



# The role of data visualization and analytics in performance management: Guiding entrepreneurial growth decisions

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## ABSTRACT

This case introduces you to a small but growing e-commerce venture and asks you to assume the role of an accountant tasked with designing a performance management system that aligns with the venture's growth objectives. Using a sample of actual customer, order, and revenue data, you are guided to develop visualizations in Excel and Tableau and communicate your findings. Finally, the case challenges you to map business problems with analytical techniques such as regression, decision trees, and clustering in order to prioritize activities and manage the growth the company has experienced to date. The case addresses a growing need for accountants to develop competency in predictive analytics (PwC, 2015).

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## 1. Introduction

The goal of most companies, whether a startup or a large multinational corporation, is to grow net income by increasing revenues. It is logical to think that in order to grow, a company should pursue revenue opportunities from any source possible. However, most successful companies focus their growth efforts in areas where they have built their distinctive capabilities; strengths that set them apart from everyone else (Leinwand & Mainardi, 2016). To make sound strategic growth decisions, companies must establish a coherent performance management system that includes critical metrics that support a company's value proposition. To do so, companies must find ways to select, validate, and prioritize performance measures.

This project gives you hands-on experience with analytics and performance management in an e-commerce venture. This project also challenges you to think of ways to incorporate financial and non-financial data to guide the venture at a critical time in its evolution as it attempts to thrive and grow. This case is unique as it highlights the interdisciplinary nature of running a company where analytics help create a performance management system that informs strategic growth decisions.

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### 1.1. Background: data and analytics

Data and analytics are critical components of successful performance measurement and management for growth. A company's operations and interactions with customers are constant generators of data that are often rich with information. However, the abundance of data and plethora of data sources are also responsible for many challenges faced by companies trying to drive decisions based on data. For example, some data are *structured* – stored in rows and columns in spreadsheets or in relational databases – and are easy to retrieve and analyze. Other data – such as email data or website traffic data – are referred to as *semi-structured* and require more effort to process and summarize in useful ways. Finally, there is often a wealth of *unstructured* data associated with a company – customer comments, reviews, testimonials; social media discussions and references; customer service call transcripts. Storing, retrieving, and managing all different types of data, as well as prioritizing performance measures based on these data to help a company grow are complex problems faced by many companies today.

Tracking performance via performance measures is an example of *descriptive* and *diagnostic* analytics; one can obtain information about how the company is doing and diagnose potential issues. Many companies have grown to appreciate the importance of employing various types of analytical techniques to move from the descriptive and diagnostic to predictive and prescriptive (see, for example, Kiron, Prentice, & Ferguson, 2014; Parr-Rud, 2012). *Predictive* analytics involve employing complex analysis based on statistical, data mining, and machine learning techniques to detect relationships and make predictions about the future or about categories of data that are not available (such as what type of customer would find a product appealing). *Prescriptive* analytics go a step beyond and use modeling to make recommendations about the best course of action given the predictions made; such as how to schedule sales representatives given predicted demand for goods and/or services.

Accountants often play central roles in supplying senior management with timely and reliable information to inform crucial strategic decision-making activities. Accountants, therefore, have the opportunity to be at the forefront of analytics implementation in their companies. A necessary step toward accomplishing this goal is for accountants to achieve competency in the analytical techniques that take advantage of data from multiple sources and of multiple types – structured, semi-structured, unstructured, big and small.

### 1.2. The business life cycle

Bombas, the startup in this case, is an early stage company that is in need of the advice from an “analytics-savvy” accountant. It is just a couple of years old and has been quite successful to date. Bombas has survived the difficult first stages of development and now has a handful of products that it has sold to over one hundred thousand customers in just the two-and-a-half years it has been in business. Fig. 1 contains the classic life cycle depiction which can be used to illustrate either the life cycle of an individual product or the life cycle of a business. During the introduction stage, companies are focused on trying to acquire the resources needed to get started and develop the necessary technical capabilities to get into the marketplace. Next, as companies begin to grow, they have to overcome issues related to commercialization: the production and scaling of their products and the business as a whole. As growth accelerates and the venture begins to move toward maturity and stability, companies struggle with issues such as sales volumes, market share, profitability, internal controls, and where their future growth will come from.

While the success Bombas has enjoyed is admirable, it now faces the challenge of stabilizing and growing the company. The company is currently in the growth phase and is managing the myriad issues that come as a startup attempts to scale. Top management relies on you as their accountant to assist in the analysis of data and to provide advice. Data and analytics can be used to prioritize activities and manage the growth the company has experienced to date. This case provides you with

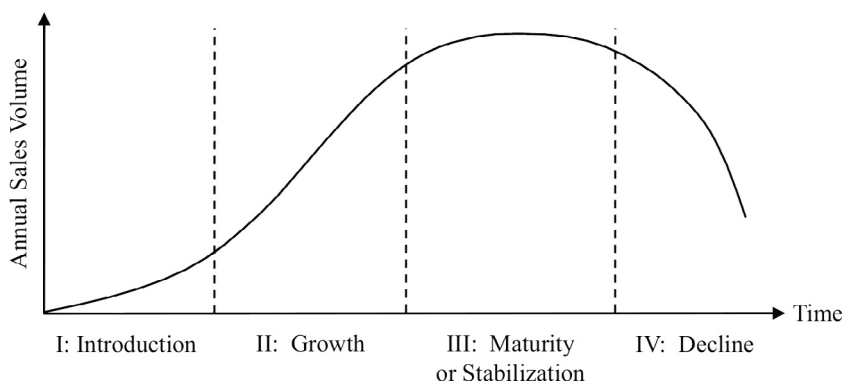


Fig. 1. Lifecycle of a product (or business) (adapted from Levitt (1965)).

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