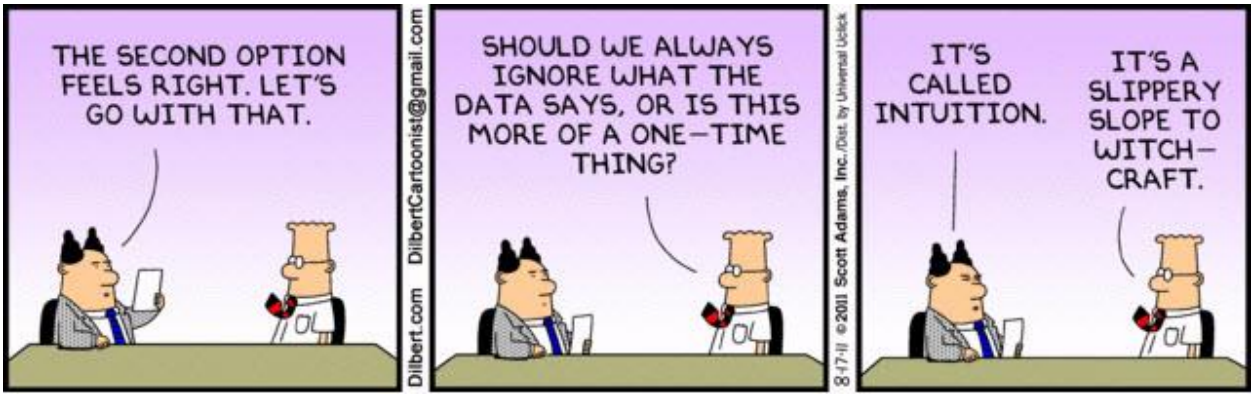
Business Intelligence for Small Businesses

4.4 zettabytes ($1zettabyte = 10^{21}$) data generated in 2013.

This is set to rise to approximately 10 times to 44 zettabytes by 2020.

Data is the new oil that fuels the growth and change. To a layman, the comparison might not be visually appealing. However, from the perspective of economy, the way power of oil changed the fortunes of businesses and nations in the last century, the data is reshaping nations and businesses. Moreover, a data warehouse (DW) has more in common with an oil refinery than we relaize at first glance. An oil refinery gets in vast amounts of crude oil each day and uses fractional distillation techniques to separate different fractions crude into useable forms like petrol, diesel, kerosene, etc. A data warehouse, similarly, receives vast swathes of data from multiple systems, cleans, stores and extracts usable information from raw data using business intelligence solution. The vast amounts of data being generated, captured and the availability of the computational power to analyze the *big data* has created new businesses, infrastructure and new economics. No wonder than that like oil giants in the past, newer businesses relying on data have been accused of trying to monopolize data. Google, Apple, Microsoft, Facebook, Amazon have all faced this allegation (*and not entirely without basis!)*. These companies have dethroned oil companies and currently are the five most valuable companies in the world. These companies have amassed fortunes on the wave of data-backed products.

Each and every activity, online or offline, generates some data. A visit to an ATM to withdraw money, browsing the ecommerce sites to find the best deal for a mobile phone, browsing internet or just clicking around, undertaking online training courses, visiting a shoe store etc., all generate data. The ATM managing company can look at data to find out the days on which withdrawals are maximum and be prepared to restock that ATM more times or can share data with banks about the denominations most frequently withdrawn.



However, like *solar energy*, most of this data is of no value unless it can be captured, stored, cleaned, integrated and conformed so that it can be readily presented and reliably analyzed to make decisions or predictions. Business Intelligence (BI) is generally defined to encompass all of these functionalities and a few more. BI allows businesses to make use of the data that it generates - either internally, a third-

party service, vendors or through its customers and competitors – to make evidence based decisions. Data is also the engine that powers Artificial Intelligence (AI). AI is not possible in the absence of BI. Businesses are going all-out to exploit something called the *data network effect.* It means using data to serve users betters and to attract more users, this in turn generates more data thereby helping to serve customers better and get more of them…

> "Business intelligence (BI) is an umbrella term that includes the applications, infrastructure and tools, and best practices that enable access to and analysis of information to improve and optimize decisions and performance."

So although, as a broad picture, we do see that BI can assist businesses in making fact-based decisions, on the ground, we also see small businesses shying away from BI solutions. This paper is not about the benefits from BI *per se* but looks at some reasons why small businesses are hesitant in adopting BI. In this section, we will debunk some of the myths around the need of business intelligence for small businesses.

Myth 1: Business Intelligence is only for big corporations

Big businesses generally would generate more data, so in that sense, business intelligence is important to them to discover any new or discerning pattern from data. However, that does not preclude small organizations from using business intelligence. With an increase in the number of internet based startups, that have no physical interface with the customers, it make much more sense to analyze your data. If you are into business for good, you have as much stake in gaining business intelligence as any of your bigger competitors. The use of data mining tools can help your business uncover information that you will deem surprising and can result in more avenues becoming available for decision making, customer acquisition, sales increase or customer satisfaction. Businesses around financial products, lending, ecommerce etc. can hardly make do without some sort of business intelligence that guides them like the invisible hand of God!

Although, there is a lot of noise around *Big Data,* it is actually the small data around which Internet of Things (IoT) is being developed. Smart devices are being made on the back of specific small data. Come to think of it, even big data gets analyzed and filtered down as small data for further analysis and prediction. Conversely, small data is fed back in the big data loop to reveal patterns. The machine-leaning algorithms use small data sets to actually refine themselves. Small data contains very specific attributes unlike the big data where the patterns, known and unknown, are stored and analyzed. Small businesses, rather than going by the hype around big data, shall understand their own specific needs which will be in high probability a small data set or a specific attribute that they need to analyze.

Myth 2 : Business Intelligence is capital intensive

Like any new technology, BI solutions of a decade back were prohibitively expensive and were therefore, more suited to large corporations with large IT budgets that could be expended towards deploying and managing a BI solution. This was more like the days when computers were in their infancy, have limited

capabilities and still overpriced. Companies like Apple and Microsoft made computers personal and for everyone. Today's BI solutions are like personal computers that can be configured as per needs of the user and hence makes it cheaper as you do not need to buy the entire system but only what you need. It is still an investment, nonetheless.

Myth 3 : DW and BI projects fails almost 50% of the times

Some researches point to the fact that many Data Warehousing and BI projects fail to achieve their goals. This is partially true. When BI projects are initiated without understanding the purpose behind their deployment and what problem the corporations are trying to resolve, they are bound to fail. The aim of the BI projects is to provide intelligence or actionable insights to the functional teams. Therefore, complete concurrence between functional teams and the deployment teams as to what is required is of paramount importance. Lack of flexibility in the BI models is one of the biggest reasons cited for their failure. The needs of business and hence the kind of data and information that is required is bound to change. An inflexible BI model that cannot provide for changes in the organization's needs is doomed. The Business Intelligence system needs to be *agile.*

Organizations that focus more on visualization tool than the underlying data models are bound to face challenges sooner than later. A BI solution can provide the intelligence depending on how good the underlying data is. However, many teams tend to overlook this aspect. Further, there is a tendency to "*get the data if it is there"* approach. This approach tends to defocus from the actual needs but try to get every piece of data that is available. This not only leads to unnecessary data complexity but also brings forth the team's immaturity in not fully comprehending the purpose of BI deployment. Lack of regular trainings to the staff was also cited as a reason for the failure in many cases.

Last but not the least follow the rule of *'crawl, walk, run'* with respect to BI deployment. Think big but start small shall be the mantra for small companies.

Myth 4 : BI needs expensive high-end systems

If you are churning terabyte sized and streaming data, that might be true for you. However, we need to get a perspective here. As a small business, you are not necessarily churning out large data-sets. If you are analysing small-sized data sets, even a low-end tool like MS Excel might be a good choice for slicing and dicing your data. In fact free-to-use, tools like Microsoft Power BI can be a good choice as they integrate very well with Excel. The choice of a BI tool will always start from what you intend to do achieve and the kind of datasets you have. Choosing a BI without a clear objective is, more often than not, prone to erroneous judgement on what kind of tool you require. If you call yourself a moderate sized company in terms of the data churning needs *(not very large data sets but not small either)*, it might be a good choice to invest in a good reporting and visualization tools that will surely help you move ahead in your game. In fact, there are several BI tools available in the market that are easy to implement, learn, train-on and develop. One of these tools is the Microsoft SSRS that is administered via a web based interface and can be used to develop and present a number of interactive reports. Tableau and Qlik are two of the new generation BI analytics software that are rated as BI market leader in the Gartner magic quadrant

2017. Both are very easy to deploy (desktop or cloud) and help create visualizations, dashboards and stories. Another advantage is the pocket-friendly pricing that both of these offer. Python and R are two open source statistical and model building software that are free to use although it requires some learning of the language to make it work for you. SAS and Cognos are two other big players in the BI and analytics market although pricing is one of the issues with both of them.

OK, I get it. But what shall I look out for as a small business? An **Agile Business Intelligence** approach can be the right answer to all challenges that the small businesses face while deciding to implement a BI solution for their organizations. As per Forrester Research, *Agile BI is an approach that combines processes, methodologies, tools and technologies, while incorporating organizational structure, in order to help strategic, tactical and operational decision-makers be more flexible and more responsive to ever-changing business and regulatory requirements.* An agile BI approach can help small businesses focus on what they require while shortening the time-to-value from BI system. An agile BI system can make it easy to make changes to the data models based on the changing needs of the business or the stakeholders. The costs can be kept under control as you focus only on what is necessary. The total cost of ownership as well as the total cost of change of agile BI solutions is lower than traditional BI solutions.

In the table below, let's also see how the four Agile Values align with BI needs of small businesses

Agile Values	BI Alignment
► Individuals and Interactions over processes and tools	► Not getting stuck in the processes, faster turnaround
► Working software over comprehensive documentation	► Avoids delays and provides quick value
► Customer Collaboration over contract negotiation	► Involvement of end-user even during the development cycle to ensure that products meets the business needs
► Responding to change over following a plan	► Customer needs are the highest priority. The development is fluid to respond to changing business needs.

Such is the importance of an agile BI environment for the BI products that Gartner has changed its magic quadrant assessment in 2016 to include support for 'Agile Centralized BI Provisioning' as one of the criterion of assessing vendors. An agile BI solution lets you start small, while gradually moving up the BI maturity scale. User adoption of agile BI solutions is typically higher than traditional BI solutions as it is easier to understand, use and leverage.

So, where does this leave us? BI can provide you with an avenue to serve your customers' needs better and up your ante against the competition. You do not need to be working with large data sets to need a BI. A well thought out agile BI solution can help you with small data sets as well to discover hitherto unknown trends that might have a significant impact on what you do and how you do it. However, it is of

utmost importance to understand the business need for a BI solution. An experienced and a competent data analytics professional can help you determine that need.