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Ba Business Management
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Introduction

The report presented before you aim to observe, analyse and define current trends in Business Intelligence and clearly provide an understanding of such concepts. In doing so, the report will cover trends such as Real-Time Data, Artificial Intelligence or Data Security, with applicable examples. Furthermore, it will also address the role and implications of Big Data on Business Intelligence in the current landscape and discuss some techniques used for analysing.

In order to lay a foundation for this report, it's important to first define Business Intelligence (BI) in order to better understand the topic at hand. As such, according to Maheshwari (2015) Business intelligence is a comprehensive range of IT solutions that comprises tools for acquiring, processing, and presenting information ⁵ users regarding the performance of the organisation and its surroundings. Furthermore, Ng (2013, p.8) states that "the high-level goal of BI is to help a business user turn business-related data into actionable knowledge". We could then conclude that BI helps the decision-making process by providing the necessary framework to transform information into actionable insights for the end user. It can improve customer experience and satisfaction, provide a competitive advantage and increase efficiency.

Big Data: what is it and the impact on Business Intelligence

In the current business environment, organisations need to collect large amounts of data in order to better understand their customers and their behaviour. This data has increased in volume in the last decade and it has become a challenge for businesses to gather, store and analyse such vast amount of information. One culprit for this change ⁸ is the perpetual use of the internet to engage with organisations and particularly the use of social media platforms such as Facebook or Instagram.

The term Big Data simply refers to a massive and complex set of data sets that are generated and transmitted from one point to another. It involves collecting, storing, analysing and processing of information in order to present patterns and help the decision-making process.

According to (Russom,2011 cited in Ng,2013), Big Data is categorized into three dimensions:

1. Volume

Data generated nowadays is increasing substantially and organisations need to capture as much as possible in order to gain insight into their user base and gain a competitive advantage.

2. Velocity

Through the use of technology, data is gathered as an increasing rate. Businesses ¹⁰ want to reduce the amount of time it takes to collect information in order to increase efficiency.

3. Variety

With the increase in volume, the necessity of increased variety of data has emerged. This variety of data can be further categorized as such:

- Structured: stored in a pre-defined format, such as a table.
- Unstructured: no pre-defined format with content from, for example, a video.

- Trusted: the source can be trusted if for example it's generated by the business itself or in the case of book and journals, has been peer-reviewed.
- Non-certified: to keep in line with the previous example, this could be websites such as Wikipedia.
- Internal/External: generated within an organisation or externally through the use of partners and suppliers or online social networks.
- Facts/Opinions: financial transactions, statistics or alternatively opinions of customers such as product reviews.

According to Larson and Chang (2016), data was initially stored as a data mart or data warehouse and its purpose was merely that of reporting. With the introduction of Big Data, there was a shift in the BI delivery and data had to be converted into information quickly in order to accommodate the increased volume and velocity.

Whilst BI mainly focuses on reporting (descriptive analytics), Big Data focuses on prescriptive and predictive analytics, with the mention that both can cover all three analytics. Also, BI emphasizes visualization through the use of dashboards mainly, whilst Big Data emphasizes data modelling and statistical analysis. The two collaborate in order to assist organisations in gaining deeper insights. We can then observe how the use of Big Data analytics has revolutionized the way businesses approach Business Intelligence and its positive impact on the decision-making process.

Big Data: Analysing Techniques

Because Big Data resources are complex, new approaches for processing and analysing them are required. These strategies have an influence on the functionality and capabilities of Big Data applications, as well as the efficacy of decision-making and personalisation of goods and services. (Olszak, 2020).

Data Mining

Data mining is the process of analysing large sets of data with the purpose of extracting information and identifying trends and patterns. According to Olszak (2020, p.74), "the main purpose of the data mining analysis is interpretation and prediction". In this case, interpretation refers to using algorithms in order to identifying patterns and trends and display them in such a way as to be easily understood, whilst the goal of prediction is to forecast the value of an unknown variable in the future or to evaluate the probability of future occurrences. For example, companies like Amazon can use data mining to predict which product will likely sell in the foreseeable future and based on their past customers demographics can establish a customer profile for said products. Furthermore, through the use of regression analysis, Amazon can create a predictive model in order to forecast sales or stock prices.

Network Analysis

The most common network analysis, according to Olszak (2020) is social media mining (SMM). It refers to collecting and analysing data from social media through the use of algorithms in order to establish consumer preferences and trends. "It encompasses the tools to formally represent, measure, model, and mine meaningful patterns from large-scale social media data". (Zagarani, Abbasi, & Liu, 2014 cited in Olszak, 2020).

Search-based applications

This refers to what we commonly describe as a search engine. A user-friendly and flexible way of searching for information being it structured or unstructured and from different sources. A very good example of a popular search engine is Google.

According to (Capgemini, 2013 cited in Olszak, 2020), there a number of benefits for using such an application:

- a) High flexibility in recognising different types of information
- b) User-friendly and easy to navigate
- c) Can accommodate different data formats
- d) They can deal with constantly changing data structures.
- e) Users are less dependent on IT departments since data can easily be accessed and filtered to meet demands.

Current trends in Business Intelligence

The Business Intelligence landscape has been revolutionized in the last decade and is influenced more and more by Big Data and the need for fast and easy solutions. With the increase in variety of data, there has been a shift towards the need of unstructured data from various sources, thus increasing the complexity of tools needed in processing and analysing.

Business users now require access to data in almost real time in order to satisfy demand and like we mentioned earlier, gain insight and competitive advantages. According to Kabakchieva, Stefanova and Yordanova (2013) this shift has led to the development of Mobile BI applications, Real-Time BI and Self-Service BI tools, and furthermore, because of the increasing volume and velocity of data, new Data discovery and Exploration tools are being developed constantly. Data discovery allows users to uncover insights in a more dynamic way by creating their own reports and dashboards, as opposed to predefined set-in stone dashboards (Kabakchieva, Stefanova and Yordanova, 2013).

One of the trends we currently see in BI, is the shift from descriptive analysis towards predictive and prescriptive analysis. The predictive analysis allows organisations to forecast future possibilities by extractive relevant information from any given data set and identify potential risks and opportunities that may arise. For example, the marketing department can predict user purchases or frequency of said purchases by any given customer.

At the same time, the need for Real-Time Data has become increasingly important in offering live and accurate information. This implementation has arrived through the use of live dashboards that allow companies to receive relevant information in real time thus increasing the response time and increasing delivery efficiency.

Such an example was seen during the Covid-19 pandemic, where statistics needed to be followed and analysed rapidly in order to address the issue at hand and take proper action.

Another important trend we can observe is data security. Cyberattacks have increasingly become a problem for corporations and now its more important than ever to develop solutions to mitigate this risk. Corporations like Facebook for example, have seen numerous data breaches in the last years, thus raising the need for increased investment into data protection.

Lastly, Artificial Intelligence (AI) is an ever-growing phenomenon that promises to augment human intelligence and provide deeper insights beyond conventional ones. In the upcoming years it's expected that more trusted and transparent AI models will be developed and will once again revolutionize the way we interact with data and analytics. A good example currently is ChatGPT, a language processing tool that can have near human conversation and interactions.

Conclusions

In the current climate, it's difficult to forecast how the BI industry will take shape. But with the help of these observable trends we discussed, we can clearly see that businesses need to quickly adapt and overcome challenges in order to stay competitive and respond to the rapid changes in the BI landscape. Business Intelligence is essential in the modern business world and will continue to expand in correlation with advancements in technology. Whilst challenges like Data Security need to be addressed by organisations worldwide big or small, the rise of AI models and machine learning promises to provide an additional dimension and perspective into enhanced analytics.

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