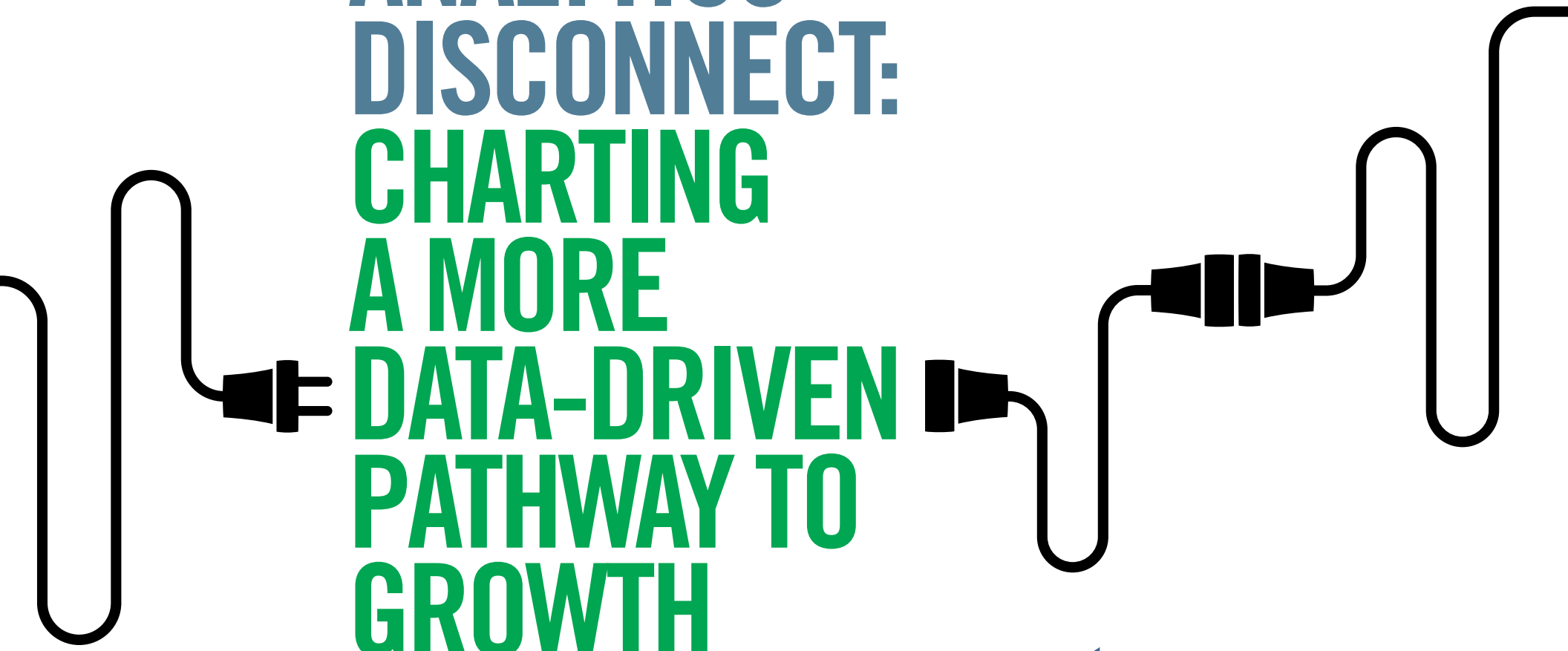
BRIDGING THE ANALYTICS DISCONNECT: CHARTING A MORE DATA-DRIVEN PATHWAY TO GROWTH



THE ANA EDUCATIONAL FOUNDATION

BY ELLIOT LUM,
Senior Vice President, Talent Strategy and Program Development

Overview

BRIDGING THE ANALYTICS DISCONNECT: CHARTING A MORE DATA-DRIVEN PATHWAY TO GROWTH

STUDY BACKGROUND

Since 2017, the ANA Educational Foundation (AEF) has conducted an annual qualitative study of key stakeholders: industry, academia, and talent, specifically undergraduate students and new hires. The purpose of the study is to diagnose the talent disconnects across all the stakeholders and propose solutions that have sufficient scale to bring all parties together. The AEF has approached building this bridge between academia and industry from three different angles:

Year 1 in 2017:	**Year 2 in 2018:**	**Year 3 in 2019:**
The **TALENT** Disconnect	The **DIVERSITY** Disconnect	The **ANALYTICS** Disconnect

ANALYTICS BACKGROUND

Growth. Every organization is striving for business growth. Talent is seen by CMOs as the most crucial enabler of business growth.[1] Other research has shown that growth companies designate talent as a key investment area for them to capitalize on new opportunities, whether that be launching new products to fulfill unmet customer needs or crafting messaging that drives greater brand affinity and loyalty.[2]

Underpinning these actions are the analytics required to make these decisions. Gary Ottley, senior lecturer at Babson College, shared, "Analytics is the art of using data to make better decisions. It is the tools, software, techniques, and formulas that go into analytics. All of it allows us to make more informed decisions."

GLOBAL GROWTH CONTEXT

In summer 2018, the ANA (Association of National Advertisers) and Cannes Lions formed the Global Growth Council. This council of more than 20 global CMOs designated four key areas for industry-wide collaboration:

- Society and Sustainability
- Data, Technology, and Measurement
- Brand, Creativity, and Experience
- Talent and Marketing Organization

Each group has its own specific deliverables that look to enact material change by organizing collective marketing resources to drive growth for the industry and for companies. This report falls under the Talent and Marketing Organization umbrella with a domain focus on data and analytics.

STUDY METHODOLOGY

The AEF conducted interviews with both academia and industry. With academia, the approach was to secure the perspectives of professors, deans, and career service directors. With industry, the AEF

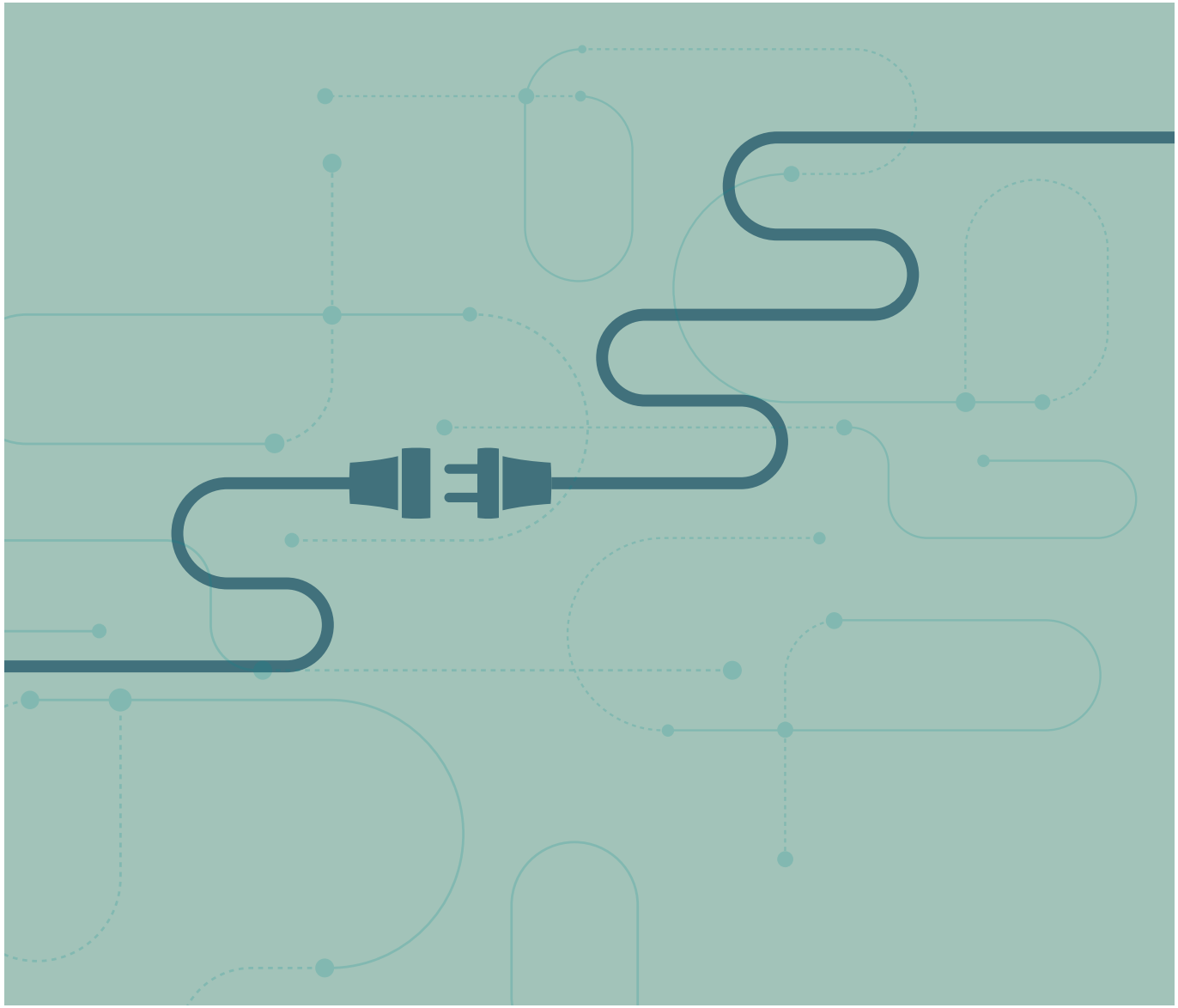
1. "The Link Between Talent and Organic Growth," *Forbes* (February 2018).
2. "Marketing Organizational Structure Research," Association of National Advertisers (2017).
3. "Analytics," Wikipedia (2020)

conducted interviews with heads of analytics, heads of research, CMOs, and agency leads. The breakdown of the interviews:

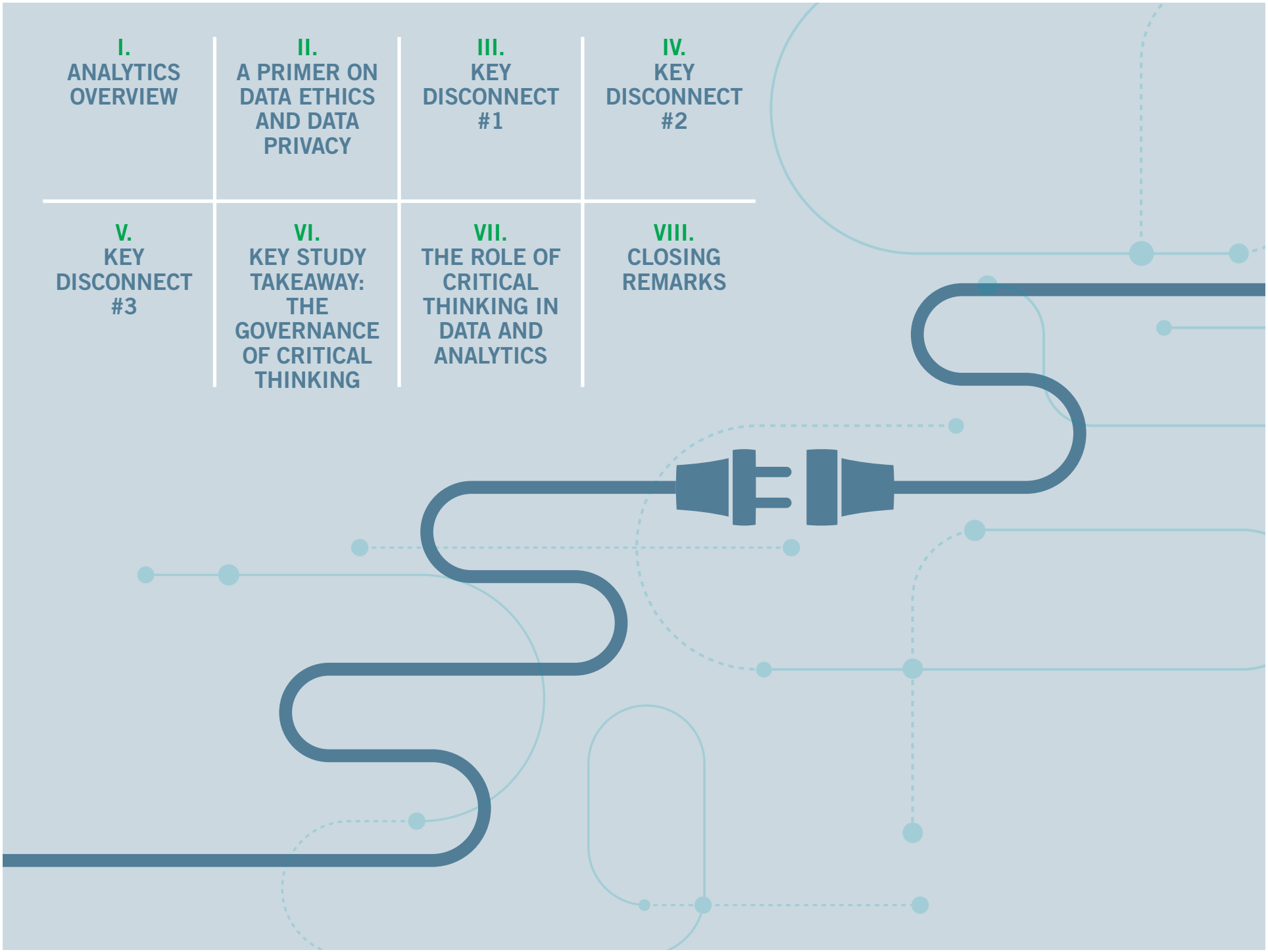
- **Industry:** 69 interviews
- **Academia:** 59 interviews

The AEF hired the research firm Egg Strategy to conduct the undergraduate student and new hire interviews where there was a nationally representative sample across different racial, gender, and educational backgrounds. To limit the research scope, study focuses only on the undergraduate population and those new hires who graduated from the undergraduate level. The final breakdown of the interviews for undergraduate students and new hires:

- **Individual Interviews:** 20 interviews
- **Focus Groups:** 2 focus groups of 5 students and new hires



I. ANALYTICS OVERVIEW	II. A PRIMER ON DATA ETHICS AND DATA PRIVACY	III. KEY DISCONNECT #1	IV. KEY DISCONNECT #2
V. KEY DISCONNECT #3	VI. KEY STUDY TAKEAWAY: THE GOVERNANCE OF CRITICAL THINKING	VII. THE ROLE OF CRITICAL THINKING IN DATA AND ANALYTICS	VIII. CLOSING REMARKS



I.
ANALYTICS OVERVIEW

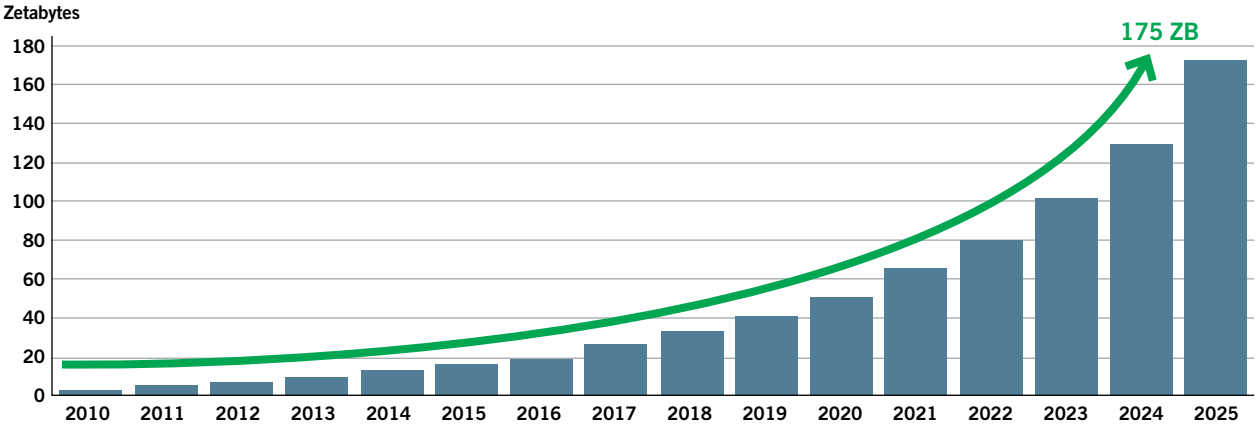
The term "analytics" is often combined with the term "data" to form the phrase "data and analytics." The definition of analytics can range from being fairly technical (the systematic computational analysis of data or statistics) to something more business focused (analytics is the discovery, interpretation, and communication of meaningful patterns in data, and the process of applying those patterns toward effective decision-making[3]).

The use of analytics is not new in marketing. Companies have been running mixed models and conjoint analysis to segment audiences for decades. What is new is the explosion of data that has run across all channels in marketing. As seen in Figure 1, the sheer volume of data requires more computational power than ever before to structure this data and then distill business insights from what the data is saying to drive organizational action.

The demand for this kind of data science skill set spans industries such as consumer packaged goods, retail, technology, financial services, and automotive. As Mike Bentley, global chief strategy officer at GTB, shared, "There is an anticipated tidal wave of data that will be produced by innovations in automotive. An autonomous vehicle generates many terabytes per day. Multiply that by a fleet of 100,000, and you understand how an organization that makes cars suddenly finds the need to structure the ability to take in and comprehend oceans of data."

FIGURE 1

ANNUAL SIZE OF THE GLOBAL DATASPHERE



Key Facts for Perspective

- One zettabyte is equivalent to a trillion gigabytes
- If you were able to store the entire Global Datasphere on DVDs, then you would have a stack of DVDs that could get you to the moon 23 times or circle Earth 222 times.
- If you could download the entire 2025 Global Datasphere at an average of 25 Mb/s, today's average connection speed across the United States, then it would take one person 1.8 billion years to do it, or if every person in the world could help and never rest, then you could get it done in 81 days.

SOURCE: "The Digitization of the World from Edge to Core," IDC (November 2018)

LACK OF CLARITY IN DEFINING ANALYTICS

Despite the tremendous hype generated by the data and analytics field, there is still a lack of clarity in what the term "analytics" means as described by study participants:

> *"From a ten-thousand-foot view, there is ambiguity around what analytics are and what is expected of the analytics team to deliver. If I asked 10 people to define marketing analytics, each one would have different perspectives on the term, the different kinds of roles, and where the team sits within the organization. Much of this depends on where the company is on the analytics maturity curve. Until that is clear, and everybody is on the same page regarding those aspects, it's hard to proceed in making an impact."*
>
> ***— PRATEEK UPADHYAYA, Director, Marketing Analytics, Bright Horizons***

3. "Analytics," Wikipedia (2020)

"The phrase "Data and Analytics" has become broadly used and there is often ambiguity in what it means. It can range from what a data scientist does at NASA to conducting a complex analysis within Excel. Even within the field of marketing analytics, it is not just working with data. It is about drawing insights from large amounts of information to deduce what that data means to the business."

— JAY KAUFMAN,
SVP, Global Research and Insights,
NBA

"In the media and advertising ecosystem, there isn't universal consensus on what, precisely, the word "analytics" means. The word has different connotations depending on the industry, company, or team in which the practitioner sits. Generally, analytics involve collecting and analyzing data to gain some business insight. That might include classical research techniques focused on advertising impact or consumer insights. Or it might imply digital campaign reporting, with a focus on the types of behavioral KPIs common in performance media. And it very often means the use of advanced modeling or machine learning techniques to generate outputs as varied as inventory forecasts, content recommendations, behavioral predictions, or media attribution."

— ERIC Z. SHERMAN,
SVP, Insights and Analytics,
GSTV

THE BUZZ AND HYPE AROUND ANALYTICS

Academia points to the buzz and hype surrounding analytics as the field has grown tremendously within industry:

"There is so much buzz around data and analytics. What I see in this trend is an extended version of what we traditionally call marketing research. Part of market research draws on statistics where we analyzed the existing data and compared responses from different groups. In the digital world, data sets can be much bigger and more comprehensive. Thus more sophisticated computational and statistical skills are required to obtain the data, analyze the data, and develop business insights."

— MIN ZHAO,
Associate Professor, Carroll School of Management,
Boston College

"I feel like there is such a big data analytics fetish in the industry (and also in academia). Big data, along with analytic tools, offers great opportunities to businesses, there is no question. However, it feels at times as if people unquestionably accept what big data shows as the ultimate absolute truth about everything or as an answer to every question, which is not necessarily the case."

— GULNUR TUMBAT,
Professor, Marketing,
San Francisco State University

"There is a lot of hype in industry around machine learning and AI, but we've seen how hype can be incredibly faddish. Meanwhile, academia moves at a slower pace, for good and bad, focusing on problems that aren't often aligned with trends and interests in industry. This disconnect between industry and academic only seems to be widening."

— MARC DOTSON,
Assistant Professor of Marketing,
BYU Marriott School of Business

THE GROWTH OF MARKETING ANALYTICS

As Mark Kaline, SVP of data marketing and analytics at the ANA, pointed out, "Unlike a lot of disciplines, analytics cuts across different functional silos." Those functions might include pricing, sales, merchandising, HR, and technology as seen in Figure 2. Organizations are looking to harness the power of data to drive business outcomes:

"Ten years ago, we looked to data as validation for the creative. In the past five years, data is now the fuel, not the exhaust. It is the input into decision-making, not used as the output to validate the decision."

— MICHAEL HORN, Chief Data Officer, Huge

"Our team's focus has shifted from reporting data to more consultative relationships with our business partners. Researchers need a broad perspective of consumers, content, and currency across all distribution platforms; we can no longer think of media as just digital or linear television. When we are hiring today, we look for individuals who have cross-platform experience. The necessary skill sets have evolved along with the media landscape."

— SHARUK ALI, Director, Research, WarnerMedia Ad Sales

"Ten years ago, if you were good at Excel and numbers, it was good enough. Today, in the analytics world where the data set is larger and not all of the information will fit into Excel, we need to be proficient in higher-level skills like SQL to make sense out of the data."

— ANALYTICS EXECUTIVE[4]

FIGURE 2

ANALYTICS SPAN THE ORGANIZATION AND ORGANIZATIONS

FUNCTION	SNAPSHOT OF COMPANIES DEPLOYING
Chief Analytics Officer	• Chase • Horizon Media • Dow Jones
Business Analytics	• StubHub • Amazon • Sephora
People Analytics	• NBA • Bloomberg • ADP
Supply Chain Analytics	• WayFair • Dell • Chrysler
Marketing Analytics	• Prudential Financial • Samsung • Hilton
Media Analytics	• Pepsi • Merkle • HP

SOURCE: LinkedIn (2020) — sourced by examining executives at those companies with roles with those titles

Analytics are prevalent in many sectors of the marketing field, as seen in Figure 3. The field of analytics isn't necessarily new within marketing, as Jay Kaufman, SVP, global research and insights, NBA, shared. "We have been using data for a long time. It is not necessarily new. What has changed is how widespread it has become and how much emphasis and value companies are deriving from making fact-based decisions."

4. When "Analytics Executive" is used, this interview respondent preferred to remain anonymous.

FIGURE 3

ANALYTICS SPAN DIFFERENT MARKETING FUNCTIONS

MARKETING FUNCTION	ANALYTICS EXAMPLE(S)	ANA CASE STUDY
Advertising/Creative	• Copy testing • Dynamic creative	• Hotels.com • Clorox
Media	• Programmatic Media • Marketing Mixed Modeling	• Altice • McCormick
Market Research	• Customer segmentation • Syndicated research	• Caterpillar • Diageo
Digital/Social	• Google Analytics • Facebook Analytics	• Discover Financial Services • McDonald's
Shopper Marketing	• Point of Sale Data • Geolocation Data	• Pepsi • Best Buy
Communications	• Media Impressions • Value of PR	• Siemens
Marketing Analytics	• ROI focus • Lift focus	• Scotts Miracle Gro • MGM Resorts

SOURCE: ANA Website (2020)

What is new, is the explosion of data that has required the industry to introduce a new skill set so that we can hone in on our goals and utilize the additional information strategically. Debbie Reichig, Founder of In-Focus Media Consulting explained, "it's important to acknowledge the distinction between the role of data scientists and the role of researchers. Both are equally important. Underlying each role is the technical strength to drive better decision making. We need data scientists to help process large sets of data. We need data savvy researchers to communicate with the data scientists to bring more clarity to interpreting patterns and behaviors. There is a lot of art and subjectivity in these numbers, which the researcher helps to clarify."

Organizations have invested more heavily in marketing analytical capabilities:

- **Role:** 14 percent growth in plans to add marketing analytics role to their organization[5]
- **Investment:** The percentage of marketing budget dedicated to marketing analytics expected to jump to 11.3 percent in the next three years, a more than 80 percent jump from February 2019 investment levels[6]
- **Decision-Making:** Increased usage of marketing analytics in decision-making to 43.5 percent of the time in February 2019, an increase of more than 20 percent since February 2016[7]

Many organizations don't derive value from marketing analytics. In the Deloitte CMO study, the degree to which marketing analytics contribute to company performance was hovering at average levels over the past seven years.[8] However, growth companies leverage marketing analytics with greater effectiveness than non-growth companies.[9]

The commonality between growth and non-growth companies is the priority they place on marketing technologies to help manage customer data. The key distinction between growth and non-growth companies is the level of investment in talent and staffing. Growth companies prioritize this resource at the highest level where non-growth companies put that closer to the bottom. According to a different study, this talent gap — the right expertise, the skills, and experience — represents a significant challenge for organizations looking to derive value from the data that they have.[10]

Anna Sweetwood, SVP of global marketing at SAS Institute, shared, "As you shift your organization to be both more analytical and customer-centric, you need to ensure that your people have the requisite skills to perform in the new kinds of roles you're creating. That takes two components: incorporating a different filter for hiring new employees, and also assessing your current staff to see if they have the desire and capability to evolve and embrace the new analytical skills they'll need."[11]

5. "Marketing Organizational Structure Research: Do You Have the Right Structure to Grow Your Business?" ANA (October 2017)
6. "The CMO Survey: Highlights and Insights Report," Deloitte (February 2019)
7. The CMO Survey," Deloitte (February 2019)
8. Ibid.
9. "Marketing Organizational Structure Research," ANA
10. "The Data-Centric Organization: 2018," ANA (January 2019)
11. "Marketing Organizational Structure Research," ANA

THE ANALYTICS DISCONNECT

This report focuses on the analytics disconnects across academia, industry, and talent.

This study identifies three key disconnects at this intersection:

- **DISCONNECT #1:** A perception problem exists with students who view marketing and advertising as more *qualitative* than *quantitative* affecting the type of talent entering the industry.
- **DISCONNECT #2:** Significant obstacles exist for companies to provide *real* and *contextualized* data to academia restricts educator's ability to connect data and analytics to business outcomes.
- **DISCONNECT #3:** The shortage of data and analytical skills is not just technical as employers place a premium on the combination of *hard* and *soft* skills together with a *business mindset*.

II.
A PRIMER ON DATA ETHICS AND DATA PRIVACY

This report acknowledges the importance of data privacy and data ethics. There is significant private, public, and academic work that is occurring. While this section acknowledges its importance, it is unable to cover these issues comprehensively.

- There are many different players that go beyond just industry, academia, and talent.
- The scope of the issue is much larger than the narrow focus of this report.
- The AEF lacks the ability to create change.

This section captures some of the core issues that are important to the key report constituents and highlights what their perspectives are.

DATA IS THE NEW "OIL"

"Data is the new oil."[12] While the analogy between oil and data is not perfect,[13] underlying this overarching sentiment is the significant role that data plays in today's economy. The growing data and analytics field has significant benefits to job seekers as there are more opportunities for marketers who are looking for better ways to reach consumers with products they might be interested in purchasing. The upside of this growing field also is balanced by the risks with more consumer data being misused or mishandled. In the first nine months of 2018, there were 3,676 data breaches alone; Fast Company citied the most significant:[14]

- Cambridge Analytica, a political consulting company, harvested the data of 87 million Facebook users without their knowledge. The company then reportedly sold this data to the Donald Trump campaign to support his election for president.
- Hackers stole information from 500 million accounts from Marriott Starwood, the hotel conglomerate. More than two-thirds who were affected had key information like name, mailing address, email address, data of birth, and passport number stolen.
- The Panera Bread website leaked customer records such as email address, physical address, birthdays, and last four digits of credit cards. Total numbers of those affected were estimated to be 37 million.

SNAPSHOT OF CONSUMER PRIVACY EFFORTS

- In 2018, the European Union (EU) implemented General Data Protection (GDPR), a regulation that requires businesses to protect the personal data and privacy of EU citizens for transactions that occur within EU member states. Non-compliance can result in severe financial penalties for companies in transgression.[15]
- In 2020, California implemented the California Consumer Privacy Act (CCPA), a regulation that takes a broader review than the GDPR of what constitutes private data. It allows any California consumer the right to see all the information a company has saved on them, as well as a full list of all the third parties that data is shared with. In addition, the California law allows consumers to sue companies if the privacy guidelines are violated, even if there is no breach.[16]

PRIVACY FOR AMERICA NETWORK

The current regulatory and marketplace environment prompted the ANA to form a coalition with other key trade associations — the American Association of Advertising Agencies, the Interactive Advertising Bureau, the Digital Advertising Alliance, and the Network Advertising Initiative — that will work with Congress to support enactment of comprehensive federal consumer data privacy and security legislation.[17]

This coalition, called Privacy for America proposes:[18]

- A national law that protects consumers with their data as a state specific approach will lead to major regulatory fragmentation where there will be no consistency with how Americans protect their data nationally
- The creation of a new division to oversee privacy within the FTC
- A penalty system to punish companies that breach of misuse data

BIAS IN TECHNOLOGY

Data is often seen as objective truth. However, there is bias in how that data is collected and interpreted based on who is collecting, analyzing, and presenting it. Bias extends to more advanced analytical methods like artificial intelligence and machine learning. Jacob Metcalf, a researcher at Data & Society, a nonprofit research institute, issued a warning to marketers about entering people's lives in a way that will make them feel uncomfortable. "The underlying problem is a disconnect between

12. "The World's Most Valuable Resource Is No Longer Oil, But Data," The Economist (May 2017)
13. "Here's Why Data Is Not the New Oil," Forbes (March 2018)
14. "How Our Data Got Hacked, Scandalized, and Abused in 2018," Fast Company (December 2018)
15. "General Protection Regulation (GDPR): What You Need to Know to Stay Compliant," CSO (May 2019)
16 "California Consumer Privacy Act (CCPA): What You Need to Know to Be Compliant," CSO (October 2019)
17. "About Privacy for America," Privacy for America (2019)
18. "ANA, IAB Form 'Privacy for America' Coalition, Propose National Data Laws," A List (April 2019)

marketers' intentions and the nature of machine learning. The thing about machine learning is that it doesn't care at all about your categories. Datasets that are continually updated are built on the assumption that all datasets can talk to all other datasets, regardless of domain — health, finance, credit, demographic, psychographic — to find unexpected patterns, so domains end up bleeding into each other."[19]

The AEF report "Diversity Disconnect: Charting More Inclusive Pathways to Growth" investigated the diversity in the marketing and advertising industry. The Analytics Disconnect report did not use diversity as a central lens but acknowledged the importance of it, as data is still subject to bias. For example, an MIT researcher showcased that facial recognition technology did not pick up darker skin faces, suggesting bias built into the algorithms.[20]

There are already several significant efforts already underway to bring more diversity into the data and analytics field, including but not limited to:

- **Responsible Computer Science Challenge:** Awards $3.5 million to promising approaches to embed ethics into undergrad computer science education, empowering graduating engineers to drive a culture shift in the tech industry and build a healthier Internet[21]
- **Girls Who Code:** A non-profit that looks to close the gender gap in technology by building summer and after-school programs that create a fun and friendly environment for girls to learn how to code[22]
- **Brookings Institute:** A research think tank implementing guidelines about the ability to detect algorithmic bias to reduce consumer harm[23]

THE ROLE OF ETHICS IN EDUCATION

Regulations affect the way that companies can market to consumers based on the available data they have. As Angie Aldape, Director of Social Intelligence at Microsoft, shares, "It is unknown what the future availability will be for publicly available data, such as social media data, based on government regulation around privacy laws. Our role as researchers is focused on innovating with new market research techniques even if data gets pulled back. Despite the nature of the fluid space, it's critical to be responsible with our customers' data when we answer strategic business questions to better serve our customers."

Responsible use of data reflects corporate as well as individual ethics. That ethical behavior governs how that data is leveraged. Study respondents emphasize the importance of ethics in education:

"The ethics of what we should do with data should be covered with deliberateness in education. It's crucial for those in the data science field to have experience weighing the pros and cons of key ethics questions. It can't be a theoretical exercise. It needs to be taught as a skill just like coding. Data scientists must have the ability to think through the ethical implications of their work."

— PAUL MCLACHLAN,
Head of Data Science (San Francisco), Ericcson Global Artificial Intelligence Accelerator:

"We embed the practice of data management and ethics throughout the program. We talk about ethical issues: the role of the analyst and the ethical responsibility attached to it. We want our students to bring a critical approach to thinking about the ethics of the data they are using."

— AMY JO COFFEY,
Associate Professor, College of Journalism and Communications; Program Director, Masters of Audience Analytics, University of Florida

19. "Digital Platforms Raise New Ethical Questions for Marketers," ANA Magazine (October 2019)
20. "MIT Researcher Exposing Bias in Facial Recognition Tech Triggers Amazon Wrath," Insurance Journal (April 2019)
21. "Even the Data Ethics Initiatives Don't Want to Talk About Data Ethics," Forbes (October 2018)
22 "About Girls Who Code," Girls Who Code (2019)
23 "Algorithmic Bias Detection and Mitigation: Best Practices and Policies to Reduce Consumer Harm," Brookings Institute (May 2019)

STUDENT PERSPECTIVE ON THE ROLE OF ETHICS

Figure 4 shows that most professors do not perceive that undergraduate students view marketing, advertising, and communications as ethical. Several student and new hire respondents showed that they are aware of the ethical responsibility that these fields have:

"I think, especially with advertising, they have gotten so much shade thrown at them with different data points and privacy and things like that. You need to be very transparent and like, you guys really shouldn't do this or different things like that, because people should and will want to know. "

— NEW HIRE, Male

"The reason why Google is so powerful, compared to smaller ad tech companies, is that when you look at Google Analytics, your app, etc. it's tracking your preferences and it will tell you so much. You're 18, 21 years old. There's just so much information being collected at all times."

— NEW HIRE, Male

"There's a lot of data that's out there. And as we get older, and as we get further into first-party data collections, second-party, as we have more and more and the world develops, there's just going to be oodles and oodles of data that no one knows what to do with. However, that data is important. That data indicates what needs are out there, what problems exist, and how people react to those problems. And how people would be willing to try new things or to spend money on fulfilling these problems."

— STUDENT, Female

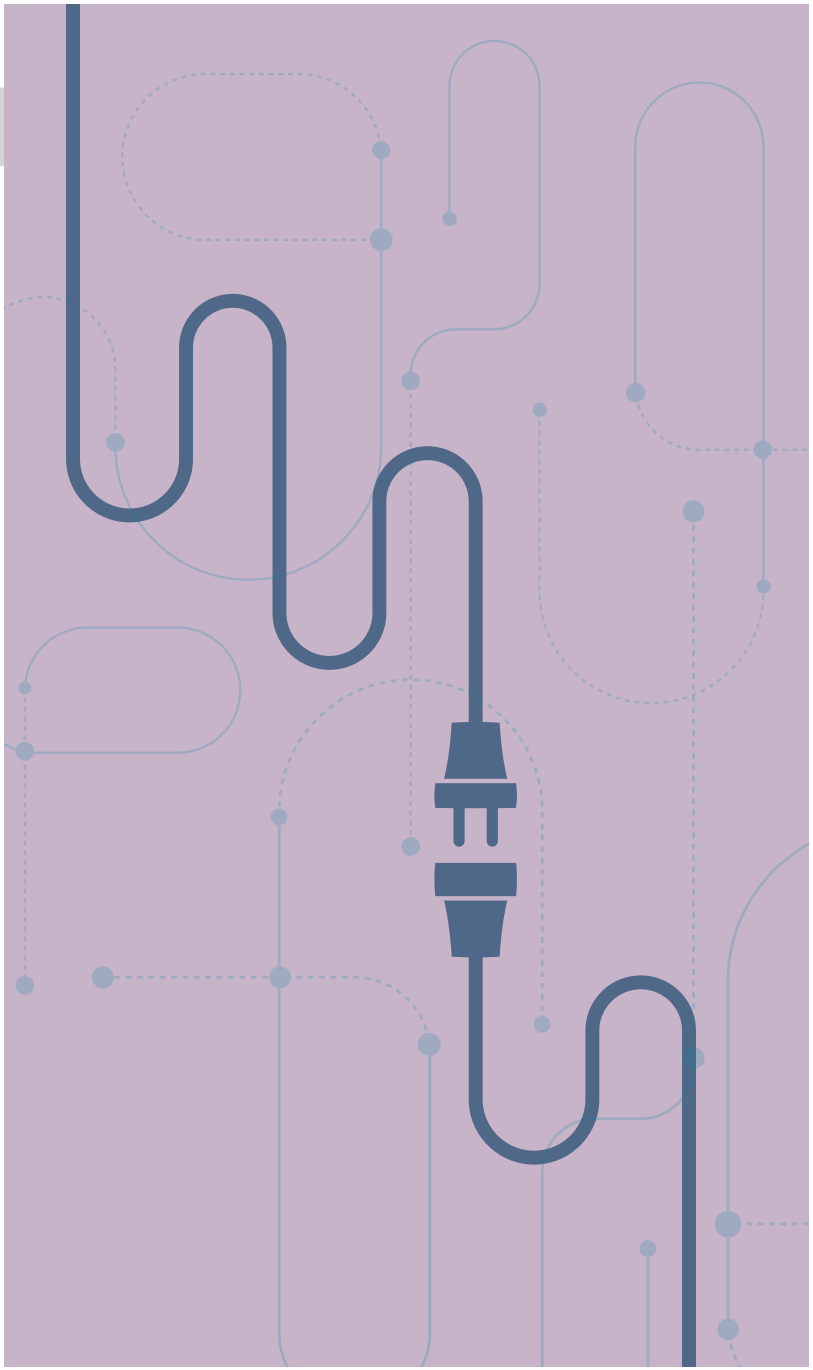
FIGURE 4

MARKETING, ADVERTISING, AND COMMUNICATIONS NOT SEEN AS ETHICAL BY STUDENTS

Top Two Box of Professor Perceptions of How Ethical Undergrad Students View Marketing, Advertising, and Communications

18%	15%	35%
MARKETING	ADVERTISING	COMMUNICATIONS

SOURCE: N=101, Question was asked on three separate occasions: Specific to the marketing/advertising/communications field, to what extent do you agree on a five point scale with the following statements: Undergrad students perceive marketing/ advertising/communications as ethical



III.
KEY
DISCONNECT
#1

DISCONNECT #1:

Significant obstacles exist for companies to provide *real* and *contextualized* data to academia restricts educator's ability to connect data and analytics to business outcomes..

Research discovered the challenges that academia faces when approaching how to teach analytics. This section is divided into the following segments:

- Quantitative Perception of Marketing and Advertising: Professor Point of View
- Qualitative Student Perception of Marketing and Advertising: Professor Point of View
- Challenges When Embedding Analytics into the Curriculum
- University Approaches to Teaching Analytics
- Specific Academic Approaches to Teaching Analytics
- Key Student Attraction Drivers to the Analytics Field
- Student Confusion When Approaching How to Learn Analytics
- Industry Entry Points into Analytics
- Action Step: "Best Jobs Ever" Campaign

QUANTITATIVE PERCEPTION OF MARKETING AND ADVERTISING: PROFESSOR POINT OF VIEW

Figure 5 captures the perception that professors have about how their undergrad students perceive marketing, advertising, and communications as much more creative and fun than quantitative and analytical.

PERSPECTIVES FROM PROFESSORS ABOUT THE QUANTITATIVE SKILL SET THAT STUDENTS BRING TO THEIR RESPECTIVE MAJORS:

"At my institution, like many similar institutions, students who gravitate toward advertising are not math or computer skills oriented. The perception is that advertising is not a math-heavy major. These students often lack the confidence necessary to acquire analytics skills."

— SALEEM ALHABASH,
Associate Professor of Advertising and Public Relations, Michigan State University

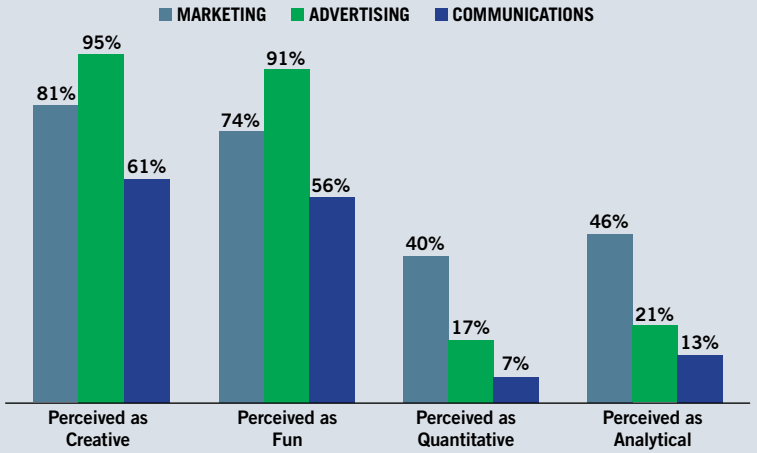
"The big data movement forces us to analyze quantitative information. The hurdle is that many students are not comfortable with numbers even if they are at a very basic level. I have seen in both core classes and capstone classes where students will make rudimentary mistakes with numbers such as when they should use raw numbers versus percentages in setting campaign objectives. This quantitative literacy is what students still are struggling with today. "

— BRYAN WANG,
Associate Professor, Advertising and Public Relations, College of Journalism and Mass Communications, University of Nebraska-Lincoln

FIGURE 5

MARKETING, ADVERTISING, AND COMMUNICATIONS PERCEIVED AS MORE CREATIVE AND FUN THAN QUANTITATIVE AND ANALYTICAL

Top Two Box of Professor Perceptions Across Different Attributes that Undergrad Students Assign to Marketing, Advertising, and Communications



SOURCE: N=101, Question was asked in a grid format for attributes on three separate occasions: Specific to the marketing/advertising/communications field, to what extent do you agree with the following statements: Undergrad students perceive marketing/advertising/communications as creative/fun/quantitative/analytical

"What I hear the reason why many students are in communications is because they don't want to deal with numbers. There seems to be a stigma to data and analytics. I think that what we need is to show students that no matter what field you are in — media, strategy, creative —data will help guide decision-making."

— SHANSHAN LOU,
Associate Professor, Advertising, Appalachian State

"Particularly in the communications program here, I see the disconnect where the perception is that advertising is just a creative industry. That perception of creativity leans heavily toward artistic creativity. We don't talk about that creativity when it comes to the data and numbers."

— Q.J. YAO,
Associate Professor, Lamar University

"When it comes to marketing, many students do not realize the extent to which marketing can be so quant-heavy. Students often come in with the impression that marketing is advertising and promotion. Once they actually take the marketing core class, they see that marketing is much more than just creating an ad campaign. Analytics are a big component of the marketing major. Designing a marketing campaign requires students to analyze and interpret the data."

— MIN ZHAO,
Associate Professor, Carroll School of Management, Boston College

"Students in our Integrated Marketing Communications (IMC) department feel like they are in the creative side of the business. And they don't like math — this is the big joke — that we talk about this topic through forums that the Public Relations Society of America hosts. For the most part, I think that they know they need the analytical skills but are just scared of what they don't have experience with."

— PROFESSOR[24]

"Marketing students tend to be scared of the numbers. In the marketing analytics concentration, 40 percent of the class comes from business analytics, 40 percent comes from marketing, and 20 percent are from other disciplines. What I have found is that the business concentration students don't fear the math. In fact, most of them are better in the math than I am as well as in coding because they have grown up in these courses. Marketing students might be able to tell the story well but struggle with the calculations of how those numbers were derived."

— GARY OTTLEY,
Senior Lecturer, Babson College

"There is a widespread notion that marketing students are weaker in quant skills as opposed to other business majors, which is backed up by many academic citations. Among those who take this major, there is a tendency to believe "quant isn't for me as it's more for finance or accounting." But the marketing discipline is changing as it is becoming more quantitative."

— GEMA VINUALES,
Assistant Professor, Department of Marketing and Business Analytics, San Jose State University

CHALLENGES WHEN EMBEDDING ANALYTICS INTO THE CURRICULUM

Several of the challenges that academia has identified in embedding analytics more deeply in curriculum:

BALANCE OF CRITICAL THINKING FOR THE FUTURE AGAINST SKILLS DEVELOPMENT TODAY:
"We recognize that there are specific digital analytical capabilities employers expect from entry level candidates. We do our best to deliver on this immediate need, but we also believe we have the responsibility to prepare students for the next 30 to 40 years of their career. While students in our graduate program do exit with multiple Google certificates, we emphasize that students have to be lifetime learners because the industry and technology continue to evolve. Certain skills like strategy and critical thinking are more timeless."

— MICHAEL J. CLAYTON,
Senior Professorial Lecturer, Department of Marketing, American University

MISALIGNED TEACHING EXPECTATIONS ON PROBLEM-SOLVING VERSUS TOOLS PROFICIENCY:
"There is a misaligned expectation about how we educate students. Faculty design courses around core elements of critical thinking. However, employers value new hires who can jump into running the software supporting existing workflows."

— ETHAN PEW,
Lecturer in the Discipline of Strategic Communication, Columbia University

24. When "Professor" is used, this interview respondent preferred to remain anonymous.

DISCONNECT BETWEEN TEACHING A FORMULA AND EXTRACTING THE "SO WHAT" FROM THAT DATA SET:

"Context matters. I can teach a formula, but it is not important without business context. We spend less time learning software and more time on the application of that analytics task to solving a business problem. For example, if we do a cluster analysis for segmentation, we can use many different pieces of software to get to the key clusters. That's the easy part. The hard part is asking the "So what?" What story does the data help me tell? I just don't see the point in teaching software. When students go into an organization, they are going to be expected to solve problems by making sense of the data. My point of view is that I teach marketing. I don't teach IT. I don't teach coding. I don't teach hardcore SQL queries although I cover the basic, core commands. My job is to teach students how to craft those stories from what is presented to them."

— GARY OTTLEY,
Senior Lecturer, Babson College

UNEVEN SKILL SETS IN THE CLASSROOM:

"There is a tremendous increase in demand for marketing analytics professionals, who apply analytical tools and models to data to generate business insights and solve marketing problems. Naturally, our analytics classroom often sees a mixed student background, with students from both the traditional marketing or advertising track and those who have had rich experience in, say, coding. How to teach a class where there is a profound unevenness in skill sets can be challenging, which sometimes prevents me from diving deeper into certain topics."

— JIA LI,
Associate Professor, Coca-Cola Rising Faculty Fellow, Wake Forest University

DIFFICULT TO FIND ANALYTICS PROFESSORS:

"Getting good analytics professors is nearly impossible. Analytics people are in high demand where they get terrific salaries in industry but universities don't have enough money to bring them in to teach our students."

— JEF RICHARDS,
Professor, Advertising and Public Relations, Michigan State University

PROFESSORS NOT TRAINED IN NEWER TECHNICAL SKILLS:

"Those who keep up with industry know that analytics are playing a big role in the strategic planning processes. Many professors are teaching the theory. However, most don't have the technical skills to pass on to their students."

— PROFESSOR

POOR FEEDBACK LOOP BETWEEN PROFESSORS AND GRADUATING STUDENTS:

"Most professors don't check with in with industry very often. When students graduate and head into industry, professors often lose touch with them. That graduating student body is the best connection that professors have with industry but often it goes untapped because the motivation is not there. Without that feedback loop, professors continue to teach in the same way despite how quickly industry is moving. Skills taught in the classroom might become obsolete but professors don't know because they are not getting that regular feedback from alumni."

— MATHEW CURTIS,
Clinical Associate Professor, Annenberg School of Communication, University of Southern California

ACADEMICS ARE RESEARCHERS, NOT SALES PEOPLE:

"Most professors don't have a clue about soliciting industry research projects. They get rewarded based on academic publications, which have little to nothing to do with real-world marketing. Academic rewards are strong disincentives to do applied, industry-relevant research. Even if their research was relevant to industry, which it isn't, they would have no idea about how to reach out to form research partnerships with industry because they've never done it before."

— LARRY DEGARIS,
Professor of Marketing, University of Indianapolis

UNIVERSITY APPROACHES TO TEACHING ANALYTICS

A broad framework for how universities have been looking to tackle analytics in either marketing or advertising departments:

- **Integrated into the Current Curriculum:** Analytics integrated into all courses within the curriculum
- **Incremental Class to the Current Curriculum:** Analytics being offered as a separate, dedicated elective within the curriculum
- **Separate Track Within Curriculum:** Analytics being offered as a separate track that students can major or minor in

SPECIFIC ACADEMIC APPROACHES TO TEACHING ANALYTICS

Approaches that academia has taken to teach analytics:

RECONCILE CLASSROOM LEARNING WITH REAL-WORLD LEARNING:

"Traditionally, a lot of the attention in the classroom is on answering business questions by using statistical inference and machine learning tools to analyze the datasets that have already been cleaned. However, when students start getting first-hand business experience in their first internship, the difficult part for many is how to take the real and quite messy data that organizations often have and clean it up to a place where they can start applying the business analytics skills they learned in the classroom. At Northeastern, building up on our institutional expertise in experiential learning, we strive to reconcile what students learn in the classroom and what students might encounter in the business world by incorporating real-world projects in various courses."

— YAKOV BART,
Associate Professor, Marketing, D'Amore-McKim School of Business, Northeastern University

LAYER DATA MINING SKILLS WITH THE "SO WHAT":

"Companies hire for analytics roles where they are focused on crunching the numbers. What we try to teach our students is to see the forest when they are deep into the data weeds. We emphasize the takeaway, the "so what" behind what they are looking at."

— ERNEST BASKIN,
Assistant Professor, Food Marketing, Saint Joseph's University

TRANSLATE DATA INTO INSIGHTS:

"We look to make the connection from the research and data to the insight and action. What we often see in campaign planning is that students do the research and set the strategy but there is not a coherent narrative from one step to the next. To address the disconnect between data and insights, we have focused our core classes specifically on creating that connection. For example, a prerequisite class is how students can get quality data through marketing research and generate insights based on the data. That is the whole focus of that class. The rest of our classes is to make that connection come to life."

— BRYAN WANG,
Associate Professor, Advertising and Public Relations, College of Journalism and Mass Communications, University of Nebraska-Lincoln

SUPPORT THE SKILL OF DATA STORYTELLING:

"There is a college-wide push for students to become data-literate. What we continuously heard from our advisory board was that we need data storytellers. What we don't need more of is "quants" who just run Excel and paste tables. We need those who know how to tell stories from the data. Here are the results, here's what they mean, and craft that business intelligence into a story to share with various audiences."

— AMY JO COFFEY,
Associate Professor, College of Journalism and Communications, Program Director, Masters of Audience Analytics, University of Florida

BUILD CERTIFICATION PROGRAMS WITH INDUSTRY PARTNERS:

"Trade Desk, a programmatic media company, approached me to offer a certification program to our students for free. With Trade Desk, the students take their certification course and then work with data on a real-time business case. They are immediately able to apply the skills

they learn through The Trade Desk Edge to create a strategy to meet specific business goals. We want this to be an experience with real results. We welcome these outside partners to help students put a credential on their résumés which makes them more marketable in the field. We don't look at this as a threat but rather as an enhancement to our curriculum.

— BETH EGAN,
Associate Professor, Advertising, S.I. Newhouse School of Public Communications, Syracuse University

HIRE FROM INDUSTRY TO TEACH:
"Business schools are increasingly engaging faculty, lecturers, and guest speakers who are heavily steeped in industry. These sources help us translate the technical and mathematical skills needed in analytics into useful, actionable, and applied business results for our students. Many of the business problems in analytics we bring to our students come directly from our corporate partners. Our 50-member corporate advisory council regularly discusses the analytic issues they are facing, what they need and what they think they need, and we bring that information back to the classroom to keep our curriculum practically focused on applied analytics."

— RAYMOND PETTIT,
Executive Director, Masters of Science in Business Analytics Program, Rady School of Business, University of San Diego

SUBSCRIBE TO INDUSTRY DATA SETS:
"We subscribe to the comScore data service where our students can get access to clickstream data sets. This allows our students to generate reports, look at different ways to review the data, and provide recommendations based on their findings. We expect our students to visualize and critically think in terms of how the information can be used to help decision-making and then identify and use appropriate analytical methods. It helps our students during job interviews with employers to demonstrate how they thought through those class problems using real data."

— PATRALI CHATTERJEE,
Chairperson — Marketing, Feliciano School of Business, Montclair State University

KEY STUDENT ATTRACTION DRIVERS TO THE ANALYTICS FIELD

Egg Strategy identified four key drivers for why undergrad students and new hires are attracted to the analytics field:

1 Scientia Est Potentia: Knowledge is power. The owner of that data is often one of the most important and powerful people in the room. According to students and new hires, data holds the details of consumers' unsaid actions and beliefs. It can tell truths, reveal secrets, and uncover new challenges all at once. These students and new hires recognize this and get excited about it because the one who knows the data is ultimately the one who knows the consumer best.

"I think it's the chance that every little thing you do, you know is part of a bigger picture. I think this goes back to the data stuff. I think it's so easy to get bogged down with the granular details without realizing that a singular data point or stat can unlock this world of possibilities, like a massive insight."

— STUDENT, Male, 21

"I was really exposed from day one to the world of advertising and with that came a few key learnings. Data is a big part of advertising, which started that trend, and to really do beautiful creative that inspires and delights, you need to have to really good data that adds it up and gets to the insight. Because things that inspire and delight might seem like art, but they are often a lot of science."

— STUDENT, Male, 21

2 No Will Huntings: While some analytics professionals could be considered math geniuses, the reality is that the majority have a strong quantitative disposition but are not solving Einstein-level problems. Analytics professionals can have all sorts of educational backgrounds and skills because it's not just their ability to "number crunch," but how they see and interpret the data that makes them invaluable. More importantly, when one moves beyond a "fear of numbers," and instead looks at numbers and data as a language, they see the true appeal of the job.

"A lot of times people think that, you know, when you data-plan it's just about the engineering, the coding. But it's really about also being a strong communicator and being very verbal because you need to be able to present your findings, be able to communicate what you're working on so that everyone in the business understands you. Data science and analytics are so fundamental for business that people need to understand what you're doing."

— FEMALE, 19

"I think the main problem with analytics is there's this stigma, which I'm sure you've heard about. I think people view analytics and data as something that you have to be a numbers person to really like."

— MALE, 21

3 **Jobs Everywhere:** Constantly hearing there's a general job crisis or a shortage of jobs can be daunting, but with analytics the story is different. Analytics jobs are in high demand in every industry. This means students/new hires have a very wide repertoire of paths to choose from when looking for a job. But more importantly, it reassures them that there is a job somewhere out there for them.

"I feel that analytics is exciting. I feel like there is a lot of opportunity. I think that it's growing fast."

— NEW HIRE, Female 24

"I think one of the most exciting things is that there's so many analyst roles in every single industry. And I've been reading a bunch of articles like on eMarketer, or Forbes that say there is going to be a huge shortage of analysts in the next five years. There's just not enough analysts coming out of college, in every industry, that are going to satisfy the needs for all the data that's been collected, and for me, that's very exciting."

— FEMALE, 21

4 **A Voice to Be Heard:** Perhaps one of the biggest draws of analytics is that it gives them a voice, a seat at the table when in meetings or in the presence of people who have more experience than them. They have the data at their fingertips, so they feel more confident or empowered to present their point of view without being automatically shut down because they don't have years and years of experience. Essentially, it makes them feel as if they won't be easily dismissed because they don't have years of wisdom, but they do have the data, and in their eyes the numbers don't lie.

"I think with data, you're able to justify any idea that you have. To me as a young person, I feel like that is a huge advantage that I have. Because I feel like a lot of our industry and marketing and advertising is built on a lot of people who are way, way older than I am, who are way, way more established, saying something, being nice to the person that they said it to, and that person buying that idea or making that deal."

— STUDENT, Male, 21

"If you don't research, you don't back up the things you do with numbers, then you don't understand the cause and effect of the things that you do. Ultimately, you're just going to keep doing the same thing and it's going to keep failing and you're not going to understand why or what you can do differently. I think that analytics play a broad role in that. You have to do the background work to make something successful."

— NEW HIRE, Female, 23

STUDENT CONFUSION WHEN APPROACHING HOW TO LEARN ANALYTICS

Student sentiment about how to approach learning analytics could be bucketed into the following segments:

- **Term Definition Ambiguity**
- **Poor Learning Infrastructure**
- **Inability to Gain Practical Experience**
- **Unclear Vision for the Future**

TERM DEFINITION AMBIGUITY

- **Ambiguity in the Term "Analytics":** One new hire, female, 24, shared, "I think data science, as a word, as a term, is not defined... especially as someone who didn't know what it was before I got into it. You really have to research exactly what it means. And the same thing with companies: I don't think companies who hire data scientists know, really, what they're hiring... but that can actually be a good thing."
- **Scope of Analytics Is Broad, Creating Confusion:** Analytics is a relatively young and undefined field, which can lead to a lot of optimism because of the opportunity to shape and define it. However, and increasingly prevalent, is the fact that individuals who are unfamiliar with analytics seem to quickly adopt a static definition that limits their understanding and allows them to pigeonhole analytics as being solely about social media or general number-crunching, for example. Ultimately, these misperceptions create confusion for students and new hires who might bypass a career in analytics for something clearly defined. As one new hire, female, 24, shared, "You could Google data science and you'll get a whole bunch of different explanations of it, and a data scientist at Facebook is not a data scientist here, which is also not the same as a data scientist somewhere else... that makes it kind of difficult."
- **Seen as Purely Crunching Numbers:** Analytics is often considered purely an exercise of crunching numbers. The perception is that it appeals to only those who have a quantitative background and have the necessary skill to do these calculations. As one student, male, 21 years old, shared, "I think the main problem with analytics is there's this stigma, which I'm sure you've heard about. I think people view analytics and data as something that you have to be a numbers person to really like."

POOR LEARNING INFRASTRUCTURE

- **Analytics Siloed Within the University:** Research uncovered that many schools have analytics sprinkled across the university. Students expressed confusion about how to approach learning analytics if universities struggle to bring a coherent theme to the topic.
- **Inadequate Access to Tools:** One student, male, 21, explained, "I know other schools might do Tableau, or all these other things. So in terms of tools, some internships require it, some don't. It might be useful to know that that is a possibility to learn. But our school doesn't really value that. The consequence is that as a student, I need access to those programs and it would help to maybe have it be subsidized or not have to pay for the full price of getting one of those subscriptions. I mean it is tough and they are expensive, especially the advanced versions that companies might be using."
- **Insufficient Analytics Course Opportunities:** One student, male, 21, highlights, "Syracuse just launched a Data Analytics major, but in the Business and Communications schools there's really no focus on the field. There just aren't many analytics courses in these schools."
- **Unclear Advice from Professors About What to Learn:** One student, male, 21, recounts, "I had this professor who told us we shouldn't bother to learn programming, that one day we'd make it and have someone else do it for us. But I was like, 'I need to learn this. I need to know how to use them because that's not how things work.' He had no perspective. It was a very difficult and frustrating experience."

INABILITY TO GAIN PRACTICAL EXPERIENCE

- **Disconnect Between Classroom Learning and Real-World Action:** One student, female, 21, shared, "I think in terms of being a student, the hardship is that I feel like what we learn in the classroom isn't as applicable as what I end up doing in my internships or what I end up seeing other people doing in internships, or what jobs and roles expect in the real world. I think there's a strong disconnect, especially in my business school in terms of maybe the things they're teaching — it just feels like they are behind. Or maybe the tools they are teaching us are behind. Or they're focused too much on theory and not enough on practice."

- **Hit or Miss About What Is Applicable in the Workplace:** One student, female, 21, explained, "I learned regression at school, but how to apply the regression to the specific data that we're using, or the specific platforms that we're using, was new for me. It wasn't until this internship at Frito-Lay that I learned how to apply what I had been taught. But I obviously wouldn't have been able to even know what regression means if I didn't take Quant at school."
- **Struggle Between the Concepts and the Practice:** Students often talk about how their classwork focuses on the "what" and "why," but not necessarily the "how," or execution. There is a greater focus on the theoretical aspects of analytics (e.g., knowing the math behind things, formulas, Excel, and other tools) instead of the real-life practice, or application of the learning.

UNCLEAR VISION FOR THE FUTURE

- **Feeling Overwhelmed and Underqualified:** One new hire, female, 22, shared, "When I started, I didn't know the tools. I hadn't had exposure to the things they were using; even with Excel I felt like I was underqualified. The title said 'Data' and I was thinking, I didn't major in math or engineering. It was really overwhelming at first."
- **Challenging to Have the Right Combination of Experience and Opportunity:** One student, male, 22, shared, "So I think there's two things: the first thing is that there's the right kind of experience they are looking for, and the second thing is they don't even give you the chance, which is the idea of being discarded before you even start just because you don't have those years under your belt."
- **Inability to Prepare for Volatility of the Future Job Market:** One student, male, 21, explained, "I think the main thing that keeps me up at night is not knowing where the job market will be. So for example, everyone talks about how in 10 years, most of the jobs don't even exist right now. So, I feel like the main thing is you're always have to be on top of your game and reading the news and figuring out what's going to come up next and so you almost feel like you're always a little bit behind in terms of trying to keep up... Because someone in that industry is always going to be one step ahead, because they're going to know just one step more than you do."
- **Unclear Career Path:** Students and new hires shared that when they look up, they see people their age and then people much older than them, but no one in the middle. It's because of this and a lack of vision that they feel they may not be doing this job long. On average, they see themselves in the job for three to five years, and mention using it mainly as a stepping stone to other roles that are more defined with better career growth prospects.

INDUSTRY ENTRY POINTS INTO ANALYTICS

Figure 6 captures how students have entered into analytics roles in the various parts of the industry based on research from Egg Strategy.

FIGURE 6

ANALYTICS ENTRY POINTS INTO THE INDUSTRY

ENTRY POINT	SNAPSHOT OF PERCEIVED ADVANTAGES	SNAPSHOT OF PERCEIVED DISADVANTAGES
Tech Companies	• Appearance on the forefront of analytics • Stronger vision for how analytics fit into career growth • Access to lots of resources for analytics training	• Challenging recruiting process • Overly competitive • Focus on number-crunching versus strategic and creative
Marketing Client Side	• Connection of contribution to end result • Structured training programs • More strategic than just number crunching	• Perception of corporate and bureaucratic • Repetitive if single brand experience • Pigeonholing in one industry
Agencies	• Strategic lens to the data • Work on multiple brands across categories • Access to perceived glamour of this industry	• Perception that intuition valued more than analytics • Inability to present work due to hierarchy • Narrowly perceived as just social media
Startups	• Taking a chance on someone less experienced • Advance quickly in the company • More liberal thinking, creative problem-solving	• Lack of a growth plan for analytics • Wear many hats which prevents analytics focus and development • Lack of financial stability and security

ACTION PLAN: "BEST JOBS EVER" CAMPAIGN

The ANA Educational Foundation is tackling the marketing industry's ongoing talent crisis head-on with a new multi-tiered campaign designed to inspire talented and diverse university students to choose marketing as a career. Dubbed "Best Jobs Ever," the campaign includes a video and a new partnership with WayUp, a digital platform that will connect marketers with millions of college students seeking summer internships and entry-level jobs.

ANA CEO Bob Liodice said the new campaign is rooted in a simple, powerful idea: The marketing industry offers some of the best jobs young people have never heard of. He added that the campaign is designed to optimize the talent pipeline from college students through to CMOs. "Top-quality talent is the lifeblood of our industry, but the current system for attracting and retaining talent isn't working, and we need to take immediate action," Liodice said. "This campaign demonstrates just how creative, innovative, and powerful a career in marketing can be, and I urge all ANA members to support it in whatever way they can."

The campaign resulted from research conducted in partnership with McCann Worldgroup that revealed marketers' recruiting efforts are beset by a perception problem in which most students view marketing as simply ads and selling. They fail to see that marketing is a diverse, multi-disciplined career that calls for a variety of skill sets ranging from creative to analytical. The campaign video was created by McCann Worldgroup and highlights the wide variety of marketing industry jobs available to students, from picking out flavors for potato chips to putting together Spotify playlists using data and analytics. The video can be accessed at www.ana.net/bestjobsever, which launched in November 2019.

ACTION PLAN FOR 2020

The Best Jobs Ever campaign provides a platform for the ANA Educational Foundation to shape the perception of marketing and advertising with students today and tomorrow. The action plan for 2020 will focus on key elements:

- **Building More Job Scale:** The goal is to add more than 100 companies to the industry job board in 2020. This is an opportunity to showcase to students the various kinds of roles that exist in the marketing and advertising field.

- **Generating Creative Continuity:** Several companies, including American Express, Sephora, and IBM, turned their social media content into an actual job application. The ANA Educational Foundation is developing a plan where this kind of creative can be produced on a continuous basis to keep the campaign top of mind for students and for industry.

- **Weave Data and Analytics into the Best Jobs Ever Campaign:** We will try to make data and analytics a more prominent component of the Best Jobs Ever campaign. We will look at different ways to keep this campaign fresh:
  - Building a data and analytics job section in the Best Jobs Ever microsite
  - Creating a Kaggle-like competition for the marketing and advertising industry
  - Launching a Best Jobs Ever podcast interviewing data and analytics executives about their careers

IV.
KEY
DISCONNECT
#2

DISCONNECT #2:

Significant obstacles exist for companies to provide *real* and *contextualized* data to academia restricts educator's ability to connect data and analytics to business outcomes.

This section is divided into the following segments:

- The Current Bridge Between Academia and Industry
- Key Barriers Preventing Scalable Research Partnerships
- Impact of the Research Disconnect
- Action Plan: Case Study Content Production

THE CURRENT BRIDGE BETWEEN ACADEMIA AND INDUSTRY

There are many bridges connecting academia and industry. Career services staff work with recruiters to channel talent into industry. Industry alumni groups connect to their schools to give back and offer mentorship advice to current students. Student clubs organize industry conferences on campus, from a sports analytics summit at MIT Sloan to Wharton's energy supply chain conference to a leadership marketing summit at Northwestern.

Specific to research, Moran Cerf, associate professor of neuroscience and business, Kellogg School of Management at Northwestern, shared: "It used to be that academia was paving the road, and companies would learn from them. Today, it is the reverse. The best technologies are not with academics but are with companies, such as Google and Facebook, because that is where the data is."

Das Dasgupta, corporate SVP, head of data science and digital transformation at Viacom as well as an adjunct professor of data sciences and advanced analytics at the USC Marshall School of Business, pointed out that technology companies are leaders when it comes to translating academic insights to business applications. "At Amazon, Pat Bajari is the chief economist and also continues to hold a full economics professor title at the University of Washington. This kind of academic integration is the same at organizations like Microsoft, Google, and Facebook."

In most cases, however, the academic world and the business world are not in sync with each other. As Alex Genov, head of customer research at Zappos, said, "It's like we are playing two completely different ballgames where there is a penalty each time you touch the ball because there are different sets of rules."

An analytics executive agreed: "It feels like industry and academia are on two lanes of a highway where each lane is passing each other. The two groups have different sets of priorities, backgrounds, and understanding. There is so much opportunity for both groups to work together for mutual benefit and gain."

KEY BARRIERS PREVENTING SCALABLE RESEARCH PARTNERSHIPS

There are several barriers preventing a more fluid research partnership between academia and industry:

- Lack of Actionability
- Data Confidentiality and Privacy
- Low Priority with Minimal Incentives

LACK OF ACTIONABILITY

DISCONNECTED EXPECTATIONS BETWEEN "REAL WORLD" AND "PERFECT WORLD":

"In academia, there is a set project where you have a set time and deliverable knowing you will be able to accomplish it. In real life, you don't have that perfect scenario. There is often not enough time and not enough information. The perfect world doesn't exist, and in real life, you may only have only a few pieces of information."

— ASHLEE WEISSER, VP, Analytics and Insights at Bloomin' Brands

IVORY TOWER ACADEMIC APPROACH:
"Most people in academia approach analytics in an ivory tower where it is overly technical without linking it to business objectives. For example, when conducting a clustering analysis to segment audiences, academics are likely to find a great algorithm that sends back a winning solution. However, it is probably unusable because that approach didn't align well with the business objectives to guide a business decision. That lack of pragmatism makes working with academia difficult on marketing research projects."

— HILARY DECAMP,
Chief Research Officer, LRW

LACK OF A "BUSINESS MINDSET" FROM ACADEMIA:
"I am a firm believer that there can be a strong relationship between academic research and a business application. There is magic that can happen with this kind of collaboration. There are two components to this. The first is the science behind the research. The second is the money to fund the research. I have had successful collaborations with professors who were practically oriented and understood how our business worked. They balanced their need to publish versus our need to drive business results and maintain a competitive advantage with the results being generated. This business mindset makes it easier for us to fund research where everyone wins. We are not in the business of funding academic research to get ourselves published in academic journals."

— ALEX GENOV,
Head of Customer Research at Zappos

ACADEMIC PRINCIPLES AREN'T REFLECTIVE OF TAKING ACTION:
"Academic journals talk about key principles like unified marketing where multitouch attribution or media mixed model simulations are done in perfect conditions. When it comes to industry, we are so challenged with marketing data and making the output meaningful to stakeholders. Talking about it in principle is one thing but bringing it all together in practice is another. Academic papers don't get at figuring out which data points matter, how to source data from different departments, or why share one data point over another with an executive — this is where the hard work begins of translating an insight into action."

— SONIA VAIDYA LELE,
Group Director, Data and Analytics, AKQA

UNREALISTIC EXPECTATIONS OF RESEARCH "PERFECTION" VERSUS DIRECTIONAL INPUTS:
"The use of a statistical level of significance of results at p = 0.05. In academia, someone may have conducted years of research work and at the end, the p level comes in at 0.07. The academic journals will reject the work and the findings will not see the light of day. In business, the significance level may be used as more directional, but the results and findings may still be used by the business if the numbers makes sense."

— ALEX GENOV,
Head of Customer Research at Zappos

DATA CONFIDENTIALITY AND PRIVACY

DATA CONFIDENTIALITY THAT MIGHT GIVE AWAY COMPETITIVE ADVANTAGE:
"The first big barrier is that it is hard to give students access to data due to contractual requirements around keeping data confidential. If we can give them access, there need to be specific constraints of what can and can't be shared. The second big barrier is the kinds of questions we as a business want answers to that help us gain a competitive advantage. We would need to find the right joint project with academics where we would be comfortable having the results published in a public forum."

— JACOB PEWITT YANCEY,
Director of Consumer Insights and Analytics, VISIT FLORIDA

LACK OF COMFORT IN HAVING CLIENTS SHARE THEIR DATA SETS — AND THE OPPORTUNITY THAT EXISTS:
"It's quite rare for clients to share their data sets outside their organization (let alone with academia), as companies realize the value of their first-party data assets, and must comply with emerging policies (the CCPA, the GDPR).

However, sharing these assets provides critical industry and academic opportunities. What if an organization monetized information assets with talent from leading academic institutions? Or built curricula with academics to meet the needs of specific industries and organizations? These are the types of untapped opportunities where greater collaboration can unlock both innovation and business impact. With this in mind, it's clear that democratizing information (and data assets) will deliver valuable returns for the industry and academics alike."

— JONATHAN LOPES, Group VP, Data and Analysis, Digitas

RECONCILIATION OF BIG DATA AND SMART DATA:

"Everyone has been hankering for data within the industry and academia. I see this disconnect between big data and smart data. Academia has a hankering for big data that we collect with interactions. Smart data is the years of experience that we as practitioners collect to apply meaning to that data. We need to reconcile the big data in academia with our collective experiences to help professors see how it becomes smart data in practice."

— ALEXEI MILGRAM, Head, Data and Analytics, Reuters

LOW PRIORITY WITH MINIMAL INCENTIVES

TIME-VALUE TRADEOFF DIFFICULT TO JUSTIFY:

"People don't have time to figure out how academia is going to help them with their specific projects. It's hard work to structure a working relationship where you can get that kind of commitment across the board. One of my data science heads asked "Why don't you work with a particular school on a project we have?" The thing is there is a lot of time that needs to be invested to do that and we don't necessarily have that time to put on the calendar to ensure a quality experience for us as well as the professor and the students."

— DAS DASGUPTA, Corporate SVP, Head of Data Science and Digital Transformation at Viacom

LACK OF A FLUID FEEDBACK LOOP:

"There is often no dissemination of an academic paper to the industry. For example, a paper might show how television is better than online from a marketing effectiveness standpoint. However, there is no feedback loop where that finding can be embedded into industry practice. In this case, industry isn't worried about the best statistical model (as academics are) because they often don't have the time to dot all of the Is and cross all of the Ts. The interaction between academia and industry happens in bits and pieces, but not on a sustained level."

— MAHIMA HADA, Associate Professor and Director of Marketing Analytics Programs, Allen G. Aaronson Department of Marketing and International Business, Baruch College

THE PURSUIT OF THE MARKETING FLAVOR OF THE DAY:

"Industry is moving so rapidly. Academia is not living and breathing what we do daily. The academic challenge is to step away from the flavor of the day, and identify what are the principles that are important to teach in marketing, media, and advertising. The output is to create strategic thinkers in those disciplines by understanding the core of what we are trying to do and interrelate those pieces."

— LISA BRADNER, General Manager, Analytics, Yieldmo

LACK OF SUITABLE FORUMS FOR KNOWLEDGE-SHARING:

"There is tension between what is "best practice" methodologically from an industry standpoint versus an academic one. There is a question of timing and methods. On timing, academics can take a long time for a study to begin and then end, while in industry we don't

have that luxury. On methods, the academic theory might be brilliant but not practical where when we are iterating on a campaign. When the two sectors try to talk with each other, we often talk past each other. There are relatively few venues for knowledge-sharing in a way that suits both academics and practitioners. Because of this, there isn't enough cross-fertilization between the two sectors."

— TONY FOLENO, SVP, Strategy and Evaluation, at the Advertising Council

COMPANY CLEARANCES DIFFICULT TO SECURE:

"When working with business and legal affairs, they are responsible for managing corporate risk where they want to protect our intellectual property. They want to understand what data is going outside of walls of the company and why. They will then want to know if the data can be cleansed and disguised in what way. Getting those clearances is a time-consuming affair when other business priorities might be more pressing."

— DAS DASGUPTA, Corporate SVP, Head of Data Science and Digital Transformation at Viacom

IMPACT OF THE RESEARCH DISCONNECT

Difficulty in forging meaningful research relationships results in those relationships not being leveraged for the benefit of students. As Mia Vallo, VP, insights and analytics, National Geographic Partners and adjunct professor at Georgetown University School of Continuing Studies, shared, "Being in both the industry and in academia, one of the struggles that I keep seeing in academia is the lack of opportunity to work with real-world data. I have the advantage where I have access to the tools already, but not all professors have that. Academics will try to compensate by bringing in a guest speaker, but that person is typically just for one class instead of the entire program. It's hard for academia — professors and students — to get access to real-world data as we all need to be mindful of data privacy and confidentiality."

Having the ability to work with real data helps maximize student learning with the tools to help them analyze data and also frames the context of what action they can take from that data. As Michael Horn, chief data officer at Huge, shared, "The risk of hiring entry-level talent straight from school is that students will often learn techniques in isolation. They are not adequately prepared for the business challenges and collaboration with internal and external partners to drive toward an outcome."

Many academics acknowledge the importance of getting access to industry data:

"We need access to data. It is hard to teach analytics and make data-driven decisions when you don't have access to a good data set. If we want to train students on data analysis, we need to have data. And data tends to be proprietary to companies. Thus, partnering with businesses has become a priority. Moreover, companies may benefit from students' insights into how they can improve their businesses as well as identify potential interns and future employees. It is a win-win for all."

— GEMA VINUALES, Assistant Professor, Department of Marketing and Business Analytics, San Jose State University

"One thing I hear from academics and classroom instructors is that to teach data analytics, we need industry data sets. We do have access to large publicly available data sets from government entities or agencies like the Census Bureau, Centers for Disease Control, or certain municipalities, for instance. However, to be relevant to what we are teaching, we invariably need access to real industry and consumer data. We realize industry is concerned about data breaches and having their data end up in the wrong hands. But even if it is data that is five years old, that would be sufficient. It doesn't have to be current for teaching purposes and

the company can remove or anonymize sensitive information. But we need the right kind of data that can provide context and realistic analysis scenarios for our students."

— PROFESSOR

"I would love to work with companies that would grant us access to their data. However, it hardly ever happens. Companies are cagey about making their data public. So instead, we rely on case studies that have data sets contained within them because students need to be familiar with numbers."

— GARY OTTLEY,
Senior Lecturer, Babson College

"For undergrads, the most important part is motivating them. As faculty, we need to demonstrate why analytics are useful by showing them their job prospects in this field. Specifically, we can talk about what role analytics play with companies and how companies are using these tools to improve what they are doing. The first step before getting into any analytics is to convince students why this is important."

— CEM ÖZTÜRK,
Assistant Professor,
Georgia Institute of Technology

"The amount of data that is becoming available to businesses is growing exponentially. When students graduate and start working, they will often encounter very large data sets which might seem overwhelming to them. Our job is to get them exposed to data sets and get them to think analytically about the data. We analyze how different variables might be connected to each other and spot opportunities that could be useful for marketing purposes. But it is a big and sudden jump from university to the workplace, and we need to have more industry involvement where they can come to the classroom to talk about how to manage this jump. "

— HEMANT PATWARDHAN,
Professor of Marketing,
Winthrop University

ACTION PLAN: CASE STUDY CONTENT PRODUCTION

As seen above, there are many successful research partnerships that currently exist between academia and industry. There are trade bodies like the Advertising Research Foundation and the Marketing Science Institute that foster greater academic and industry collaboration. The American Marketing Association has many academic journals like the Journal of Marketing and the Journal of Consumer Research that publish the best academic research in this field.

The ANA acknowledges the importance of these different initiatives to forge greater connectivity between academia and industry. The area where the ANA can add value is through its publishing scale. There are more than 10,000 pieces of content in the ANA library on marketing best practices, and ANA members produce most of this content.

While this content is not suitable for academic teaching purposes, it does provide a platform to translate industry practice into a case study format that can be used by professors to teach students. Several practitioners and academics weighed in on the value of case studies:

"Case studies highlight specific problems in a very unstructured way. It can test technical proficiency, quantitative skills, and business acumen that simulates what happens in industry and the decisions that were made based by those who made them."

— AINUL HUDA,
VP, Analytics, Marketing and Audience Development, Condé Nast

"Hands-on experience is by far the best way to get exposure, which is hard when you are in school. In the classroom, case studies give the students an opportunity to see different challenges from companies and work with some of the concepts that companies are faced with."

— CHARLIE SUNG SHIN,
VP, Strategy and Analytics, Major League Soccer

"In many instances when students are lectured to, the outcome is simply memorization rather than application. The case-based analysis method is one of the best ways to develop critical thinking skills. With this method students review a case that includes different sets of data and are expected to perform some quantitative and conceptual analysis to determine the optimal solution. A facilitated discussion allows students to hear alternate approaches from their classmates and either re-evaluate their approach or double down on their original recommendation. Conducting this process multiple times, across different industries, with different product lifecycles, and various brands with different market positions, can help students better develop the critical thinking muscle needed for informed decision-making."

— MICHAEL J. CLAYTON,
Senior Professorial Lecturer, Department of Marketing, American University

The rationale for building a marketing case study library for academic purposes:

- **Aligns on Common Interest to Bring Academic and Industry Together:** Analytics executives and professors share a common interest: research. Bringing analytics executives and academics together to work on case studies together creates an exploratory, non-commercial, and non-threatening environment where the discussion is meant to benefit the next generation of talent in the short term. In the long term, it can broaden ways in which industry and academia can engage each other with trust built through this working relationship.
- **Avoids Complications with Sharing "Live" and Proprietary Data:** Research has shown that there are many hurdles for companies to offer academia their data. Case studies offer a format where the data is shared in a controlled environment.

- **Puts Data and Analytics at the Center of Marketing and Advertising Case Studies:** Many students choose marketing and advertising because it is highly creative and they think it doesn't require quantitative skills. Putting data and analytics at the center of these marketing case studies helps update this current perception for students.
- **Showcases the Role of Data Within the Organizational Context:** The context of how the data was deployed and the action that was taken by key decision-makers using the power of what was shared helps students understand that data analysis doesn't stop at analyzing data. It is the start, and it can play a critical role in making key business decisions for the organization.
- **Creates Content that Drives Scaled Learning:** Case studies can be widely disseminated across the academic landscape. These case studies can be used in the curriculum for students today and for tomorrow. Industry investment in the development of marketing case studies for academic use provides the highest return on investment of time given resource and geographic constraints.
- **Offers a Timelier Publication Cycle:** There are several prominent marketing case study libraries such as Harvard Business Review. However, many of these case studies are relatively old and don't necessary focus exclusively on the marketing industry.

The key success factors for building this case study library:

- **Engaging the ANA CMO Masters Circle:** The ANA has developed the ANA Masters Circle, a community of more than a thousand CMOs, who have a 12-point growth agenda on topics ranging from talent development to brand purpose to media transparency. This CMO community can provide support by:
  - Offering up case studies from their own organizations
  - Providing reporting accountability on the case study development progress
  - Lining up case study topics with key growth agenda items
- **Leveraging the ANA Talent Forward Business Machine:** The ANA has formed a group called Talent Forward dedicated specifically to driving the talent agenda of the ANA CMO Masters Circle. The group brings together marketing, analytics, agency leaders, HR executives, diversity leaders, and academia to work on talent issues. A subsection of this group will steward the case study development by marshaling resources across the ANA:
  - **Professor Engagement:** The ANA Educational Foundation has a network of more than 6,000 professors who will selectively be called upon to join this effort.
  - **Analytics Executives:** The ANA has a division called the Data and Measurement group; we have called upon their constituency to join this effort.
  - **Research Deployment:** The ANA has a division called the Marketing Knowledge Center that publishes leading-edge Marketing Futures reports and recaps of the hundreds of events that the ANA hosts throughout the year.
- **Building a Manageable Timeline for Content Production and Process Optimization:** The ANA Talent Forward committee meets three times a year in New York. What we plan to accomplish in 2020, which will lay the foundation for producing these case studies at regular time intervals:
  - **Q1 2020:** The first meeting will be to bring this concept to the audience of analytics executives and academics. The output of that first meeting will be to define the goals, determine the working dynamic, and create a working template for a case study with data and analytics at the core.
  - **Q2 2020:** The second meeting will be to review the working case study template for academia and industry to leverage. We will discuss the process to produce this kind of marketing case study and determine how we can scale this process. We will target a certain number of case studies to produce by the next meeting.
  - **Q3 2020:** The third and final meeting will be to review our progress and then determine a launch plan to offer these case studies to academia for the spring semester 2021. We will align on a plan to drive a set number of case studies per year in specific topic areas but always with data and analytics at the heart of the teaching material.

V.
KEY
DISCONNECT
#3

DISCONNECT #3:

The shortage of data and analytical skills is not just technical as employers place a premium on the combination of *hard* and *soft* skills together with a *business mindset*.

How this section is outlined:
- Job Growth of Data and Analytics
- Placing a Premium on Softer Skills to Complement Technical Ability
- Snapshot of Industry Hiring Practices
- Feasibility of Undergrad Hiring for Analytics Roles
- Action Plan: ANA Resource Deployment

JOB GROWTH OF DATA AND ANALYTICS

There have been several studies pointing to the data and analytics skills shortage:
- A 2018 KPMG CIO report reports that the data and analytics field suffers from the greatest skills shortage.[25]
- A 2018 LinkedIn Workforce Report reports that every major city is suffering from a data science skills gap.[26]

Despite this skills gap, the marketing and advertising industry has looked to capitalize on opportunities created by the explosion of data. IPG acquired Acxiom, a database marketing company, in 2018 for $2.3 billion[27] while Publicis Groupe purchased Epsilon, a different database marketing firm, for $4.4 billion in 2019.[28] Brands have also been building this capability, such as when McDonald's acquired Dynamic Yield, a personalization technology company, for $300 million in 2019.[29]

Christopher Outram, chief data officer at RUN, Publicis Media, explained this trend: "In the next five years, I would not be surprised if agencies had five to 10 times the amount of engineering talent. Marketing is transforming into Marketing Technology, where we have moved from being a relationship-based business to a data-driven business."

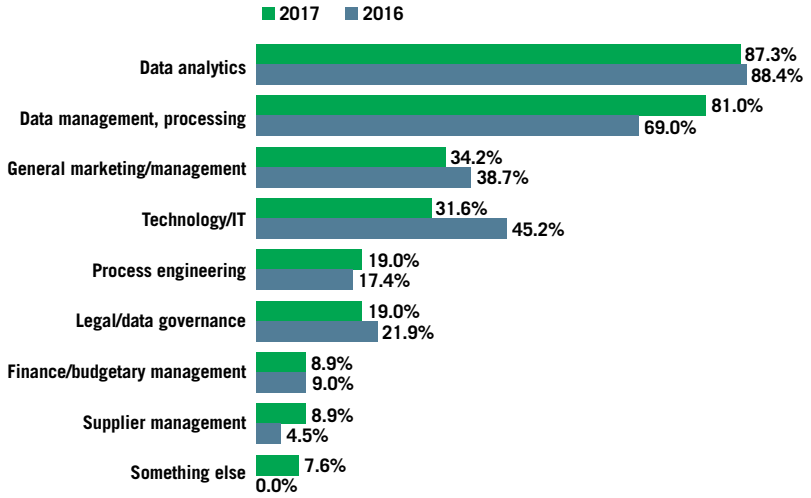
Figure 7 shows how analytics is highly sought-after as a skill set in the marketing field while Figure 8 suggests there is a significant talent gap for organizations seeking data focus. According to another study, data analysis and measurement is in fact the No. 1 most important future skill that marketers want to acquire to have a successful career in their field.[30]

Universities are picking up on this trend. "Marketing has evolved to become more of a science than an art," shared Chelsea Hammond, clinical assistant professor, Smeal College of Business, at Penn State University. "Marketing is being asked to facilitate the integration of different areas such as sales, supply chain, and other business units. Technology drives this, and the common language of data is what enables these units to work together successfully."

25. "What's Driving Data Science Hiring in 2019," Datanami (January 2019)
26. LinkedIn Workforce Report, LinkedIn (August 2018)
27. "IPG Confirms $2.3 Billion Deal to Acquire Data Marketing Company Acxiom," Adweek (July 2018)
28. "Publicis Group Completes a $4 Billion Acquisition of Epsilon," Ad Age (July 2019)
29. "McDonald's Is Acquiring Dynamic Yield to Create More Customized Drive-Thru," TechCrunch (March 2019)
30. "What Skills Would Marketers Stake Their Future On?" Marketing Charts (January 2019)

FIGURE 7

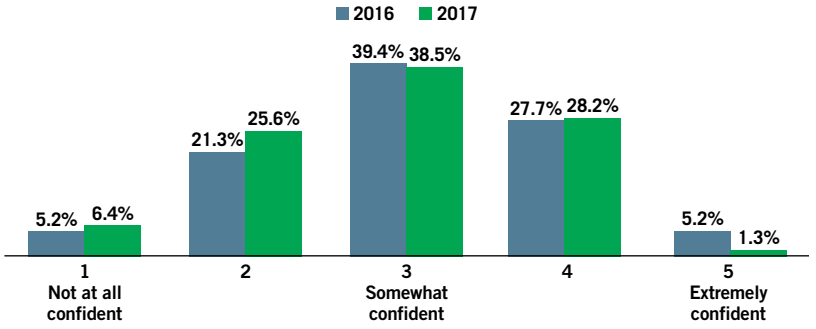
ANALYTICS IS HIGHLY SOUGHT-AFTER SKILL SET



SOURCE: "The Data Centric-Organization in 2018," ANA (January 2019). Question was "What specific skill sets or functional competencies do you think will be the most important for your organization to possess in support of its future data-driven marketing, advertising, and / or media efforts?"

FIGURE 8

TALENT GAP HINDERING DATA UTILIZATION



SOURCE: "The Data Centric-Organization in 2018," ANA (January 2019). Question was "To what extent are you confident that the people in your organization have the right expertise, skills, and experience to support your efforts to derive value from the use of data?"

PLACING A PREMIUM ON SOFTER SKILLS TO COMPLEMENT TECHNICAL ABILITY

The data suggests that there is a lack of technical skill to harness the power of marketing technology.[31] What this research uncovered was that interviewed respondents felt that technical skills were readily available. What is lacking is the technical skill combined with softer skills to influence business decisions. Figure 9 shows the top hard and soft skills that employers are looking for when hiring a data scientist.

Luisa Martinez, senior research manager, media planning and programming at Univision Communications, shared, "There is a lot of analytics and data science talent. What is lacking is talent specifically for media, where it's hard to find the right skill set to merge different sets of data together."

Dustin Engel, VP of corporate development and investments at PMG, shared, "The fundamental disconnect is the lack of practicality of how to apply the hard skills into driving action." Many others shared this sentiment:

> *"When I interview candidates, I find that they are very well equipped from the programming perspective. They have a solid grasp on the tools. That proficiency doesn't necessarily lend itself to telling a good story. There is so much duplicative data with so many different ways to look at it that it's hard to figure out what is the right story to tell. My team helps interpret the data and translate it to what it means to the business. There is a human aspect to it even as we move more towards machine learning which can generate lots of reports. However, what computers can't do is interpret that data."*
>
> ***— DAWN HAVILAND, Director, Consumer Insight, Measurement and Analytics, The Walt Disney Company***

> *"Many individuals have technical expertise, which are skills that can be taught and mastered. The ability to distill insights and present them in a compelling way is much harder to train if that person doesn't have those kinds of traits, or desire to be front and center. I have team members who don't feel comfortable in front of a group, preferring to crunch the numbers behind the scenes, and they add enormous value to our analytics product. However, the ability to provide insight, foresight, and strategic thinking to decision-making as a result of data analysis is a much more difficult skill to master."*
>
> ***— KEVIN MOELLER, Head of Media Insights and Analytics, PepsiCo North America***

> *"What I have noticed is there is a disconnect between knowing how to do the actual analysis and being able to act and influence the organization with the results. That is where things fall apart."*
>
> ***— ANALYTICS EXECUTIVE***

FIGURE 9

TOP HARD AND SOFT SKILLS FOR A DATA SCIENCE ROLE REQUIRED BY EMPLOYERS

SPECIALIZED SKILLS	BASELINE SKILLS
Data Science	Research
Python	Communication Skills
Machine Learning	Teamwork/Collaboration
SQL	Problem-Solving
Apache Hadoop	Creativity
Big Data	Writing
Data Analysis	Presentation Skills

SOURCE: Burning Glass (2020) — data quantified from employment landscape sourced through proprietary technology; Specialized skills, also referred to as hard skills, require specific domain knowledge or technical training; Baseline skills are foundational skills such as problem-solving, organization, and collaboration. These skills are often referred to as "soft skills."

> *"Many applicants have hard quantitative skills with backgrounds in quantitative finance or computer science analytics. People are often well prepared for large complex data sets and can conduct very technical analyses on them. We find soft skills to communicate those findings much less frequently."*
>
> ***— JACOB PEWITT YANCEY, Director of Consumer Insights and Analytics, VISIT FLORIDA***

> *"I am looking for candidates who have data*

31 "Marketers Say Automation Is a Key Focus But Many Lack Skills," MarketingWeek (August 2019)

aptitude. Anyone can learn how to use analytics tools and report on data, but not as many can translate that to the bigger picture and stay focused on what matters. There is a ton of data out there, and it is easy to get lost. One of my pet peeves is analysis paralysis where you analyze something without a conclusion. Being able to interpret data requires creativity and curiosity."

— MIA VALLO,
VP, Insights and Analytics, National Geographic Partners; Adjunct Professor at Georgetown University School of Continuing Studies

"If you can't communicate your analysis as if you are having a cocktail party conversation, it doesn't matter how good the analysis is. Business writing and verbal communication are just as important to the analyst as the analysis itself."

— HILARY DECAMP,
Chief Research Officer, LRW

"The data scientist needs to use softer skills to explain why analytics are so important and what value they bring to the table."

— TIMSY ARORA,
SVP, Media Analytics and Measurement, Citi

"Communications skills are a must. It's important to communicate the data clearly and deliver the key insights to stakeholders and executives to have a successful career in analytics. The executives want to see the results, the rationale behind those results, and the next steps based on the data. The data is the what, the insight is the why, and the recommendation is the what's next. Telling a story based on data is important regardless of the organization, but particularly in a creative organization where that pressure is even higher."

— MIA VALLO,
VP, Insights and Analytics, National Geographic Partners; Adjunct Professor at Georgetown University School of Continuing Studies

"The biggest gap that I see is communication skills. We can produce great analytics that are bulletproof and created with the highest level of integrity, but packaged in the wrong way, so the findings get lost. It's important to prioritize the storytelling aspect, where interpersonal skills are so crucial. Executives are constantly getting reports and are overloaded with data. They won't know what to focus on if it is not a compelling story."

— KATE KENNEY,
Director, Global Operations and Strategy, Citi

"Analytics folks who can overlay a business perspective against the data will be more successful than those who treat data as just data. In addition, connecting multiple data sets together to tell an overarching story about a business problem will drive incremental value to organizations.

— JOHN SCHULTE,
Director, National Client Attraction, Edward Jones

"When I think about my team and an analytics team, on one side, there is technical capability which is taking raw data and conducting an analysis. On the other side, there is a collection of softer skills: how to present effectively, unlock insights, understand how to position an idea that can resonate with an audience who is often not technical. I am expecting my team to have a point of view and position the findings so that action can be taken. What I am finding when reviewing graduating students who have done engineering or computer science or data science is that often they don't come with these softer skills."

— JENNIFER BRETT,
Head of North American Insights, Marketing Solutions at LinkedIn

We see in the data and analytics community those who have strong technical skills. It is the business experience that we want that can be combined with those advanced analytical skills supporting a business decision.

— CORWIN SMITH,
Data Science, Strategic Planning, and Operations Leaders, Nationwide Insurance

SNAPSHOT OF INDUSTRY HIRING PRACTICES

Several analytics leaders share how they think about hiring analytical talent:

"When we hire, it starts off with quantitative acumen. It is about technical skills that can then be applied to business problem solving. We also look at communication skills – how that candidate can distill data & analytics into insights that the business partners would understand. We also look at interpersonal skills where we look at how they might interact with different business partners from the general managers, sales, finance & marketing teams. Finally, we look at business acumen that would test their decision making in the context of the business situation."

— ASHISH JOSHI,
VP, Enterprise Analytics, Global, The Clorox Company

"One thing we look for is domain knowledge. It's not big data, it's the right data to have, and it's critical to have domain knowledge. There are a lot of students who are proficient using R, for example, who look at data and run models for the sake of running it. It's crucial for them to have domain expertise so that they can frame the problem and communicate insights better."

— CIJU NAIR,
Senior Director Global Commercial Analytics at Kellogg Co. and Adjunct Faculty at Northwestern University

"When we look for more junior people, we see what kind of foundation they have in data science and want them to be able to explain what they are doing in a simple way. They don't need to be an expert but we need them to have an aptitude to take what they have uncovered and apply it to the business. We come across people who are great with data but they can't apply it. The ones whom we hire have that willingness to get things done, and they will figure out systems they are not familiar with because of that strong work ethic."

— SIRISH UPADHYAY,
Director, Data Science, Palo Alto Networks

"One of my favorite questions to ask candidates is what their favorite sport or game is. I ask them to pretend that I have never seen it before and ask them to explain it to me. How does it work? How do you win? If candidates can explain something complicated in an easy way, then it is a good indicator that they have strong communication skills."

— ASHLEE WEISSER,
VP, Analytics and Insights at Bloomin' Brands:

Two companies change their recruiting practices so that they can find the right kind of analytical talent:

- Sonia Vaidya Lele, group director, data and analytics, AKQA, shared, "We do a one-size-fits-all data assignment. It is an eight-question test which takes 20 to 40 hours to do. Those serious about joining the agency complete the assignment. From that work, we determine how well the candidate understood the problem and their level of comfort with data sets. Specifically, we will look at:
  - The data set they had and how they cleaned the data set before beginning the analysis
  - Their level of comfort with the questions and the methodology they took to answer those questions
  - Their presentation of the data using a tool like Tableau or another visual technique
  - Their ability to bring the story together in a coherent manner with the right technical foundation."

- Chris Potts, director, marketing analytics, John Hancock, shared, "After they pass the phone screen, we bring the candidate in for a three-hour process where the major components are:
  - Résumé Review and Culture Fit: From their experience, we pull out intangibles like proactivity, intellectual curiosity, responding to urgency while delivering with accuracy.
  - Analytics Aptitude Test: We give them actual calculations to perform with a minimum score required to pass our hiring threshold.
  - Case Studies: We do a case study see how they think through a problem that we might encounter during our daily work.

We developed the entire process in-house and we have optimized our process over time. We had a set script before, but we have now upgraded it to get at the intellectual curiosity of the candidate by asking a lot of why questions."

FEASIBILITY OF UNDERGRAD HIRING FOR ANALYTICS ROLES

There is significant confusion in the analytics job marketplace from undergrad and entry-level candidates. The gaps that the research identified across the different stakeholders:

STUDENTS AND NEW HIRES

- **Perception About "Data" Creates an Immediate Feeling of Being Underqualified:** One new hire, female, 22, shared, "When I started, I didn't know the tools. I hadn't had exposure to the things they were using; even with Excel, I felt like I was underqualified. The title said 'Data' and I was thinking, I didn't major in math or engineering. It was very overwhelming at first."
- **Breadth of Analytics Creates Career Path Confusion:** The analytics field is broad, with many different roles embracing this skill set. That creates significant confusion on what type of skill set matches with what analytic roles. As one new hire, female, 24, shared, "My first role out of school was an analyst role, but it was really focused on social media analytics and reporting on the company's social media pages (e.g., impressions, campaign performance). I didn't really know what the role entailed as I originally thought that social media meant I would be more creative than reporting numbers."
- **Hard Skills Advertised Creates Significant Barriers to Entry:** Many job descriptions place huge emphasis on the kinds of technical skills (coding, math, statistics, tools) that a candidate must have. As one new hire, female, 24, shared, "Sometimes you need to know X language and you need to have Y number of experiences just to be considered for a job. They really don't care about the other skills you might have."
- **Apprehension About Adequacy of Skill Sets:** A new hire, female, 23, shared, "When I started this job, I had some reservations, like 'Am I going to show up and they're going to think that I'm this really smart person who can do all this stuff'? That's not to say that I can't do some of it, but I'm not going to be the most experienced data scientist that you've had. I'm not an experienced coder. I can't code. So I think that, for me, was definitely scary."
- **Graduation Date Precludes Quality of Internship Experience:** A new hire, female, 23, laments, "They're still going to look at your graduation date and be like, 'Oh, you just graduated,' even though you've been doing this [internship] for a year and a half."
- **Disconnect of What Is Learned in the Classroom to the Real World:** As one student, female, 21, shared, "I think in terms of being a student, the hardship is that I feel like what we learn in the classroom isn't as applicable as what I end up doing in my internships or what I end up seeing other people doing in internships, or what jobs and roles expect in the real world. I think there's a strong disconnect, especially in my business school in terms of maybe the things they're teaching — it just feels like they are behind. Or maybe the tools they are teaching us are behind. Or they're focused too much on theory and not enough on practice."

ACADEMIA

INDUSTRY OFTEN DOESN'T KNOW WHAT TO LOOK FOR:

"A lot of organizations struggle with hiring because they don't have folks on staff who actually do this kind of analytical work. This makes hiring more challenging because they are not sure exactly what they are looking for."

— CHELSEA HAMMOND, Clinical Assistant Professor, Smeal College of Business, at Penn State University

ANALYTICS JOB DESCRIPTIONS NOT ONE-SIZE-FITS-ALL:

"We have many top employers in the field who want to recruit students with analytical skills. They want these analytical skills to help them make decisions about tactics in the short run and strategy in the long run. When the job descriptions are made, there is often no distinction between business analytics and marketing analytics. Business analytics students focus on using software to generate results based on relationships or correlations in the data. They are trained on programming and software which allows them to list these tools on their résumé. In most marketing analytics courses, the approach differs in that students learn what the data represents in terms of the customer journey or marketing processes first, and then to identify the appropriate analytical tools to use to answer the business problem. As a result, there is not enough time to expose marketing students to as many software tools.

"That is the frustration many marketing programs are facing, where hiring managers want marketing analytics skills but the job descriptions are emphasizing more of the tools and software which favors the business analytics student."

— PATRALI CHATTERJEE, Chairperson-Marketing, Feliciano School of Business, Montclair State University

HIRING MANAGER BIAS MAINTAINS THE SAME TALENT INFLOW:

"The people who are hiring often do not have the technical skills to use the newest analytics software. To hire someone with this newer skill set, for some hiring managers, is an admittance of a failure — that the new hire is better. As a result, managers might keep employing MBAs at the expense of the computer scientists that they need. The only things that change their mind are (1) seeing bigger companies losing talent to smaller, more nimble startups in the same business, and (2) realizing that the lack of shift from MBAs to engineers starts hurting their financial bottom line."

— MORAN CERF, Associate Professor of Neuroscience and Business, Kellogg School of Management at Northwestern

FEEDBACK VARIATION FROM ALUMNI DEPENDING ON LEVEL:

"When we ask our alumni in the field or those in the C-suite, they tell us they want students and new hires to have strong writing and problem-solving skills. When we ask recent graduates or those about to graduate how we could serve them better, we hear that they wanted more in the field of data and analytics because they don't know how to do that in their current jobs. Sometimes academia can be late in responding to changes in the industry as we figure out how to prioritize what we are hearing."

— YVONNES CHEN, Associate Professor, School of Journalism and Mass Communications, University of Kansas

LACK OF FEASIBLE JOB DESCRIPTIONS FOR UNDERGRADS:

"The feedback that we get from students is that there are so many jobs out there and data analytics is a growing industry, but our students don't really see feasible job descriptions that fit the experience level they have. The jobs demand everything — all possible statistical tools and deep data analysis experience. At the university, we must balance industry demands with what the university is looking to teach, which is broad subject reach (communication, history, philosophy) that we don't want to take away from the curriculum. We want well-engaged citizens, not just data analysts."

— MAHIMA HADA, Associate Professor and Director of Marketing Analytics Programs, Allen G. Aaronson Department of Marketing and International Business, at Baruch College

INDUSTRY

DON'T HIRE DIRECTLY FROM UNDERGRAD:

I look for a few years of work experience, from two to four years to start with. In my team, we will hire from a variety of backgrounds and educational profiles. We look for certain kinds of competencies that someone has demonstrated in previous working roles. My perspective is that I generally don't look at what they have studied but rather what they have done since school and what skill set they have acquired through their working experience.

— JENNIFER BRETT, Head of North American Insights, Marketing Solutions at LinkedIn

PROXIMITY OF ACCESS TO DATA:

"Companies that have access to first-party data have an exciting sandbox to play within. Historically, with traditional marketing, the data is secured through panels or through classical research methods. What these companies don't have is access to first-party data through e-commerce channels, for example. If you have analytics chops, you want to have access to this kind of exclusive data."

— ANALYTICS EXECUTIVE

LACK BUSINESS CONTEXT THAT IS GAINED THROUGH EXPERIENCE:

"I have seen this with young candidates and students where they don't think about the business perspective in relation to the problem

they are trying to solve. They tend to build many charts as well as slice and dice data using the tools that they are familiar with. What we often need is just one chart or infographic that communicates the story in an effective way. That comes with experience rather than having someone do that right out of school."

— CIJU NAIR, Sr. Director Global Commercial Analytics at Kellogg Co. and adjunct faculty at Northwestern University

ACTION PLAN: ANA RESOURCE DEPLOYMENT

There is no one-size-fits-all approach to help make the transition from university to the marketing and advertising industry for those interested in a career in analytics. The ANA provides a mixture of resources for new hires to have a grounding in marketing fundamentals, to deepen their knowledge in the data and analytics field, and to boost their softer skills.

	ENSURE BROAD-BASED MARKETING KNOWLEDGE	DEEPEN DATA AND ANALYTICS SKILL SETS	BOOST MARKETING CAPABILITIES AND SOFTER SKILLS INSTEAD OF BOOST SOFTER SKILLS
Key ANA Resource	Certified ANA Marketing Professional (CAMP) Program	Data & Measurement Committee	Marketing Training and Development Center (MTDC)
Description	CAMP is a rigorous, 35-hour online certification program that has been developed specifically with the ANA marketer in mind. Covering the entire marketing process, from brand strategy and brand activation to marketing implementation across digital, direct, and analytic applications, CAMP represents the full spectrum of activities that every marketer should be familiar with.	The ANA Data & Measurement Committee helps ANA members optimize the return on their marketing and media investments and works with the broader industry to drive measurement standards and research best practices.	The ANA's MTDC equips thousands of ANA members with the skills they need to advance their careers, increase the capabilities of their teams, and enhance their brands. The MTDC offers in-person and online training across diverse marketing capabilities, as well as softer skills such as Storytelling Through Data, Effective Writing, Critical Thinking, and Presentation Writing.
Key Elements	Online certification renewed annually	• Webinars • Regional Committees • 1-Day Conferences • National Conferences	• On-Demand Training • Regional Training • Onsite Training

VI.
KEY STUDY TAKEAWAY: THE GOVERNANCE OF CRITICAL THINKING

Subodha Kumar, Paul R. Anderson Distinguished Chair professor of marketing and supply chain management at the Fox School of Business at Temple University, shared, "There is still a gap between what universities are providing and what industry needs. We hear a lot of companies complain mainly that students don't know how to approach a business problem."

Problems by very definition are ambiguous and often require an approach from multiple, diverse angles. Solving a business problem is less about getting the right answer than it is about answering the problem in a way that influences stakeholders to act on that issue. Both academia and industry are united in their perspective about the importance of critical thinking when analyzing data.

ACADEMIA PERSPECTIVE ON CRITICAL THINKING

"When working with data, it's important to ask really good questions. It might start off with one question and then evolve. One shouldn't take the initial question at face value, though. Instead, one should interrogate it and push to understand the dimensions of that particular problem."

— ED TIMKE,
Instructor of Advertising and Society and Innovation and Entrepreneurship, Duke University

"Spark curiosity and cultivate security among students. Students must be made curious. Additionally, creating a safe space for students to ask questions allows them to talk out ideas and develop greater understanding. If they don't understand a concept, they can ask to go over that material again or figure out why teaching that concept is important. Once curiosity is ignited and an assured learning environment is established, students can think through ideas, contemplate further, and come back with more questions — which often enhances learning and pushes concepts further."

— JOANNA JENKINS,
Associate Dean of Continuing Education, Graduate Studies, and Professional Studies, Moore College Art and Design

"There is an innate curiosity with students who demonstrate strong critical thinking. They accept that there is no one right answer and embrace ambiguity with what the data says and does not say. They are then able to engage in debate with their classmates about what the numbers say and what action should be taken.

— GARY OTTLEY,
Senior Lecturer, Babson College

"I think that students are often rewarded in education by being able to provide a definitive black and white answer. Getting the correct answer becomes the objective for many students. This behavior gets in the way of questioning what this data means. For example, there might be a number that measures consumer sentiment in social media. However, after 15 minutes of discussion, my students discover that this number may not be a reliable gauge to evaluate consumer sentiment. Once students understand the limitations of the software, they learn to dig into the actual social media posts so that they can perform a more in-depth analysis of the conversation. Even if the data says something, the best critical thinkers will question what the underlying assumptions are, which will help them arrive at a more fully formed understanding of what the data says."

— MATTHEW J. KUSHIN,
Associate Professor, Shepherd University

"The common denominator is a comfort with discomfort. It's the ability to navigate not knowing. Being uncomfortable in the questions they are asking or answers they might not be getting showcases the best kind of critical thinking.

— KATHRYN MATHERS,
Associate Professor of the Practice, International Comparative Studies, Duke University

"In our brand strategy course, we challenge our students to think critically. What is the problem? How do we know that is the right problem? What are the tools that might help us solve that problem? What are the sources of information

that can help provide answers to that problem? After having healthy debate around this issue, we teach students how to use and manipulate data sets. We then continue to ask more questions that help our students understand the why behind the how."

— MATT STEFL,
Clinical Professor, Marketing and Co-Director, M-School at Loyola Marymount University

"Curiosity is the driver behind long-term learning ability. The students who are inherently curious don't want to stop learning after taking the class and are looking to improve the quality of their critical thinking. That quality is crucial when using analytics — tools, methodologies, concepts — to help solve a given problem."

— CEM ÖZTÜRK,
Assistant Professor, Georgia Institute of Technology

"The best critical thinkers digest everything and question just as much. They are the ones reading James Baldwin as well as learning how to code. They tend to wrestle with lots of intersecting ideas and then look to engage with faculty who challenge and push their thinking forward."

— OLUWATOSIN ADEGBOLA,
Associate Professor, Strategic Communication, Morgan State University

"We are often fully equipped with sophisticated analytical tools to access and work on big data. However, we often don't identify what the problem is right way, or what constitutes a meaningful problem, and why is it a problem. In other words, before assuming big data as a potential solution, it's important to understand whether the problem we think it could be an answer to really exists or we simply craft one just because. This is where critical thinking becomes really important because it helps guide you to determine what you want to know. This is what I try to convey to my students."

— GULNUR TUMBAT,
Professor, Marketing, San Francisco State University

"Based on years of feedback from alumni and professionals about our curriculum, we focus very heavily on cultivating critical thinking skills for students to understand how to make better business decisions. Specific tools and techniques our students will learn on the job, while the ability to think critically sets the foundation for them to excel in their careers."

— FEI XUE,
Professor, University of Southern Mississippi

"Critical thinking means to be able to take in and evaluate information of multiple types and from multiple sources. Ideally and over time, as students evolve intellectually, they develop a valuable form of skepticism, not easily granting evidence the stamp of truth, whether that evidence comes from me, emerges in our classroom readings, or emanates from the myriad outlets students tune in to outside of class. In the classroom, they learn to think critically and ask hard questions of scholarly material. My role is to facilitate this, putting forward various perspectives and types of evidence with an aim of collectively arriving at deeper understandings. In all of this, there is more overlap between the qualitative and quantitative elements of intellectual work than may seem apparent."

— JENNIFER SCANLON,
William R. Keenan Professor of Gender, Sexuality, and Women's Studies, Director of Gender, Sexuality, and Women's Studies Program, Bowdoin College

"Many students come up with a rapid answer to a question. Critical thinkers may come up with a rapid answer but don't accept it, and then are skeptical of their own answers when they have a perspective. They are critical re-thinkers. They can then visualize what happens next and imagine a future or outcome of a decision. That process is the hallmark of a critical thinker."

— JAY NEWELL,
Professor, Greenlee School of Journalism, Iowa State

"Critical thinkers are willing to ask a lot of questions. They work really hard and appreciate the struggle to wrestle with hard questions."

— JULIE HOLLAND MORTIMER,
Professor, Economics, Morrissey College of Arts and Sciences, Boston College

"Critical thinkers are creative. They think about a different way to look at the data, see data relationships or potential explanations we haven't considered before. Often the data will tell you the what, but not the why. A critical thinker will ask that next question and will go down a rabbit hole because they are just curious, and companies need this. Critical thinkers will rely on their team — our students do a lot of group work — to help them solve a problem relying on different perspectives. Finally, that critical thinker should be concise when communicating yet share their findings in a conversational language."

— AMY JO COFFEY,
Associate Professor, College of Journalism and Communications, Program Director, Masters of Audience Analytics, University of Florida

"At a Jesuit university, we have been trying to teach critical thinking since our founding. When teaching data and analytics, we strongly emphasize decisions based on quality input. No matter how good you are individually, that decision will be bad if it is predicated on bad information. It's important to validate the information you have through group work. Individual work can cultivate analytical thinking. However, being open to other perspectives forces students to get out of their comfort zones and expands how they might approach a problem where they don't, for example, survey people for a market research study who look exactly like them. Critical thinking is really hard to teach. It is a slow process, and we do this in increments where we expose our students to different views. Showing them things that are philosophically provocative gets them thinking differently."

— MARCIA FLICKER,
Associate Professor, Gabelli School of Business, Fordham University

"Students who want to work in the analytics field must have strong curiosity about the data. They are willing to get their hands dirty to explore patterns in the data using various tools. This is part of what we call intelligent curiosity, where they are eager to learn and try anything to solve problems using data."

— JIA LI,
Associate Professor, Coca-Cola Rising Faculty Fellow, Wake Forest University

"Critical thinkers are a hot commodity. However, they must also be able to function in teams and communicate well — we constantly work on the ability of our students to conduct both quantitative and qualitative analyses to balance varying perspectives."

— CAN USLAY,
Associate Professor and Vice Dean for Academic Programs and Innovations, Rutgers Business School

"I find that strong critical thinkers are both very strategic and social. They are strategic in terms of their career strategy when they realize what they want to do early on in college and become incredibly focused to create internship and job opportunities for themselves. On the social piece, they have a complete LinkedIn profile listing their skills and often have more than 500 connections on their LinkedIn. They are usually building that network by attending industry events and following up with guest speakers that professors invite to class. Their success is orchestrated by taking a deliberate approach to building their profile within school and upon graduation."

— SHU-CHUAN (KELLY) CHU,
Associate Professor, Public Relations and Advertising, College of Communication, DePaul University

"Critical thinkers take charge of the data when writing their essays. A student might be faced with tons of statistics where they can't put the input into a mathematical equation. It's important for them to choose the data and extract a story from it that captures in prose something non-obvious about a piece of history a student might be examining."

— PAUL FREEDMAN,
Professor of History, Yale University

"Oftentimes, the pace of getting things done prevents us from honoring silence as a time for us to think. We (as faculty) often don't structure this time because everything is outcome-oriented. We ask our students to listen to 25 minutes of slides. We then create an activity for them to apply this learning and supplement that with experiential content outside of the class. There is often not enough time for students to just think. A big part of critical thinking is the need to practice thinking.

— SALEEM ALHABASH,
Associate Professor of Advertising and Public Relations, Michigan State University

"When I do my evaluations with students, I review their in-class performance and active participation. Have they demonstrated curiosity and passion along with dedication to do a deep dive with the questions they have asked? What is the depth of the detail that they have gone into? Have they incorporated course content and concepts to apply to real-world applications? When I hear a question that is relatively basic, I will facilitate a class conversation that begins with providing another question to see what direction and references students share. I encourage students to be prepared to ask additional probing questions that will provide the right framework for the strategic problem or opportunity. This will include a thorough review of course content, including articles, video, and text assigned as well as staying current with relevant business news. This will support their ability to critically evaluate the issue or opportunity.

— SANDY BECKER,
Lecturer, Columbia University

"Critical thinkers should be able to think across disciplines. Their analysis and assessment of situations are not pigeonholed within a marketing or advertising role but can see how decisions affect other functions within an organization. A lot of the students get educated to think within a silo. This is where critical thinking comes in, so they can think outside of their own discipline."

— SUJAN DAN,
Associate Professor of Business, Rhodes College

"Students with critical thinking skills have strong innate motivation. They are innately curious and have a strong drive to push themselves. We give them this Google Analytics assignment, and even after that assignment, they don't stop there. They tend to pursue more about the topic by reading widely from their chosen discipline but other disciplines as well. They are into other fields like art, architecture, and design, and they want to bring those perspectives into the conversation."

— YVONNES CHEN,
Associate Professor, School of Journalism and Mass Communications, University of Kansas

INDUSTRY PERSPECTIVE ON CRITICAL THINKING

"The number one most important attribute is curiosity. The reason is because curiosity reflects someone who is self-motivated to keep their skills as sharp as possible. They love to learn, and with that curiosity, they are the ones who are going to push themselves to figure out what is that story to the problem we are looking to answer."

— DAWN HAVILAND,
Director, Consumer Insight, Measurement and Analytics, The Walt Disney Company

"There is a healthy skepticism that strong critical thinkers exhibit. They challenge the assumptions of what is presented and don't look to skip steps to jump to a conclusion as they know they might end up in the wrong place. They then cull through the forest to find the trees without getting distracted. What they find is the cohesive underlying pattern, and don't get bogged down in the extraneous detail, to find the one to three things that the client should do."

— HILARY DECAMP,
Chief Research Officer, LRW

"Critical thinkers ask a lot of questions. They don't begin the work until they understand the problem and can translate this problem into business-centric terms."

— MICHAEL HORN,
Chief Data Officer, Huge

"*There is a term that we have been using that we have pinpointed in certain people, which is intellectual curiosity. You need a person who is naturally curious to dig into things and figure them out. You have to be curious to say why, why, why. It's that curiosity or questioning when the results come in. Very rarely is the output from the model perfect the first time. The machine might do it correctly, but the inputs are wrong, and it's up to that person to say, 'Hmmmm, this doesn't make sense. How do I figure out why is it saying this and how do I adjust it so that it makes sense?'*"

— ANALYTICS EXECUTIVE

"Critical thinkers are inherently curious. They want to know why. They don't want to stick to simply answering the request; rather, they ask a lot of questions, so that they can put the problem into a rational framework. That approach helps them drive towards a business result. For example, in a campaign to promote a new credit card, a marketer might write the creative brief to highlight the key benefits of the product. Someone who is a critical thinker will be tying this brief to the value it is driving for the business. What is the segment we are targeting and why? What data do we have about that segment? What do we know about competitors? A critical thinker uses multidimensional thinking that drives true business impact.

— KATE KENNEY,
Director, Global Operations and Strategy, Citi

"*Critical thinkers can pinpoint the issue and peel back the onion to get to the why. It's about questioning why senior leadership, for example, asks for a specific report. Why is this important? What do they need to know? What is the root cause of that business problem? It's great to understand the big picture but we get content and data from everywhere so it's important to dig in and share the most relevant pieces of data that can help answer that question.*"

— LUISA MARTINEZ,
Senior Research Manager, Media Planning and Programming, Univision Communications

"Critical thinking is crucial when approaching analytical problems. It's not just about computational competency but also how to contextualize and interpret the data. Then, analysts need to think about the business implications and what those implications mean when they interact with executives. Analytic professionals need to be prepared to think on their feet and have a point of view, which is what I try to emphasize with my team."

— RICHARD SHAKARCHI,
Managing Director, Marketing Analytics and Insights, TD Ameritrade

"Showing critical thinking skills is about acquiring experience. It is hard to just learn it. You must do it. It's about making a ton of mistakes and learning from those mistakes. Flexing critical thinking skills is a combination of the right brain and the left brain. You can't make business decisions just based on data analytics without having some understanding of the business. On the other hand, you can't make business decisions just based on understanding of the business and not be supported by data analytics. While mastery is difficult, at the very least, it's important to have an appreciation of both aspects of creative thinking combined with data analytics."

— CHARLIE SUNG SHIN,
VP, Strategy and Analytics, Major League Soccer

"Critical thinking is thinking beyond the things that machines can't think of. It is where we apply our creativity to the analysis. How do we think about the factors that are existential to what the numbers say? There are softer factors that help shape a decision beyond a number that a computer might generate about, for example, social media sentiment."

— DAN MCKINNEY,
VP, Data and Analytics, Entercom

"Curiosity. Critical thinkers want to know the why. Why did this happen or what is this about? It's the ability to step back and understand how the pieces come together. Then, based on this knowledge, is there something that we should have done differently? After digging through this data, they can extrapolate the key elements of

that story and share that with me. What I bring to my teams is critical thinking. I train my people to ask the question of why the client is asking a specific question. Then, what is the question beneath the question? What is the business decision they are trying to make? This mindset helps us shift from being order-takers to problem-solvers."

— LISA BRADNER,
General Manager, Analytics, Yieldmo

KEY BARRIERS

Core to this entire process is the application of critical thinking. Several factors have made it difficult for the next generation of talent to have the flexibility to apply critical thinking to a wide range of problems.

TECHNOLOGY FACILITATES IMMEDIATE (BUT OFTEN NOT THE RIGHT) ANSWERS:

"Students can get all of their answers from Google. They don't have that intrinsic need to dig to find information. It all can come to them. Even if students have perfect GPAs, great SAT scores, and are excellent writers, they haven't been trained to find information, as they expect information to come to them. It is a struggle to get talent for the local agencies who can take the initiative to figure things out and not sit and wait for something to come to them."

— ANTONIO BANOS,
Faculty and Associate Director, Institute for Entrepreneurship and Innovation, Neeley School of Business, Texas Christian University

EDUCATIONAL PEDAGOGY TO FOCUS ON GRADES:

"Critical thinking is a hard skill to teach as it doesn't fit the high school undergrad rubric, which is more about memorizing to get an "A" in class. Students learn from an early age to play it safe, which discourages critical thinking. You learn more about being wrong than mostly right and being safe which makes it difficult to encourage critical thinking where we debate the answers and showcase how subjective data really is."

— MATHEW CURTIS,
Clinical Associate Professor, Annenberg School of Communication, University of Southern California

STUDENTS UNWILLING TO GET OUT OF COMFORT ZONE:

"Selective colleges and universities enroll high-performing students from high school. Numerous studies (including Pew Research 2018) show that young people are very conscientious and grade-conscious, which can make them risk-averse about pursuing activities where they might not succeed. I believe that the stigma attached to getting a lower grade (below a B) prevents some from pushing outside of their comfort zone as it risks poor credentials on their academic record. This internal pressure is reinforced by parents' expectations about how grades reflect the value of their tuition spending and from employers who establish GPA thresholds (3.5+) for job applicants. Subjects like analytics are viewed as challenging, and some students whom I mentor are hesitant to enroll in these courses. I try to encourage them by pointing out that the risk of not having this critical skill set for today's marketing professionals outweighs the potential downside of getting a lower grade than what they might be accustomed to receiving."

— DEIRDRE TRABERT MALACREA,
Professor of Practice, Marketing, College of Business, Lehigh University

GENERATION HAS BEEN "SPOON-FED" INFORMATION:

"Today's typical college students have been spoon-fed information throughout most of their education. When giving them an assignment with some degree of ambiguity, you can see their apprehension in how best to approach the task. Oftentimes, they don't know where to begin."

— Michael J. Clayton,
Senior Professorial Lecturer, Department of Marketing, American University

SILOED APPROACH TO CURRICULUM DEVELOPMENT:

"Academic institutions tend to be siloed. For example, computer science and statistics, two departments we work with, have rigid curricula. It is difficult to develop cross-departmental curricula that would benefit the student who is looking to have a blend of analytics and creative skills graduating from our school."

— JAY NEWELL,
Professor, Greenlee School of Journalism, Iowa State

VII.
THE ROLE OF CRITICAL THINKING IN DATA AND ANALYTICS

THE ROLE OF CRITICAL THINKING IN DATA AND ANALYTICS

Data can play a crucial role in making key business decisions. The data itself doesn't make that decision. People ultimately make those decisions. There is a process where the data becomes accessible and useful to make those decisions, which may include:

- Where is the data sourced?
- How is the data being structured?
- Do we have the right skill sets for securing and interpreting this data?
- What insights can be gleaned from the data?
- What is the story that we are telling from this data?
- Who are we presenting this data to?
- Are they the right people to present the data to?
- Will they understand the value of this data?
- What kinds of key decisions will be made from this data?
- How will those decisions influence business growth?

From a marketing perspective, data can have a massive impact on decision-making, from how media dollars are allocated to greenlighting a TV ad to go to market after testing its effectiveness through research. What is important is that data supports a decision that is helping answer a key business problem. As Juan Solana, director, advanced analytics at Walmart, said, "What is most critical is to correctly define the business problem and what are the key business questions to answer that drive that problem. We then put the necessary effort to source and manage the data using analytical tools that answer those business questions."

For illustration purposes only, the following table helps break down decisions that a retailer might make to boost sales during its important Q4 holiday season:

ANALYTICAL TOOL USED	DECISION MADE	BUSINESS PROBLEM
Media Mixed Model	Increase media dollars during Q4 season	How do we maintain our share of voice in an increasingly competitive media landscape?
Ad Testing Effectiveness	Greenlight a TV ad featuring a new promotion after testing well in research	How do we break through with consumers in a crowded marketplace when competitors are offering similar kinds of deals?
Geolocation Targeting	Allocate more spend to mobile in key geographic regions targeting younger demographics	How do we convince a younger demographic who traditionally shops online to come in store?

KEY COMPONENTS OF DRIVING DECISION-MAKING USING DATA

Research has identified four key areas to drive decision-making to answer a business problem leveraging data as seen in Figure 10:

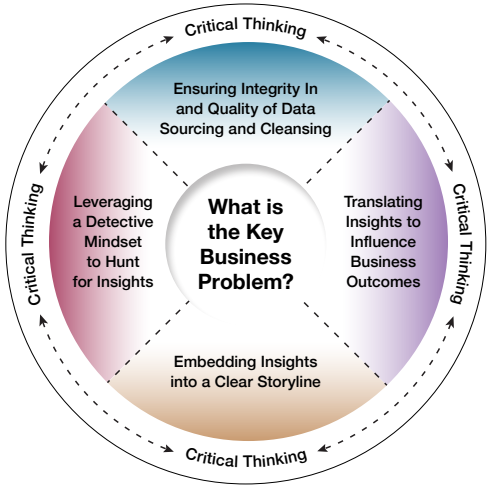
1. **Ensuring Integrity in and Quality of Data Sourcing and Cleansing**
2. **Leveraging a Detective Mindset to Hunt for Insights**
3. **Embedding Insights into a Clear Storyline**
4. **Translating Insights to Influence Business Outcomes**

ENSURING INTEGRITY IN AND QUALITY OF DATA SOURCING AND CLEANSING

Having the right data is often important to making a quality business decision. For many organizations, data is readily available through key partners. For example, CPG companies may rely on Nielsen or IRI

FIGURE 10

CRITICAL THINKING GOVERNING THE DECISION MAKING LEVERAGING DATA AND ANALYTICS



to capture market share data. For ad testing, many companies may rely on the methodologies and benchmarks from IPSOS or Millward Brown to evaluate and project market success for a TV commercial. These partners invest significant analytical resources to ensure the data they are sharing with their clients is of the highest quality.

With the explosion of data sources, a significant number of companies are investing in their own marketing analytics capabilities to determine how to take advantage of what is now available to them. The data is incredibly "messy," requiring the right kind of technical skill set to find ways to make sense of these unstructured inputs. Depending on the task, that skill set often will require understanding key coding languages (Python, R, SQL) to process this data through sheer computational power.

The underlying theme, whether a company is working with a partner or building an internal analytics capability, is that there is an entire process to get the data to a point where it has integrity. Integrity, however, does not translate into usability. Integrity means that the data can be trusted to be acted on by the organization because it has been vetted with analytical rigor and discipline.

"The way that I think about it," said Mary Brewer Blanks, director, marketing capabilities at Red Hat, "is 'Bad Data In, Bad Out." Ciju Nair, senior director global commercial analytics at Kellogg Co. and adjunct faculty at Northwestern University, added, "We get inundated with data, so it's important to have the right data from the outset, from when/how we source it all the way through the to the application of that data to a business use case. If we are not disciplined at every stage, we lose the integrity and fidelity of that data. Garbage in, garbage out."

LEVERAGING A DETECTIVE MINDSET TO HUNT FOR INSIGHTS

After ensuring the data quality, the next phase is to determine the insights that can be generated from this data. The challenge in getting to this next step is a mindset that the analytics community may have when looking to generate an insight. Shoshana Collins, manager of data science at Red Hat, explained, "There is this impulse of 'I want to show everyone what I did to get to this point. I want everyone to understand how much work went into this.' Because from an analytics perspective, that process establishes credibility and builds trust. But when you think about a designer, they don't go through and show every sketch and rough draft. They just show the beautiful final product. Analysts need to develop the practice of distilling the essential insight down to what is needed to make a decision."

Report creep is what many organizations are looking to get away from, which just captures the data in a very static way. Ed Lucas, VP of business analytics at Toll Brothers, shared, "There is a prevailing perspective that the main purpose of analytics is report generation versus analysis and actionable insights. It's a culture shift where we move from generating reports in Excel and saying 'I'm done, here are your numbers,' to having that data available for making decisions in real time. We need to get people thinking about analytics as a forward-looking strategic business driver versus a backwards-looking tool to substantiate results."

Dustin Engel, VP of corporate development and investments at PMG, highlighted the shift from report generation to insight creation that the agency undertook. "More than five years ago, we saw a significant amount of time being spent on low-value data activities. It was very practical where we were building a report for a client where we sourced from three different platforms. When we looked at it, we basically had to keep throwing bodies at the problem where there was not going to be high value in delivering insight or action that drove a meaningful business outcome for the client. We decided to invest the time and resources to build a data infrastructure that automated and curated vast amounts of data among those multiple data sources. We then could allocate more time deriving more meaningful insights in this data set instead of focusing this time on exhaustively generating reports."

But in conducting quantitative analysis, there is a balance of discipline and creativity to approaching the data set and unlocking the value from it. Dan McKinney, VP of data and analytics at Entercom, explained, "The way that I think about analytics is that I am a detective where I can go and piece information together to provide an explanation of a business problem that is then backed by data and insights."

Abby Mehta, SVP, Marketing Analytics & Insights at Bank of America, adds, "It's important to make sense of the numbers instead of just posting them.

The "why" and the "so what" behind the data rather than just that this number went up while this went down, is what I am looking for. It's a huge missing skill that prevents us from getting into the insight behind the numbers"

Analytics isn't just about numbers. It's a language that tells the story of human behavior. Being a detective requires a lot of spadework to put all of the pieces together that build up to this bigger picture. It is that bigger picture that helps the organization get on the same page around the insight without getting bogged down in the minutia of how the insight was derived.

EMBEDDING THE INSIGHTS INTO A CLEAR STORYLINE

Insights need to be contexualized against what problem the business is facing. The insight helps shift the perception of the organization from one way to look at something to a different way. The story around why that insight matters and how it affects the business is what the analytical community most struggles with.

Luisa Martinez, senior research manager, media planning and programming at Univision, shared, "I never studied to be a storyteller but I became one after being in media for 14 years where I learned that data goes way beyond just being a reporter. It's important to know the audience, who you are catering to, and how that research might affect decision-making."

Jenny Gomez, director of product marketing at TiVo, shared a similar sentiment: "The facts shape the story of that marketing campaign. I love delving into the numbers to understand what those facts are even though my background was not in analytics. What it does is to give me a foundation to tell the story."

Getting that storyline crystal clear is of critical importance. Fran Sapir, manager of marketing enablement at Red Hat, pointed out, "There is a tendency to build stories that try to include every possible insight because there is always more to share." She continued to explain: "As a result, I think people can, very quickly, become overwhelmed. We have a responsibility to try to be empathetic to how they will receive this information and adjust accordingly."

A few tactics that several analytics executives have used:

KEEP IT HIGH-LEVEL:

"Most executives don't want to review five spreadsheets with three different ways of looking at the business problem to get to a decision. They want the analytics practitioner to do that work for them and provide them with a concrete recommendation, or with a shortlist of choices accompanied by a clear, concise explanation of why one path might be better than the other to tackle the business problem."

— SHOSHANA COLLINS, Manager, Data Science, Red Hat

BRAND YOUR TEAM:

"When I came on to the team, I wanted to change the image of what our group does. We called ourselves BA/DA/SS: business analytics, data activation, strategic support. The idea was to make it fun and showcase to our partners that we were accessible and fun yet could deliver key data needs for the business."

— ASHLEE WEISSER, VP, Analytics and Insights at Bloomin' Brands

SEPARATING THE SIGNAL FROM THE NOISE:

"What I tell my team is to understand how the data helps us in terms of decision-making. Senior executives don't care too much about the methodology. They are not fascinated by the data itself. They are only interested in data that enables them to make high-level decisions with more confidence. What I coach my team is to separate the signal from the noise. There is so much data that we need to apply critical thinking to identify what the most important insights are, which are few and far between. We want to know what is going on, and if what we are doing is working or not working, and most importantly have a plan for what we should do about it.

— TONY FOLENO, SVP, Strategy and Evaluation, The Advertising Council

Storytelling is as much as what to share as well as what not to share. What is crucial is for that story to drive toward a business recommendation. That recommendation drives action that an organization to take to improve its business performance. The insight is what drove the recommendation to solve the business problem. The next phase in the process

is to ensure that the insight can be shared in the proper forum for key stakeholders to review that insight and act on the information presented.

TRANSLATING INSIGHTS TO INFLUENCE BUSINESS OUTCOMES

Having a powerful story centered around a core business insight doesn't necessarily drive organizational action. Michael Hugo, senior director of marketing, analytics, and growth strategy at Reynolds Consumer Products, recounted, "When evaluating a specific marketing program, I determined that the return was not worth the investment and made the recommendation to discontinue the program to the brand. The CMO was puzzled why this program was then still in another brand director's plan after he had seen me make that specific recommendation for its removal. It was made clear that it was my role to make sure that we don't repeat these kinds of programs again. I needed to inject myself more into each brand's business plans and be responsible and accountable for changing the behavior of my key stakeholders, even without direct control of their spending."

Insights generated in a vacuum will not achieve a desirable outcome to change organizational behavior. That story needs to influence key decision-makers who might then make a resource allocation decision, for example, based on what is recommended in a presentation. With a marketing problem, Mark Kaline, the SVP of data marketing and analytics at the ANA, indicated there is a growing need for a translator to put insights into business terms where the CMO can make actionable decisions. Mike Bentley, global chief strategy officer at GTB, agreed that "without that layer of translation, that data and insight can get dismissed if we are not talking the same language as our business stakeholders."

Mohammed Chaara, chief data scientist at UPS, advanced this translation idea: "I think about communications as a spectrum of languages when, for example, you have a creative marketer, an engineer, and mathematician working on a business problem together. They all speak in different languages, which is why communication becomes so crucial. If the audience during a presentation uses a more creative language, then you need an analytics translator who can understand what a mathematician is saying so that a creative person can understand it in terms where they can act on that idea. There is a certain emotional intelligence that governs translating these different languages."

Research participants share strategies that have helped them drive business outcomes:

- **Become the Chief Sales Person:** Ultimately, the value of analytics must be unlocked to influence decisions that can drive better business outcomes. It's how, for example, Robert Reyes, director of analytics, consumer, and marketplace insights at Nestlé S.A., helped his organization refocus digital media targeting efforts that overspent in certain segments and tied it more closely to product sales. He explained, "I have used analytics as a tool to improve marketing. I'm not paid to play with numbers. I need to arrive at data-driven recommendations to influence decisions. My livelihood depends on my ability to sell to the chief sales person. If I'm not influencing in this way, the value of my group diminishes."
- **Expect that Organizational Data Literacy Takes Time:** Shoshana Collins, data science manager at Red Hat, shared, "We talk a lot about data literacy in the context of learning overall. Just think about how many years of language we take in school. It takes years to drill those foundational concepts into our thinking. So it's unreasonable to expect that we can build real data literacy with just one stats class. Data needs to be woven into the organizational fabric so that people are deeply engrained in the habit and practice of interpreting data, where drawing insights from data is the critical part of someone's job responsibility. Data is everywhere. And that needs to be woven into the foundation of all of these courses to make data literacy relevant and intuitive. That reinforcement is crucial to the marketing function so we are able to use data as an organization to be more powerful and effective."
- **Understand Centers of Organizational Power:** Every organization has an inherent balance of power where decisions are made and how budget is allocated. An analytics executive at a technology company explained that "it tends to be the engineers and analytically driven folks. Data becomes the currency in which tech organizations speak, whereas that might not be true in other kinds of organizations where that language translation must occur."

- **Build Cross-Functional Relationships:** Marketing influence extends across the enterprise, affecting other functions. This is why Jennifer Brett, head of North American insights, marketing solutions at LinkedIn, encouraged her team to connect with their cross-functional counterparts. "It's important to get to know your own team, your managers, and other people in different groups. Get to know someone on the sales side. What do they think about marketing? What are their core priorities? Similarly, get to know folks in finance to understand how they think about how to connect marketing investments back to sales. Relationships are so crucial to your success both within and outside of your department."
- **Focus on Value Creation, Not Vanity Metrics**: Brett continued: "Too many marketers are sharing vanity metrics like click-through rate or engagement rate. They are not showing value of the marketing organization. To show value, you need to get down to things like how many new customers we got from leads and how much revenue they added to the business. It's important for the marketing organization to see that they are adding value to the business instead of being seen as a cost center."

ANA RESOURCE DEPLOYMENT TO SHARPEN CRITICAL THINKING

KEY PHASES	SAMPLE OF ANA CASE STUDIES (WITH MORE THAN 10,00 PIECES OF CONTENT)	SAMPLE OF ANA MEETINGS (WITH MORE THAN 250 MEETINGS ANNUALLY)	SAMPLE OF ANA TRAINING (WITH MORE THAN 100 TRAINING MODULES)
Ensuring Integrity in Data Sourcing and Cleansing	• Land O' Lakes • Dollar Shave Club • Bank of America • Trunk Club • McCormick	• Analytics and Data Science Committees, One Day & National Conferences • Data and Measurement Committees, One Day & National Conferences	• Measurement and Attribution • Advanced Measurement • Customer Database • Data-Driven Analytics and Testing
Leveraging a Detective Mindset to Hunt for Insights	• Best Buy • Campbell Soup • Nationwide • Pearle Vision	• Analytics and Data Science Committees, One Day & National Conferences • Data and Measurement Committees, One Day & National Conferences	• CRM Implementation: Testing and Profiling • Customer Journey Mapping • Understanding Consumer Insights • Implementing Consumer Insights
Embedding Insights into a Clear Storyline	• Symantec • NASCAR • Motorola • MGM Resorts	• Analytics and Data Science Committees, One Day & National Conferences • Data and Measurement Committees, One Day & National Conferences	• Storytelling through Data • Brand Storytelling and Effective • Consumer Connection • Presentation Writing and Delivery to Convey
Translating Insights to Influence Business Outcomes	• Scotts Miracle-Gro • Mars • Northwestern Mutual • Kellogg's	• Analytics and Data Science Committees, One Day & National Conferences • Data and Measurement Committees, One Day & National Conferences	• Critical Thinking for Marketing Success • Brand Activations that Drive Results • Effective Writing, Critical Thinking, and Presentation Writing • Marketing Analytics Certificate Program

VIII.
CLOSING REMARKS

The AEF's mission is to serve as the bridge between academia and industry. That bridge is well-travelled through programs that the AEF has:

- **Campus Speakers Program:** More than two hundred times a year, the AEF sends industry speakers across that bridge to campus.
- **Visiting Professor Program:** Across that bridge, academia will send more than 60 professors to companies in New York, Chicago, and Los Angeles through the AEF Visiting Professor Program.
- **MADE Program:** Universities will send more than 60 of their brightest students to intern for the summer at ANA member companies annually through AEF's Marketing and Advertising Education (MADE) program.
- **1-Day Conferences:** Five times a year, the AEF organizes conferences on campuses such as Yale, Fordham, Georgia Tech, Rutgers, and University of California, San Diego.

SCALE ACHIEVED THROUGH PRINCIPLES, NOT PRESCRIPTIONS

Creating this bridge serves to inspire students, energize industry executives, and enable greater access for academia to industry. What happens across that bridge is transformative. Curricula start to change. Professors have new research ideas. Students enter the industry more prepared. Companies tap into new recruiting pipelines. While these programs are a start, they only represent a fraction of what is happening on campus today. To make a true lasting, sustainable and measurable impact, more scale is required.

Those key focus areas will create scale include:

- **Best Jobs Ever Campaign:** Our goal is to continue the Best Jobs Ever campaign to acquaint the next generation of students with the unique opportunities that the marketing and advertising industry provides.
- **Marketing Case Study Library:** Making marketing and advertising case studies available to academia creates an opportunity for all professors to access this content on an ongoing basis for the benefit of their students.
- **Research Studies:** The AEF has developed an annual disconnect series surveying industry, academia, and talent. The intention is to continue this series and continue to bring the different stakeholders together through new programs grounded in research.

FINAL THOUGHTS: INTERDISCIPLINARY LEARNING APPROACH

The AEF recognizes that every school and every company faces its unique challenges. Having a set of prescriptions to hand out about. Having a set of prescriptions is not the answer.

What is clear is that the role of data and analytics cuts across all disciplines, both industry and academia. Interdisciplinary learning is crucial. Problems are not just marketing problems that need to be addressed by marketing only. Marketing must enlist HR, IT, sales, finance, and other functions to solve business problems that are led by marketing.

Data and analytics help with the marketer's ability to lead the organization. Education becomes crucial to this as, Michael Horn, chief data officer at Huge, shared. "Roles are becoming more fluid. The tricky thing is how you educate for versatility. What drives innovation and creativity is diverse teams working together in an interdisciplinary fashion. Adapting to this fluidity is crucial where there is not one fixed way of doing things but there can be continually evolving and improving approaches."

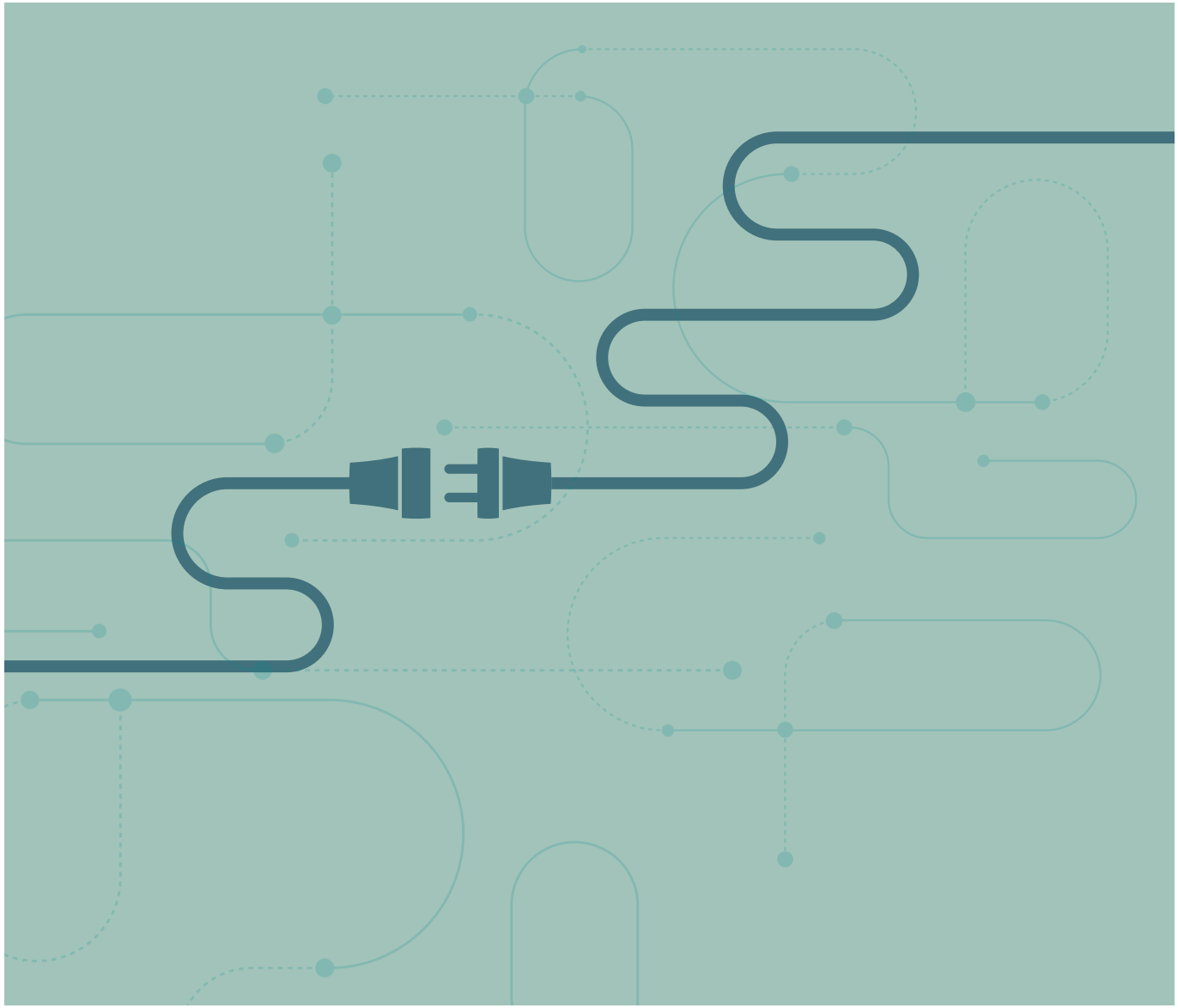
Many schools, particularly in the liberal arts sector, embrace this interdisciplinary approach to learning. Specific to data and analytics, two professors commented on this trend:

"UCSD recently unveiled a $75 million data science institute. We work with them as collaboration hub partners to facilitate cross-collaboration with more computation-heavy disciplines. This interaction greatly benefits our MSBA students, but also our Rady business faculty, who collaborate on research and instruction."

— RAYMOND PETTIT,
Executive Director, Masters of Science in Business Analytics Program, Rady School of Business, University of San Diego

"This is the future direction for academic programs, where there is a merging of computer science and communication, among other fields. However, academic programs change slowly. Universities change even slower. The first step is to recognize that data and analytics is a collaborative effort that isn't owned by a single major. How do we start to work together in a way that breaks down these silos?"

— MATTHEW WEBER,
Associate Professor, Hubbard School of Journalism and Mass Communication, University of Minnesota

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