict trends, improve performance indicators by implement Business analytics initiatives in their firms, to make better and informed decisions. Hence it is important to study the working definition, background and review of Business analytics and the current trend of Business analytics.

III. Objectives of the study:

- 1) To understand the concept & importance of Business Analytics or Business Intelligence or Big Data.
- 2) To identify the Buzzword from usage by the authors in the research papers through analysis.

IV. Review of Literature:

Business Analytics (BA) may be defined as “a broad category of applications, technologies, and processes for gathering, storing, accessing, and analyzing data to help business users make better decisions” (Watson, 2009). Vendors and academics interchangeably use “Business Analytics (BA)”, “Business Intelligence (BI)” and “Big Data (BD)” to refer to similar topics. For instance, the term “business intelligence” is used by the information technology community, whereas “business analytics” is preferred by the business community (Sircar, 2009). In this study however, the term “Business Analytics” is used to be consistent with the leading vendors and academia.

The growing use of information technology (IT) in the business world has led to the development of large and complex datasets for various organizational functions. Understanding their businesses and making decisions based on very large datasets has become an important challenge for organizations. The IT industry refers to this development as “Big Data” to indicate the complexity and size of data sets. Traditional database applications do not have the capabilities to analyze such big data and address the decision-making needs of organizations. BA is the current solution for analyzing big data by using advanced

mathematical and statistical models, databases, and interfaces to answer “what has happened” and “what will happen” questions (Wicom et al., 2011).

Having BA capabilities has already become an important goal for organizations. BA/BI ranks among the top five search terms on Gartner’s website (Schlegel, 2011), recently published books are becoming hits (Wicom et al., 2011), and leading companies such as Accenture, Deloitte Consulting, and IBM have launched analytics centers and practices. The field of BA is experiencing enormous growth and the accelerated growth rate of structured/unstructured data is fuelling this growth. As argued by Davenport and Dyche (2013), no single business trend in the last decade has as much potential impact on incumbent IT investments as BA. According to a study done by International Data Corporation (IDC), business analytics is one of the top two IT priorities for large enterprises (SAS-b, 2011). Manyka et al., suggest that by 2018 “The United States alone could face a shortage of 140,000 to 190,000 people with deep analytical skills as well as 1.5 million managers and analysts with the know-how to use the analysis of big data to make effective decisions.” Thus, recognizing its importance, numerous companies have already implemented BA initiatives and technologies to gain a competitive edge.

V. Concept of Business Analytics:

Business analytics has an essence, a meaning. The concept is an abstraction and generalisation of many activities occurring in organisations. Technically, business analytics is a compound noun and one would expect its meaning to be anchored in the two independent concepts of “business” and “analytics”. At some level of generalisation, business analytics is the application of analytics to business problems. The etymology of each component word is relevant. Business itself is a relatively recent concept from the sixteenth century, but it refers to commercial activity which dates to antiquity. Analytics has an ancient origin and derives from the Greek word *analytics*. The concept of analysis has its roots in logic, mathematics, and science. Aristotle prior to 323 BC explored analytics in his classic monograph *Prior and Posterior Analytics*, cf., Smith (2018). Analytics differs from analysis in the suffix “-ics”, which means a body of knowledge or principles (Dictionary.com, 2018), whereas “analysis” is an activity. Analytics is a singular noun, just like Economics or Physics.

The word “analytics” has been modified by many words including business, data, marketing, big data, predictive, and prescriptive to create compound nouns. The fundamental ideas of analysis – fact-based and logical problem-solving – provide a shared link for these varied compound nouns. Nelson (2017) defines analytics as “the scientific process or discipline of fact-based problem-solving”. Davenport and Harris (2007, p.7) define analytics as “extensive use of data, statistical and quantitative analysis, exploratory and predictive models, and fact-based management to drive decisions and actions”. Wilder and Ozgur (2015) define it as “the application of processes and techniques that transform raw data into meaningful information to improve decision making”. Finally, INFORMS recommends the definition: “Analytics is the scientific process of transforming data into insight for making better decisions” (Boyd, 2012). Analytics is a broad umbrella term that includes business analytics and data analytics. Analytics is the progenitor concept for the compound word phrase “Business Analytics”.

VI. Methodology:

Research method and data collection:

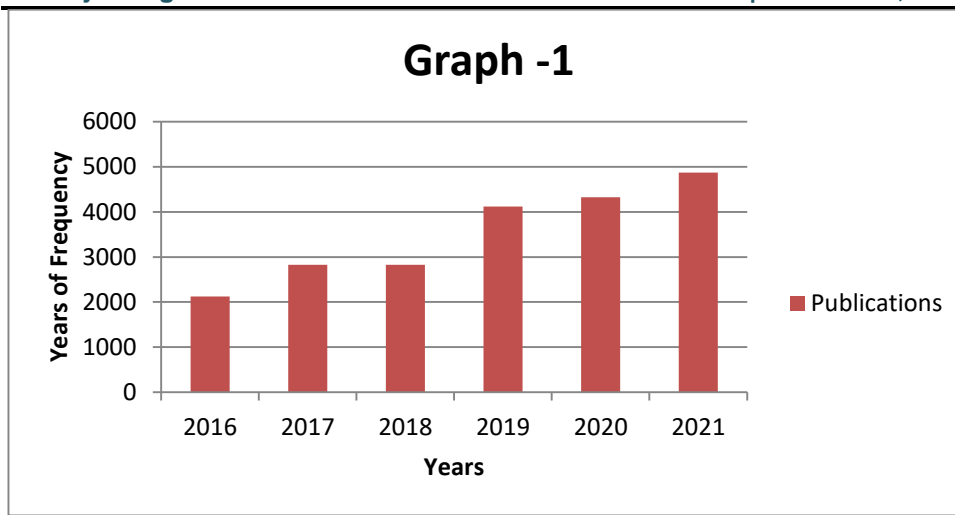
This study was conducted utilizing publicly available data relating to publications maintained in well known data bases such as Sciecedirect.com. While the internet is full of websites where a wealth of information can be found on any subject, in this study I made use of the following databases recognised and used by the academic world across the globe. These are Elsevier, Wiley, Springer, and Emerald.

In this study, we reported on every published study in the area of Business Analytics, Business Intelligence and Big Data between the years of 2016-2021. Every publication containing any of the three key words in its abstract, title or in the body the publication was tallied.

Once the data was collected, we then refined and filtered our search within each database by topic, content type, and discipline, frequency of the key words in each publication, publication type and subject.

VII. Data Analysis and interpretation:

We first queried sciencedirect.com, which is maintained by Elsevier, one of the leading publishers in the world. Graph 1 explains the total no of publications containing the three key words of interest published between the years 2016-2021. As we observed in Graph 1 there is on gradual increase in the number of publications covering the three keywords. While there was a publication in the year 2016 is 2125 as of the end of 2021 in just one data base there was more than 4875 outlets containing the Business Analytics, Business Intelligence or Big Data. It was concluded that by observing Graph 1 Business Analytics, Business Intelligence or Big Data capabilities, applications and tools have emerged as one of the fastest growing fields in recent years.



The No. of Publications containing the Keywords BA/BI/BD.

Graph 2 shows the total no. of publications containing while in the early 2016, there was a 2125 publications containing the Criteria BI, however, BD is mentioning more frequently than the other keywords. This may be because the term 'big data' is used more and more frequently by the IT community to communicate their findings to the general business community. The term Bi is the second most frequently cited keyword in the same database of numerous publications.

As summarized in Graph 1 & Table 1, having evaluated the data in sciencedirect.com, summarized the current type and the total no. of publications listed in different databases containing 3 Keywords. Table 1 which shows breaks data by the publisher and the 3 keywords. If we observed, between 2016 and 2021. The total no. of publications making a reference to BA is 2036, where as BI is 19479 references made to the keyword BI. Lastly, the Keyword BD was alluded to 14731 times in the same databases. The database maintained by Springer contained the highest No. of publications making references to the three keywords.

Table 1 – Content types and summary of the No. of Publications in Seven Databases.

S.No.	Particulars	Total of BA	Total of BI	Total of BD	Total
1	ACM	380	3141	1388	4909
	Article / Chapter	380	3141	1388	
2	Emerald	61	902	288	1251
	Article/chapter	61	902	288	
3	Informa	162	119	65	346
	Book review	3	5	1	
	Chapter	3	2	4	
	Miscellaneous	68	32	22	
	Notice editorial	3	3	7	
	Primary article	74	77	29	
	Primary introduction	11	0	2	
4	Science direct	412	4398	3667	8567
	Book	91	1334	765	
	Journal	319	3046	2887	
	Reference book	2	18	15	
5	Springer	602	8118	6155	14785
	Article	143	1279	1819	
	Book	7	53	41	
	Chapter	437	6705	4230	
	Reference work entry	15	81	65	
6	Taylor & Francis	128	1001	888	2017
	Article/chapter	128	1001	888	
7	Wiley	291	1469	1828	3588

	Books	145	591	425	
	journals	146	878	1403	
	Grand Total	2036	19148	14279	35463

Table 1 shows the frequency of the three keywords as the publishers and databases. If we observed, in terms of the content type, the highest No. of references is made to BI in various chapters published by Springer 6155. Followed by Scencedirect and ACM digital library.

Table 2 shows, the first 10 topics utilizing BA, BI, BD applications. As expected, the computer science field is where the three keywords are cited more frequently. Followed by Business Management and thirdly engineering.

Table 2: Topics / Subject

Topic/Subject	Frequency
Computer Science	6490
Business Mathematics	3902
Engineering	1311
Economics	620
Mathematics	373
Statistics	245
Physics	236
Medicine	221
Life Sciences	179
Social Science	162

As seen in Table 2, in addition to such fields as Computer Science BM, where one should be expected to utilize BA/ BI/ BD capabilities. It was concluded that BA, BI, BD capabilities appear to hold great future for various public as well as private sector.

Table 3 shows the list of the first 10 disciplines and the frequency of the 3 Keywords within each discipline. If we observed Table 3, a similar pattern emerges, as expected, 3 keywords appear 11926 times in the publications pertaining to the Computer Science field. The same keywords appeared 5023 times in a title, an abstract or the body of the publications pertaining to the Business and Management Discipline.

Table 3: Frequency of BA/ BI/ BD by Discipline

Discipline	Frequency
Computer Science	11926
Business Mathematics	5023
Engineering	2321
Economics	817
Mathematics	732
Statistics	460
Physics	427
Medicine	483
Life Sciences	466
Social Science	4579

It was observed from the Table, BA, BI, BD capabilities cannot only be made use of Information Technology, Computer disciplines but also employed in various disciplines including Social Science, Life Sciences, and Statistics.Etc.

VIII. Conclusion:

Majority of the Companies identified that BA plays an important role in addressing their challenges, prediction of future outcomes and capitalizing on the value of the data. Number of organizations depends on BA to plan their business operations, forecasting of their business outcomes, improve efficiency, make improved decisions, launch new products and services and capture new market opportunities. Moreover, advanced analytics capabilities can help the corporate find more novel uses of data, build their organizations around data and transfer their business models.

Every sector is facing with different set of challenges and business analytics presents new opportunities for decision makers to deal with such challenges. Different studies incorporated in the literature review section suggest that BA has already become a business enabler in various organizations. It was concluded that with all the tools, models, technologies, opportunities and capabilities it presents, BA is not a passing fad rather it is a much promising paradigm shifter.

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