

INTEGRATING BUSINESS ACUMEN AND ANALYTICS: A SIMULATION-BASED APPROACH

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ABSTRACT

Business analytics curricula can focus on statistics, data management, and business modeling to help students become well-rounded analytics professionals who can translate data into making strategic decisions. However, how do you immerse business analytics students in the business context to make data-driven decisions? How do you enable them to gain an understanding of how executives use business analytics to formulate and solve business problems and to support managerial decision making? This paper will describe how a business analytics simulation was used to integrate descriptive, diagnostic, and predictive analytics with business acumen concepts such as financial, strategic, and business goals at the beginning of a course at the start of a graduate business analytics program. It will discuss the instructional tools and methodologies used throughout the two-class experience including a flipped classroom, articles, case studies, simulation, and reflection. This experiential learning design enables students to develop their critical thinking and decision-making skills.

Keywords: business simulation, business acumen, business analytics, critical thinking, decision making

INTRODUCTION

Total enterprise simulations (TES) typically highlight the integration of business acumen content such as finance, strategy, marketing, and operations. They help students understand how a business works and the interconnectedness of its functions. Students can know, sense, experience, and understand the challenges that business leaders confront, analyze, and overcome on a regular basis. When there are multiple teams competing against each other over multiple rounds, students learn to make adjustments based on the interactive effects of the external environment, i.e., the industry and its competitors (Anderson, 2005).

Scenario-based simulations (SBS) generally focus on one academic discipline within leadership or business acumen. Topics include teamwork, change management, influence, conflict, negotiation, mergers and acquisitions, marketing, and business analytics. The decision-making round is typically shorter than a TES round, and there can be multiple rounds. The typical process for facilitating a SBS includes reading the case scenario, making decisions, analyzing and reflecting on the feedback and results, and debriefing the experience.

SBS can be used in one or two class sessions, or they can be used over the entire course. For example, one instructor (Beaudry, 2016), used the Leadership and Team Simulation: Everest v2 (Roberto & Edmondson, 2011) and related themes (Roberto et. al., 2011) in the three modules (individual, team, and organization) of an organizational behavior course (Beaudry, 2016). In the individual module, students learned individual theories such as values and motivation, and applied them via self-assessments and to the mountaineers, Edmond Hillary and Tenzing Norgay (Beaudry, 2016). In the team module, the students learned team concepts such as power, influence, conflict, communication, and team effectiveness. Then, students developed a team charter, learned the five simulation team roles, made decisions in the simulation, kept a journal, and created a video of their team experience (Beaudry, 2016). Then, all the teams merged during the organization module to form a mountain expedition company and determined their name, purpose, roles, structure, and culture. They participated in team building exercises including instructing and learning in mixed groups and proposal presentations (Beaudry, 2016).

Given the objectives of a program or course, a SBS can also be used to integrate an individual academic discipline with business acumen. For example, a SBS is used to enable technical project managers to understand how their projects are aligned with organizational strategy (BTS, 2017). This paper will now describe how a SBS was used to integrate business analytics with business acumen for graduate business analytics students.

THE BUSINESS ANALYTICS PROGRAM, COURSE, AND SIMULATION

Drexel LeBow's MS in Business Analytics program covers the entire data analysis lifecycle. By focusing on statistics, data management, and business modeling (the program's three pillars), the experiential learning curriculum helps students become well-rounded analytics professionals who can translate data into making strategic decisions (LeBow Analytics, 2017).

Aligning Information Systems and Business Strategies (MIS 612) is a required course during the first term in Drexel LeBow's MS in Business Analytics program. It provides the business acumen context for the remainder of the program. The course learning objectives are to "(1) gain an understanding of how managers use business analytics to formulate and solve business problems and to support managerial decision making, (2) drive value through the alignment of analytic and strategic thinking, (3)

become familiar with the processes to move from data to insights, and (4) learn how to use and apply business analytics software such as SAS text miner to extract insight into unstructured data” (Anandarajan, 2016, p/1). The course has two modules: “Business Question to Story” and “Computerized Thematic Analysis” (Anandarajan, 2016).

The first module covers an “organization’s analytics climate within which strategic decisions are made” (Anandarajan, 2016, p/1). It includes organizational speed and agility, fact-based decision making, competitive advantage, and business strategies and information systems alignment (Anandarajan, 2016). During the Strategic Decision Making - Quantitative Approach topic in the first module, a web-based simulation was used to accomplish these learning objectives: “(1) integrate analytics and business acumen, (2) turn around the lagging performance of product in a competitive market, and (3) make strategic decisions using simulated data vs. intuition” (Anandarajan, 2016 p/4).

The individual-player simulation used was Harvard Business Publishing’s Data Analytics Simulation: Strategic Decision Making (Davenport, 2016). This versatile simulation can be used to teach business analytics, business decision making, business intelligence, marketing research, and marketing strategy concepts. The engaging simulation provided a more realistic context for the entire course content to follow. The simulation experience was implemented over two class sessions and a flipped classroom approach (Harris, Harris, Reed, & Zelihic, 2016) was incorporated here as students used the time outside of class to prepare for and reflect on the simulation.

The Typology of Serious Games and Exercises (Baldissin, Greco, Nonino, & Wolfe, 2017) is a classification system that provides descriptions and reviews of over 230 simulation and experiential learning entries. Key classifications include “name, content topic, adopter goal (e.g., education), and sophistication level (e.g., college, graduate)” (Baldissin et. al., 2017). The major classification categories are “activity administration, participants/relationships, engine/model, interface, outcomes, and ancillaries” (Baldissin et. al., 2017).

The typology describes that Harvard Business Publishing’s Data Analytics Simulation: Strategic Decision Making (Davenport, 2016) can be used for college and graduate students and that it takes approximately 75 minutes to complete the four annual decision rounds. It states that this is a single-player simulation that can played in a group setting, enabling the instructor to compare results among students. The simulation focuses on conceptual and technical skills including predicting market demand, and setting channel price, product formulation, and promotional budgets. The simulation is web-based and provides immediate feedback to the students. Finally, it lists support materials such as simulation navigation, participant, and instructor guides, debriefing slides, a Harvard case study, a teaching note, and instructor videos (Baldissin et. al., 2017).

The simulation experience encompasses 1.5 classes of 11 over an 11-week course. The simulation experience occurred during the fifth and sixth classes the first time the simulation was used in this course. Since then, the simulation experience has occurred during the first and second classes.

THE STUDENT EXPERIENCE

PREWORK

Before the first class, students became acclimated to the simulated laundry detergent industry, their company, and four years of financial and market data (descriptive analytics). This enabled the students to begin to see the relationships between variables and to inquire about why and how things happened (diagnostic analytics). Based on this data, students chose their strategy and target segment(s), and planned their decisions. In addition, students also read a strategy article to enable them to link analytics to strategic and financial goals and to drive value through the alignment of analytic and strategic thinking.

FIRST CLASS

During the first class, the instructor discussed the business acumen mindset for analytics of solving business problems to provide a context for the upcoming simulation experience. Content included stakeholder value, business goals, financial management goals, and business strategy. These are the similar business acumen concepts covered in an MBA program where students learn about the real-world business challenges of driving performance to improve revenue, growth, profitability, productivity, return on investment, shareholder value, and customer and employee satisfaction. However, the goal here is to link these cardinal business concepts to the world of analytics.

The students individually managed their product (Blue Detergent) and made decisions for four simulated years. Decisions included forecasting, production, pricing, R&D, and advertising. The instructor answered individual student questions and shared key points with the entire class. Since the students made decisions and analyzed data for four years, they had the opportunity to make adjustments each year. Each new year of actual results data was added to the cumulative descriptive data. Students conducted a gap analysis and an after action review (AAR) after each simulated year. This process helped the students reflect on planning/forecasting and budgeting by looking at actual results.

During the four decision-making rounds and two mini-debriefing sessions, there were several methods used to develop students’ critical thinking and decision-making skills. Instead of immediately answering the student’s question, the instructor facilitated the Socratic teaching method by asking such questions as ‘what is your strategy?’, ‘what is the most important thing that you want to accomplish this round?’, ‘why is that important to you?’ and ‘what do you think?’.

The first mini-debrief focused on analyzing the past to assess ‘where are we now’ and ‘how did we get here’. The instructor linked the income statement and its drivers and three financial statement analysis tools (common size, percent change, and ratio) to descriptive (what happened) and diagnostic (why and how it happened) analytics.

The second mini-debrief focused on predicting the future (‘where are we going’). Sales and production forecasting were linked to predictive analytics (the future). Students calculated minimum, maximum, and expected values to assess demand. Then, they used a Monte Carlo forecasting tool to obtain more forecasting guidance based on obtaining the highest operating profit. This proforma planning tool enabled students to perform sensitivity and scenario analyses and to use their judgment to input their actual forecast.

INTERSESSION

In-between the two simulation classes, students were provided several questions to reflect on their simulation decision-making process. In addition, the students read the simulation’s accompanying Procter & Gamble case study (Davenport, Iansiti, & Serrels, 2013), which became the real-life context for designing the simulation. Business simulations and case studies share common benefits. They are interdisciplinary and involve thorough analysis, critical thinking, decision making, and experiential learning (Mitchell, 2004; Gomide & dos Santos, 2013). Combining both in a course provides a more robust and relevant learning experience for the student.

Finally, students also had the option during the week to try other simulation scenarios such as improving their performance with their original strategy or implementing a new strategy. They also had more time to practice conducting an AAR (descriptive and diagnostic analytics) and using the Monte Carlo forecasting tool (predictive analytics).

SECOND CLASS

During the second simulation class, the instructor provided a debrief of the simulation results and experience and conducted a class discussion of the lessons learned. This included linking the real-life business challenges and business acumen concepts discussed in the case study with the business analytics simulation experience.

CONCLUSION

The author believes that the Harvard Business Publishing’s Data Analytics Simulation: Strategic Decision Making (Davenport, 2016) provides an excellent opportunity to highlight both the technical and managerial aspects of business analytics, enabling students to make better data-driven decisions and solve business problems quicker. The author feels that this simulation, combining business acumen and analytics, works best for this course within the context of the MS in Business Analytics program given its current required and elective courses. If the program wants to provide more business acumen content, a TES could be incorporated into this course or a separate MBA course that uses a TES could become a required course.

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