Chapter 6
An Overview of the Data Science Process and Data Analytics Within Organisations

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ABSTRACT

This paper attempts to conceptualise the concept of data analytics for both MSMEs and large corporations. Data analytics enable organisations to learn how customers think and behave in real time, and make changes to their business as a consequence, using real-time insights about the customer base. The various misconceptions on data analytics, especially in organisational context, warrants the writing of this paper. Present day organisations are already under immense pressure due to increasingly competitive and hostile environments, and by utilizing data analytics may give them that extra edge over competitors in order to survive and grow. The objective of this chapter is to provide an overview of data analytics, and propose a conceptual framework to showcase the data science process as well as some of the most well-known and useful features of data analytics. This chapter also attempts to synthesise the various jargons for organisations to easily comprehend step-by-step, from data collection to producing useful data in order for them to enable informed decision-makings.

INTRODUCTION

Human society is always striving for efficiency, whether it's through complicated algorithms, multitasking, the sharing economy, or life hacks. One of the great promises of the internet and big data revolutions is that we can better our work and personal procedures and routines to do more in less time than ever before in the effort towards industry 4.0. Data has been acknowledged as the driving force behind the 3rd Industrial Revolution – the Information Age – when computers and the Internet revolutionized the globe. In this Age of Innovation, the 4th Industrial Revolution, when machine-human interaction is revolutionizing the way we live and work even more swiftly, data is being hailed as the "new oil." It's

hardly surprising, considering that data and analytics are at the heart of every new technological trend - Internet of Things, Artificial Intelligence, Robotic Process Automation, and so on. With practically every device creating and collecting data, data preparation and management is one of the most difficult tasks for data analysts and scientists. This is the process of filtering and sorting data from diverse sources and formats in order to categorize and prioritize it based on business needs.

However, static data - statistics alone - will persuade only a small number of people. The visualization must depict a situation that has an impact and necessitates careful consideration. There must be some movement in the visualization. In a nutshell, the visualization must convey a story, to capture the interests of the masses, especially stakeholders (Bogza & Zaharie, 2008), and this can be achieved through the data science process of data analytics. Furthermore, certain sectors are experiencing disruption as a result of rapid advancements in analytics technology, such as Artificial Intelligence and chatbots (Millar et al., 2018).

There are main issues surrounding today's context that warrants this paper. Firstly, is the high failure rate of organizations, including small and medium-sized enterprises or 'SMEs' (Ahmad & Seet, 2009; Beh, 2013), micro-enterprises (Blanco-Oliver et al., 2014; O'Dwyer & Ryan, 2000), as well as established organizations such as large corporations (Khan et al., 2019; McGovern, 2007).

Regardless of SMEs located in either developed or emerging economies, it is found that SMEs everywhere have a high failure rate. For instance, in Asia, SMEs experience failure for the first five years (Abdul Rahman et al., 2016; Ahmad & Seet, 2009), whereby the failure rate stands at an approximate 60% and can potentially be worse (Chong, 2012; Husin & Ibrahim, 2014). In Africa, it is believed that the failure rate of SMEs in South Africa is between 70% and 80% (Adeniran & Johnston, 2011), whereby around 440,000 small companies in South Africa have closed in the previous five years (Fatoki, 2014). Micro-enterprises, on the other hand, is also experiencing stunted growth to point of failure. Despite the help of micro-finances, micro-enterprises can potentially close down even in less than 5 years. This is due to various barriers stunting growth (Omri & Frikha, 2011) as well as management issues (O'Dwyer & Ryan, 2000). Above all, entry-level businesses are most affected including those who have just started up. The lack of experiences is also a major hindrance (Watson, 2003).

In March 2020, almost 21,000 more UK firms failed including large corporations than in the same month the previous year. Coronavirus, along with Brexit and a slowing economy, is putting a strain on businesses (Prashar et al., 2020). While the reasons for their closure are slightly different, in that they are arguably less affected by economic conditions due to their large assets (Lieberson & O'Connor, 1972), which can be converted to cash for emergency purposes. Instead it is internal leadership, finances, and differences have caused their failures. Many significant corporations have gone bankrupt. Some have gone bankrupt, while others have significantly shrunk in size and lost their status as industry leaders. Thomas Cook and Jamie's Italian are prime examples (Salman & Seiam, 2021). However, the point remains whereby they fail to successfully utilize data analytics to make informed decisions makings which can increase their survivability and save costs by preventing diseconomies of scale (Canback et al., 2006).

Above all, the reasons cited are for the various organisations to fail is the increased hostility in business environments (Félix & Maggi, 2019; Lee & Mukoyama, 2018). Since many well-known and trustworthy 'rocks' of business were born, the world has altered drastically. However, reinvention, development, and the potential to disrupt the market are all required at such a rapid pace that many businesses are unable to stay up (Bessant, 2013). In addition, it is now more easier than ever to create a start-up due to lowering cost of production (Freund & Weinhold, 2004).

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