Data Analytics for Managers

Idea In Short

Managers need not be quants, but they must understand regression, p values, experiment design and data cleansing. Clarify the purpose before starting, keep analysis simple and stay intellectually honest so decisions rest on evidence.

Good Decisions Require Data

Without robust thinking and analysis grounded in data, decision-making is just guessing. Even if you are not a quant, you need to explain what a regression is and how it works. Most people have forgotten undergraduate statistics, but understanding a p value remains useful. Managers who cannot articulate their analysis cannot defend it to others.

The world is awash in data thanks to converging technologies. Enterprise Resource Planning [ERP] systems from a decade ago are finally paying off. The Internet of Things [IoT] spins off data from watches, lightbulbs and cars. Optical Character Recognition [OCR] and Natural Language Processing [NLP] keep improving. Direct-to-Consumer [DTC] channels and Application Programming Interfaces [APIs] bring software closer to plug-and-play integration. 1 distills these trends into 223 pages of practical guidance for non-quants.

Clarify the Purpose Before Starting

Unless you download a standardized canned report, ambiguity lurks in every analysis. What data do you need? What time range? What confidence level? Who can help pull the data? What does clean data look like? Vetting these questions in your head reduces wasted time and frustration. Take a minute to crystallize your thinking so you can go faster later.

Keep It Simple and Explainable

Fortune 500 professionals with dedicated analytics functions get enamored by data lakes,

Hadoop and Snowflake. Even if you do not run the analysis, you need to understand it. Frank Friedman, a Deloitte Chief Financial Officer, said if he cannot articulate it, he cannot defend it to others. The Chief Executive Officer of TD Bank Canada insisted managers explain the math behind financial products, which helped the bank avoid toxic leveraged derivatives that caused the 2008 financial crisis.

Stay Intellectually Honest

Useful insights take effort and often end in failure. Hypothesis-based consulting is the right approach because you cannot analyze everything, but it means you are often proven wrong. It is tempting to take shortcuts and use only the data you have. Professionals must commit to a plan, be transparent about observations and variables and avoid running experiments until they get desired results. 2 shows that coefficients, confidence intervals and residuals help managers separate fact from wishful thinking.

Understand Regression Analysis

The HBR guide describes regression as the workhorse of analytics. Regression analysis is a statistical technique to determine the relationship between a single dependent variable and one or more independent variables. In less wonky terms, it helps you understand to what extent factors A, B, C and D affect outcome X. No regression is perfect, so there is always an error term. The smaller the error term, the better the explanation power of the formula.

Adding more variables shrinks the error, but a formula with 2,000 variables is useless. Consider a gas station owner who wants to know what affects sales. You might input weather, day of the week and the price difference with competitors into a regression formula to see which factors influence sales most.

Ask Better Questions With Analytics

Thomas Redman, known as the Data Doc, said the goal is not to figure out what is going on with the data but what is going on in the world. Managers should treat regression and analytical tools as a means to ask better questions. Which variables matter most? Which can you ignore? How do variables interact with one another? The best analysts use data to challenge assumptions rather than confirm them.

Correlation is not causality, because black umbrellas do not cause rain. Seasoned consultants know trend lines are rarely straight. Market share saturates, demand elasticity shifts and slopes change over time. Whether you measure customer lifetime value, mortgage amortization or unit profitability, the curve bends.

Get Good Data and Cleanse It

Good data is abundant, easy to access, cheap, unbiased, structured and self-explanatory. Since that is unrealistic, managers evaluate trade-offs. Can you repurpose publicly available or validated data sets? Can you start with structured data, clean it and work from there? Do you have a representative sample size and known source definitions?

Nothing is worse than analyzing bad data, because it is like cooking with rotten ingredients. Look for missing values, convert text to numbers and fix typos. Identify outliers and determine their relevance. Cross-walk data carefully while keeping an audit trail of edits. Document data definitions and get buy-in from stakeholders before presenting analyses. Managers who skip cleansing risk presenting insights that collapse under scrutiny, which damages credibility and undermines decision-making across the organization.

Stay Involved in Experiment Design

Business owners must help define key questions and hypotheses while trusting the analytics team. Study a treatment group that looks and feels like your target. Randomize people into treatment and control groups rather than letting them self-select. Wait long enough for a good sample size, limit metrics to something reasonable and retest results.

Use a big hammer when piloting experiments because weak signals get lost in noise. You are testing a hypothesis and can follow up with nuanced experiments later. The eventual implementation will likely get watered down, so start with a strong intervention. 3 are the most basic form of this approach, where you give the same thing to two groups with one variable changed.

Tell a Story and Prevent the Yo-Yo

Data does not explain itself. Consultants must understand the business context, structure choices logically and give executive clients the courage to act. Chris Anderson of Wired

magazine noted that petabytes of data let us say correlation is enough. Storytelling with data turns numbers into decisions.

Backsliding is common when projects end and no one watches, which is the anti-Hawthorne effect. Hardwire changes through automated metrics tracking and better data practices. Leave the place better than you found it, just as they taught you in school. Finding great data scientists means scanning user group memberships, hosting Kaggle competitions and verifying candidates can code and find a story in a data set. The best data scientists combine technical skill with business acumen, making them invaluable partners rather than back-office technicians.

- 1The HBR Guide To Data Analytics Basics For Managers
- 2Regression Analysis Explained
- 3A/B Testing And Randomized Experiments

Summary

Data analytics is a managerial discipline, not a technical sideshow. Clarify your purpose, demand clean data, design bold experiments and tell a compelling story. Regression, p values and A/B testing are tools that help you ask better questions and act with confidence. Leave the place better than you found it.