International Journal of Emerging Trends & Technology in Computer Science (IJETTCS)
Web Site: www.ijettcs.org Email: editor@ijettcs.org
Volume 6, Issue 5, September- October 2017 ISSN 2278-6856

Innovate and Differentiate Your (BI) Analytics Product with Intelligent Narratives and Deeper Context of your data

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Abstract: ***There is no doubt that Big Data will transform business. But in an age of connected and empowered individuals, precision targeting must be balanced with personal value. If you want to build loyalty, spend less time using data to tell customers about you, and spend more time telling them something about themselves using intelligent narratives and deeper context of their data.***

Keywords: Business Intelligence, Intelligent Narratives, Big Data

1. Introduction

The recent growth of large data sets, better math, and increasingly cost-effective data storage options made "Big Data" accessible to everyone. Marketing Executives, Technology Leaders and Financial Analysts all over the world can now employ deeper analytical rigor as they evaluate business tactics. But does this mean they will make better business decisions?

Albert Einstein once said, "We cannot solve our problems with the same thinking we used when we created them." Companies that help customers shift their thinking will be more effective at solving problems and ultimately selling products. Try to frame it as a "From" and a "To". This is not about bad to good, just better for the current context. As an example, consider companies selling software and services related to "big data." The shift is not about "simple to intelligent" or "smaller to bigger." In the area of data, the "aha" might relate to a shift in thinking about decision-making from intuition to analytics, in data models from spreadsheets to algorithms, or how the data is used from target to empower.

One of Kenya's most provocative thinkers Professor Ochieng[1] never quoted Mark Bonchek or built a content factory like Croton Ville, the World's Top Corporate University. Perhaps, gave a road-map from mere thinking, insight, or intuition to empowering and enlarging the target audience is necessary. Decision making based on data analysis delineate right from wrong, precepts upon precepts, a priori versus a posteriori truth, antecedent and precedent regulations (Rao, 2003).

2. Business Intelligence

Business Intelligence is a very broad term that means using the data available to your organization to make factually based business decisions (Beller & Barnett, 2009). This can take on a number of forms and methods but generally includes doing things such as developing Key Performance Indicators (KPIs), Trending Analysis, Predictive Modeling, dashboards, etc. There are also a few variations of the Business Intelligence Maturity Model[2] which basically categorizes the extent to which an organization leverages BI to make key decisions.

Business Analytics is the heart of BI that doesn't include the actual business decision making, but the steps that lead up to the decision. Business Analytics is a specialized branch that requires huge amount of data and expensive tools like SAS, SPSS and some other less complicated tools like XL Miner (Battiti & Brunato, 2011).

3. How Data-Driven Companies Perform

Taking into account the development of machine learning and the exponential curve of digitized human knowledge. It is observed that the specialists will be replaced by software and even the governments and mega-corporations algorithms will make the decision of more equal division considering the perfect balance of Neumann and incentives, making the society more egalitarian because it will be better for the long-term. But does greed as one of the main variables of human character to model history allow? You can definitely make use of the studies already done by companies by simply observing and appreciating how they might have used the business analytics tools.
Where's the evidence that using big data[3] intelligently will improve business performance? What this change in the paradigm of decision means in a time series of approximately 50 years. If this path really proves possible given the countless variables that can change it as world wars and natural catastrophes for example. Would not that mean dehumanizing humanity? Throughout the history of technology we see the effort to separate the package. But to be something you need the whole package. To create identity requires the good side and the bad side. Mankind has to change like the river and man. We just wanted to raise this question that we believe is linked to this paradigm shift.

[1] Profile, *Visit: http://www.imperial.ac.uk/people/w.ochieng*
[2] Business Intelligence (BI) Maturity Model, *Visit: http://bi-insider.com/portfolio/bi-maturity-model/*

4. How Intelligent Narrative Is Revolutionizing Business

Today's enterprises have Big Data problems–a data collection that has grown so big that it has become difficult to handle it using traditional way. The explosion of data sources, technology, and business intelligence analytics is yielding a wealth of new business opportunities to provide success in today's business market with self-service analytics. Wealth management companies are using deep learning solutions for long-term value investing. They need innovative knowledge breakthrough, integrating country central banks, monetary, economic, fiscal policy impact on sectors supply, demand, company earning based asset pricing, market timing, long short strategy maximize risk adjusted return all with the intelligent narrative and deeper context of data.

Quantenstein is just one example of such an integrated software platform for automated long-term value investing that builds on the latest developments in Deep Learning technology. For a given investment universe (e.g. regions, industries, market cap categories) and set of constraints (e.g. portfolio size, dividend yield, holding period, transaction costs, ESG criteria), Quantenstein[4] optimizes client-specific financial performance metrics based on large quantities of fundamental accounting data to assemble tailored investment portfolios.

4.1 Business Data Analysis

Data centric style of decision making is Analytics. There is some campaign that your organization will be doing. Lot of marketing money is at stack. You review past data of campaigns and suggest where your marketing money needs to be spend. The purpose of any data and any system is to enable your business and be part of your Decision Support System. Intellectual analysis and context combined with data are key to making good decisions (Werbos, 1974).

4.1.1 Real-time ad-hoc data exploration to identify what drives key metrics

The over-riding aim of business data analysis must be to support great Customer Relationship Management. Any business investment that those not ultimately tend towards improving customer satisfaction is missing on the fundamental bedrock of the enterprise. Business data should lead to a better understanding of the belying motivations of the customer. When this is known, strategy formulation can be better on point.

Context is everything with analytics. Without deep context, data is just data. No purpose, no intelligence means no resultant decision benefit (Chen, 2012). But do not underestimate the complexity and commitment required to build this complex relationship. Also, in cases, when we are talking about data, we more likely are directed to math, science, machine, etc. We tend to forget the final audience of data display are human eyes. Business data is not only about being scientific, but also about bringing out the art to people. This is where innovation is necessary.

4.1.2 Where is the hurdle?

A big obstacle to companies effectively using business data can be their business analytics product's limitations or inability to harvest data in the first place and a lack of clarity and consistency across an organization about what exactly they want to achieve with that data without the use of differentiation in the intelligent narratives (Dugas, 2017). Remember you are not in a business of technology for employing technology personnel to build those intelligent narratives. Ideal way is to select a BI platform that works on cloud which demands no hardware investments or any special skills to deploy and manage the system.

4.1.2 What kind of intelligent narratives lead to better outcomes in business intelligence for the analytics product?

The answer from constructive developmental psychology(Moldoveanu, 2015) is that business intelligence analytics product not only creates an intelligent narrative about the world, these are also very much aware about how they bring deep context about the data. A successful analytics product is always aware that any problem that is 'simple' is one that has been simplified, by someone for some purpose. (S)he will for example see that the business model canvas, an agile framework, a flexible value chain optimization model, an IT architecture, or a customer interaction approach will always have unidentified or hidden dimensions and consequently the model does not reflect what is happening in the 'real world'(Wixom, 2010). A comprehensive BI analytics product uses intelligent narrative and bring context to data, and then does both while doing. So it has mechanisms that enable it to conclude beyond dominant narratives, beyond what is salient.

5. Differentiation among Competing Business Analytics Technologies

Tableau[5] is presently the "gold standard" of visualizations in this software category, but there are alternatives that might better fit your team - whether you're a team of one or a department of many, among other considerations. Tableau has a history of being the best for BI visualizations, but others are catching up in light of this past 2016 Gartner Magic Quadrant BI Report where you'll see there was a big shift and new rules on how they're ranked (Gartner's 2016 BI Magic Quadrant: Insights from Tableau, Qlik and Logi, 2016). Expect to find many choices with this type of question examples include BIME, Thinklayers, Plotly and Sisense.

5.1.1 Tableau vs Microsoft Power BI

Both solutions provide visualizations. With Power BI you choose the visualization first, then drag the data into it. In Tableau, you select the data and switch between visualizations on the fly. It's easier to jump between visualizations in Tableau.

[3]Big Data: The Management Revolution, *Visit: https://hbr.org/2012/10/big-data-the-management-revolution*

[4] Company Profile, *Visit: https://quantenstein.org*

[5] Tableau Software Review by Elizabeth Mazenko, *Visit: https://www.betterbuys.com/bi/reviews/tableau-business-intelligence/*

When it comes to presenting data visually, both solutions take a different approach. Tableau has always had a strong focus on visuals, while Power BI has developed its data manipulation features first, but provides access to simple visualizations as well.

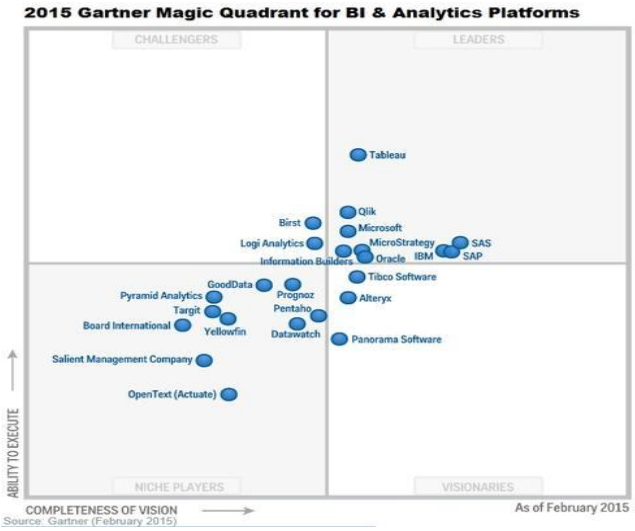


Figure 1 With the underlying goal to make insights more accessible and empower average business people, everything seen through the user's perspective is a reflection of the market reacting to disruptive advancements.

5.1.2 Tableau vs IBM Cognos

When BI products are compared to Tableau, visualizations are always a significant consideration because Tableau is known as the best in this regard. If your sole purpose for a BI solution is to quickly create and share data visually, Tableau is a top contender. If visualizations are only a portion of what you're looking for, a full BI platform such as Cognos could be a better fit.

5.1.3 Tableau vs Spotfire

Tableau provides superior visualizations for graphs, dashboards and reports, but Spotfire also provides fine visuals compared to most BI tools. One detail that shouldn't be overlooked with both solutions is that they can each visually display outliers in a dataset. Many BI solutions for visualizations can accurately interpret trends, but not outliers. When a solution can't spot anomalies that skew trends, users make inaccurate assumptions. Tableau and Spotfire do not have this flaw. Tableau Public is free, embeddable most anywhere, super easy to use, and has support for tons of cool viz types (bullets, sparklines, etc). This is more of a visualization and inductive (vs. technical) analytics tool. Spotfire is not a web service per se. However, visualizations created using the software can be viewed in a browser. Spotfire supports the S+/R libraries from what we understand. There are more technical analytical elements in this tool.

6. Innovation in your Business Analytics Products

Nowadays, everyone, from students to corporate executives and MNCs presence across continents needs to deal with massive amounts of data. Without proper analysis and understanding of data, both individual professionals and companies will not be able to utilize the data they deal with. That is where the concept of data visualization steps in (Tufte, 1998). Basically denoting presentation of data in an easy to comprehend graphical and pictorial format, Data visualization enables users to gain more insight and make their points clearer to others.

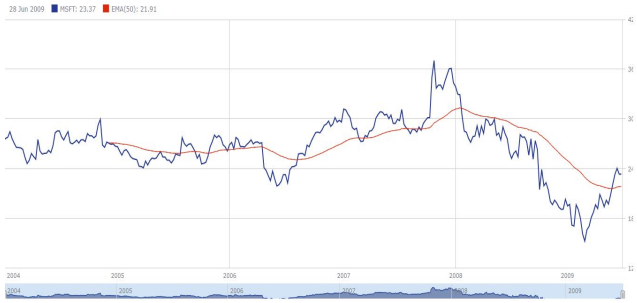


Figure 2 Drawing Tools and Annotations with Anychart

6.1 Make your business decisions with a data driven approach

As data analytics are now an integral part of business life, more and more companies elaborate strategies to manage it effectively and make the most out of it. In today's fast paced business world, smart data analysis tools are essential to successfully manage a business. We have never been exposed to so much information as we are today, nor have we been exposed to so much data collection. Raw data make an increasing part of any business; it is no longer ignored, and needs to be dealt with.

Figure 3 Smart data is data that has been contextualized, and tells a business something without meandering or time wasted on testing that doesn't yield great new information - Courtesy InetSoft

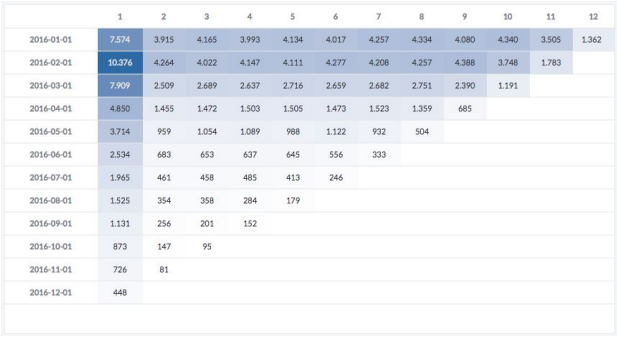
6.1.1 Growing your business with Freemium Business Data Analysis Tools

Free tools for such reporting could be Python with Matplotlib or SeaBorn, you can use Qlikview (Desktop version) which is completely free without a need for trial license, you can use R with Shiny or Bokeh, you can use Excel assuming data volume is low, you can also try

Pentaho, SpagoBI for free use, and RapidMiner. Helical Insights is onther open source Business Intelligence Platform.

6.1.3 Customization is the need of the Time

Efficiency is the language business intelligence warrants as it needs to blaze through intelligent narrative while keeping conversations smart and relevant. The trouble with data analysis is that you first need to know what question it is you want to answer. Preparing the questions you need to ask and having a thorough understanding of the data you're modelling will make it quicker to get to the answer you're looking for. There are a handful of free tools available in the market but most of them have limited capabilities. Some does the job absolutely fine although it's not enough that you rely on free solutions alone.



	1	2	3	4	5	6	7	8	9	10	11	12
2016-01-01	7.574	3.915	4.165	3.993	4.134	4.017	4.257	4.334	4.080	4.340	3.505	1.362
2016-02-01	10.376	4.264	4.022	4.147	4.111	4.277	4.208	4.257	4.388	3.748	1.783	
2016-03-01	7.909	2.509	2.689	2.637	2.716	2.659	2.682	2.751	2.390	1.191		
2016-04-01	4.850	1.455	1.472	1.503	1.505	1.473	1.523	1.359	685			
2016-05-01	3.714	959	1.054	1.089	988	1.122	932	504				
2016-06-01	2.534	683	653	637	645	556	333					
2016-07-01	1.965	461	458	485	413	246						
2016-08-01	1.525	354	358	284	179							
2016-09-01	1.131	256	201	152								
2016-10-01	873	147	95									
2016-11-01	726	81										
2016-12-01	448											

Figure 4 Cohort table to help visualize data by Cluvio

If you are looking for a SQL based analytics platform, you should check out Cluvio or Datapine. R, the open-source language for statistical programming, can be embedded into Apache using RApache to help you customize and examine all key performance indicators instantly at a glance. Beside Processing.js, there is a plethora of Javascript libraries that can support your development process. First, evaluate the pros and cons of the two options SVG and Canvas (ExCanvas for IE) and then choose a fitting library.

6.1.4 Visualization is core to differentiation of any BI Analytics Product

Some think visualizations alone are an effective form of communication, providing executives with all the information they need to extract valuable insights(SciDev.Net , 2016). If you have your own data set and you want to visualize it, options range from a BI tool that is the most user friendly (something like Tableau) to D3, which gives you the most control but requires the most time and technical abilities to produce a finished product. There are several business intelligence analytics products that are being used for data visualization these days. Before you select one such app for business intelligence needs, considering factors like licensing, integration with existing platforms and usability becomes necessary.

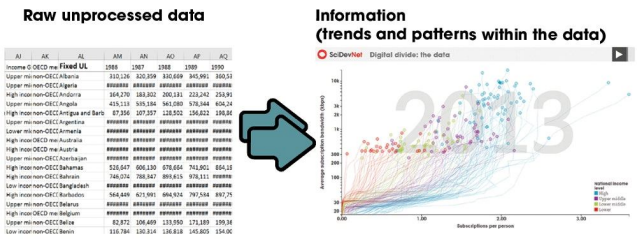


Figure 5 Brining intelligent narrative and deeper context to business data with the help of data visualization tools

In between these two, you will find web tools like Infogram that will require you to work within some tight constraints, or JavaScript charting libraries like ZingChart that tech some of the technical time out of drawing charts for the browser as mentioned above, but still let you customize the end product as much as you would like. For simple things like charts creating in a few clicks, sharing, printing or export to image, Vizydrop, a Data Visualization Software is also a great addition around intelligent narratives. For complex stuff, Google Fusion tables are perfect(Hector Gonzalez, 2010).

The Roosboard search driven is a desktop and also handheld user-friendly business intelligence tool drives major success for the business by analyzing the business performance in a right way. Manyeyes is relevant if your data is in check and you just want a visualization engine. You can try the cloud-based application AnswerMiner that you can run in your browser. Inetsoft offers a drag-and-drop interface for dashboard creation and data mashup. Silk is a really powerful graphDB with a super simple WYSIWYG editing or visualization engine on top. Databox has a beautifully designed and powerful Web application or mobile application and offers several one-click integrations. Then, there is also Quandl, which combines the datasets and the DataViz, but you're somewhat beholden to their data sets and their themes(Thomas, 2017).

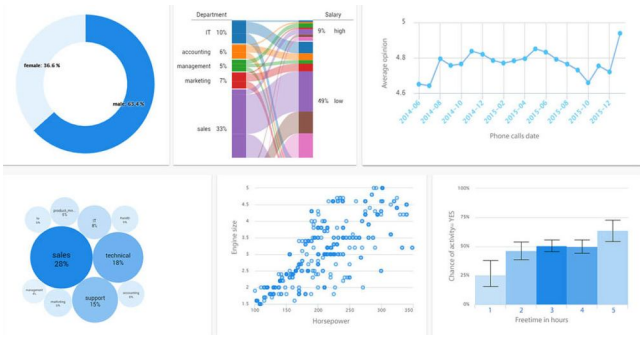


Figure 6 Automatic Charts by AnswerMiner

Custom built solutions may be a good alternative for specific visualization methods that are missing in the existing services. D3.js - Data-Driven Documents is known to be a good library for data visualization. Some other visualization solutions are Protovis, Raphael, Javascript Infovis Toolkit, AnyChart JS Charts, AnyStock Stock/Financial JS Charts, AnyGantt JS Gantt Charts, AnyMap JS Maps, ZingCharts and HighCharts. Through

SaaS nature of any good business intelligence analytics product, it could be made available anytime, anywhere, real-time. This is one form of innovation. Sometimes, through intuitive drag and drop interface one product is differentiated from the other. Compelling customizable dashboards integrated with rich library of data visualizations also may be embedded with these products to bring intelligent narratives and deeper context of business data.Easy data consolidation is another prime objective(Herschel, 2005).

6.1.6 Track user behavior to improve conversion rates throughout any product or service

The right information in the nick of time is what critical business decision makers need. With innovative algorithms for Business Intelligence and analytics which empowers decision makers to take decisions, businesses should explore the power of Business Intelligence and Big Data Analytics with intuitive, easy to use, reporting dashboards for all your business needs from the above mentioned available custom solutions. You can differentiate your business analytics product with an intelligent narrative that helps you easily compare customer behavior over time to uncover drivers of engagement and retention (Surbakti, 2017).

7. Conclusion:

In the end, Business Data Analysis, helps for defining KPIs and building the reporting platforms that deliver them. Data Analysts might also perform ad hoc analyses on specific scenarios for product or functional groups. Some companies have a dedicated group for this usually called something like Consumer Insights, some have data analysts sitting in product groups, and some have generic business analysts who sit between the product and management layers in the company hierarchy. The BI system should never expect any special skills within your organization.

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