

SPECIAL ISSUE: TEACHING CASES

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Teaching Case

Ethics and Data Manipulation

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Abstract

According to the cliché, it's not what one says so much as how one says it. In the business world, those words ring particularly true. How one presents information can influence all forms of business decisions, from level of investment to expansion to downsizing and everything in between. This brings up significant questions relating to the manipulation of data and data integrity in general – particularly since the presentation of data is, in effect, the creation of knowledge. It is therefore vital to be able to look at data, its analysis, and its presentation, using an ethical framework. This article presents the students with two scenarios, one focusing on how data is presented and the other focusing on the credibility of the data. In both cases, the “clear” answer is to present the information honestly, but the looming question is “how?” Due to extenuating factors in both cases, students are forced to think about how a seemingly simple decision can have a significant impact on not only a business and its employees, but also the clients, customers, suppliers, and other stakeholders.

Keywords: Ethical Dilemmas, Ethics, Decision-Making, Research, Data

1. INTRODUCTION

When it comes to ethics and ethical dilemmas, only the major issues seem to hit the news – cover-ups, fraud, embezzlement, abuse of power, etc. As a result, other instances, ones that don't make the news, may not always be recognized for the dilemmas that they are.

Ethics is not simply what is *right* or *wrong*, nor is it *good* vs. *evil*. Binary choices such as those actually cloud the discussion because they risk adding judgment rather than simply seeking the best solution possible. In the cases that follow, the actors are asked to make decisions that

relate to the creation of knowledge, where lines should be drawn, and what consequences one has to be willing to accept.

Regardless of the field one is in, how one presents information determines how it is understood by the audience. What is shared, or not shared, impacts the final interpretation. As Mathies (2018, p. 90) notes, “there are multiple contexts and reasons” for how one uses data, and while in one instance the approach is ethical, in another, that same approach would be unethical.

While Mathies' article focused on data use in higher education, the concepts remain the same: those who provide information have a responsibility to provide it clearly, coherently, and completely. Without reliable data, the audience lacks the information to make fully informed decisions or draw accurate conclusions.

In the field of data science, the question on clear information does not just relate to what is written but also to what is shown. In the first case, data visualization is the issue. What happens when the information is presented honestly, but is drawn in such a way that affects the way the audience perceives it?

This leads to the second case, and the second issue: the question of reliable data. How much can one trust studies and their results, and how do deadlines, profits, and reputation affect the decisions one makes regarding the quality of data used?

2. SITUATION 1: GOOD DATA, BAD NEWS

On Monday morning, Lark Lawson, barged into her boss's office without knocking. Edie DeLuca glanced up, saw the stress on Lark's face, and motioned for her to sit down.

"Just tell me what's going on," Edie said. Lark shook her head and handed Edie a stack of printouts.

"I keep running the numbers and nothing is coming out the way that it should. Sales are down but customer satisfaction is up, and production costs are up... everything is wrong. The board is not going to be happy with any of this."

Edie held up a hand. "Let's start over again. What do you mean that everything is wrong?"

As Lark explained, Edie began to understand the new hire's panic.

Lark was looking at everything over the last four quarters, which were less than impressive (figures 1-3). If owners saw these numbers, Edie thought, things could get ugly – layoffs, canceled bonuses, smaller raises. Worse, if investors knew... she smiled at Lark.

"Let me think about this. Did you tell anyone else about the data?" Lark shook her head no. "Good. Keep it that way. If anyone asks, you're

still crunching numbers. Got it? Email me everything that you have. I want to look at it."

Edie got to work the minute she received the email. Quarter 2 showed a definite loss in sales, but Quarter 3 had a small uptick, and Quarter 4 had another small improvement. The problem was that the losses outweighed the gains significantly.



Figure 1: Quarterly Sales

Customer satisfaction, meanwhile, was slowly and steadily increasing. That was definitely a plus because it meant that they were doing something right. It was just a matter of pinpointing what it was and keeping on that track.



Figure 2: Quarterly Customer Satisfaction

Thanks to tariffs that were put in place during Quarter 1, production costs went up significantly. It wasn't pretty, but Edie was relieved to see that they dropped and leveled out by Quarter 3.

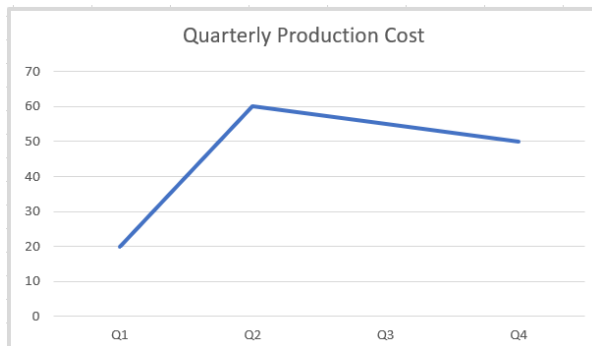


Figure 3: Quarterly Production Costs

If one took the time to think about the data, the numbers really weren't *that* bad, but at first glance, it did appear that the company could be in trouble.

Lark was right to worry, Edie thought. Presenting data from all four quarters would make upper management nervous about the current and the coming year. Hiding it wasn't an option, that would be illegal, but perhaps there was a way to spin it that would make things look better than they actually did.

Presenting the data

Using the data that Lark had provided, Edie created new graphs for the report. She knew that upper management had some initiatives to boost sales in place, and current data from the current quarter suggested that those initiatives were working. She also knew that they were negotiating with new suppliers in effort to bring production costs back down. She decided that she would present the data in a way that focused on the positive, which would – ideally – keep the owners and the investors happy.

The next day, she sent Lark her changes with a note:

Present all of the data in writing, add the attached information on initiatives to boost sales and reduce production costs that I attached. Be sure to use these new charts in your final report.

When Lark reviewed Edie's charts (figures 4-6), she saw data that presented a moderately successful company that was growing, gaining points in terms of consumer confidence, continually increasing sales, and cleverly reducing production costs.

But when she looked at how Edie manipulated the data, she got more than a little nervous.

While the numbers were accurate, they played to the short term and failed to provide a complete story.

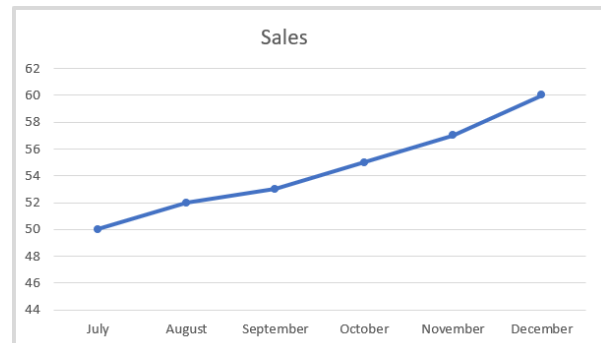


Figure 4: July-August Sales



Figure 5: Q1-Q4 Customer Satisfaction

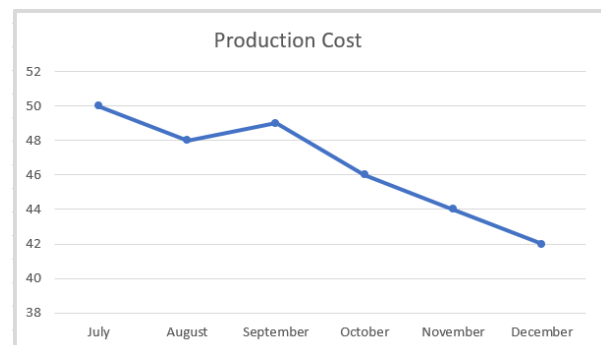


Figure 6: July -August Production Costs

In addition, the only visuals that would be used were ones that painted a rosy picture. Lark knew that most people would look at the charts and graphs and just skim over the written explanation.

She ran up to Edie's office. "We can't use these. The data isn't complete," she blurted out.

"Lark, have a seat and relax. It's not like we're lying about anything. We're providing them with

everything they need to know. It's not our responsibility to make sure that they read it."

Lark shook her head. It had been a while since her intro to management class as an undergrad, but she remembered the chapter on ethics and doing what was right. One didn't have to lie about something to be unethical. To her, these charts omitted significant historical information that management and investors had the right to know.

"I know that the onus is ultimately on the reader, but you have to remember that the reader trusts us to provide all of the pertinent information..."

"I am providing pertinent information," Edie replied, more than a little annoyed at being questioned by someone who was just hired a few months ago. How could someone so new to the company understand what this data meant?

The managers in the C-suite wanted to know that they would make money. They didn't care about the details. If she sent Lark's graphs upstairs, everyone would focus on the first two quarters and how profits were down. No one would read them and say "yes, but things are looking up." No one would ask what was already being done to remedy the downturn. Nope. They would just ask how to cut expenses further – and that usually translated to cutting wages, bonuses, overtime, and jobs.

"We are creating knowledge here, Edie," Lark said. "We are responsible for how people understand these numbers."

Edie shook her head. "Nonsense. We present it. They interpret it. Nothing more. I've been here for fifteen years and, trust me, upper management doesn't want to know what's going wrong. All they want is what's going right. It's our job down here to solve the problems – and we are. As you know, we're changing suppliers, so production costs will continue to go down. We have a few new promotions to boost sales, and even though it's slow, we're going to be fine.

"But," she said, leveling her gaze on the young woman before her, "we will *not* be fine if you send them your version of the data. They will want to cut costs – that means jobs, raises, everything. We are on track to get a cost-of-living increase this year, which is the first one in two years. But we might not if they think we

can't afford it. If you want to be responsible for that, just let me know."

Lark just sat there, letting Edie's words sink in. She hadn't thought about what the repercussions might be. "Would they really do that?"

"It's hard to say. From my experience, they aren't the type of managers who ask questions and have open dialogues with us. They just make decisions based on what they read."

"So we don't really know what they'll do."

Edie had to concede that point. "We don't. It's wholly possible that they will be okay with the data. But, at the same time, it's impossible to tell."

The decision

That evening, Lark pondered the situation as a whole. She had agreed to use Edie's graphs, but mostly because she was new, and Edie had seniority. The other reason, if she wanted to be honest with herself, was that she was still new and did not want to lose her job due to a bad review when they did her 90-day evaluation. The thought of finding a new job, again, was more than a little disheartening. This was her first "real" job since graduating with her bachelor's degree a year ago, and she was determined to keep it.

Edie's argument made sense – for Lark, the thought of being responsible for cutbacks of any sort was awful. She had made a few friends and knew from some of their remarks that raises had been either minuscule or non-existent these last few years. The fact that everyone was slated to receive at least 3% was welcome news.

What was nagging at Lark was the question as to whether or not the company could afford the raises. What if the low sales and high production costs made raises fiscally irresponsible? Surely Edie took that into consideration. Right?

The questions kept coming. What if the company couldn't afford the raises? While it would be horrible, wouldn't it be better in the long run? Or what if they kept the raises and laid people off instead? But Edie admitted that she didn't know what might happen. What if their worries were for nothing?

Then, just when Lark thought that she had enough to worry about, another idea popped to mind: what if she got in trouble for using Edie's graphs? What if she was blamed for manipulating the data, and they thought that she was trying to cover something up?

The whole thing was a mess, and if she didn't figure out what she believed and act on it, she would end up letting other people make decisions for her.

3. SITUATION 2: BAD DATA, GOOD NEWS

Meanwhile, across town at Research, Inc., Julie Hamilton was dealing with her own issues.

Six months ago, MultiCorp contracted with Research, Inc., to conduct extensive studies that would be used to guide a massive re-imaging starting next year. It was the largest undertaking the small research company had ever attempted, meaning that the pressure was on to not only succeed but to surpass all expectations.

The owner, Gil Hart, put Julie in charge and gave her more freedom than ever. "You're the expert when it comes to surveys," he said. "You have that knack for asking just the right questions, and your analysis is always spot on. Get a team of two or three together and work directly with Pat from MultiCorp. I'm going to step back and let you run with it. Just keep me in the loop."

And now it was Monday and MultiCorp expected a presentation on Wednesday, but thanks to this morning, it was wholly possible that the presentation would be the worst moment of her career.

For whatever reason, as she gave everything a final review, Julie decided to check the survey one last time. Rather than log in through her desktop, where she had several windows open already, she grabbed her phone and opened the survey.

It opened with no problem, but as Julie clicked through the questions, she realized that half of the images were missing from the options the respondents were to choose from. Trying not to panic, she pulled the survey up on her desktop, where it opened without issue. Relieved, she decided that it was her phone and that the issue was probably slow load time. Sighing in relief, she returned to the presentation.

When she reached a discussion on methodology, it clicked. Her phone defaulted to Chrome. Her desktop used Firefox. Hoping that she was wrong, she opened Chrome on her desktop. Then she opened the survey.

Half of the images were missing.

An hour later, Julie was sure that her career was over. Though she wasn't sure how, she'd certainly never forgotten before, she had neglected to verify the survey's compatibility with Chrome. As a result, she had no idea how many of the 4,573 responses were valid because she had no idea how many respondents had taken the survey using Chrome.

While she was tried to figure out how to manage the situation, Gil came in. "Working on the final presentation?"

Julie nodded. "Just making sure everything is in order." She would have to tell him, but right now wasn't the time. She needed to come up with solutions first.

"You said that the last survey just reinforced everything we already knew, right?"

She nodded again, wishing he'd leave so that she wouldn't have to discuss what she'd said or how fantastic the response rates were. She just wanted to close the door and hide from the world while she figured a way out of this debacle. Perhaps if she looked busy... Julie began shuffling papers on her desk. "I need to make sure that everything is, um, perfect."

Gil took the hint. "I'll let you get back to work."

She flashed him a smile that, she hoped, radiated confidence. "Okay. Hey, can you shut the door on your way out? Thanks!"

As soon as the door clicked shut, she buried her head in her hands, dreading the moment where she would have to tell him the truth – the last survey didn't reinforce anything. All it did was prove that his trust in her was misplaced and that the last three months had been a complete waste of time. She didn't even want to think about how much money had been spent developing and deploying the now-useless study.

Then again, who said he needed to know? She studied the numbers again. The results were

overwhelmingly in support of everything that they already knew. It was possible, she reasoned as she flipped through the other studies and their results, that the glitch didn't have a significant impact on the results at all.

Perhaps the participants would have answered the same way regardless. If that was the case, why bother telling Gil or Pat or anyone? After all, she was the only person who knew. No one on her team had discovered the problem, and had it not been for her using her phone this morning, she would never know either.

Then again, what if the missing images did skew the results and people chose answers that they would not have chosen otherwise?

Julie remembered how one of her colleagues would always stress dependability and validity. "We need to make sure that our methods are consistent. We need to make sure that we get the truth. You can't get good data if you have sloppy methods."

There was nothing dependable or valid about a survey that was missing questions. But, again, Julie reasoned, if the results are the same, it doesn't matter. The client wanted results, not methods.

Gil wanted results, too. He wanted a satisfied customer. More specifically, he wanted MultiCorp as a permanent customer. A company that large would need studies done on a regular basis, which would make it far easier for Gil to continue to keep Research, Inc., out of the red. This contract, he had said more than once, was the company's golden ticket. Once other companies knew that MultiCorp used Research, Inc., it wouldn't be long until they, too, signed on.

Then again, things were just fine before MultiCorp. Gil was showing a steady profit. It wasn't like they were on the verge of closing down.

Maybe this would be easier if Gil wasn't such a nice guy. He didn't deserve to be lied to or let down. She wanted to talk to him, to get his perspective, but still wasn't quite ready to actually talk about the problem. Besides, she wasn't sure what would be worse – his firing her or his telling her to do something unethical.

If she didn't admit to anything, and presented everything as legitimate, she would be lying. That didn't sit well with her. But given the consequences of telling the truth, would it be worth it in the long run?

4. POST-CASE DISCUSSION

According to Valasquez, Andre, Shanks, Meyer, and Meyer (2010), *ethics* can be defined as "well-founded standards of right and wrong that prescribe what humans ought to do, usually in terms of rights, obligations, benefits to society, fairness, or specific virtues."

This is a fairly basic definition, and it hits on all of the main points of the concept. Using this definition as a starting point, one wants to look at the cases presented and consider what standards are coming into question. For those just learning about ethics or who simply need a refresher, consider viewing the two *Crash Course* videos listed in the Further Reading section of this paper.

Utilitarianism looks at the consequences of one's actions and is often summed up as choosing the greatest good for the greatest amount of people; meanwhile, deontology is about universal rights and intention, and can sometimes be summarized with the Golden Rule: do unto others as you would have done unto you.

A caution though: the "greater good" needs to go beyond what is best financially. Simply looking at the "greater good" can actually create "conflicts with the direct obligation to not harm the person" (Fairfield & Shtein, 2014).

With deontology, one might argue that the intentions of the actor are most important, but the decision makes needs to consider universal rights as well. These rights are similar to those espoused by the Josephson Institute (Appendix A) for ethical business behavior. Rights such as *loyalty*, *fairness*, and *accountability* are important in these two cases. The challenge here is determining which right to value.

With both theories, it is vital that the one considers the stakeholders – and that means thinking beyond the company and the customers. Primary stakeholders are those immediately affected, e.g. employees, customers, vendors, and management. Secondary stakeholders are also affected, but

the impact is either less or not as immediate, e.g. employees' families and businesses in the immediate vicinity that profit from the company's presence. While it is impossible to take all stakeholders into consideration, one wants to think about as many as possible prior to making the final decision.

In the two cases, the actors are faced with decisions regarding data and how they will use it. On one hand, one can argue that these are almost non-issues because the actors need to just do whatever is considered the "right thing" by whatever standards of behavior already exist. Most companies have codes of ethics or standards of behavior. Depending on what is in place, these issues may actually be non-issues, as existing policies will guide ethical behavior and eliminate the need for discussion (Hudson, 2017).

On the other hand, one can look at the potential fallout from the assumed "right thing" and wonder if there might be more than one way to approach a decision. When it comes to data, there is a myriad of ways to report it, many of which are wholly ethical.

Erroneous results are more common than we might think. According to *The STM Report*, in 2014 "around 1-2% of scientists admit to having fabricated, falsified or modified data or results at least once" (Ware & Mabe, 2015, p. 73). If there were four million authors in 2014, over 40,000+ have, at least once, used faulty data (Dunie, 2017). While there are differences in terms of the types of research and their purposes, the one constant that remains is the need to produce; and it is this need that can drive someone to falsify, manipulate, or outright lie about data.

It is important to remember that one is not just the gathering and providing information. It is the actual creation of knowledge. As a result, reporters of data are "unconditionally responsible" for the resulting knowledge (O'Leary, 2004, p. 50). How one understands data can, and is, influenced by how it is presented. In both cases, how the actors chose to move forward will impact the businesses they work for, their careers, their colleagues, and a number of other stakeholders.

This is not hyperbole. How one presents data, regardless of whether it relates to financial performance, consumer preference, or any other

topic on which information is collected and analyzed, determines the way in which the receiver understands it.

The questions below will help guide your analysis and strengthen your critical thinking skills.

5. DISCUSSION QUESTIONS

1. When it comes to ethical dilemmas, one of the first steps we need to take is to identify the actual dilemma. What is the ethical dilemma faced Lark? By Julie? Why are these dilemmas?
2. The most logical response to both cases would be "just tell the truth." The problem is that neither case is black and white. What new problems will be created by telling the truth?
3. When making a decision, you want to keep stakeholders in mind. Who are the stakeholders in each case? Who will be affected by the decisions that each person makes and how does that affect your decision-making process?
4. When it comes to making decisions, one of the final steps is the "gut check," where you ask yourself exactly how you feel about the decision you are about to make. What does your gut tell you for each case?
5. Consider the theory of utilitarianism.
 - a. How would a utilitarian, which looks at maximizing benefits for the whole, approach the situation from Lark's point of view? What about from Edie's point of view?
 - b. In Julie's case, what is the greater good and would not mentioning the glitch ever be an option? Why or why not?
6. Deontology is the ethical theory that looks at universal rights such as *justice*, *fairness*, and *honesty*. Is Edie violating these rights when she provides visuals that highlight the company's successes and downplays its setbacks?
7. Part of deontology is Kant's *Categorical Imperative* which advises that we should act as if our actions were to become law, meaning that if we can do something, so can everyone else. How would this imperative affect Lark's and Julie's decisions? Why?

8. Consider the field that you are studying to enter. When might you find yourself facing situations such as these? What would you do? What are the possible consequences of such a decision?
9. Consider each case using Rawl's Veil of Ignorance. How does not knowing who is involved affect your decision?
10. For this last question, consider the opposite point of view – why might it be a *good* idea to manipulate data or hide the fact that the results may be corrupt?

6. FURTHER READING

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Editor's Note:

This paper was selected for inclusion in the journal as the EDSIGCON 2019 Best Teaching Case This is based on blind reviews from six or more peers including three or more former best papers authors who did not submit a paper in 2019.

Appendix A

12 Ethical Principles for Business Executives from the Josephson Institute

1. HONESTY. Ethical executives are honest and truthful in all their dealings and they do not deliberately mislead or deceive others by misrepresentations, overstatements, partial truths, selective omissions, or any other means.

2. INTEGRITY. Ethical executives demonstrate personal integrity and the courage of their convictions by doing what they think is right even when there is great pressure to do otherwise; they are principled, honorable and upright; they will fight for their beliefs. They will not sacrifice principle for expediency, be hypocritical, or unscrupulous.

3. PROMISE-KEEPING & TRUSTWORTHINESS. Ethical executives are worthy of trust. They are candid and forthcoming in supplying relevant information and correcting misapprehensions of fact, and they make every reasonable effort to fulfill the letter and spirit of their promises and commitments. They do not interpret agreements in an unreasonably technical or legalistic manner in order to rationalize non-compliance or create justifications for escaping their commitments.

4. LOYALTY. Ethical executives are worthy of trust, demonstrate fidelity and loyalty to persons and institutions by friendship in adversity, support and devotion to duty; they do not use or disclose information learned in confidence for personal advantage. They safeguard the ability to make independent professional judgments by scrupulously avoiding undue influences and conflicts of interest. They are loyal to their companies and colleagues and if they decide to accept other employment, they provide reasonable notice, respect the proprietary information of their former employer, and refuse to engage in any activities that take undue advantage of their previous positions.

5. FAIRNESS. Ethical executives are fair and just in all dealings; they do not exercise power arbitrarily, and do not use overreaching nor indecent means to gain or maintain any advantage nor take undue advantage of another's mistakes or difficulties. Fair persons manifest a commitment to justice, the equal treatment of individuals, tolerance for and acceptance of diversity, they are open-minded; they are willing to admit they are wrong and, where appropriate, change their positions and beliefs.

6. CONCERN FOR OTHERS. Ethical executives are caring, compassionate, benevolent and kind; they like the Golden Rule, help those in need, and seek to accomplish their business objectives in a manner that causes the least harm and the greatest positive good.

7. RESPECT FOR OTHERS. Ethical executives demonstrate respect for the human dignity, autonomy, privacy, rights, and interests of all those who have a stake in their decisions; they are courteous and treat all people with equal respect and dignity regardless of sex, race or national origin.

8. LAW ABIDING. Ethical executives abide by laws, rules and regulations relating to their business activities.

9. COMMITMENT TO EXCELLENCE. Ethical executives pursue excellence in performing their duties, are well informed and prepared, and constantly endeavor to increase their proficiency in all areas of responsibility.

10. LEADERSHIP. Ethical executives are conscious of the responsibilities and opportunities of their position of leadership and seek to be positive ethical role models by their own conduct and by helping to create an environment in which principled reasoning and ethical decision making are highly prized.

11. REPUTATION AND MORALE. Ethical executives seek to protect and build the company's good reputation and the morale of its employees by engaging in no conduct that might undermine respect and by taking whatever actions are necessary to correct or prevent inappropriate conduct of others.

12. ACCOUNTABILITY. Ethical executives acknowledge and accept personal accountability for the ethical quality of their decisions and omissions to themselves, their colleagues, their companies, and their communities.