Scientific method data analysis worksheet

Data analysis involves searching information to identify predictable trends, interpret results and make business decisions. Software solutions are often used to perform efficient and optimal data analysis. Companies use analytics in areas such as strategic management, marketing and sales, business development and human resources. Boards of directors and business leaders meet periodically to develop forward-looking goals and strategies. The data is analyzed to ensure that objectives and strategies are quantified, based on the current situation of the company and on the basis of business intelligence and not intuitions. In order for executives to set a target of increasing their market share by 5% within two years, business revenue data is compared with industry revenue data to identify current market share. Market share trends and projected revenue data are useful in setting reasonable targets. Companies also analyze competitive data, such as revenue, profit and market size, to identify positive forces to leverage planning. Marketing and sales functions are strongly driven by 2015 data. Software is used to collect and evaluate market research. Companies use data to familiarize

themselves with the characteristics of target customers. Target, for example, tracks all demographics, such as age and gender, as well as the transactional behaviors of its customers using an individually assigned Guest ID. Tracking these details allows for highly targeted direct mail or email promotional campaigns. The leading enterprise marketing system, customer relationship management, is also built on data-driven software. Marketers use profile data and behavioral transaction histing to find business models. These models are used to target the right customers in the right way with promotional material. This improves sales and service activities. Sellers use CRM to better manage ongoing interaction with prospects and customers, and to keep notes on key customers. Business development applications with data analytics are closely linked to marketing applications. Retailers, for example, often analyze customer data to determine locations for new stores. If an existing location attracts a large traffic from a 45 to 60 miles, for example, the company can add new stores in nearby cities to meet larger portions of those markets. Companies can diversify product mixes into certain categories by identifying the types of solutions that appeal most to their most valued customers. Surveys are often used to collect and interpret customer data about their preferences. Data analysis is also used in the human resources field as it is more of a strategic process than a business function. HR professionals use data analytics software for talent management, which involves projecting employee needs in different departments and positions based on the company's objectives. Data analysis is used in employee evaluations and goal setting. Customer service workers often receive customer satisfaction ratings. If the company determines that the average rating is 92 per cent, it can develop training and development plans to raise the average to 95 per cent within three months. In addition, workers who score more than 95 or 96 per cent may receive bonuses or other incentives. Data-based scoring systems are also used in promotional decisions, sometimes, to ensure the objective. HR services also track employee turnover and retention rates. Let's break the definition of science. Part 1 Science is practical. Although science sometimes involves learning textbooks or teachers in conference rooms, its main activity is discovery. Discovery is an active and practical process, not something done by isolated scholars of the world in ivory towers. It is both a search for information and a quest to explain how information integrates meaningfully. And he almost always seeks answers to very practical questions: how does human activity affect global warming? Why are Mellifene bee populations suddenly declining in North America? What allows birds to migrate such long distances? How do black holes form? Science is based on observation. Scientists use all their senses to gather information about the world that is happening to them. Sometimes they collect this information directly, without a tool or intermediate device. Other times, they use a piece of equipment, such as a telescope or microscope, to collect information indirectly. In any case, scientists will write down what they see, hear and feel. These recorded observations are called data. Part 3 Data can reveal the structure of something. This is quantitative data, which describes an object numerically. Examples of quantitative data include: the body temperature of a ruby-throated hummingbird is 40.5 degrees Celsius (105 degrees Fahrenheit). The speed of light is 299,792,458 metres per second (670 635 729 mph). Jupiter's diameter is 142,984 kilometers (88,846 miles). The length of a blue whale is 30.5 meters (100 feet). Note that quantitative data consists of a number followed by one unit. The device is a standardized way to measure a certain size or quantity. For example, the foot is a unit of length. So is the meter. In science, the international system (IS) of units, the modern form of the is the global standard. Part 4 of the data can also reveal behavior. This is qualitative data, which is written descriptions of an object or organism. John James Audubon, a 19th-century naturalist, ornithologist and painter, is famous for his qualitative observations of bird behaviour, such as this one: Scientists generally collect quantitative and qualitative data, which also contribute to the overall knowledge associated with a certain subject. In other words, quantitative data are not important or more valuable because it is based on precise measurements [source: Audubon]. Then we will learn more about science as a systematic and intellectual pursuit. As further evidence that there is not a single way to do science, different sources describe the steps of the scientific method in different ways. Some list three steps, about four and five. Basically, however, they incorporate the same concepts and principles. For our purposes, we will say that there are five key steps in the method. Almost all scientific research begins with an observation that piques curiosity or raises a question. For example, when Charles Darwin (1809-1882) visited the Galapagos Islands (located in the Pacific Ocean, 950 kilometres west of Ecuador), he observed several species of finches, each uniquely adapted to a very specific habitat. In particular, finch beaks were quite variable and seemed to play an important role in how birds obtained food. These birds captivated Darwin. He wanted to understand the forces that allowed so many different varieties of finches to coexist successfully in such a small geographic area. His observations led him to wonder, and his wonder led him to ask a question that could be tested. Step 2: Asking a question The purpose of the question is to narrow the purpose of the investigation, to identify the problem in precise terms. The question Darwin might have asked himself after seeing so many different finches was something like this: What caused the diversification of finches on the Galapagos Islands? Here are other scientific questions: What makes a plant's roots grow down and the stem up? Which brand of mouthwash kills the most germs? What body shape reduces air resistance most effectively? What causes coral bleaching? Does green tea reduce the effects of oxidation? What type of building material absorbs the most sounds? It is not difficult to ask scientific questions and does not require training as a scientist. If you've ever been curious about something, if you've always wanted to know what caused something to happen, then you've probably already asked a question that could launch a scientific investigation. Step 3: Formulating a hypothesis The great thing about a question is that it aspires to an answer, and the next step in the scientific method is to suggest a possible answer in the form of a hypothesis. A hypothesis is often defined as an informed guess because it is almost always informed by what you already know about a subject. By If you wanted to study the air resistance problem mentioned above, you might already have the intuitive feeling that a bird-shaped car would reduce air resistance more effectively than a box-shaped car. You can use this intuition to help formulate your hypothesis. In general, a hypothesis is stated as a if ... then statement. By making such a scientists engage in deductive reasoning, which is the opposite of inductive reasoning. The deduction requires movement in the logic of the general to the specific. Here's an example: if a car's body profile is related to the amount of air resistance it produces (general declaration), then a car designed as a bird's body will be more aerodynamic and reduce air resistance more than a car designed as a box (specific statement). Note that there are two important qualities about an assumption expressed as an if ... then statement. First, it is testable; an experiment could be set up to test the validity of the instruction. Second, it is falsifiable; an experiment could be designed that could reveal that such an idea is not true. If these two qualities are not fulfilled, the question asked cannot be addressed using the scientific method. Despite the influx of computing power and access to data over the past two decades, our ability to use data in decision-making is lost or not too often maximized. We do not have a good understanding of the questions asked and how to properly apply the data to solve the problems involved. The purpose of this course is to share the methods, models and practices that can be applied in data science, to ensure that the data used in problem solving is relevant and properly manipulated to meet business and real-world challenges. You'll learn how to identify a problem, collect and analyze data, build a model, and understand feedback after the model is deployed. Advancing your ability to manage, decipher and analyze new and big data is essential to working in data science. At the end of this course, you will have a better understanding of the different steps and requirements of the data science method and will be able to apply it to your own work. The main steps in the fight against a data science problem. Why data scientists need a methodology and an approach. What it means to understand the data, and to prepare or clean up data How to practice data science, including the formation of a concrete business issue or research. By completing a peer-reviewed mission, you will demonstrate your understanding of the methodology of data science by applying it to a problem you define. IBMAlex AklsonReceive a certificate signed by the instructor with the institution's logo to verify your achievements and increase your job prospectsAdd the certificate at CV or CV, or post it directly on LinkedInGive yourself an additional incentive to complete the courseEdX, a non-profit organization, relies on verified certificates to help fund free education for everyone around the world