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The Western Casewriters Association (WCA) is the Western regional association of business casewriters. WCA is associated with the North American Case Research Association (NACRA) and the Western Academy of Management (WAM). Its purpose is to train, develop and support business case writing for research and pedagogical purposes. WCA organizes an annual conference for experienced and new case-writers and academics using cases for teaching and publishes the *Journal of Case Research and Inquiry*. Visit the WCA website at www.westerncaswriters.org

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JCRI Editorial Policy

Approved by the **JCRI** Editorial Board March 9, 2017; updated September 15, 2022, and April 6, 2024.

Aim and Goals

The *Journal of Case Research and Inquiry* (**JCRI**) is a publication of the Western Casewriters Association (www.westerncasewriters.org). **JCRI** publishes peer-reviewed case studies (cases) prepared from primary and secondary research, as well as pedagogical articles, notes and exercises. The journal publishes one issue per year, and if submissions so merit, may publish additional issues with editorial board approval. **JCRI** publications are available online, full text, and free of charge at www.jcri.org.

Scope and Content of the Journal

The journal publishes cases that address significant contemporary and perennial issues faced by organizations and managers in the areas of business and public administration, nonprofit management, social entrepreneurship, economics, education, and public policy. The journal publishes both Teaching Case Studies and Consulting Case Studies. Cases may be derived from primary field research, secondary research, or a combination of both. **JCRI** does not accept fictional cases, nor cases, notes, or articles previously published elsewhere.

Teaching Cases are primarily intended to support classroom instruction, including decision-making and the application of theory and best practices, and may or may not require a managerial decision. Teaching case studies have been used in higher instruction for more than 115 years. Teaching cases are necessarily accompanied by detailed Teaching Instructor Manuals (TIMs) that are not published but may be provided to instructors.

Consulting Cases ask the reader to develop solutions to issues faced by managers and organizations, with emphasis on practical solutions; these cases may be appropriate for final exams or other assignments. Consulting cases are accompanied by a detailed Consulting Instructor Manuals (CIMs).

All cases, IMs, notes, exercises, and articles are double blind peer-reviewed by at least two reviewers. IMs submitted should follow the guidelines provided at www.jcri.org. Case authors are required to obtain signed release forms, when necessary, from the organizations studied. The journal also publishes peer-reviewed articles, notes, and exercises. **Articles** are scholarly papers on case research, teaching with cases, and related pedagogical issues. **Notes** are industry or theoretical analyses or summaries of research or law to accompany cases. Finally, **Exercises** provide a “*case like*” learning experience in the classroom and may be associated with teaching cases or stand-alone exercises.

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Cases, articles, notes, and exercises are available online at www.jcri.org at no cost. Instructors and students at state and nonprofit educational institutions are granted the right to reproduce **JCRI** published materials for educational purposes. The journal encourages instructors to include in their course syllabi links to the **JCRI** website so that students can easily access cases, articles, notes, and exercises. For reproductions by for-profit institutions, or for publication in textbooks or elsewhere, authors shall retain all rights.

Submission of Manuscripts

Authors should submit manuscripts electronically to editor@jcri.org. All submissions must follow the JCRI submission guidelines available in detail at www.jcri.org.

Review Policy

At the editor's discretion, a submission to the journal may be rejected without a full review, particularly if the manuscript does not align well with the aim and scope of the journal. Otherwise, all submissions shall be blind peer reviewed by at least two qualified reviewers. Authors shall receive reviewers' comments, together with a decision (reject, revise and re-submit, conditionally accept, or accept) by the Editor. Unless approved by the Editorial Board, no cases or papers shall be invited, and none published without undergoing the peer review process. The journal's Publication Ethics policy, including requirements for reviews, retractions, corrections, and appeals is available at www.jcri.org.

WCA Membership Requirement for Authors

There shall be no fees to publish in the journal, however the policy of the journal is that at least one author of each case, article, note, or exercise must be a WCA member for the year in which the case is published. To join WCA, please visit www.westerncasewriters.org. Attendees at the annual WCA conference are automatically members of the association for the year following the conference.

WCA Conference Cases

Authors of cases presented at the WCA conference will be invited and encouraged to submit their work to the journal. However, all submissions (whether presented at WCA, NACRA, or another conference) will undergo the peer review process. No paper - even a WCA award-winning case - shall be guaranteed publication in the journal.

Release forms

The journal shall require signed release forms from organizations, which must be collected by case authors for any case to be published that was carried out using primary research. A sample release form can be found at www.jcri.org.

Ownership and Distribution of Instructor Manuals

Instructor manuals (IMs) shall be archived by the journal for a period of at least three years after publication of a given case. IMs will only be provided to instructors who request them to editor@jcri.org when such instructors are formally affiliated with a nonprofit or governmental educational institution. No fees shall be charged to instructors who receive IMs, nor is membership in the WCA required to receive an IM. After the three-year period, inquiries for IMs should be made directly to the case author.

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Authors must be fully transparent regarding the use of generative AI in their submissions. If authors used AI or AI-assisted software to aid in writing any portion of their submission, this use must be declared in full in the instructor's manual of a case study and/or in a statement at the end (prior to references) of an article, note, or exercise. Authors must include what program was used, prompts, and details of outputs and any adaptations of outputs that appear in the submission. Authors should also include a footnote on the first page of the case, article, exercise, or note indicating that some of the content in the case was written by an AI or with the support of an AI tool. AI and AI-assisted software tools cannot be considered co-authors on submissions. (Adapted from North American Case Association (NACRA) submission details, March 22, 2024.)

JCRI Publication Ethics Policy

Approved by the **JCRI** Editorial Board March 9, 2017; updated September 15, 2022.

1. **Board Accountability.** The **JCRI** Editorial Board shall be responsible for establishing and updating, as needed, the Publication Ethics Policy of the *Journal of Case Research and Inquiry*.
2. **Editor Responsibilities.** The **JCRI** Editor shall be responsible for the content of the cases, notes, articles, exercises, and letters published in the journal. In consultation with the Editorial Board, the Editor shall endeavor to ensure that the content of the journal meets the standards of quality expected by the Western Casewriters Association (WCA) through the application of the blind peer-review process. The Editor shall also be responsible for ensuring that any non-peer reviewed content of the journal is clearly identifiable.
3. **Records.** The **JCRI** Editor shall keep accurate records of submissions to the journal, reviews, revisions, acceptances, and all other pertinent information to be able to inform the Editorial Board and WCA members of the status of the journal. The Editor shall also maintain a list of qualified reviewers for the journal that is updated based on reviewers' performance (availability, quality of review, and timeliness).
4. **Continuous Improvement.** The Editor shall strive for continuous improvement of the quality of the journal and the quality of the published cases, articles, notes, and exercises in each issue. The Editor shall seek the advice and input of Editorial Board and WCA members on ways to improve the quality, appeal, and usefulness of the journal.
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7. **Quality of the Review Process.** The Editor, in consultation with Editorial Board, shall review and as needed update the journal's editorial policy and guidelines for reviewers in order to ensure thorough and timely reviews. The Editor shall also endeavor to ensure that the reviewers selected are qualified to review the submissions sent to them. The Editor shall apply the same review policies, procedures, and standards to submissions by WCA members, **JCRI** Editorial Board members, and non-WCA members. In addition, the **JCRI** Editor shall encourage reviewers to comment on the originality of submissions and be attentive to redundant publications or plagiarism. **JCRI** shall not accept fictional cases, nor cases, notes, articles, or exercises previously published elsewhere.

8. **Decisions and Appeals.** Decisions to accept or reject cases, articles, notes, and exercises shall be based on each paper's importance, originality, clarity, and pedagogical relevance as well as adherence to the submission requirements provided at www.jcri.org. Editorial decisions shall not be affected by the origins of the manuscript, including the institutional affiliation, nationality, ethnicity, political beliefs, race, gender, religion, or sexual orientation of authors. Authors whose submissions to **JCRI** have been rejected may appeal to the President of the Western Casewriters Association at www.westerncasewriters.org.
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CASE RESEARCH

BITCOIN IN EL SALVADOR: DIGITAL FINANCE INNOVATION OR PRESIDENT BUKELE'S GAMBLE, p. 14

By Anne Anders, Yvette M. Bendeck, Stephen J. Cotten & Ivelina Pavlova

In 2021, President Nayib Bukele led El Salvador to be the first country to adopt cryptocurrency – Bitcoin specifically – as legal tender. Through a series of initiatives, he pushed for widespread adoption in the country. President Bukele believed that the use of Bitcoin – then the most popular cryptocurrency in the world – would help improve access to the formal economy in a country where more than two-thirds of its citizens did not have bank accounts. Furthermore, it was hoped Bitcoin would decrease costs for citizens receiving remittances from family members who lived abroad. He was confident that Bitcoin would attract foreign investment and increase tourism, as well as provide Salvadorans with an appreciating currency. The International Monetary Fund and credit rating agencies, however, saw it differently, immediately downgrading El Salvador's debt, raising its borrowing costs, and restraining its access to foreign loans until the policy was reversed. Salvadorans themselves were, at best, skeptical, as they remembered the sharp swings in exchange rates and living standards that occurred before El Salvador adopted the U.S. Dollar as its official currency in 2001. Had President Bukele had led El Salvador to the cutting edge of a world of digital finance, or he was gambling public money on an ill-advised scheme?

Key words: El Salvador, Bitcoin, Digital currency, International Finance, Economics

GT ENERGY GROUP OF MEXICO: ENERGIZING A TEAM MEMBER, p. 44

By Rosa Isela Gomez Garcia, Katelyn Guevara, Silvia Arias, Ivan Beltran, Carlos Morales & Luis Garcia

Raquel, the Deputy Director of GT Energy Group of Mexico, managed a team that designed and implemented renewable energy projects. In 2020, a new general director took over. The new general director, Hector, hinted that if Raquel continued to perform well, she would be promoted to Director of the Bioenergy Department – a significant increase in authority, prestige, and compensation. Tomás, one of Raquel's team members, had begun to fall short of expectations for performance. Despite Raquel's attempts to lead Tomás, he seemed to be increasingly ineffective in his role, with consequences for the team and the projects. Additionally, Tomás made inappropriate comments about Raquel's appearance, and failed to acknowledge her authority. Raquel made efforts to mitigate Tomás's inappropriate behavior while striving to improve his performance. She scheduled weekly one-on-one meetings with him. She created a development plan for Tomás to monitor his own work. Nonetheless, Tomás' poor performance became known to Raquel's superiors. Because of this, she was suddenly faced with the decision of whether to continue working with Tomás, request a transfer him to another department, or terminate his employment. When Hector, the new general manager, learned about the issue, he wanted to terminate Tomás immediately – but doing so would be costly to the Mexican company. Hector looked to Raquel for another way to remedy the situation.

Key words: Mexico, Sexual harassment, Organizational culture, Motivation, Leadership

UNBOXD: DETERMINED TO MAKE SECONDHAND YOUR FIRST CHOICE,

p. 55 By Svilena Valcheva, Aleksandar Nikolov, Stefan Balkanski & Trendafil Dzhingarov

Unboxd was a Bulgarian start-up trying to solve the problems caused by the fashion industry. The fashion industry was the second largest consumer of water in the world, responsible for 20% of the world's waste and 10% of global carbon dioxide emissions. 87% of used clothing was thrown away or burned. Unboxd was established to give a second life to unused clothes, serving sustainable fashion connoisseurs. After winning an accelerator fund of \$10,000 USD, Unboxd faced a huge challenge – Refining its business model and figuring out the best way to generate revenue and growth. The Unboxd case is an example of young entrepreneurs with a start-up business, and the factors that determine early success – even when the entrepreneurs have a brilliant idea.

Key words: Bulgaria, Europe, Fashion, Business model, Entrepreneurship, Sustainability, Start-up.

AT THE HELM OF TWITTER: THE LEADERSHIP STYLE OF ELON MUSK, p. 78

By Issam Ghazzawi

A leader's character is revealed over time through decisions in varying situations. The case study explores Elon Musk's personality, task-oriented leadership behavior and decision-making in an organizational setting. The case specifically relates to his role as the CEO of Twitter, exploring the behavioral challenges faced by this leader.

Key words: Elon Musk, Twitter, Leadership, Hardcore culture, Character, Personality, Decision-making.

GYMREALM: SOFTWARE SOLUTIONS BEYOND BORDERS, p. 108

By Tania Kishkin, Nadya Hristova, Taulant Mecaj & Ivan Dzhamulov

The online meeting of the GymRealm team at the end of the second quarter of the year had just finished. GymRealm, based in Bulgaria, offered gym management software with a low-cost payment processing solution to sports facilities. Despite announcing good results, CEO Dimitar Georgiev knew that his company could do much better. He was convinced that GymRealm could achieve a huge expansion in the U.S. market. GymRealm had already stepped on American soil, and so far, had overcome the obstacles it had met: local tax and fiscal regulations and the language barrier. Dimitir thought, *“If only I could send someone to the U.S. to spearhead our growth in America ... We could try to find a way to provide 24/7 support from Bulgaria to fix U.S. customers’ problems as soon as possible despite the time difference. GymRealm could achieve massive success there!”*

Key words: Bulgaria, International business, software, Sport business, stages of business evolution.

WAS THE SPIN-OFF OF PAYPAL FROM EBAY A TAXABLE OR TAX-FREE REORGANIZATION? p. 126

By Gretchen R. Lawrie & John R. Cooper

The case study reviews the facts of eBay, Inc.’s spin-off of PayPal, Inc. It presents an opportunity to reinforce students’ understanding of the complex U.S. corporate reorganization provisions. The case study leads to the question: What were the U.S. tax and non-tax consequences of eBay’s spin-off of PayPal for eBay, PayPal, and eBay’s shareholders?

Key words: U.S., eBay, PayPal, Corporate Reorganizations, Spin-off, Income Tax, Tax-deferred

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CHATGPT'S PERFORMANCE ON CASE DISCUSSION QUESTIONS, p. 150

By Yvette M. Bendeck & Troy A. Voelker

This paper reports the results of ChatGPT's performance on business case discussion questions. As ChatGPT becomes more broadly deployed in higher education, its capabilities and limitations have become better understood. ChatGPT fares quite well in certain activities and with some success in qualitative business work. ChatGPT fares less well in its management of quantitative information and tabulated or data-visualized information. ChatGPT has well-documented issues with so-called "hallucinations" where the AI creates a cogent, but false, answer to a question. We provided ChatGPT-3.5 and ChatGPT-4 with access to three recently published business cases and the discussion questions associated with each case. We provided ChatGPT responses and the instruction manual rubric for the discussion questions to pairs of independent faculty reviewers. This paper reports on the ChatGPT responses, the independent faculty review, and our observations from the outcomes of these activities.

Key words: Case studies, Artificial Intelligence, AI, ChatGPT, Business case

Letter from the Editor

This is the 9th volume of the *Journal of Case Research and Inquiry*. With this volume, so far **JCRI** has published 65 teaching case studies prepared from primary and secondary research by 165 casewriters, as well as several scholarly articles, notes, and pedagogical exercises. Each case was thoroughly reviewed and is accompanied by a peer-reviewed instructor's manual available to qualified instructors upon request. The cases published in **JCRI** address diverse issues in business and society. They include studies of for-profit, nonprofit, and governmental organizations in several countries around the world. While most of the cases are based in the United States, **JCRI** publications have also included cases on truly global companies, as well as organizations operating in Argentina, Belgium, Brazil, Bulgaria, Canada, Chile, China, Colombia, Egypt, El Salvador, Honduras, India, Ireland, Mexico, Nepal, Niger, The Philippines, The Solomon Islands, S. Korea, and Thailand.

Instructors will find cases that focus on everything from entrepreneurship and small business management to decisions made in major multinational organizations. In addition to case studies, the journal also publishes peer-reviewed scholarly articles or notes concerned with case research, teaching with cases, and case-like pedagogical exercises. Cases, notes, exercises, and articles published in the journal are available online, full text, and free of charge at www.jcri.org. Qualified instructors can receive detailed, peer-reviewed Instructor Manuals upon request to the **JCRI** editor. The editor is also available to write to authors' tenure and promotion committees.

In the volume, we publish six new cases and one article. Topics in the present volume include international finance, leadership and business ethics, entrepreneurship, tax, sustainability, and artificial intelligence. **JCRI** cases are ready for use in the classroom, and all come with detailed peer-reviewed instructor manuals.

JCRI is the publication of the Western Casewriters Association (WCA). On the WCA website, <http://www.westerncasewriters.org/>, authors will find a call for cases for the next WCA conference. The WCA annual conference is a unique opportunity to engage with other casewriters in a small group format to exchange feedback and polish-up a case, learn about teaching with cases, and enjoy presentations from leading case authors and case educators. The WCA is held in association with the annual meeting of the Western Academy of Management.

We are grateful to our authors for their submissions and especially grateful to our reviewers for their detailed, insightful comments on the case submissions for this volume. We look forward to receiving well-written cases, notes, and article submissions for **JCRI** in 2025.

Steve McGuire
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CASE RESEARCH



BITCOIN IN EL SALVADOR: DIGITAL FINANCE INNOVATION OR PRESIDENT BUKELE'S GAMBLE

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In 2021, President Nayib Bukele led El Salvador to be the first country to adopt cryptocurrency – Bitcoin specifically – as legal tender. Through a series of initiatives, he pushed for widespread adoption in the country. President Bukele believed that the use of Bitcoin – then the most popular cryptocurrency in the world – would help improve access to the formal economy in a country where more than two-thirds of its citizens did not have bank accounts. Furthermore, it was hoped Bitcoin would decrease costs for citizens receiving remittances from family members who lived abroad. He was confident that Bitcoin would attract foreign investment and increase tourism, as well as provide Salvadorans with an appreciating currency. The International Monetary Fund and credit rating agencies, however, saw it differently, immediately downgrading El Salvador's debt, raising its borrowing costs, and restraining its access to foreign loans until the policy was reversed. Salvadorans themselves were, at best, skeptical, as they remembered the sharp swings in exchange rates and living standards that occurred before El Salvador adopted the U.S. Dollar as its official currency in 2001.

Had President Bukele had led El Salvador to the cutting edge of a world of digital finance, or he was gambling public money on an ill-advised scheme?

El Salvador

From Independence to Coffee Exporter

El Salvador, located in Central America on the Pacific coast between Honduras and Guatemala, was the smallest and most densely populated country in the region. In 1821, Honduras, Guatemala, Nicaragua, Costa Rica, and El Salvador formed the Federation of Central America and declared independence from Spain. Eighteen years later, El Salvador broke ties with the Federation and became an independent republic (U.S. Department of State n.d.)

During the 1880s, large parts of communal land were privatized to expand the country's coffee production. Over time, coffee became the country's biggest export and increases in the price of coffee brought prosperity to the country. However, the country's newly found wealth was concentrated in the hands of few, resulting in social inequality (Menjívar & Gomez 2018).

Military Rule, The Exodus, and Prosperity

The killing of at least 10,000 farmworkers who participated in a 2-day revolt organized by Farabundo Martí, leader of the Salvadoran Communist Party, in January 1932 known as "*La Matanza*" (The Slaughter), marked the beginning of a series of military dictatorships that governed El Salvador until 1979 (Varela *et al.* 2023). The drop in coffee prices because of the Great Depression combined with the political repression that followed The Slaughter, led as many as 40,000 Salvadorans to migrate to Honduras in search of work (Menjívar & Gomez 2018). By 1950, the price of coffee had rebounded which spurred economic growth and allowed the Salvadoran government to engage in a series of economic reforms throughout the 1950s and 1960s. These reforms brought economic growth, but once again, only a small portion of the population benefited, intensifying social inequality (Varela *et al.* 2023).

Involuntary Repatriation

By the late 1960s, Honduras had 300,000 Salvadorans residing in the country, most of whom were squatters living illegally. In 1969, Honduras started returning undocumented immigrants

to El Salvador, which resulted in a war between the two countries. By 1971, 41% of Salvadoran peasants were landless, with an estimated unemployment rate of 45% (Menjívar & Gomez 2018).

Political Unrest and The Civil War

Economic growth slowed during the 1970s as coffee prices declined. During this time, several armed resistance groups were formed against the government. These groups organized peasants to engage in non-violent political protests. On the heels of the Salvadoran military's assassination of Archbishop Oscar Romero, who was an outspoken critic of the military for their human rights abuses and social injustice, five of the resistance groups joined forces to form the Farabundo Marti National Liberation Front (FMLN) in 1980. Talks between the government-military coalition and the FMLN proved unproductive which resulted in a civil war that lasted 12 years (Macica *et al.* 2023). Despite the civil war, El Salvador transitioned from a military dictatorship to a democratic government in 1983 with the adoption of a new constitution and President Napoleon Duarte's election (Varela *et al.* 2023). The international community's outcry over the November 1989 assassination of six Jesuit priests associated with the Central American University, El Salvador's first private university, led to the UN-mediated peace negotiation that ended the civil war in 1992 (Macica *et al.* 2023).

From the Colón to Dollarization

In 1992, with the country in shambles after the civil war, El Salvador began to rebuild its economy with the assistance of the World Bank, the International Monetary Fund (IMF) and other international organizations. At the time, the official currency was the Colón, which was pegged to the dollar at an exchange rate of 8.75 per U.S. dollar from 1993 to 2000 (Andrew 2012). The country's service industry grew, and agricultural exports increased. By 2000, the country's debt was manageable, and the economy was growing at about 1% per year. In 2000 El Salvador's inflation rate was 2.3%, which was considerably lower than other countries in the region. The average inflation rate for Latin American and Caribbean countries (excluding high income countries) was 7.1% (World Bank 2022a, 2022b).

Despite a stable economy, El Salvador adopted the U.S. Dollar as its official currency in 2001, a move that surprised many since only a country with inflation out of control and an economy in a downward spiral would consider giving up control over its own monetary policy with such a move (Andrew 2012). The country's leaders explained that the move would attract more foreign investment, especially from the U.S., and result in a much-needed economic boost. Furthermore, under the pegged regime before dollarization, there was a currency risk premium and relatively high Colón-Dollar interest rate spread, driven in part by economic growth (leading to lower spread) and inflation (leading to higher spread) in El Salvador (Andrew 2012). Dollarization brought price stability and resulted in a decrease in interest rates, due to a decrease in the currency risk premium (Andrew 2012). However, the hoped for increase in foreign investment did not occur and economic growth remained sluggish.

Social, Economic and Political Situation as of 2023

Despite persistent economic growth between 2012 - 2019, El Salvador saw a decline in inequality and poverty, which made it the most equal country in the region prior to the COVID-19 crisis (Barroso & Robayo 2022). The increase in equality was partly due to the remittances sent from the almost two million Salvadorans living abroad, more than 20% of El Salvador's population. The poor depended on remittances for their livelihood, but these payments also were important for the country, consistently making up a large portion of the country's GDP as shown in Exhibit 1 (World Bank 2021a). In 2021, as the country rebounded from COVID-19, El Salvador's Gross Domestic Product (GDP) was \$26.1 billion, growing by an estimated 10.2% as shown in Exhibit 2 (World Bank 2021b). GDP growth slowed to 2.8% in 2022 and was expected to slow to 2.3% in 2023 (World Bank 2023).

Exhibit 1. Personal Remittances as Percent of GDP

Source: World Development Indicators Personal Remittance as a Percent of GDP data series 1980 -2021.

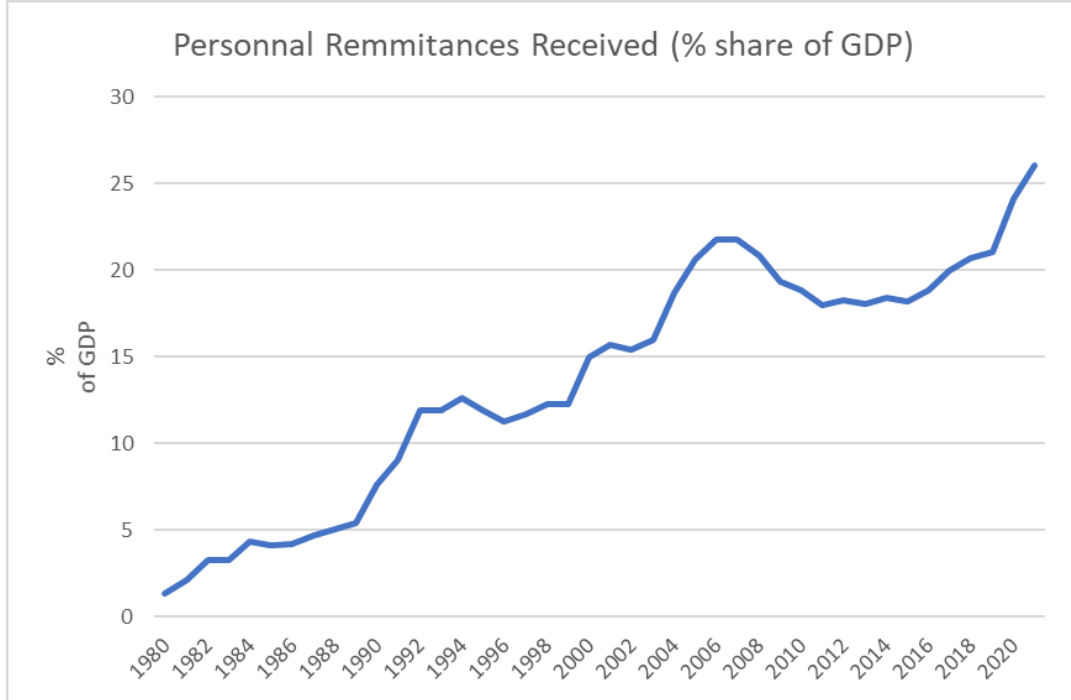


Exhibit 2. GDP Growth Rate

Source: World Bank National Accounts Data 1996 - 2021



Corruption, defined as the intentional misuse of public resources for personal gain, was pervasive in El Salvador. In 2021, Transparency International, which conducted corruption perception surveys, gave El Salvador a transparency score of 34 out of 100. The lower the score, the more corrupt the public sector was considered. The ranking placed El Salvador in the bottom 36% of the 180 countries surveyed (Transparency International, 2022a). The organization also placed El Salvador on its watch list in 2022 over concerns about the dismissal and replacement of five Supreme Court justices from the Constitutional Chamber. The justices had declared unconstitutional the arrest and confinement of individuals who violated the national COVID-19 quarantine rules. Transparency International was also concerned about the removal of the attorney general investigating allegations of corruption linked to COVID-19 crisis spending, and the inclusion of government officials on the 2021 U.S. Engel List of those who were “*accused of corruption and assault democracy*” (Transparency International 2022b; Blitzer 2022).

After President Nayib Bukele’s New Ideas party won a super-majority of seats in 2021, the Legislative Assembly passed legislation banning any COVID-19 spending investigations and protected officials from facing corruption charges. Immediately after *El Faro*, a Salvadoran newspaper, published an article detailing the government’s negotiations with the MS-13 gang, the Legislative Assembly amended the penal code to punish anyone who shared information about gangs. The action was considered as a move to censor journalists (Blitzer 2022).

Although El Salvador had twenty-one political parties, only the Nationalist Republic Alliance (ARENA), FMLN and New Ideas party candidates had won presidential elections since the end of the civil war. As of 2022, one-third of the political parties held at least one seat in the Legislative Assembly (List of political, 2023).

President Bukele

Nayib Bukele served as the 43rd president of El Salvador. When he was elected at 37, he was the youngest national leader in Latin America. His family was involved in fast food, textile, and public relations businesses. President Bukele briefly attended college in El Salvador where he studied law but left without earning a degree. Instead, he ended up running the family's public relations firm (Blitzer 2022).

Unlike most of the upper-class families in El Salvador, the wealthy Bukele family was affiliated with the FMLN, which was one of the principal clients of the Bukeles' public relations firm. Bukele's position at the firm served as a "*political apprenticeship*" that sparked his political interest. He successfully won elections to serve as mayor of Nuevo Cuscatlán (2012-2015) and mayor of San Salvador (2015-2018) as the FMLN party candidate. Some of his accomplishments in Nuevo Cuscatlán included the addition of a 24-hour medical facility, a library, a community center, and grants for students to learn English or study computer science. As mayor of San Salvador, he was credited for building the Cuscatlán market and San Salvador's first municipal library, as well as revitalizing the capital's historic commercial district. President Bukele's working relationship with San Salvador City Council deteriorated to the point he was expelled from the FMLN party. The deterioration in the relationship was due to Bukele's failure to seek required permits or follow the city's zoning ordinances for the projects he initiated (Blitzer 2022).

His expulsion from the FMLN party led him to create the New Ideas party in 2018. President Bukele's New Ideas progressive presidential candidacy was blocked by the FMLN party and the right-wing conservative party ARENA. He ran for president as the candidate for the Grand Alliance for National Unity (GANU) party, winning with 53% of the votes cast (Blitzer 2022). Bukele's landslide victory stemmed to a considerable extent from his accomplishments as mayor, his populist agenda and promises he made about creating jobs, attracting foreign direct

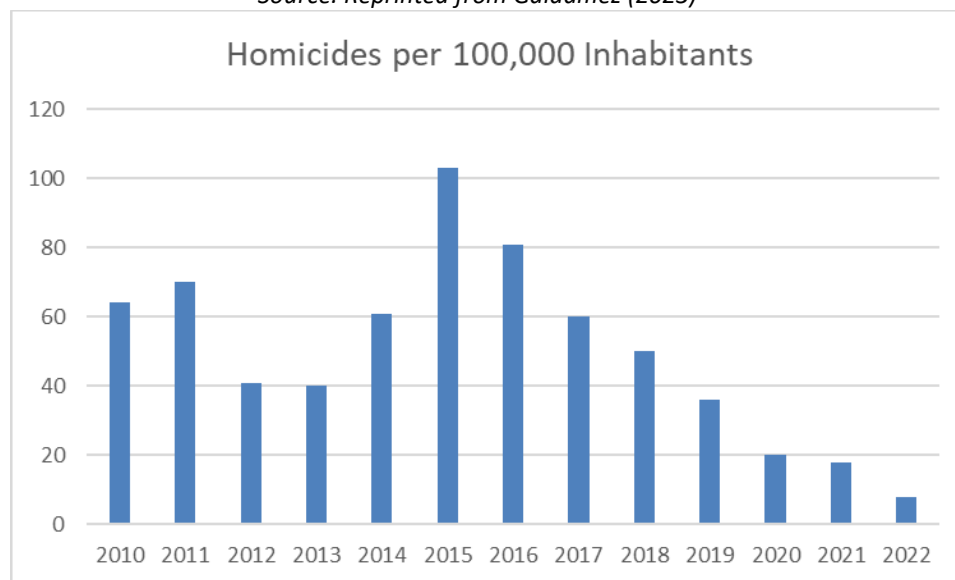
investment, addressing corruption and cracking down on gang violence to lift the citizens out of poverty.

Gang violence started dominating life in El Salvador after the United States began deporting gang members in the mid-1990s. By 2015, gangs had tens of thousands of members who extorted 4 billion U.S. dollars (approximately 15% of GDP) per year from local businesses (Blitzer 2022).

According to the United Nations Office of Drugs and Crime, from 2015 through 2018, El Salvador had the highest crime rate in the world. The homicide rate per 100,000 population ranged from 52 to 105 (United Nations n.d.). As shown in Exhibit 3, President Bukele's crackdown on gangs led to a historic decrease in the number of murders, with the homicide rate decreasing by half from 2021 to 2022 (Galdamez 2023).

Exhibit 3. Homicides in El Salvador

Source: Reprinted from Galdamez (2023)



However, Bukele also demonstrated authoritarian tendencies. In February 2020, President Bukele, flanked by armed soldiers, entered the Legislative Assembly and sat in the chair reserved for the head of the Assembly in order to intimidate legislators who were failing to

approve a loan for security spending from the Central American Bank for Economic Integration, declaring, “It is clear who is in charge of the situation.” (El Salvador Parliament 2020) He also discharged Supreme Court judges and replaced them with judges who allowed him to run for a second term despite constitutional term limits (Blitzer 2022). His attitude to this criticism was reflected in the Twitter profile shown in Exhibit 4, referring to himself as the coolest dictator in the world (Crane 2021).

Exhibit 4. President Bukele’s Twitter Profile on September 20, 2021

Source: Image copied from Crane (2021)



Despite his popularity, human rights groups, opposition party politicians, and journalists raised concerns about his authoritarian governing. The years of Bukele’s presidency also coincided with thousands of Salvadorans being detained during the COVID–19 outbreak and jailed after mass sentencing with no proper criminal investigations. Journalists were threatened; protestors and others were arrested for “illegal gathering” and other pretenses (Blitzer 2022).

President Bukele’s approval rating was the highest among all Latin American leaders with an approval rating of 86%. (CID Gallup 2022). From a scale from 1 (lowest) to 10 (highest), his approval ratings between 2019 and 2022 ranged from 7.54 and 8.37 (Instituto Universitario 2023). President Bukele’s popularity stemmed from his crackdown on gangs, improved public infrastructure, and his response to the COVID–19 pandemic (Blitzer 2022).

What is Bitcoin?

Bitcoin was created in October 2008 by “Satoshi Nakamoto,” (an) anonymous individual(s) who wished to create a currency that was *“completely decentralized, with no central server or trusted parties, because everything is based on crypto[graphic] proof instead of trust”* (Nakamoto 2008). The coins were digital ledgers of transactions. All transactions making up a coin were recorded on the coin; thus, the legitimacy of the coin was easily verified. The video in Exhibit 5 describes the verification process.

Exhibit 5. What is Bitcoin Mining?

Source: Voice of America (2022)

<https://www.youtube.com/watch?v=a4WSVqLkvn0&t=21s>

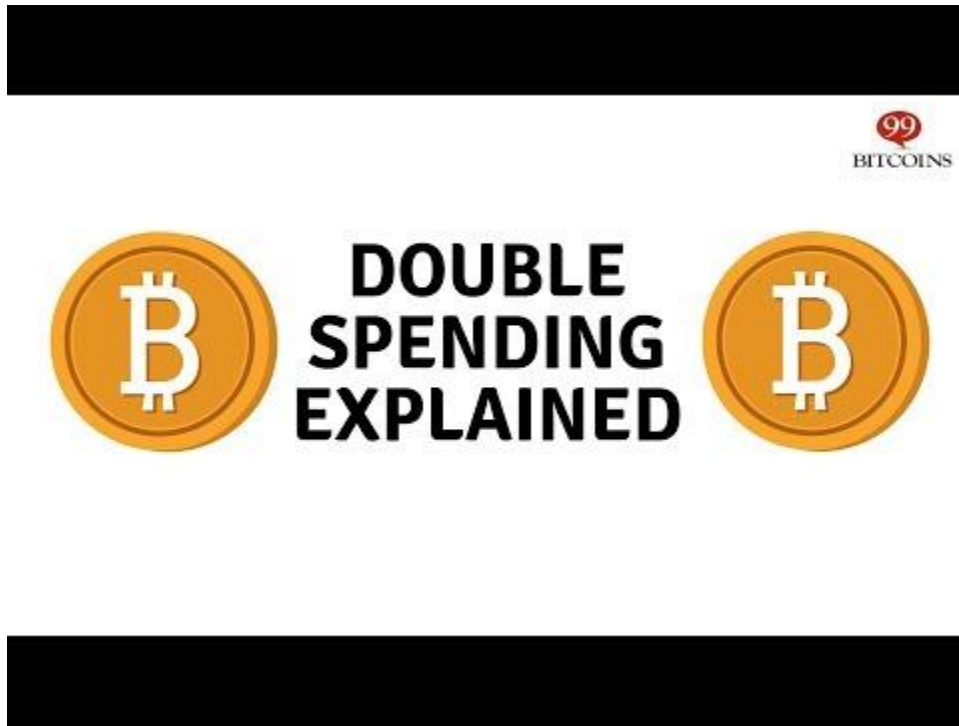


Financial intermediaries at the time accepted that some amount of fraud was expected with checks and electronic transfers, and these costs were incorporated into the system's transactions costs. Bitcoin had the potential to eliminate these costs. However, unlike checks and electronic transfers, non-physical currencies were subject to the "double-spend" problem. The problem arose when an individual who used a digital currency to pay for items or services subsequently canceled the payment after the goods or services had been received, and then used the same digital currency for another transaction. Exhibit 6 illustrates the double spending problem and how it could be avoided.

Exhibit 6. What is Double Spending?

Source: 99Bitcoins (2015)

<https://www.youtube.com/watch?v=phLSjZdDc5A>



Bitcoin had a fixed supply of 21 million total coins. As of 2023, approximately 19.3 million had been issued. The rate of “*mining*” of new coins, in which new coins were awarded in exchange for the computational work of verifying transactions on the blockchain, was expected to slow as the number of coins approached its final supply. Because of the finite supply and wider adoption, increased demand over time was anticipated. In addition, because individuals occasionally lose their Bitcoins, in the ultra-long run the supply was expected to decrease. For example, James Howells, of Wales, accidentally threw away a hard drive in August 2013 containing roughly 8,000 Bitcoin (\$160 M at 1 BTC=\$20,000 USD) and fought unsuccessfully for years for permission to excavate the local landfill (Max 2021). Similarly, Stefan Thomas lost 7,002 Bitcoin (\$140 M) when he lost the paper containing his password to access his hard drive (Popper 2021). As a result of this largely finite but ultimately decreasing supply, investors’ expectations had generally tilted towards increasing prices. Bitcoin advocates hoped that eventually fiat currencies would be moved out of the hands of governments.

For reserve currencies, Bitcoin and other cryptocurrencies could be considered a threat. For small countries, however, cryptocurrencies theoretically had the advantage of providing access to an alternate appreciating asset. For countries that conducted much trade in U.S. dollars, or were fully dollarized, monetary policy was at the whim of policymakers in the United States. El Salvador, which was dollarized, chose to adopt Bitcoin as an official currency in the hopes of benefiting from the appreciation of Bitcoin over time, and to take advantage of increased direct trade from advocates of Bitcoin.

Before the Law, There Was Bitcoin Beach

In 2018, an anonymous donor provided the funds to support the Bitcoin Beach project, which strived to establish a sustainable Bitcoin economic ecosystem in El Zonte. El Zonte was a small, secluded fishing town located on the Pacific Coast, about 26 miles from San Salvador, the country's capital. Devastated by the civil war, the community remained highly impoverished, but had immense potential for growth through the tourism industry. Known for great surfing, the town had seen an increase in travelers visiting the community, but the estimated 500+ local families gained little from it. Most of the population did not have a bank account and depended on remittances from relatives living abroad. With the help of a local non-profit organization, the infrastructure for Bitcoin Beach was put into place and locals were educated on the use of the currency. The donation allowed for the creation of dozens of jobs with the stipulation that everyone be paid in Bitcoin. Two years later, the community had been transformed, and the Bitcoin Beach experiment was portrayed as an enormous success (Bitcoin Beach n.d.).

Bitcoin Law

Via recorded video broadcasted at the Bitcoin 2021 conference on June 5, 2021, President Bukele announced that he was sending a bill to the Legislative Assembly of El Salvador to approve Bitcoin as legal tender for the country (Thebault & Villegas 2021). Three days later,

Decreto N° 57, Ley de Bitcoin (Bitcoin Law), was overwhelmingly approved by the Assembly with a vote of 62 for and 22 against the bill, making El Salvador the first sovereign nation to approve a cryptocurrency as legal tender (Renteria *et al.* 2021). The reasons for adopting Bitcoin as legal tender included bringing into the fold nearly 70% of the Salvadoran population who did not have access to traditional financial services and promoting economic growth for the benefit of the population (Decreto N° 57 2021 p. 1).

Effective September 7, 2021, Salvadorans were able to transact business either in U.S. Dollars (USD) or in Bitcoin (BTC). The law stipulated that the exchange rate between BTC and the USD would be determined by the market. At the purchaser's request, the law mandated the acceptance of Bitcoin payments by all goods and services providers (Article 7) with the technical capability to do so (Article 12). To protect against Bitcoin price volatility, the law guaranteed *"the automatic and instantaneous conversion of Bitcoin into Dollars if so desired"* by the recipient (Article 8). The guarantee was backed by the creation of a \$150 million governmental trust fund in the Development Bank of El Salvador (BANDESAL) (Decreto N° 57 p. 2). Exhibit 7, lists other provisions included in the legislation.

Exhibit 7. Other Provisions of the Bitcoin Law

Source: Bitcoin Law p. 2

Prices for goods and services could be quoted in Bitcoin.

Taxes could be paid with Bitcoin.

No capital gains taxes associated with the sale of Bitcoin.

The infrastructure investment to implement the plan would be funded by the government.

The U.S. Dollar would continue to be the currency of reference for accounting purposes.

In Peter McCormack's *"What Bitcoin Did"* podcast (2021 40:13), President Bukele explained that Article 7, 8 and 12 of the Bitcoin Law could not each be viewed in isolation. He noted that if merchants refused BTC payments *"it would be discrimination against 70% of the people you*

want to benefit,” so Article 7 is there to protect the buyers. Article 8 was designed to protect the sellers because as President Bukele noted, if sellers “*don’t want to receive Bitcoin, they just press a button, and they will receive U.S. dollars.*” He stated that both parties “*have full freedom to choose between Bitcoin and U.S. dollars.... It’s probably the only system in the world that lets a payer pick one of the choices that is different from the seller.*” He mentioned that Article 12 protected everybody as it gave parties the ability to opt out for several reasons. President Bukele stated that they would continue to promote its use and recognized that it could take 5 to 10 years until full adoption.

The Chivo Wallet Rollout

Shortly after the passage of the Bitcoin Law, President Bukele announced plans to release a mobile app named Chivo, which was slang for “cool,” as the country’s digital wallet. As a government sponsored app, individuals did not incur cellular data charges. Users only needed access to the Internet. To promote the use of the wallet, Salvadorans who downloaded the free app and registered would receive the equivalent of \$30 in Bitcoin to encourage its use in the economy and to incentivize its citizens to utilize the app (Casa Presidencial 2021a). The conversion of the \$30 bonus into Bitcoin would be determined using the spot rate at the time of Chivo app registration. Other details about Chivo are outlined in Exhibit 8. Exhibit 9 illustrates the Chivo App. Chivo was a custodial wallet, which meant that users did not hold the private key to their Bitcoins. Exhibit 10 lists the pros and cons associated with custodial wallets.

By launch day, a network of 200 Bitcoin ATMs were located around the country. In addition, 50 Bitcoin ATMs were installed in various cities in the United States to facilitate the transfer of funds from Salvadorans living abroad (Chivo Bitcoin ATMs 2021). Chivo ATMs could be found in Dallas, Houston, El Paso, Laredo, and McAllen in Texas; Los Angeles and San Francisco in California; Chicago, Illinois; Columbus, Ohio; and Doral, Florida.

Exhibit 8. Additional Chivo Wallet Details

Source: Casa Presidencial Twitter Account (2021b, 2021c, 2021d)

Users may choose their preferred currency (BTC or USD) to make or receive a payment.

Users may hold both USD and BTC balances in the wallet.

Users may convert USD into BTC and vice versa at any time.

Users may make payments and send funds using a QR code, as well as receive payments using a QR code.

Users may buy BTC without paying any commissions.

Exhibit 9. The Chivo Wallet

Source: Phone images from Chivowallet.com

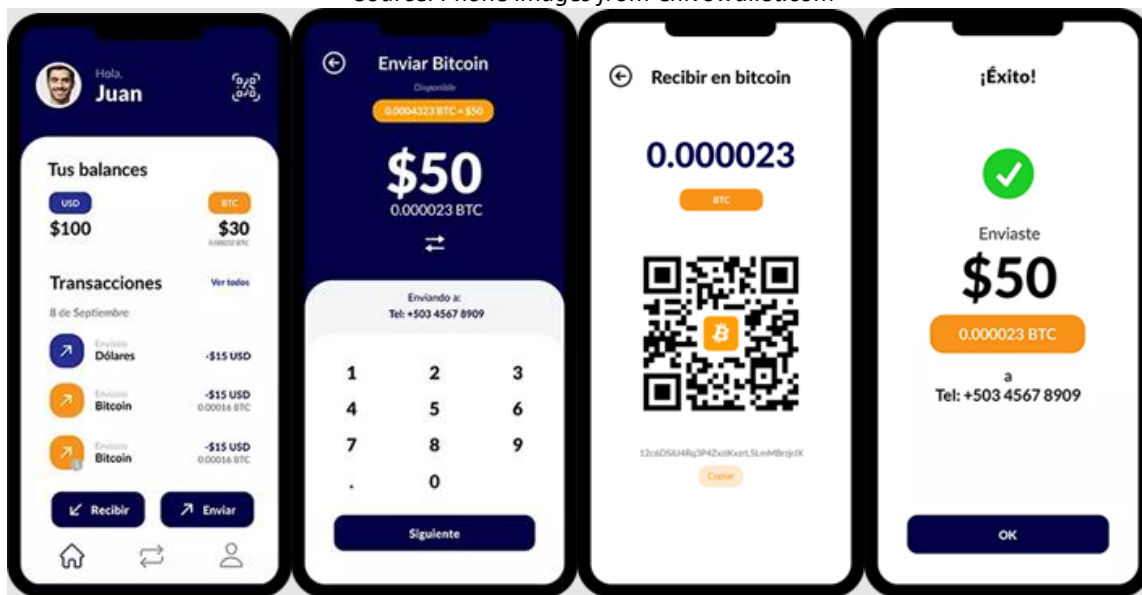


Exhibit 10. Pros and Cons of Custodial Wallets

Source: Recreated from BitPay Blog (2022)

Pros	Cons
Less responsibility held by users	Private keys are controlled by third party
Simple and easy to use for beginners	Custodial wallets are vulnerable to hackers
Can reset password to regain access to digital assets	KYC and AML verification for account creation ^[1]
	Less advanced features available for experienced crypto use

^[1] KYC or ‘Know Your Customer’ is a mandatory process that requires the identification and verification of a client’s identity. AML or ‘Anti-Money-Laundering’ is a set of procedures to identify and prevent profits from illegal activity

Citizens' Views of Bitcoin

A national poll conducted by the University Institute of Public Opinion (IUDOP) at Central American University (San Salvador) prior to the Chivo rollout indicated that 67.9% of the 1,281 individuals interviewed disapproved of adopting Bitcoin as legal tender. A similar percentage of respondents indicated that they would like to see the Bitcoin Law revoked. According to the survey, 60% of the participants did not agree with the use of public funds to promote the initiative. Furthermore, 90% percent of the participants demonstrated a lack of understanding that Bitcoin was a financial asset rather than currency. Moreover, 80% percent of those interviewed expressed little or no interest in downloading and using the Chivo wallet (Instituto Universitario 2021). A year after implementation, negative public opinion regarding the adoption of Bitcoin continued to persist. Exhibit 11 through 13 summarizes key findings from 1,269 survey participants conducted in September 2022. Overall, only 38.7% of survey participants approved of the use of Bitcoin (Instituto Universitario 2022).

Exhibit 11. Percentage of Respondents who have used Bitcoin for Purchases or Payments

Source: Recreated from IUDOP (2022), page 2

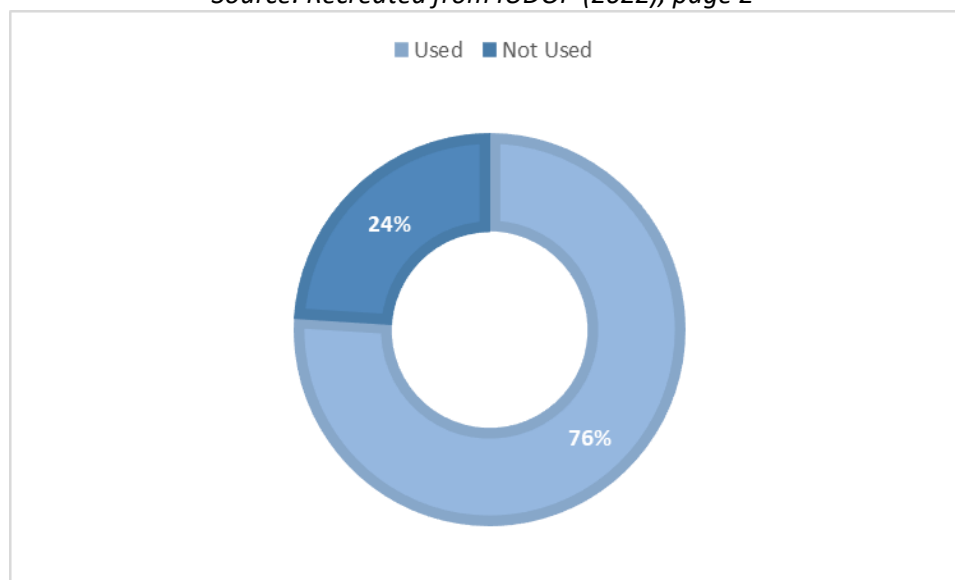


Exhibit 12. Should the Government Continue Spending Public Funds on Bitcoin Purchases?

Source: Recreated from IUDOP (2022), page 2

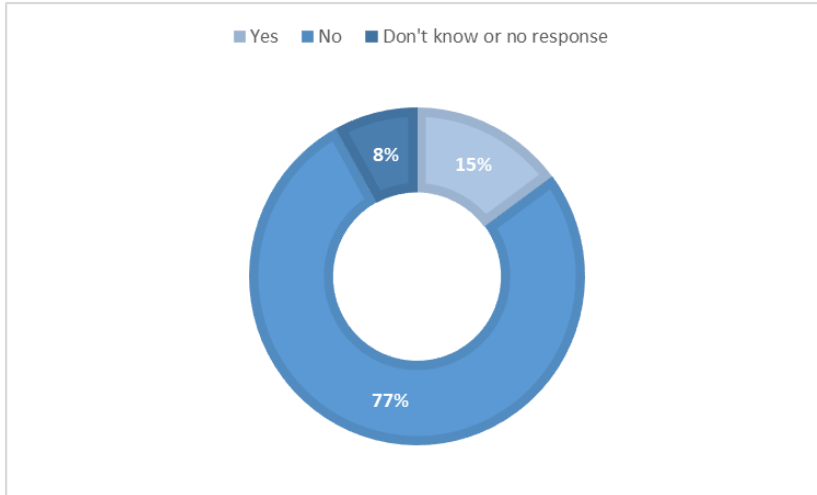
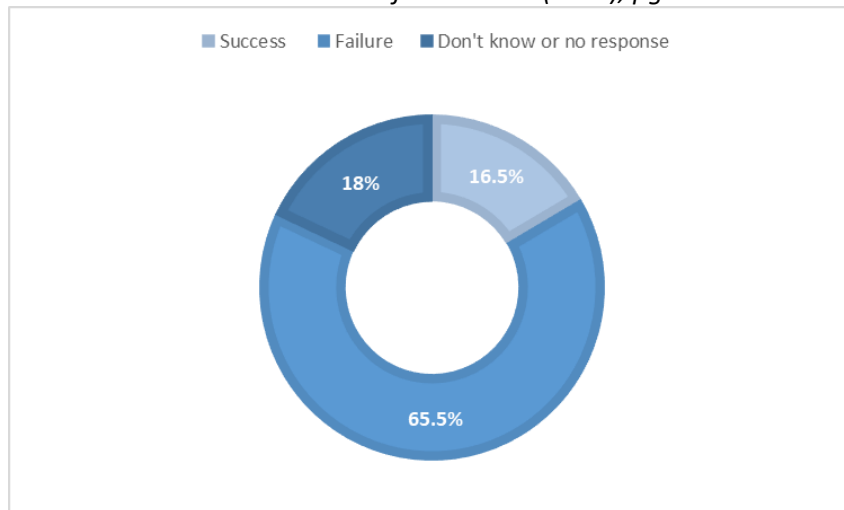


Exhibit 13. Has the Approval of Bitcoin been a Success or a Failure?

Source: Recreated from IUDOP (2022), pg. 2



Not So Smooth Launch Day

The implementation of the plan did not go smoothly. On launch day, Chivo was offline for a prolonged period to address server capacity issues due to heavy demand. Reports surfaced that the Chivo wallet was not available in the major app stores, while others reported login issues when using their telephone numbers or their official government ID (Perez & Ostroff 2021). In the following months, complaints regarding identity theft and phishing schemes were reported. Claims regarding failed transactions between Chivo and other e-wallets, as well as blocked transactions and unauthorized charges in the app also surfaced (The Block 2022).

One and Done?

El Salvador reported, through a tweet, 4 million registered Chivo users (Bukele 2021b). Despite the substantial number of registered Chivo users, data on actual Chivo wallet and BTC usage was not available from government sources. Alvarez *et al.* (2022), in partnership with CID-Gallup, interviewed 1,800 individuals to determine the success of the BTC initiative. Alvarez *et al.* stated:

“According to our results, over two-thirds of Salvadorans (68%) are aware of the existence of Chivo Wallet, and most people find out about it through social media, followed by TV and radio, news, and friends and family. The probability of being aware of Chivo is higher for individuals who own a cell phone with internet, and who are banked, educated, young, and male. However, not all of those who know about the app have tried to download it, just over half of all respondents. Most downloads took place just as Chivo was launched. In fact, 40% of all downloads happened in September 2021, and virtually no downloads have taken place in 2022. The main driver of adoption is reported to be the \$30 bonus offered by the government, equivalent to 0.7% of annual income per capita. Again, owners of a cell phone with internet, and those who are banked, more educated, younger, and male are more likely to download this technology. The most important reason not to download the app, conditional on knowing about it, is that users prefer to use cash, which was followed by trust issues—respondents did not trust the system or Bitcoin itself. While most respondents spent their \$30 bonus, less than half of those who downloaded Chivo Wallet continued to use it after spending the bonus—20% of all respondents. Furthermore, most users who used Chivo after spending the \$30 bonus do not engage with the app intensively. We do not find evidence of Chivo Wallet being used to pay for taxes or to send remittances at a significant scale.”

According to El Salvador’s Chamber of Commerce and Industry, 86% of local businesses had not made any sales using Bitcoin, and only 13.9% said that they had. Meanwhile, 3.6% of local stores indicated that Bitcoin had contributed to an increase in their sales, while 91.7% reported that the implementation of Bitcoin had no effect on their businesses (McDonald 2022). In an interview, Fernando Alvarez, coauthor of the Alvarez *et al.* 2022 NBER (National Bureau of Economic Research) working paper stated, “*There is no experiment where a currency was introduced with such strong incentives and still failed*” (Taylor 2022).

Through December 2022, \$126.7 million of the \$7.742 billion in total remittances for the year or 1.6% were transferred through the wallet (Banco Central 2022). Monthly total remittances and remittances via cryptocurrency wallets for 2022 followed the same pattern. With the non-substantive percentage of remittances transferred using cryptocurrency wallets, the potential savings by using Chivo rather than through banks or money transfer to transfer remittance services fell short of the estimated savings of \$400 million annually touted by President Bukele (Bukele 2021). Refer to Exhibit 14 for remittance data. Remittances were recorded in the current account of the balance of payments, under secondary income. Refer to Exhibit 15.

Exhibit 14. Total Remittances and Remittances via Cryptocurrency Wallets

Source: Created from Personal Remittances According to Geographical Destination in Millions USD (Banco Central 2022a)

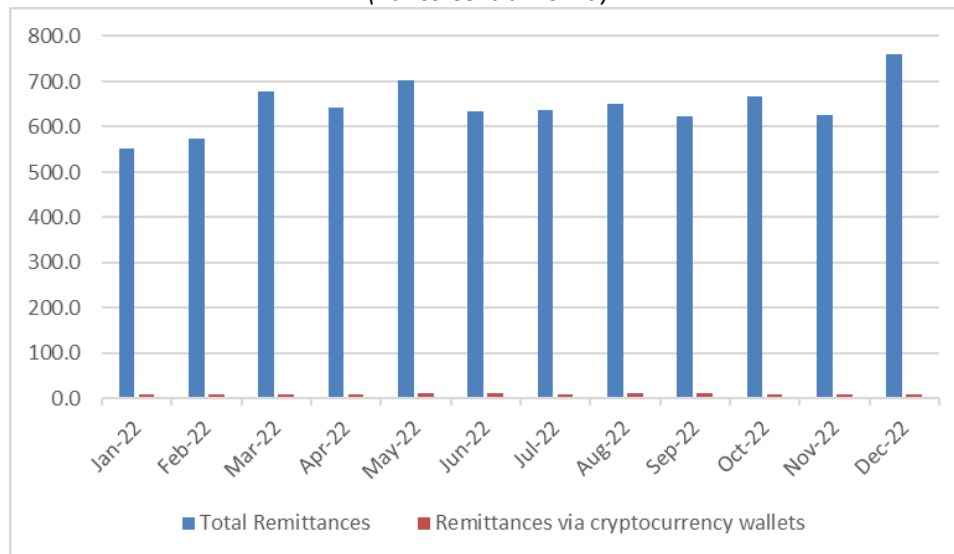


Exhibit 15. El Salvador Current Account of the Balance of Payments

Source: Created from the *Economic and Financial Data for El Salvador in Millions USD (Banco Central 2022b)*

	Q3/22	Q2/22
Current Account Balance	-623.06	-642.66
Exports of goods	1524.39	1546.84
Imports of goods	4092.07	4124.16
Services, Credit	1119.88	1064.69
Services, Debit	670.15	676.57
Primary Income, Credit	67.85	56.25
Primary Income, Debit	495.25	449.85
Secondary Income, Credit	2010.47	2025.78
Secondary Income, Debit	88.18	85.65

First it was Bitcoin Beach. Next a Bitcoin Volcano?

One final motivating factor for Bitcoin adoption was the idea that El Salvador, a small country, could benefit from capturing a disproportionate share of worldwide enthusiasm for Bitcoin. In November 2021, President Bukele announced plans to build a new “*Bitcoin City*.” The settlement was to be constructed in a “*coin shape*” at the base of the Conchagua volcano, where geothermal energy could be used to meet the heavy electrical power requirements needed to mine new Bitcoin (Attlee 2022). The construction project was to be financed in the future by Bitcoin-backed Salvadoran bonds; any investor buying more than \$100,000 in bonds would qualify for Salvadoran citizenship (Attlee 2022). By bringing in high-income citizens and increasing crypto-tourism, El Salvador hoped to eventually set up a successful tourism industry akin to Cancún or Cabo San Lucas in Mexico. Crypto industry companies lauded the plan, predicting El Salvador would become “*the Singapore of Latin America*.” Critics noted that the volcano had recently shown noticeable seismic activity, electricity costs would likely be higher than electricity generated in other regions, and the country already had a record of failed charter city plans (Attlee 2022).

International Monetary Fund and Debt Payments

External creditors were not impressed by the volcano. On January 24, 2022, the Executive Board of the International Monetary Fund (IMF) concluded its consultation with El Salvador's government regarding the adoption of Bitcoin as a legal tender. The directors emphasized that there were substantial risks linked to the use of Bitcoin along multiple dimensions, including financial stability (banks may need to establish new capital and liquidity requirements to cope with Bitcoin volatility), financial integrity (possibility of tax evasion, money laundering, terrorist financing), consumer protection (individuals and business might be subject to cybercrime or loss of wealth due to large fluctuations in value), as well as the associated fiscal contingent liabilities (because of adoption with public funds) (IMF, 2022). Due to these factors, IMF advised El Salvador to reverse its decision to make Bitcoin a legal tender.

The adoption of Bitcoin was viewed as a negative signal by credit rating agencies. In February 2022, the credit rating agency Fitch downgraded El Salvador's Long-Term Foreign Currency Issuer Default Rating from "B minus" to "CCC" and subsequently downgraded its rating again from "CCC" to "CC" in September 2022. Among the main reasons was weak fiscal liquidity and the high current account deficit, increasing the probability of default on external debt (Fitch downgrades 2022). For similar reasons Moody's and Standard and Poor's revised El Salvador's credit rating. Refer to Exhibit 16 for the El Salvador's credit agencies rating.

Exhibit 16. El Salvador's Credit Rating

Source: Created from Fitch (2022), Moody's (2022) & S&P Global (2022)

Agency	Rating	Outlook	Last Updated
Fitch	CC	NA	September 15, 2022
Moody's	Caa3	Negative	May 4, 2022
Standard and Poor's	CCC	Negative	June 1, 2022

In response to speculation that El Salvador would default on its debt, in September 2022, the government spent \$360 million in foreign currency reserves to buy back a portion of the bonds which were going to mature in 2023 and 2025 (Dulaney *et al.* 2022). To ensure that there would

be sufficient funds to pay for the debt repurchase, the Congress of El Salvador passed a bill allowing the conversion of \$360 million special drawing rights (SDR) allocated by the IMF to be converted to U.S. dollars (Renteria 2022). A second bond buyback was scheduled for the end of November 2022, with a maximum repurchase of \$74 million. While doubts in financial markets persisted over the possibility of default, El Salvador formalized credit for \$350 million from the Central American Bank for Economic Integration and other external sources in the beginning of January 2023. Surprising credit rating agencies and market participants, on January 23, 2023, El Salvador's Finance Minister announced via Twitter that the country had completed payment of the 2023 \$800 million bond, the same day as it was set to mature (Reuters 2022).

Bitcoin Developments

As shown in Exhibit 17, from 2015 to 2018, the price of Bitcoin increased at an accelerated rate. Between 2018 and the middle of 2020 was a period of relative stability, but during the COVID-19 pandemic the price accelerated rapidly through March 2021. Between March 2021 and July 2021, Bitcoin lost about half of its value. Bitcoin then regained all its lost value between July 2021 and December 2021, before beginning an unrelenting slide to one-third of its peak value by January 2023. In Exhibit 18, El Salvador's Bitcoin purchases are provided alongside the price at time of purchase.

Exhibit 17. Daily Price of Bitcoin in U.S. Dollars Over Time

Source: Yahoo! Finance BTC – USD from February 2015 – February 2023

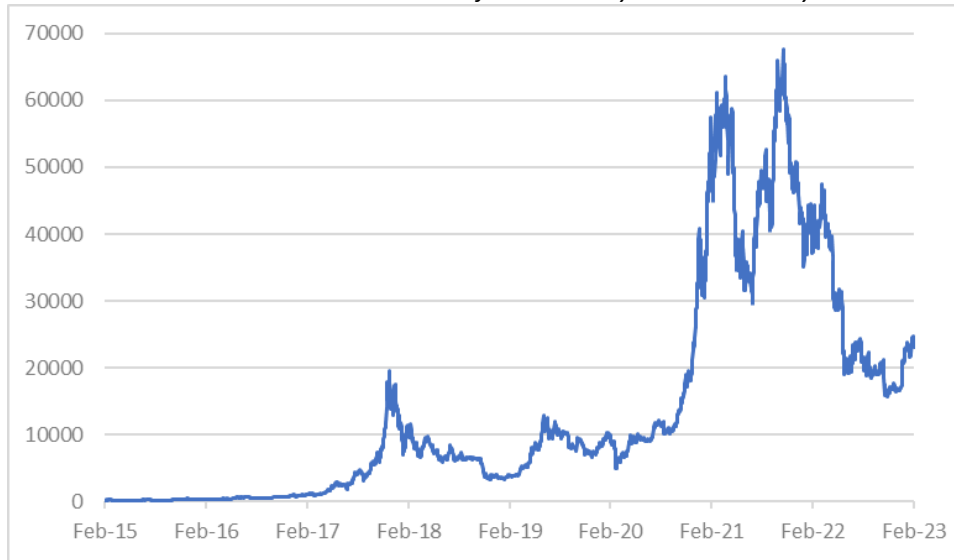


Exhibit 18. Daily Price of Bitcoin in U.S. Dollars Over Time

Source: Adapted from Prashant (2022)

Purchase Date	Bitcoin Quantity	Cost per Bitcoin	Total invested
September 6, 2021	400	\$46,811	\$18,724,400
September 7, 2021	150	\$46,091	\$6,913,650
September 19, 2021	150	\$42,843	\$6,426,450
October 27, 2021	420	\$60,622	\$25,461,240
November 26, 2021	100	\$54,815	\$5,481,500
December 3, 2021	150	\$48,670	\$7,300,500
December 21, 2021	21	\$49,220	\$1,033,620
January 21, 2022	410	\$36,585	\$15,000,000
May 9, 2022	500	\$30,744	\$15,372,000
June 30, 2022	80	\$19,000	\$1,520,000
November 17, 2022	1 per day and thereafter	Between \$16,687 and \$30,253 as of writing	~\$5,000,000 as of April 10, 2023

As of April 10, 2023, El Salvador’s BTC holdings were estimated at 2,546 BTC. This was up from the 2,381 BTC announced after a purchase of 80 BTC in July 2022, and a tweet from President Bukele on November 16, 2022, which stated that El Salvador would purchase 1 BTC per day, beginning the next day. The Bitcoin holding had an approximate market value of \$77 million and an estimated purchase price of \$108 million, representing a 29% loss on the BTC holdings (McDonald 2023).

Despite the 29% loss on their BTC investment, Samson Mow, CEO of Jan3 and one of the main proponents of BTC adoption in El Salvador, believed that El Salvador's experiment could become a successful example for other countries to follow. He commented that El Salvador losses on the BTC portfolio were outweighed by the benefits that BTC adoption brought to the country stating:

“The biggest achievement is that they managed to rebrand themselves as a Bitcoin country and they've drawn a lot more attention to themselves on the international stage. This is good for a number of reasons. This is because they are attracting more investments to the country, they're attracting a lot more tourism, I believe tourism is up 30%. And basically, they're the epicenter of nation state of Bitcoin adoption at this time.” (Cointelegraph 2022).

However, Mow's implied attribution of the increase in tourism to Bitcoin may have been overstated, as the increase in tourism in 2023 was largely attributed to the crackdown on crime. From 2019 through early 2023 there had been 365 days with no murders, compared to the previous 10 years where there was only 1 murder-free day (Di Salvo 2023a). As of May 15, 2023, BTC was trading at \$27,600 with BTC transaction fees increased to \$31, which made it more expensive for BTC users in El Salvador (Di Salvo 2023b). The country was also preparing to issue the Bitcoin volcano bonds after the Legislative Assembly in January 2023 approved the Digital Assets Issuance Law that provided the framework for the sale of bonds (Kohler 2023).

Given the fluctuations in the Bitcoin market, the level of public support for the Bitcoin rollout, and the attitude of external investors toward Bitcoin adoption, was the President's choice to adopt Bitcoin as legal tender a clever idea? Was it superior to dollarization?



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Stephen J. Cotten received his Ph.D. in Economics from University of Tennessee in 2009. He joined the UHCL faculty as an associate professor in 2015, after working as an assistant professor from 2009-2015. In the summer of 2022, he was promoted to professor. He has written over twenty journal articles and book chapters and has delivered various presentations. Dr. Cotten has also contributed content to four textbooks and served as a consultant for Space Center Houston, regional hospitals and local government.



Ivelina Pavlova received Ph.D. in Finance from Florida International University in 2008 and is a Certified Financial Planner™. She joined the University of Houston – Clear Lake in Fall 2008 as an Assistant Professor of Finance. Dr. Pavlova teaches Business Finance, International Finance and Personal Wealth Management courses. In 2014 Dr. Pavlova was promoted to Associate Professor. Since 2022 she has been a Full Professor at the same university. Her research interests are in the field of international finance, emerging markets, derivatives, commodities, and ESG investing.



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GT ENERGY GROUP OF MEXICO: ENERGIZING A TEAM MEMBER

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In November 2021, Raquel, Deputy Director at GT Energy Group of Mexico, was assigned to manage a recently adjusted team in the Biofuels department. Increased goals and expectations for 2022 were communicated to the team from higher-ups. After seven months of adapting to her new responsibilities, Raquel identified that Tomás, one of the team members, only partially met the job expectations, mainly due to his attitude. Despite Raquel's attempts to lead Tomás, he seemed to be increasingly ineffective in his role, with consequences for the team and the projects. Additionally, Tomás made inappropriate comments about Raquel's appearance and failed to acknowledge her authority.

Raquel made efforts to mitigate Tomás' inappropriate behavior while striving to improve his performance. She scheduled weekly one-on-one meetings with him. She created a development plan for Tomás to monitor his own work. Nonetheless, Tomás' poor performance became known to Raquel's superiors. Because of this, she was suddenly faced with the decision of whether to continue working with Tomás, request to transfer him to another department, or terminate his employment.

When Hector, the new general manager, learned about the issue, he wanted to terminate Tomás immediately – but doing so would be costly to the Mexican company given Mexican employment law. Hector looked to Raquel for another way to remedy the situation.

Company Background

GT Energy Group of Mexico was a company focused on renewable energy projects, including a unit dedicated to electricity generation projects. In 2020 the executives of the unit were replaced, and the departments and employees of the unit were reassigned to new teams. The change in management personnel occurred for a variety of reasons, including incomplete projects, unresolved audits, and poor team performance. Hector, the new general director of GT Energy Group of Mexico, took over in November 2020 and found that the departments were overloaded. His first directive was to reassign teams and responsibilities.

The Reassignment of Teams

Hector oversaw the reorganization of this unit and the structuring of new teams. The Biofuels department did not have a director and had been run for the past year by the deputy director, Raquel. After analyzing the responsibilities in the department, Hector reorganized the team with two deputy directors, Raquel and Tomás, and one staff support person, Sandra.

Team Members

Hector. After three years at the company, Hector was promoted to general director. Even though he came from a different area, he had a good understanding of the matters and procedures of the renewable energy industry. His first change was realigning teams based on team members' expertise. Although the employees did not always agree with Hector's changes, they adhered to the directives. Hector was polite, often charismatic, and seemed like a good leader. He was always looking to make every employee feel appreciated. After examining the

way the biofuels department worked, Hector found that Tomás was avoiding his responsibilities, and noticed that Raquel, as the head of the team, neither fixed nor reported the problem. In October 2021, Hector spoke with Raquel and instructed her to remove Tomás from the team due to his poor performance.

Raquel, a young woman, was deputy director of Biofuels, with three years of experience within the department. In 2019, Raquel's boss had resigned; when he did, he gave Raquel the plans and budgets for the following years, and instructions on how to run the department. When Hector assigned additional employees to the team, Raquel oversaw the new employees' onboarding process and supervised their initial work. In June 2021, she was promised a promotion to director of the Biofuels department. Raquel was the admittedly inexperienced boss of Tomás and Sandra but was also highly motivated to succeed to help all the people in her team succeed. Raquel became increasingly concerned after noticing shoddy work from Tomás and listening to Sandra's constant complaints about having to correct Tomás' work. In October 2021, after Hector talked to her about Tomás, Raquel reassured Hector that she would work to motivate Tomás and get him to improve the quality of his work.

Tomás worked at GT Energy Group for 4 years and was moved between three different departments before his promotion in 2020 to deputy director. His expertise was mainly in topics related to energy efficiency. When he was reassigned to the Biofuels department, he did not like the idea, but he accepted the promotion. Essentially, Tomás had transited from a support (staff) role to role with direct responsibilities in the biofuels department. In Biofuels, there was a relatively heavy workload of projects, and the department had experienced some delays. Most people would describe Tomás as very friendly and charismatic, but sometimes careless. When Raquel expressed her concerns about his performance, Tomás attributed it to being on a learning curve and claimed not to fully understand his new tasks. He assured Raquel that he would be more careful in the future. Tomás was confident that in the worst scenario Hector would move him to another department or allow him to go back to his previous position.

New Year Expectations

Happily, the problems of the Biofuels department from 2020 were nearly resolved, and the new goals for 2022 were ambitious. Nonetheless, Raquel was confident that the department could reach them. All was looking positive. However, in January Raquel was called to Hector's office. The problem? Continuing complaints about the quality of Tomás' work. She explained to Hector that she had scheduled weekly one-on-one meetings with Tomás. She created a development plan for Tomás to monitor his own work. Nonetheless, his work remained substandard. Raquel communicated it was easier to do the work herself than to completely rework Tomás' product. She asked Hector to transfer Tomás. to another department.

Hector reprimanded Raquel for not firing Tomás when she first had evidence of poor performance. No, Hector explained, he would not transfer Tomás to another department – instead, Raquel would have to convince him to resign. The meeting did not end well.

After the meeting, Raquel researched GT Energy's human resource policies on termination of employment. She learned the termination process required Hector's approval. She knew Hector would not be willing to approve the termination process because it would take at least two months or more. Raquel met with Hector and explained the policy. Hector indicated that the company could not wait; instead, Raquel should ask Tomás for a letter of resignation. Hector hinted that if Raquel continued to perform well, she would be promoted to Director of the Bioenergy department – a significant increase in her formal authority, prestige, and compensation. Continuing to perform well, Raquel thought, seemed to imply getting rid of Tomás.

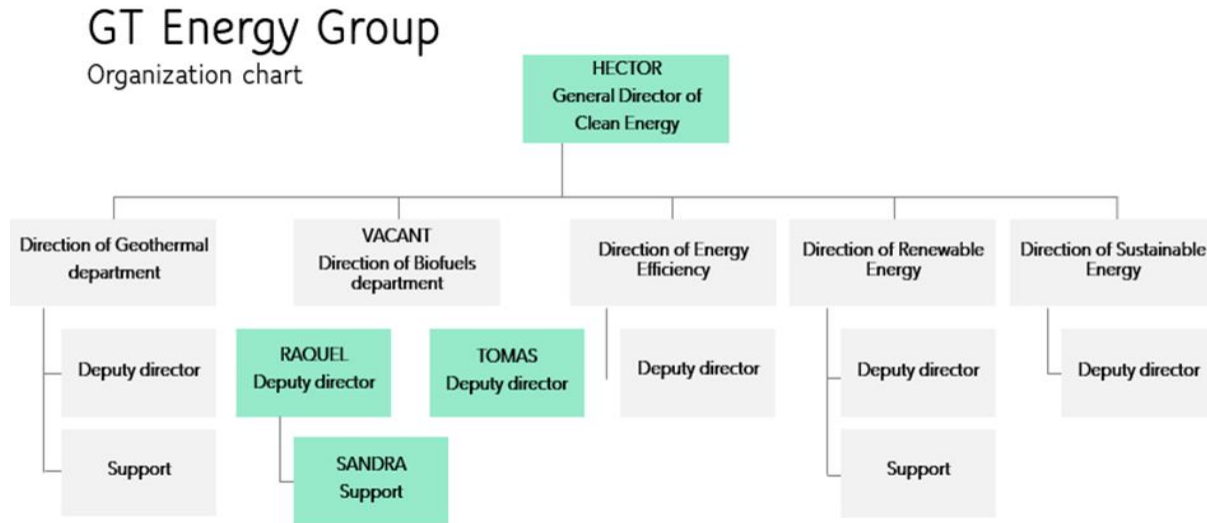
The Ultimatum

Hector requested a report with all the documented incidents of Tomás' performance. He further informed Raquel that she would need to have a meeting with Tomás the following morning. Hector tried to convince Raquel that she would learn a lot from the meeting and surprised her by saying he would be out of the office in the morning for an important assignment. Nonetheless, the company would provide a lawyer to accompany Raquel at the meeting with Tomás.

The following morning, Raquel, the lawyer, and Tomás met. In the meeting, Raquel read a long list of documented incidents of Tomás' poor performance. Tomás agreed that the concerns were valid, but some of them were not entirely accurate. In the heat of the conversation, Raquel said that the incidents were indeed accurate, and that she had not even included Tomás' unbelievable excuses for not delivering results, or the inappropriate comments that he made about her. After this outburst, the lawyer requested more information about the comments. Raquel described to the lawyer some of Tomás' comments about her attire and her physical appearance.

The lawyer asked Raquel if she asked Tomás to stop making these comments. She said yes. He asked her if after asking him to stop, he kept it up. Raquel said yes; even though she suspected that Tomás had not meant the comments in a bad way, the comments made her feel uncomfortable. The lawyer then asked Tomás if what Raquel had said was true. Tomás confirmed he had indeed made some comments but said that Raquel must have misunderstood him. The meeting ended with the lawyer telling Tomás that the company had a zero-tolerance policy for sexual harassment. The ultimatum: either Tomás would resign or his employment at GT Energy would be terminated.

Appendix A. GT Energy Organization Chart



Appendix B. Sexual Harrassment Legislation in Mexico

CERO TOLERANCIA al Hostigamiento Sexual y al Acoso Sexual

The National Institute for Women and the Mexican Government created the Zero Tolerance campaign for public service personnel and citizens to join in the construction of a culture free of *Hostigamiento Sexual* and *Acoso Sexual* (sexual harassment), promoting prevention in the work environment and designating a single national procedure for attention, sanction and registration of cases.



Hostigamiento sexual and *acoso sexual* were defined as conduct of a lewd, unwanted, and improper nature exhibited in the workplace. To the extent that such behavior humiliates, offends, intimidates, and violates women's health, integrity, dignity, professional opportunities, and human rights, it constitutes an expression of sexual and gender violence.

According to the General Law on Women's Access to a Life Free of Violence, *Hostigamiento Sexual* is defined as:

"The exercise of power, in a relationship of real subordination of the victim to the aggressor in the workplace and/or school. It is expressed in verbal, physical, or both behaviors related to sexuality with lascivious connotations."

Acoso Sexual is defined as:

"A form of violence in which [...] there is an abusive exercise of power that leads to a state of defenselessness and risk for the victim, regardless of whether it is carried out in one or several events."

Both behaviors express an exercise of power that leads to a state of defenselessness and risk for the victim, regardless of whether it is carried out in one or several events. A crucial element is **consent** or lack thereof. That is, if such behaviors are not desired, allowed, or explicitly tolerated by two or more people who participate in them, the conduct of a sexual nature that invades the space of psychosexual freedom constitutes an act of sexual harassment.

Appendix C. Ethical and Legal Considerations

Ethical and legal confrontations can be common in the workplace. There is a fine line between the two: law dictates how a person must behave, while ethics dictates how a person should behave.

Forced Resignation: A forced resignation is when “an employee quits his or her position of employment as a result of pressure from managers, supervisors, or members of a board” (Palmquist, 2023). In both Mexico and the United States, forced resignation is not typically unlawful, but can be an opportunity for the employee to negotiate a deal upon exit.

At-will Employment – Mexico: Mexico does not have at-will employment. Instead, individuals enter into individual contracts with employers. Because Mexico does not have at-will employment, the reason for termination must be justified cause as listed in Mexican Federal Labor Laws. An unjustified cause for dismissal entitles the employee to sue for wrongful termination.

Severance upon Termination:

Voluntary Resignation: In Mexico, when there is a voluntary resignation, the employer must pay all benefits due, including sales incentives, on a prorated basis up to the termination date. If the employee has at least fifteen years of seniority, he is entitled to a seniority premium of twelve days’ salary for each year of service, capped at twice the minimum daily salary in force.

Termination with Cause: The employer must pay all benefits due, including commissions, on a prorated basis until the date of termination, and the seniority premium of twelve days of salary for each year of service (but with a cap of twice the minimum daily salary per the terms above).

Termination without Cause: Employees who are terminated without cause are entitled to the following lump sum severance: (1) three months of the employee’s daily aggregate salary, (2) plus twenty days of the employee’s daily aggregate salary for each year of service; (3) plus a

seniority premium of twelve days' salary for each year of service (but with a cap of twice the minimum daily salary in the same terms as explained before); plus (4) any benefits due.

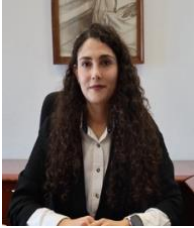
Notice Period: There is no necessary notice period before termination in Mexico. However, the employer should have a written reason with just causes and date of occurrence provided to the Labor Board. Failure to do so will deem the termination as unjust (Dismissals, (n.d.)).

Employment Law - United States

In the United States, an employee without an individual or collective contract is employed at-will, and therefore can be fired for any reason in the absence of a specific legal exception. However, in some instances, the courts will protect employees who do the right thing, even if this violates the boss's orders (e.g., the public policy exception to employment at-will). U.S. courts have been willing to uphold casual promises from employers, such as written or oral agreements or implied contracts in place of formally signed documents. A written agreement can include an employee handbook.

Sexual harassment under U.S. law involves unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature. There are two types of sexual harassment: *quid pro quo* and hostile work environment.

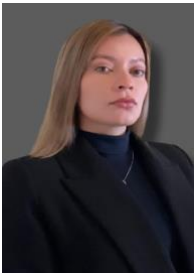
A Hostile Work Environment per U.S. court precedents is a form of sexual harassment. Creating a hostile work environment means an employee has a valid claim of sexual or gender-related behavior, talk, or innuendo that interferes with the ability to work. Courts have found that comments about clothes or body parts can create a hostile environment.



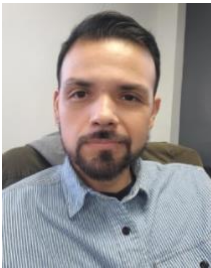
Rosa Isela Gomez Garcia (rgomezg@calstatela.edu) is a graduate MBA student at California State University, Los Angeles, in the College of Business and Economics. She earned her Bachelor of Environmental Engineering from Instituto Politecnico Nacional of Mexico. She focuses on how finance and policies affect business, social, and political programs and currently works on Clean Energy projects.



Luis Garcia (lgarci272@calstatela.edu) is a graduate student at the College of Business and Economics at California State University, Los Angeles. He earned his B.A. from California State University, Long Beach, and is pursuing his Master of Business Administration. He brings over 20 years of professional work experience in the private business sector and enriches his academic pursuits with real-world insights. Luis aspires to extend his academic journey by pursuing a Ph.D.



Silvia E. Arias is a student at California State University, Los Angeles, working towards her MBA with a concentration in Management. She earned a B. Sc. in Business Administration with a concentration in Marketing Management from the same university. She has worked in both Management and Human Resource departments.



Carlos Morales is a graduate student at the California State University Los Angeles in the College of Business and Economics currently pursuing his MBA. Carlos completed his B.A in Art from the California State University Dominguez Hills. He has ten years of professional experience as a Graphic Designer and has transitioned into the world of Project Management where he has now been completing projects for five years.



Katelyn R. Guevara (kgueva19@calstatela.edu) is a returning student at California State University, Los Angeles. She previously graduated on the Dean's List with a B.S. in Business Administration. Katelyn is currently pursuing her master's in business administration (Concentration: Finance/New Venture), with a goal of earning a Ph.D.



Ivan Beltran was born and raised in Los Angeles and graduated from California State University, Los Angeles in 2021 with a bachelor's degree in business administration and a minor in Real Estate. He accomplished this while being employed as an assistant manager at Little Caesars and gaining experience in a management role. He is currently attending California State University, Los Angeles pursuing a master's degree in business administration with a focus in finance. Ivan has set a goal to graduate by fall 2025 and he has also joined the corporate workforce at Bank of America with hopes of furthering his career in a finance focused role.

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UNBOXD: DETERMINED TO MAKE SECONDHAND YOUR FIRST CHOICE

**SVILENA VALCHEVA
ALEKSANDAR NIKOLOV
STEFAN BALKANSKI
TRENDAFIL DZHINGAROV**
American University in Bulgaria

Nikol, Vilislav and Aleks, founders of Unboxd, had a clear mission. They wanted to extend the lifetime of fashion. Their vision was to become Europe's leading e-commerce platform focused on the resale of fashion items for both men and women, sparking an eco-conscious retail movement that would reduce the fashion industry's environmental impact by extending the lifetime of clothing items and encouraging on-going sustainable practices through re-selling and re-wearing.

Unboxd was a digital C2C fashion resale service for brand-new and pre-worn fashion goods. As a start-up project, Unboxd participated in Season 3 of the Elevate Program at the American University in Bulgaria (AUBG) and won a \$10,000 USD grant. During the program, Unboxd hosted its first two "Pop-Up Bazaars" in Blagoevgrad, Bulgaria, and created the MVP version of the product: the Unboxd website. In the first 8 weeks after the website was launched, Unboxd gained over 100 users and 300 listings organically (AUBG Elevate Accelerator 2023; Haydushka 2022).

Shortly after, Unboxd won second place at the "Best Youth Startup 2022" hosted by the Fund of Funds and then second Place at Pitch2Pitch, receiving the Grantive Award. In August 2022, Unboxd was accepted into the ClimAccelerator program, receiving a €5,000 Euro Grant (Funds of Funds 2022; Pitch2Pitch 2023).

The authors developed the case for class discussion rather than to illustrate either effective or ineffective handling of the situation. The case and its accompanying instructor's manual were anonymously peer reviewed and accepted by the *Journal of Case Research and Inquiry, Vol. 9, 2024*, a publication of the Western Casewriters Association. The authors and the *Journal of Case Research and Inquiry* grant state and nonprofit institutions the right to access and reproduce this manuscript for educational purposes. For all other purposes, all rights are reserved to the authors. Copyright © 2024 by Svilena Valcheva, Aleksandar Nikolov, Stefan Balkanski & Trendafil Dzhingarov. Contact Svilena Valcheva, Southern Industrial Zone, ul. "Svoboda Bachvarova" 12, 2700 Blagoevgrad, Bulgaria, svr237@aubg.edu.

The Unboxd team was dedicated to transforming the shopping habits of individuals who perpetuated overconsumption, often amassing vast quantities of clothing that remained unworn.

Unboxd's founders advocated for conscious clothing purchases and aimed to educate the public on the detrimental effects of fast fashion. While they recognized that they could not stop the momentum of fast fashion entirely, they believed it was possible to decelerate its pace.

Understanding the extensive resources required to produce a single item of clothing might encourage consumers to reevaluate their wardrobes before making their next purchase. By promoting pre-loved fashion as an eco-friendly alternative to mainstream stores, Unboxd offered consumers a sustainable option. Purchasing an item that has already been "unboxed" by a previous owner, but remained in good condition, extended its lifetime and allowed multiple individuals to appreciate the item over time.

The Impact of Fast Fashion

Fast fashion was the design, production, and advertisement of clothing with a focus on producing large quantities of items quickly. It was a combination of short-term trends and low-quality materials (such as synthetic fabrics) to provide cheap styles to the end consumer. In essence, it was inexpensive clothing produced rapidly for mass-market retailers in response to the latest trends.

The fashion industry has been challenged on a global basis for its environmentally harmful supply chain practices. Despite widely reported negative effects on the environment, the industry has been expanding because of the emergence of fast fashion, which depended on low-cost production, frequent consumption, and short-lived garment use. Fast fashion had a huge impact on water usage, chemical pollution, CO2 emissions, and textile waste. Over 92 million tons of garbage were created annually by the fashion business, and 79 trillion liters of

water were used. There was a need for fundamental changes in the fashion business model based on these environmental effects, including a slowdown in manufacturing, the adoption of sustainable practices throughout the supply chain, and changes in consumer behavior, specifically a decrease in clothing purchases and an increase in garment lifetimes. To provide long-term sustainability of the fashion supply chain, many believed there was an urgent need to return to "slow" fashion, minimizing and mitigating the negative environmental repercussions (Niinimäki *et al.* 2020).

Due to price decreases and fast fashion delivery to consumers, the average volume of clothing purchased in the European Union (EU) had climbed by 40% in just a few decades. Between 2% and 10% of the EU's consumption's negative environmental effects were attributable to clothing. Most of the production was done outside the EU. Therefore, the consequences were seen in developing nations. Large quantities of water and chemicals, including pesticides for the cultivation of raw materials such as cotton, were needed for the manufacturing of raw materials, spinning them into fibers, weaving fabrics, and coloring. Consumers also had a large environmental footprint due to the water, energy and chemicals used in washing, tumble drying and ironing, as well as to the microplastics shed into the environment. Since technology that would make it possible to recycle worn clothing into virgin fibers was still in its infancy, less than half of used clothing was collected for reuse or recycling and only 1% was recycled into new clothing. Several solutions to these problems had been put forth, such as new business models for clothing rental, designing products to facilitate recycling, reusing clothing (circular fashion), persuading consumers to buy fewer higher-quality clothes (slow fashion), and generally influencing consumer behavior to favor sustainable options.

In 2018, the European Union adopted a circular economy package that would, at the insistence of the European Parliament, for the first time ensure that textiles were collected separately in all member states by 2025 at the latest. The use of environmentally friendly and sustainable raw materials, as well as the reuse and recycling of garments, had long been promoted by the European Parliament (Nikolina 2019).

Circular Economy in Fashion

The "take-make-use-throwaway" philosophy of the linear economy, which had negative side consequences such as economic loss, environmental destruction, and risks to human society, had long been accepted by the fashion industry. Governments and industry leaders promoted the social need for a move from the linear economy to the circular economy, which supported the "take-make-use-reuse" system. Business models for the circular economy were centered on the development of closed manufacturing systems that kept resources in use for long periods of time. Despite the fashion industry's significant need for - and ambition to become - circular, little was known about the principles and applications of the circular economy in the industry.

The transition from linear to circular fashion posed many obstacles for designers, academics, businesses, and innovators. Despite an increase in circular fashion academic research over the past five years, the sector has struggled to implement a truly circular economy. There were few empirical studies examining whether consumers morally supported the idea of a circular fashion (CF) or felt obligated to participate in fashion businesses' CF offerings. The fashion industry faced complex challenges in implementing CF because just one supply chain member's commitment—a fashion retailer—was insufficient to create CF without the involvement of consumers (Dissanayake & Weerasinghe 2021; Ki *et al.* 2021).

Unboxd aspired to be an authoritative voice on the circular economy in the fashion sector, addressing the prevailing stigma associated with secondhand. While many brands were shifting towards creating clothing from recycled materials, the process still entailed the production of new garments, inevitably consuming resources.

In contrast, the Unboxd platform offered a space where individuals could list clothing items that had already been produced, worn, and were still in good condition. Though Unboxd's objectives aligned with its indirect competitors, Unboxd accepted that there was room in the market for

both approaches: as long as consumers were educated and inspired to make the Earth a better place.

The Secondhand Clothing Market

Secondhand consumption was a significant circular practice leading to decreased environmental consequences (Bocken and Short 2016; Shirvanimoghaddam *et al.* 2020) and helping to reduce resource use and trash generation (Fanning *et al.* 2022). Because of the negative environmental consequences of new clothes consumption in wealthy societies, such as CO2 emissions, chemical pollution, water, and land use (Niinimäki *et al.* 2020), it was important to investigate the used clothing market. Garment reuse did not come without negative environmental consequences (Sandin & Peters 2018) and buying secondhand did not always mean avoiding the purchase or creation of new products (Sharpe *et al.* 2022). Product reuse, however, was fundamental to circular economies and secondhand marketplaces could play an important role in shifting consumption away from new items by encouraging the use of already existing products (Niinimäki *et al.* 2020; Sharpe *et al.* 2022; Persson & Hinton 2023).

According to Quartz (Diaz, 2023), *“The secondhand clothing market is exploding.”* As more people became aware of the environmental, social, and economic benefits of thrift shopping, the market for worn apparel might, in fact, overtake that of fast fashion. According to a recent analysis by ThredUP, an online consignment and thrift retailer, the worldwide secondhand garment market was anticipated to rise 127% by 2026, three times faster than the overall apparel market.

In 2022, the market for used clothing increased by 24% year on year to \$119 billion dollars. According to the ThredUP research, growth was occurring globally, with North America accounting for approximately 42% of the market. The global market for secondhand fashion was anticipated to rise 127% to \$218 billion by 2026 (Diaz 2023; Hill 2023). According to eMarketer and Insider Intelligence, secondhand clothes would account for \$30.6 billion, or 10%

of all apparel sales in the United States, by the end of 2025 (Insider Intelligence 2022). According to ThredUP Resale Report 2023, the global secondhand market was set to nearly double by 2027, reaching \$350 billion. Online resale was expected to reach \$38 billion by 2027, growing two times faster than secondhand overall. Younger generations were expected to account for nearly two-thirds of incremental secondhand spend as their purchasing power increased (ThredUP 2023).

Competition

In recent years, the secondhand clothing market in Bulgaria had grown in popularity and become a successful industry. Secondhand clothes were a cost-effective and environmentally friendly alternative to purchasing new garments: a popular choice for Bulgarians looking for distinctive fashion items, low-cost alternatives, or just a means to lessen their environmental impact.

One of the biggest players in the market was Mania, launched in 1996 in the city of Varna. Mania was the leading franchise chain with dozens of modern secondhand and new outlet clothing and footwear stores in Bulgaria. The company had three main activities: collecting, sorting, and trading. It had a large production facility with its own sorting line. The company had 41 physical stores in the country, 57% of which were franchises, as well as an updated online store (Mania 2023). According to SimilarWeb, the site had 21,000 visits per month, a bounce rate of 70,4% and an average visit duration of 0:01:31, which indicated that the online store was not very popular.

The biggest player in the online space was Remix. With 4 million visitors per month, a bounce rate of 33,80% with 16,27 pages per visit and an average visit duration of 00:11:29, the Remix site was the leader in the online secondhand market (SimilarWeb 2023). Remixshop.com was one of the leading online secondhand and outlet fashion stores in Europe. Remix offered high quality and affordable branded clothing and accessories for women, men, and children. With a

blog behind the site, Remix focused on sustainable fashion. Its motto was: “*We are creating the sustainable future of fashion today.*” The website offered a 40% discount for new users and claimed that it added 15,000 new items every day and had high a quality selection of over 5,000 global brands (Remix 2023).

Online websites for other secondhand items such as olx.bg and bazar.bg could also be considered competitors. These websites had a huge penetration in Bulgarian society and had been around for many years.

NOLD was one competitor to Unboxd. NOLD had 3 separate projects: a) influencers sent some of the clothes (only women’s clothing) they no longer wore for people to purchase; b) “*Nold by You*” allowed anyone to upload listings and boost them (through paid offers); and c) operating in the UK market where NOLD collaborated with certain brands and sold their items.

PUSH was yet another rival, “*the biggest fashion community*” as per its marketing campaign. The interface of PUSH’s application looked like Instagram but with the option to sell the items in the photos. PUSH’s business model was similar to NOLD’s; both offered paid boost listings. Both companies recently announced that they would charge 8% commission on every sale. The majority of the items were supposedly uploaded by the company, and the clothes were purchased from secondhand outlets. PUSH also had its own line of new clothes.

In contrast to platforms like eBay, Unboxd specialized exclusively in sustainable fashion: clothing, accessories, and footwear. Unboxd considered itself to be an expert in this niche, curating a marketplace tailored specifically for eco-conscious fashion. Visitors to Unboxd’s platform had a clear objective — to purchase sustainable fashion items.

Predominantly brick-and-mortar stores in the United States (such as Goodwill), contrasted with the Bulgarian market where there were numerous secondhand stores. However, a substantial number of Bulgarian stores lacked a robust online presence. Given the digital-centric

predilections of the Gen Z demographic, coupled with the global trend toward online shopping, Unboxd viewed e-commerce as the future of retail. Unboxd offered users the convenience of browsing curated sustainable listings from the comfort of their homes.

Although there were other online competitors in the sustainable fashion space, Unboxd was conveying the message that sustainability and caring about the planet was cool. People should really think twice before making their next purchase of clothes. Unboxed strived to be a pioneer in educating consumers about the intricacies and imperatives of sustainable fashion. Unboxd's emphasis was on engaging younger customers who were receptive to adopting new, environmentally conscious habits. Unboxd experienced challenges in reaching older Bulgarians, who often required intensive efforts to understand the importance of sustainable consumption.

Unboxd primarily catered to eco-conscious individuals who already had sustainable living habits. Such individuals required little persuasion about the merits of investing in pre-owned fashion. Additionally, Unboxd welcomed anyone looking to resell well-preserved clothing items on the platform.

[A Startup with an Unclear Business Model](#)

By June 2023, Unboxd had organized 8 pop-up bazaars in Sofia, Blagoevgrad, and Burgas, Bulgaria and had been featured in *Forbes*, DigitalK, and Economic.bg (Djeneva 2023; Mihlelieva 2023; Stoyanova 2023). The company was educating youth organizations on the importance of extending the lifetime of fashion through lectures, events, and live presentations. Unboxd's website was free to use for sellers and buyers and featured a variety of secondhand treasures and useful features such as rating/reviewing users, the ability to make pricing offers on items, and shop clothing based on style preference.

Nonetheless, Unboxd was facing a huge problem: How to start generating revenue?

During the AUBG accelerator program, the Unboxd team formed three focus groups composed of 10-15 participants each. The focus group participants were peers and friends from the university. The focus groups revealed a clear inclination towards a subscription-based business model akin to Netflix. Encouraged by this response, Unboxd incorporated the subscription idea into its pitch during the Demo Day presentation to the jury. However, the jury found Unboxd's financial projections to be overly optimistic. Despite this setback, Unboxd received an initial investment after one month.

Vilislav Slavev, Co-founder of Unboxd, said:

“We needed to implement monetization quickly, so we began building a solid foundation for the two main website features: user listing uploads and the option for others to purchase them. It took us a few months to upgrade our initial MVP, which was presented on Demo Day. During this time, we focused on networking with entrepreneurs and founders in Sofia, while also meeting new people. However, many individuals expressed reluctance to pay upfront for a similar service, particularly in Bulgaria.”

Unboxd's pursuit took an exciting turn when it received an invitation to meet with Vitosha Ventures, a prominent Venture Capital Fund in Bulgaria. To prepare, the Unboxd team meticulously crafted financial projections and forecasts encompassing three different scenarios. Despite a positive meeting, Vitosha Ventures acknowledged the lack of traction that Unboxd had gained thus far and suggested that the team should explore generating revenue from each transaction on the website, both from buyers and sellers. Doubts were expressed regarding the viability of the business model in Bulgaria. Sensing the need for an alternative, the Unboxd team embarked on an extensive brainstorming session that led to a pivotal idea.

The subscription model was abandoned entirely, giving way to a new concept: charging a percentage from every sale on the platform. The Unboxd team eventually settled on an 18% fee for sellers included in the price of the uploaded item for sale (the lowest rate in Bulgaria) and a 7% service fee for buyers, resulting in a total commission of 25% per transaction for Unboxd. However, another challenge soon emerged. The operational systems of Speedy and Econt, the two biggest courier services in Bulgaria, could not accommodate Unboxd's commission-based

business model. There was no mechanism in place for the courier services to split the money received for the "pay on delivery" option selected by the buyer. The ideal scenario would have been for Speedy or Econt to receive full payment including the 7% service fee. The courier company could then transfer the 7% service fee along with the 18% fee from the seller to the Unboxd platform's account. Discussions with the courier service companies revealed that this approach would not be feasible in the short run. Validating the idea took an additional 3-4 months. The Unboxd team was not convinced that the buyer should be additionally charged for the service provided. Due to the inability to implement a solution, the model was dropped as well.

Vilislav Slavev noted:

"Currently, the only way this could work is if buyers are willing to pay online using debit cards through Stripe. However, we face a larger problem based on the local mindset of many people. Firstly, older generations are generally skeptical of even ordinary e-commerce stores that sell their own inventory with buyer protection and guarantees. Secondly, there is a stigma surrounding secondhand fashion in Bulgaria. Unboxd combines both aspects in one platform. Therefore, we began educating our audience about the positive aspects of shopping for secondhand items online."

In February 2023, another brainstorming session sparked a new possibility: partnering with physical secondhand stores who wished to establish an online presence. Leveraging the existing website, this collaboration seemed like a perfect solution to increase and diversify listings and boost conversions, a key metric in attracting further investment. Many users expressed interest in purchasing items but struggled to find what they wanted. Unboxd targeted stores unaffiliated with the Mania franchise who were lacking an existing website. After engaging in discussions and securing the interest of a store manager, Unboxd's plans hit a roadblock. Permission from the owner, who was located outside of Bulgaria, was necessary to proceed. At this point, the Unboxd team realized that it had deviated too far from its original idea, which centered on helping individuals extend the lifespan of their clothes by uploading and selling them on the platform. As a result, Unboxd decided to halt the potential partnerships with physical stores.

Unboxd conceived the *"We sell for you"* business model, which proved successful. The Unboxd team was committed to enhancing conditions for users selling their items, ensuring a seamless and rewarding experience and better terms. *"We sell for you"* was a service where sellers dispatched their items to the platform, where Unboxd would complete the listing on the seller's behalf. The service included uploading pictures, pricing, managing the listing, and overall performance marketing with the purpose of selling the item as soon as it was uploaded. Once the item was sold, Unboxd would transfer a percentage of the funds to the seller and keep the rest as commission. This model came with the additional complications of having a warehouse to store items that were advertised on the platform.

Transaction Safety, User Privacy and Product Quality

Unboxd firmly upheld user privacy by adhering to the stringent regulations set by the Bulgarian General Data Protection Regulation (GDPR). Unboxd's compliance with these regulations underscored its commitment to ensuring the privacy and protection of user data. Misleading its customers or compromising their trust was non-negotiable, and the Unboxd team implemented rigorous measures to prevent such scenarios.

Regarding product quality, Unboxd relied on a third-party authentication provider. By doing so, Unboxd ensured an objective and unbiased verification process for the items listed on the platform. Such a partnership allows Unboxd to leverage the specialized expertise of industry professionals, thereby ensuring a high standard of product authentication. Unboxd's primary objective was to amplify the positive impact in the market and grow the business.

Conclusion

Unboxd was led by a passionate team of young entrepreneurs who, along their journey of experimentation, adaptation, and lessons learned, still had the ambition to contribute to a better future for our planet. By addressing the challenges they had met along the way, overcoming obstacles, refining the business model, and focusing on the user experience, the Unboxd team was getting closer to reducing the environmental impact of the fast fashion industry.

Appendix A. Unboxd Team

WHO ARE WE



NIKOL PEEVA
CO-FOUNDER



VILISLAV SLAVEV
CO-FOUNDER



ALEKS KISOVA
HEAD OF BRAND

THE DEV TEAM



KIRIL TRENKOV
JUNIOR FULL STACK



KRISTINA TSVETANOVA
UX/UI DESIGN

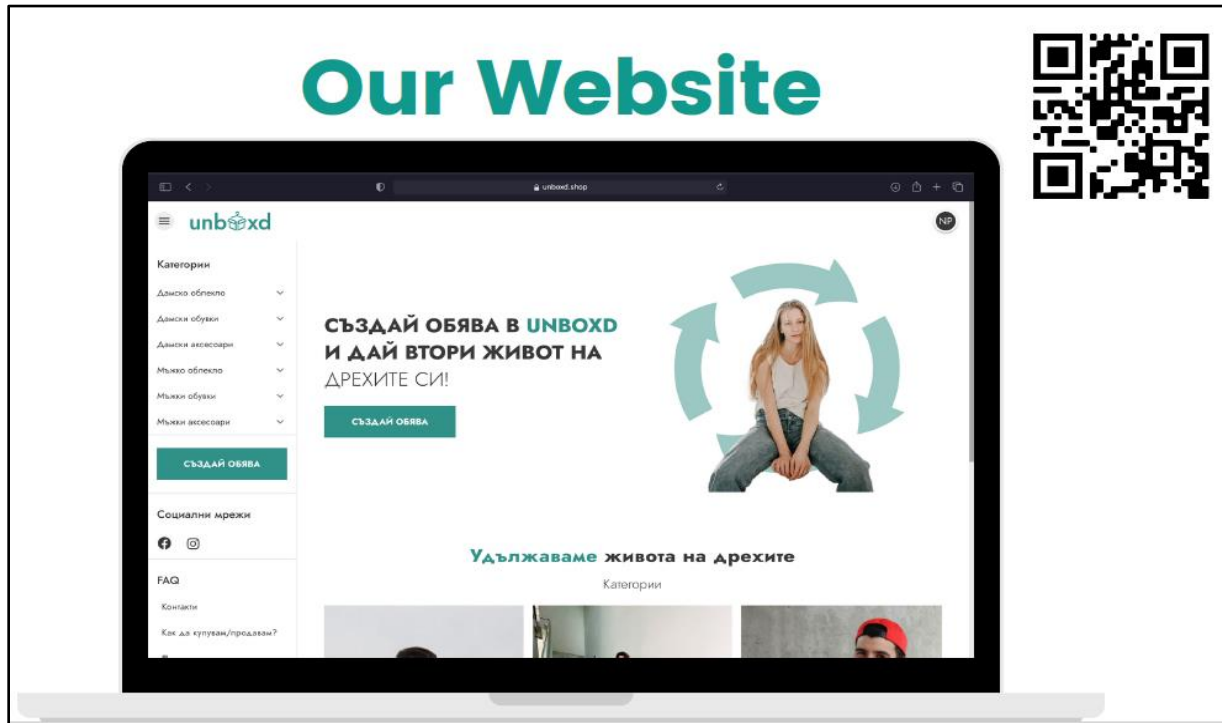


STOJAN LISICKOV
JUNIOR FULL STACK



GEORGI ANTONOV
SENIOR FULL STACK

Appendix B. Unboxd's Website




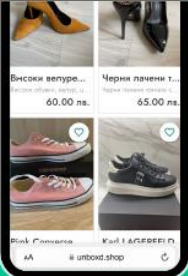
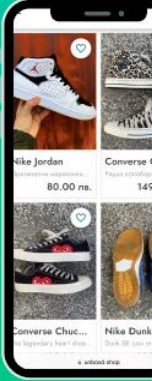
SHOP AND SELL SECOND HAND

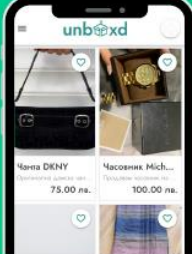


● ● ●

GIVE A NEW LIFE

Sell and shop preloved clothing straight from the comfort of your own home to help build a greener tomorrow.

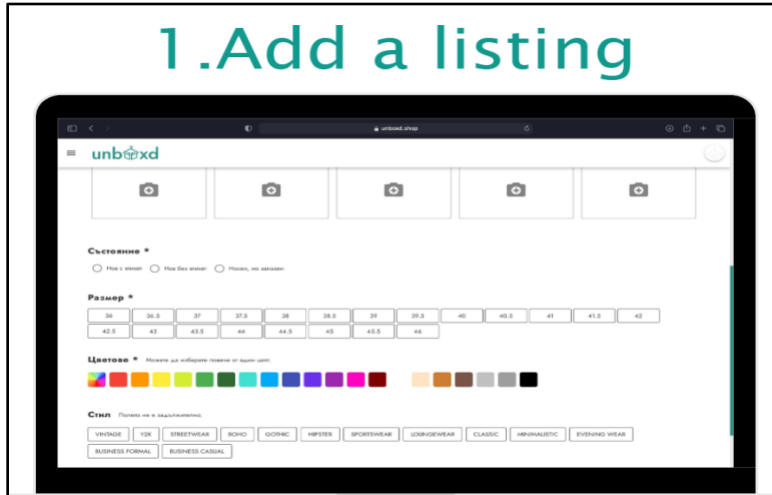
Take a photo, add details to your listing, and give a new life to your clothes. No commission on sales.

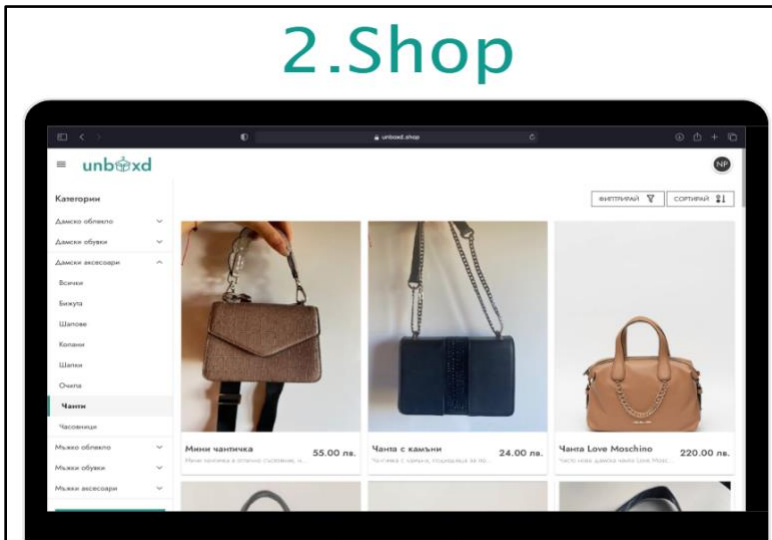




Appendix B. Unboxd's Website, continued

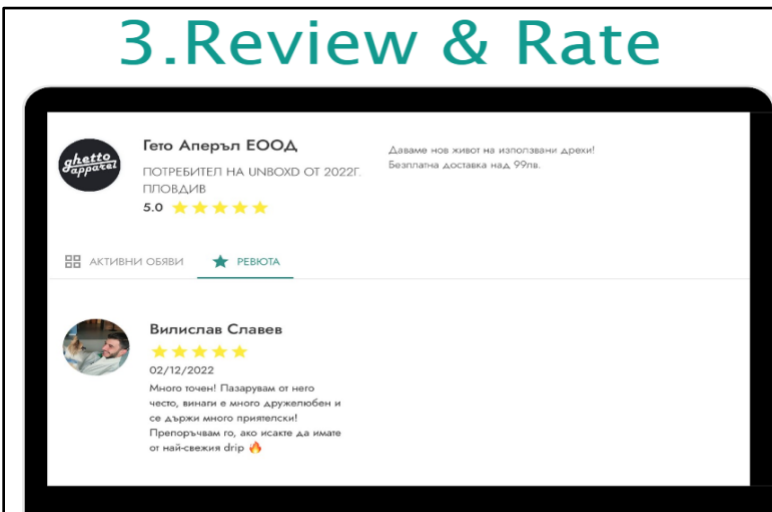
1. Add a listing



2. Shop



3. Review & Rate




Appendix C. Timeline

Since the beginning...




<p>1st Pop-Up 1st resale bazaar hosted at AUBG</p>	<p>2nd Pop-Up 2nd resale bazaar hosted in Blagoevgrad</p>	<p>MVP Launch In 8 weeks: 100+ users 300+ listings</p>	<p>Accelerator \$10,000 investment from the Elevate Accelerator Program</p>	<p>3rd Pop-Up 3rd resale bazaar hosted in Plovdiv</p>
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From every competition...



<p>2nd Place 2nd place at "Best Youth Startup 2022" hosted by the Fund of Funds</p>	<p>Business Marathon Unboxd was presented as a business case for the Business Consulting Marathon 2022 hosted by 180 Degrees Consulting</p>
--	--

We've always loved what we do...



<p>Pitch2Pitch Grantive Award</p>	<p>ClimAccelerator Accepted into Phase 1. 5,000 Euro Grant</p>	<p>Women's Entrepreneurship Day Partner for the Event</p>
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Appendix D. Unboxd's Bazaars

Sofia Pop Up Bazaar 01.10

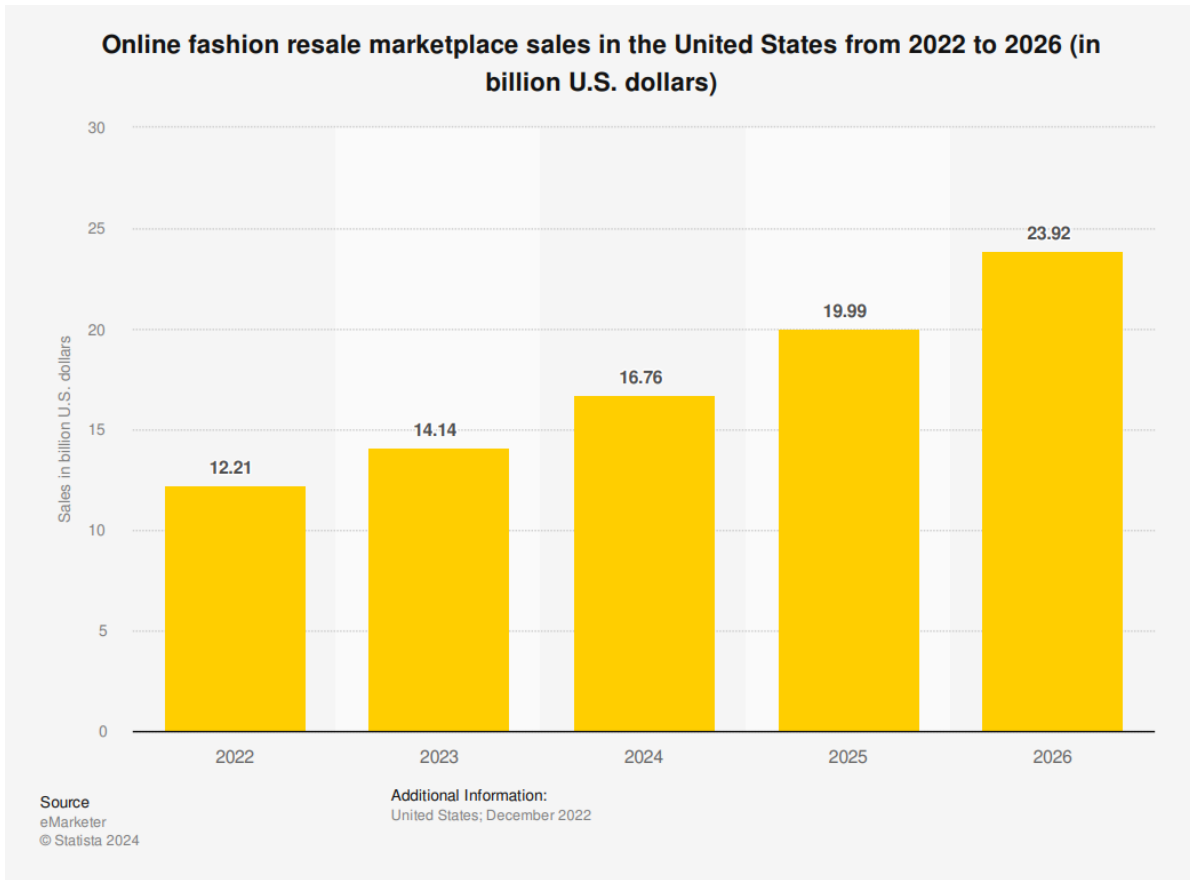


AUBG Pop Up Bazaar 23.11

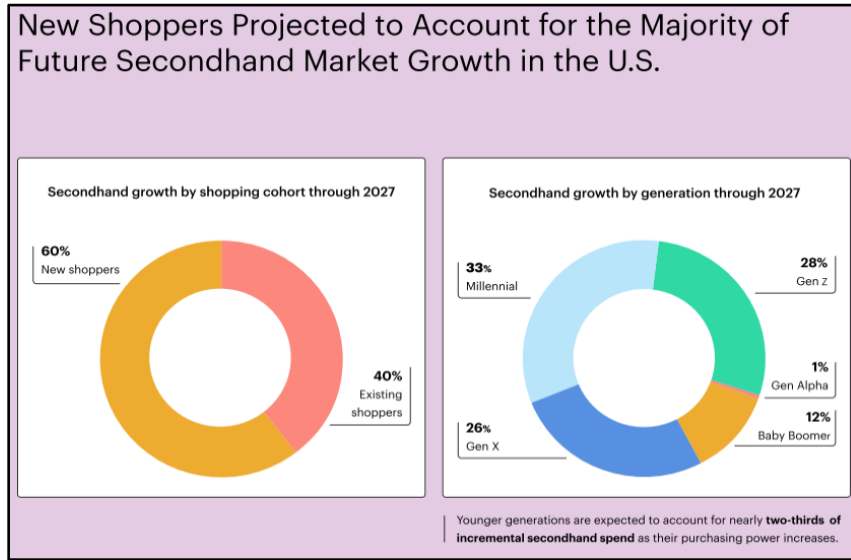
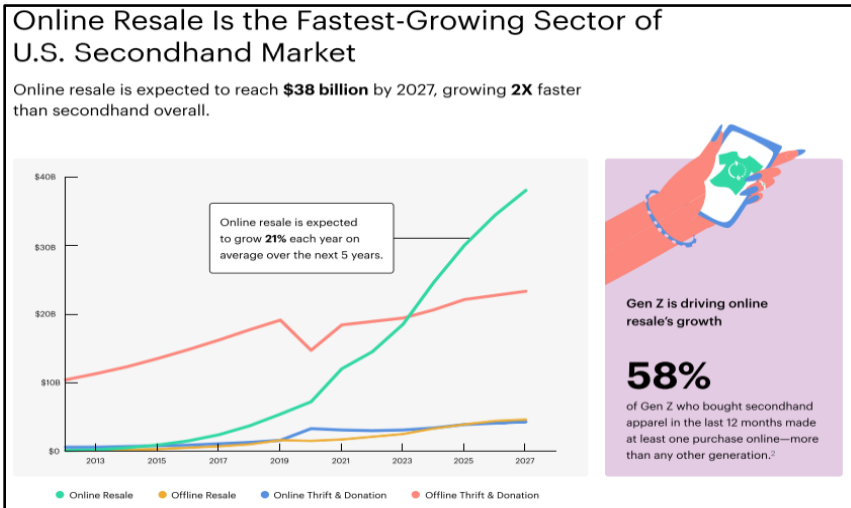
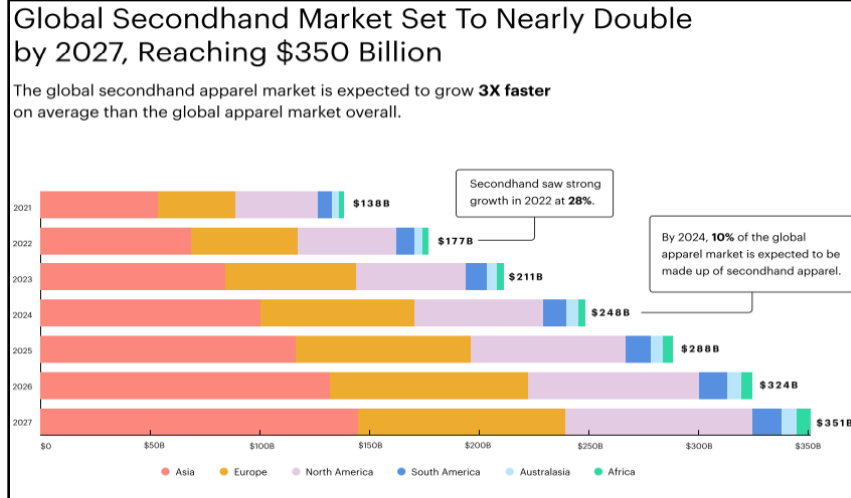


Appendix E. Market Data – 2022 -2026

Source: Statista 2024



Appendix F. Market Data – 2023 ThredUP Resale Report



Appendix G. Local Competition - Mania

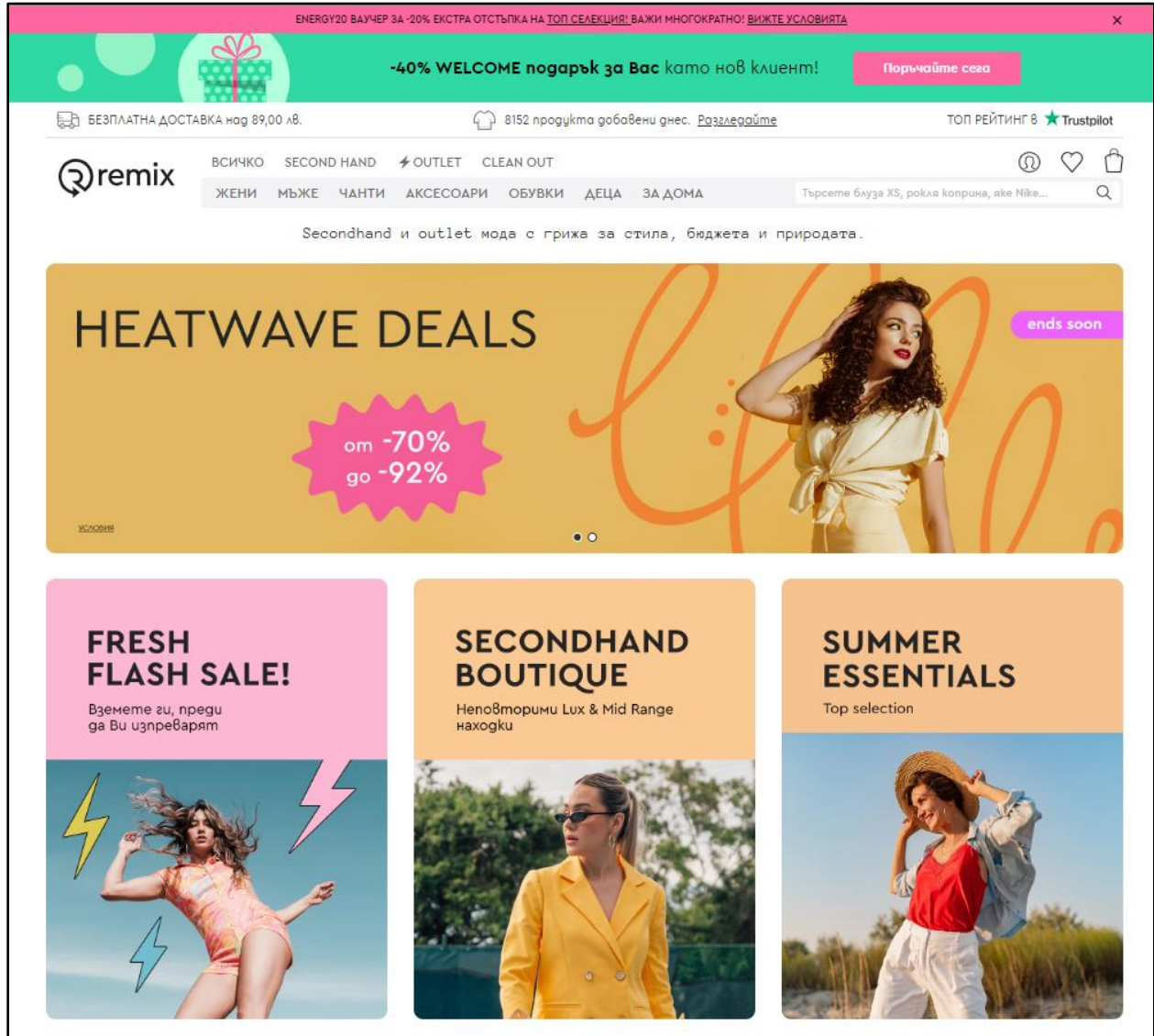
The screenshot shows the Mania website homepage. At the top, there is a navigation bar with the Mania logo, a search bar containing the text 'Търсене', and icons for a heart, a shopping bag, and a user profile. Below the navigation bar, there are several menu items: 'ЖЕНИ', 'МЪЖЕ', 'ДЕЦА', 'ОБУВКИ', 'АКСЕСОАРИ', 'OUTLET', 'SECOND HAND', 'ОФЕРТИ ДО 10 ЛВ', 'SMART CHOICE', 'MOST WANTED', 'НОВА КОЛЕКЦИЯ', and 'SALE'. Below the menu, there are two promotional banners: 'БЕЗПЛАТНА ДОСТАВКА ПРИ ПОРЪЧКА НАД 80 ЛВ. И ПРЕДВАРИТЕЛНО ПЛАЩАНЕ.' and 'БЕЗПЛАТНА ДОСТАВКА ДО МАГАЗИНИ МАНИЯ ПРИ ПРЕДВАРИТЕЛНО ПЛАЩАНЕ.'

The main banner features a woman in a gold and white patterned outfit on a beach, with the text: **HOT SUMMER SALE**, **ДО -90%**, and **на сезонни модели**.

Below the main banner are four promotional tiles:

- МАНИА ЗА РОКЛИ**: **ДО -90%** (with an image of a woman in an orange dress).
- ЗА СПАСИТЕЛИ НА ПЛАЗА**: **OUTLET БАНСКИ**, **ОТ 8 ЛВ.** (with an image of a woman in a white swimsuit).
- ЛЕТНИ НАХОДКИ ЗА НЕЯ**: **ДО 30 ЛВ.** (with an image of a woman in a beige top and striped pants).
- СЕЗОННИ ЗАБИВКИ ЗА НЕГО**: **ДО 30 ЛВ.** (with an image of a man in a light-colored jacket).

Appendix H. Local Competition – Remix





Svilena Valcheva is an experienced professional in the Online Gambling sector internationally. She specializes in Safer Gambling and Customer Protection, Compliance, Regulatory and GDPR areas, Operational and Organizational Excellence and Change Management. Overseeing a large Operations department that she created from scratch, Svilena is a passionate leader with a can-do attitude who goes above and beyond. She holds an EMBA from the American University in Bulgaria. Her desire is to make a difference, to empower and motivate the younger and more unexperienced by coaching, mentoring and positive leadership.



Aleksandar Nikolov is a Founder and CEO of AI SOLUTIONS Ltd., With over two decades of expertise in the IT enterprise sector, marked by a resolute dedication to achieving results and ensuring client success, he managed to lead to significant growth on Business results and Market footprint. His skill set encompasses Leadership, Coaching, and Strategic Business Development. His mission revolves around introducing innovation and fostering client success. Moreover, his passion lies in nurturing personal growth and investing in the potential of the younger generation.



Stefan Balkanski is a commercial and marketing expert in the pharmaceutical industry with a passion for innovation and education. Stefan, who holds a Master and PhD in Pharmacy from the Medical University of Sofia in Bulgaria, expanded his knowledge by pursuing an Executive MBA at the American University of Bulgaria (2023-2024), where he discovered a new passion for entrepreneurship. Driven by a commitment to advancing both business and education, he combines his pharmaceutical expertise with a forward-thinking entrepreneurial spirit.



Trendafil Dzhingarov has more than eight years of experience in sales in the pharmaceutical and telecommunications sectors. He obtained his physiotherapy specialization from the Medical University of Plovdiv, Bulgaria, in 2018. For the past three years, he has been leading the medical field force team at a pharmaceutical company in Bulgaria. Concurrently, he is pursuing an Executive MBA at the American University of Bulgaria.



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AT THE HELM OF TWITTER: THE LEADERSHIP STYLE OF ELON MUSK

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University of La Verne

“Going forward, to build a breakthrough Twitter 2.0 and succeed in an increasingly competitive world, we will need to be extremely hardcore... This will mean working long hours at high intensity. Only exceptional performance will constitute a passing grade.”

- Elon Musk (in Milmo, 2022, para. 4).

The day was Friday, October 28, 2022, when Elon Musk sat in the early morning with Twitter’s human resource executives in what was known as a “war room” at the company’s headquarters in San Francisco to prepare for widespread layoffs. At that meeting, Musk stated, *“Twitter’s workforce needed to be slashed immediately... and those who were cut would not receive bonuses that were set to be paid on November 1”* (Conger et al. para. 1).

Surprised by his plan, human resource executives warned their new boss that his idea could violate employment laws and breach contracts with workers, leading to employee lawsuits. The response from Mr. Musk’s team was, *“He was used to going to court and paying penalties and was not worried about the risks”* (Conger et al. 2022, para. 2). Following the meeting, Musk’s demand created a major task for Twitter’s human resource, accounting, and legal departments— they scrambled to figure out how to comply (Conger et al. 2022).

In the meantime, rumors started surfacing in the company, and some employees waited for information about layoffs or company projects as they were in the dark for the most part (Bosa et al. 2022).

As Musk waited two days after the meeting, he realized that his decision was going to be costly in terms of potential fines and lawsuits, coupled with work delays as managers struggled and

The author developed the case for class discussion rather than to illustrate either effective or ineffective handling of the situation. The case and its accompanying instructor's manual were anonymously peer reviewed and accepted by the *Journal of Case Research and Inquiry, Vol. 9, 2024*, a publication of the Western Casewriters Association. The author and the *Journal of Case Research and Inquiry* grant state and nonprofit institutions the right to access and reproduce this manuscript for educational purposes. For all other purposes, all rights are reserved to the author. Copyright © 2024 by Issam Ghazzawi. Contact Issam Ghazzawi, 1950 3rd St, La Verne, CA 91750, ighazzawi@laverne.edu.

haggled on which employees to let go. Finally, he informed the human resource, accounting and legal departments that he could wait on cutting jobs until after Nov. 1, 2022 (Conger *et al.* 2022).

As Twitter employees braced for what was to come under their new leader, they became worried about their future (Bhuiyan, 2022). They had glimpses of his leadership style through his initial acts as the new head of Twitter, as well as his time as the top leader of Tesla. Employees reflected on the examples of his practices, which included his June 2022 laying off of about 500 employees from Tesla's Giga factory. This was followed by two former employees suing Tesla for allegedly violating California's Warn Act (Worker Adjustment and Retraining Notification), which required 60-day advance notice as well as pay and benefits for that period (Bhuiyan 2022).

Following a traditional view that *"Inputs cost reduction generates profit,"* Musk defended his position and claimed he had no choice as far as the layoff. And then it was November 4, 2022, when he tweeted that the workforce reduction at Twitter was necessary and unfortunately, there was no other choice with the company losing over 4 million dollars a day. Additionally, Musk added that everyone who exited was offered 3 months of severance, which was 50% more than legally required (Southern 2022).

After the massive layoffs, Musk sent an e-mail to all employees giving them 24 hours to decide whether they wanted to commit to *"extremely hardcore"* and be a part of the culture Musk wanted to implement at Twitter, or else effectively resign. He wanted to build a breakthrough Twitter 2.0 to succeed in an increasingly competitive world. Musk further explained in a memo, *"This will mean working long hours at high intensity. Only exceptional performance will constitute a passing grade"* (O'Sullivan & Duffy 2022, para. 2).

As the deadline was approaching, employees were uncomfortable. They had to decide quickly whether to accept the harsh employment conditions in Musk's ultimatum (Duffy & Darcy 2022). In the meantime, citing a toxic work environment, the new Twitter owner and CEO had

introduced, many employees indicated their intention to leave. Others struggled with their decision. One employee commented on Musk's email with, *"Felt like a punch in the gut because no matter how you felt about wanting to stay or wanting to go, you were forced to make a decision and feel like you're up against the time clock to make the best decision for you and your family"* (Duffy & Darcy 2022, para. 6).

Meanwhile, Twitter's *"internal slack channel"* got filled with employees posting the salute emoji which has become a signal that someone was exiting the company after the 5 p.m. deadline given by Mr. Musk, indicating they had chosen not to sign Musk's pledge and leave the company instead (Duffy & Darcy 2022).

When Musk fired half of Twitter's workforce and threatened to fire any remaining *"dissenters,"* he demanded that all employees pledge to accept *"long hours at high intensity"* (Reich 2022). , His stance led to the resignations of an estimated 1,200 additional employees. In reality, he began to destroy what he just purchased.

A former Twitter executive Sunil Singhvi voiced his concerns about the safety of the platform moving forward, saying,

"15 percent of the Trust of Safety team were laid off in yesterday's firing rounds. My concern for Twitter is that, if something erupts, something changes, if there's a big story in the world, we're in a position now where Twitter has fewer resources to guarantee the safety of its users and to make sure that misinformation and abuse doesn't spread like wildfire" (Peters 2022, para 1).

Watching the mass exodus of Twitter's employees, Musk panicked and tried to hire back some of the employees he had fired earlier. He quickly sent out e-mails asking anyone who wrote software to report back to work as he wanted to learn more about what was called *"Tech Stack"* —Twitter's term for software and related systems (Reich 2022).

With no comprehensive plan to execute, Musk scrambled with ideas regarding how Twitter and a social media service company should operate. He ran into the business, legal and financial

side of running the company's platform which had been called a "global town square" (Southern 2022).

Elon Musk, the Making of an Entrepreneur

Elon Musk was Born in Pretoria, South Africa on June 28, 1971. He grew up in the economic hub of Johannesburg. He left South Africa shortly after graduation at 17 to go to college in Canada, barely looking back (Eligon & Chutel 2022). While in North America, he realized his dream and became the co-founder of the electronic-payment firm PayPal; founder of SpaceX, the maker of launch vehicles and spacecraft; an angel investor, CEO, and product architect of the electric vehicle manufacturer Tesla, inc.; owner and CEO of Twitter, Inc.; founder of the Boring Company; co-founder of Neuralink and OpenAI; and president of the Philanthropic Musk Foundation (Blystone 2022; Gregersen 2023).

When reflecting on his son, Elon's father Errol Musk stated that Elon had always been unusual. He had an unhappy childhood, possibly affected by his parent's divorce. As young as four years old, Elon tended to sit with adult people. His father recounted an occasion when one man asked Elon, "Hey little chap, why don't you join the kids and run around?" Elon replied, "No, I prefer to listen to you" (ET Panache 2022, para. 20).

Eligon and Chutel (2022) reported that Musk's classmates at two of the high schools he attended described him as a loner with no close friends. No former classmate recollected anything that Elon said or did that revealed his views on the politics of the time. However, Black schoolmates recalled that he spent time with Blacks.

Errol Musk said in an interview with *The New York Times* that Elon and Elon's brother and sister were aware from a young age that there was something wrong with the apartheid system (Eligon and Chutel 2022).

Musk displayed an early talent for computers and entrepreneurship. At the young age of 12, he created a video game that eventually he sold to a computer magazine. *“Even as a preschooler, Elon had set his sights on becoming the wealthiest man alive, crediting that uber-macho South African boy’ upbringing with driving his ambition”* (ET Panache 2022, para. 3).

When young Elon announced that he planned to be a millionaire, an adult man scoffed and told him, *“When you grow up, you’ll see. It’s not like that... you’re going to be disappointed.”* Elon quickly responded, *“Well, I think you’re stupid.”* His father added, *“That was typically Elon”* (ET Panache 2022, para. 21 & 22).

After obtaining a Canadian passport, Musk left his native South Africa for Canada in 1988 due to his unwillingness to support apartheid through compulsory military service, coupled with his belief that greater economic opportunities would be available in North America (Eligon & Chutel 2022; Gregersen 2023).

When in Canada, Musk attended Queen’s University in Kingston, Ontario before he transferred to the University of Pennsylvania in Philadelphia. In 1997, he received bachelor’s degrees in physics and economics. Afterward, he enrolled at Stanford University to pursue a graduate degree in physics, however, he left the school after only two days to pursue his passion for changing society through the internet (Gregersen 2023).

While in college, he had founded Zip2, a provider of maps and business directories for online newspapers. Zip2 was sold to the Compaq Corporation in 1999 for \$305 million. This transaction allowed him to create an online financial transferring services company, X.com, which later became PayPal. PayPal was sold to eBay in 2002 for \$1.5 billion (Bauer 2018).

Musk founded Space Exploration Technologies “SpaceX” in 2002 to make more affordable rockets. Space X launched its first rocket, the Falcon 1 in 2006. Space X launched Falcon 9 in 2010 and Falcon Heavy in 2018; the latter was designed to carry 117,000 pounds into orbit.

SpaceX also developed the Dragon spacecraft, which carried supplies and as many as seven astronauts to the International Space Station in 2020. As part of NASA's Artemis Space Program, Musk's SpaceX was contracted to build a lander for the astronauts returning to the Moon by 2025 (Eldridge 2023).

Musk, who had long been interested in electric vehicles, heavily invested in 2004 in the Tesla Motors Company, an electric car company co-founded by Martin Eberhard and Marc Tarpinning. Tesla introduced its first car, the Roadster, in 2006. In 2010, the company raised about \$226 million in a public offering and then introduced its acclaimed S sedan Model in 2012. Tesla won praise for its high-performance Model X luxury SUV, which went on the market in 2015. Additionally, Tesla's economic Model 3 went into production in 2017 and became the best-selling electric car of all time (Gregersen 2023).

Elon Musk made it know that he was dissatisfied with Twitter's commitment to the principles of free speech. Twitter's filings with the SEC in early April 2022 disclosed that Musk had bought more than 9 percent of the company. On October 27, 2022, Elon Musk acquired Twitter and became its new owner and CEO—Twitter became a private company (Duffy 2023).

[Twitter: Company Overview](#)

Headquartered in San Francisco and founded by Jack Dorsey, Christopher Isaac Stone, Noah E. Glass, Jeremy LaTrasse, and Evan Williams on March 21, 2006, Twitter, Inc. was a global online platform for public self-expression and conversation in real-time. It served customers worldwide. On October 27, 2022, Twitter, Inc. was taken private (Bloomberg.com n.d.; Forbes.com n.d.). Exhibit 1 shows Twitter's headquarters. While the US market was its largest and accounted for more than 50% of its revenue, Twitter was available in more than 30 languages around the world (D & B Hoover n.d.).

“The company's primary product is Twitter, a platform that allows users to consume, create, distribute, and discover content. It also provides promoted products that enable advertisers to promote brands, products, and services, as well as enable advertisers to

target an audience based on various factors, including who an account follows and actions taken on its platform, such as Tweets created and engagement with Tweets.” (YahooFinance.com n.d.).

Twitter provided a network that connected users to people, information, ideas, opinions, and news. Its services included live commentary, live connections, and live conversations. Its application provided social networking and micro-blogging services through mobile devices and the Internet. Additionally, its services could be used as a marketing tool for businesses. Its key products and services included Twitter, Periscope, Promoted Tweets, Promoted Accounts, and Promoted Trends (Forbes.com n.d.). See Exhibit 1 for Twitter’s Headquarters. The company had robust in-house research and development (R&D) facilities. In fiscal 2021, Twitter spent about \$1.2 billion on research and development, about 24.6% of its revenue (D & B Hoover n.d.).

Exhibit 1. Twitter’s Headquarters

Source: DAWN.com



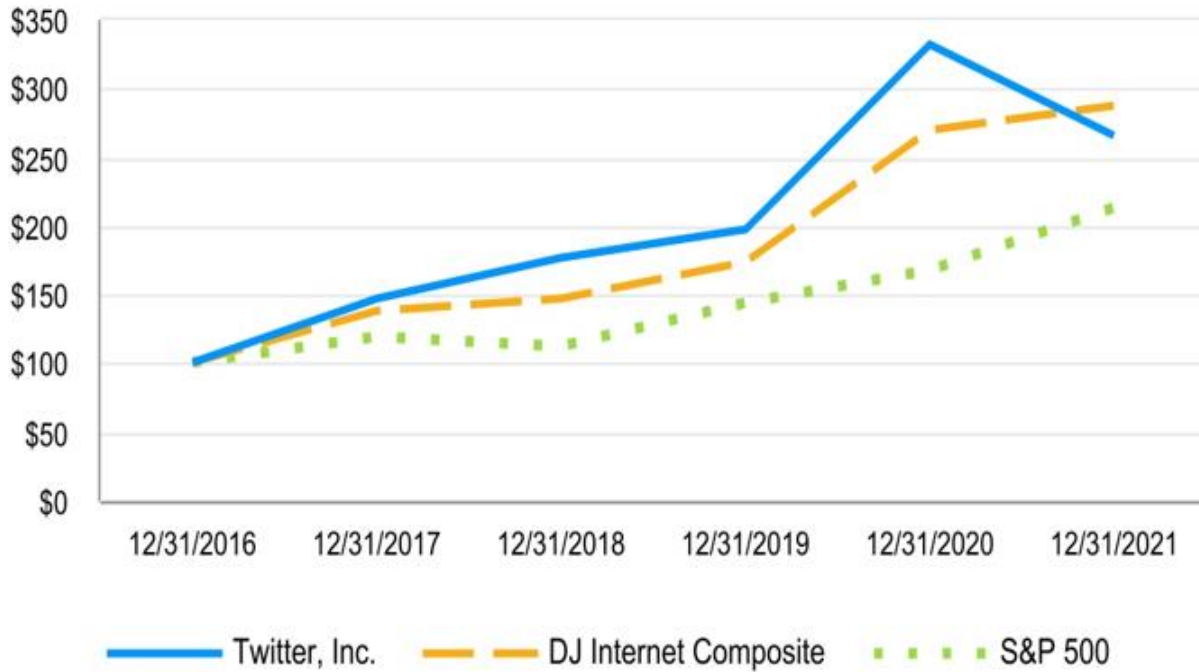
In recent years, the company showed a strong revenue stream (see Exhibit 2). For instance, it reported a revenue of \$5.1 billion in fiscal 2021, an increase of 36.6% from its \$3.7 billion in fiscal 2020. Its revenue growth was due to an increase of 40.5% in the sales of advertising services and 12.4% in the sales of Data licensing, product improvements, and strong sales execution (D & B Hoover n.d.). Exhibit 2 shows Twitter's cumulative total returns for 2016

through 2021. Refer to Appendix 1 for Twitter, Inc.’s Consolidated Balance Sheets for Fiscal 2020 and 2021 and Consolidated Statements of Operations for Fiscal 2019, 2020, and 2021.

Exhibit 2. Twitter, Inc. Comparison of Five-Year (2016-2021) Cumulative Total Return

Source: : Twitter 2021 Annual Report

Comparison of Five-Year Cumulative Total Return for Twitter, Inc.



The Social Media Industry in Perspective

Social media was one of the fastest-growing industries in the technology sector. Social networking companies focused on monetizing users through advertising and data licensing. Both consumer-focused and commercial-focused businesses were increasingly dependent on social networks to build brand awareness, as well as to engage in conversations with their customers through sophisticated ad-targeting features. Businesses served ads on social networks to specific users based on their interests, habits, and location (Asset 2016).

The social media industry included many large international firms that dominated their local markets, such as Tencent, China's social media conglomerate, the LINE messaging app of Japan, and Russia's search giant Yandex. Tencent was one of the largest internet companies in the world with nearly a billion users and a host of various successful business lines that included chat, digital media, and gaming (Markets and Markets.com n.d.).

According to Markets and Markets.com (n.d.), the global social media management market was projected to reach \$ 41.6 billion by 2026, with a compound annual growth rate (CAGR) of 23.6%. The major factors behind such growth were the increase in the focus on the market and competitive intelligence, enhancement of customer experience, increase in the need for search using return on investment for social media strategy, and increase in customer engagement in social media using smartphones.

The world's 5 billion Internet users spent an average of 6 hours and 53 minutes online each day totaling more than 2 trillion minutes daily. The average Internet user spent more than 40% of his or her working life online. The typical user spent over 48 hours a week online, which meant that billions of the world's users spent more time connecting than working (Data Portal 2022).

Despite the aforementioned figures, Data Port (2022) reported that there were 2.9 billion worldwide who did not use the Internet, representing 37 % of the people on Earth. Southern

Asia was home to the largest offline population. India had 744 million offline people (53% of India's population), followed by Pakistan with 145 million people offline (63.7% of Pakistan's population), and then Bangladesh with 114 million offline (67.9% of its population).

In the US market, Facebook was dominant with a revenue of about \$86 billion in 2022, followed by YouTube with \$28.8 billion, Instagram at \$24.00 billion, LinkedIn at \$12.4 billion, TikTok at \$11 billion, WhatsApp at \$5.5 billion, and then Twitter \$5.42 billion. See Exhibit 3 for the Top 10 Social Media applications by monthly active users.

Exhibit 3. The Top 10 Social Media Apps by Monthly Active Users

Source: Searchenginejournal.com, 2022

	Company	MAU*	Revenue	Launched	Headquarters
1	Facebook	2.9 billion	\$85.96 billion	2004	Menlo Park, California
2	YouTube	2.2 billion	\$28.80 billion	2005	San Bruno, California
3	WhatsApp	2 billion	\$5.50 billion	2009	Menlo Park, California
4	Instagram	2 billion	\$24.00 billion	2010	Menlo Park, California
5	TikTok	1 billion	\$11.00 billion	2016	Culver City, California
6	Snapchat	538 million	\$1.06 billion	2011	Los Angeles, California
7	Pinterest	444 million	\$575 million	2005	San Francisco, California
8	Reddit	430 million	\$289.9 million	2010	San Francisco, California
9	LinkedIn	250 million	\$12.4 billion	2006	San Francisco, California
10	Twitter	217 million	\$5.42 billion	2003	San Francisco, California

*Number of monthly active users worldwide

Elon Musk Style: A Leadership Behavior or A Business Savviness?

At one time or another, Elon Musk had been called a bad boss, unsympathetic, someone who fired people who disagreed with him, brilliant, creative, demanding, domineering, and savvy.

For instance, he announced in 2017 that the soon-to-be-released Tesla vehicles would have hardware that would eventually allow the cars to drive themselves. His announcement surprised and frustrated some Tesla engineers. Additionally, he expected Tesla employees to

work 100 hours a week to release the Model 3. His constant announcements were complemented by Tesla “notoriously” dissolving its public relations in 2020 (Bhuiyan 2022).

Musk has been called one of the most creative and visionary leaders of our time (Wingard 2019). While his unique personality and creativity have led to great entrepreneurial ventures and successes, these same unique traits brought him unexpected challenges and troubles. To explain his leadership behavior, his brother, a Tesla Board member, stated that the reason Elon Musk attracted drama was his openness and his transparency; he did not know how to be any other way (Wingard 2019). In essence, a great leader created a highly motivated and productive workforce by building a culture of leadership at all organizational levels. The skills and the behavior of the leader inspired others and achieved extraordinary results.

The demanding boss of SpaceX and Tesla was known to place importance on the product above all. And whether the employees who built the product agreed with Musk’s plan or not, they were expected to go above and beyond – at times sleeping on the company floor – to make it happen, or else (Bhuiyan 2022).

Musk did not accept that good things take time. He rejected the commonly accepted belief that often a slower process could lead to unexpected and positive outcomes (Kocher 2019). His belief was simple, *“During the Starship manufacturing process, they discovered the type of steel they developed performs better in the vacuum of space than carbon fiber”* (Kocher 2019, para. 5).

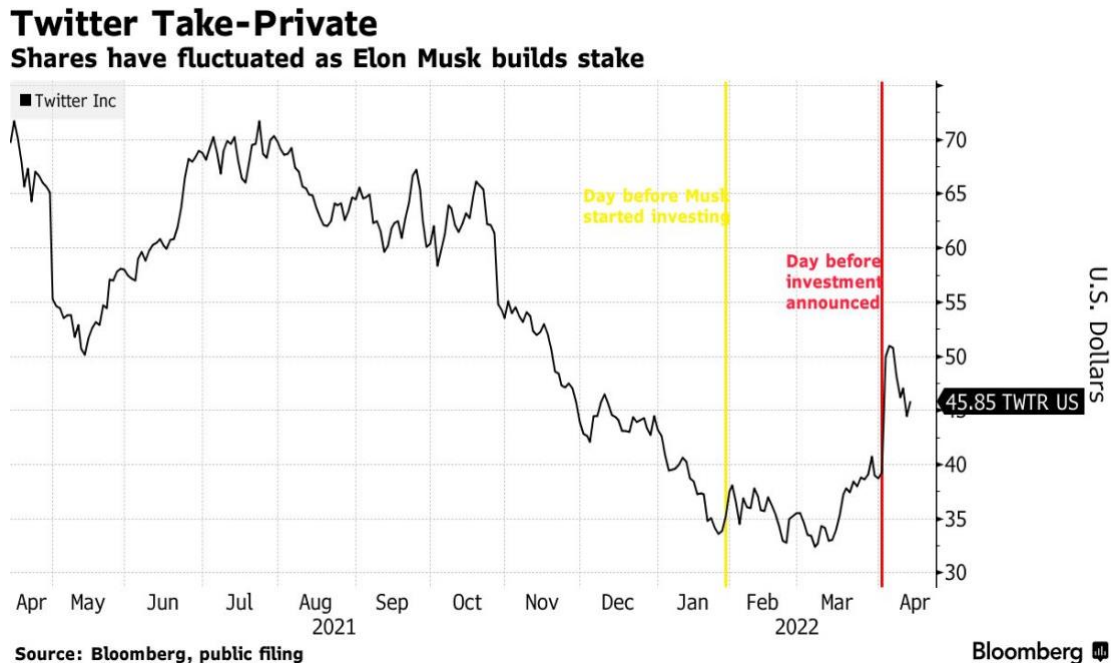
The Acquisition of Twitter

On October 27, 2022, Elon Musk acquired Twitter. He expressed his interest in buying Twitter as early as 2017 (Paul 2022). Musk started buying Twitter shares in late January 2022. On April 4, 2022, Musk stated that he would pay \$54.20 per share in cash, 38% above Twitter’s trading price on Friday, April 1, 2022. After his announcement, Twitter shares were not much affected

and traded at \$45.81 in New York, a sign there was skepticism that the company's most outspoken user would succeed in his takeover bid (Alder & Turner 2022). See Exhibit 4.

Exhibit 4. Twitter Shares Fluctuated as Elon Musk Builds Stake

Source: Adler & Turner (2022), Bloomberg



In early April 2022, Musk announced that he had invested a total of \$2.64 billion, equivalent to 9.2% of the company's shares, making him the largest shareholder (Alder & Turner 2022). Nonetheless, he did not file the necessary Securities and Exchange Commission (SEC) paperwork within 10 days of his stake passing 5%, a violation of U.S. securities laws (Alder & Turner 2022).

Upon his disclosure of his stake in Twitter, the company's stock surged to its highest level since the initial public offering in 2013; it rose roughly 27%. Not filing the disclosure of his stake in Twitter, Musk may have purchased shares at an artificially low price, potentially saving him \$156 million according to legal and securities experts (Albergotti 2022; Alder & Turner 2022).

The day following Musk's announcement of becoming the biggest investor in the company, Twitter invited him to join the company's board of directors. He agreed to be a member of the

board and to limit his stake in the company to 14.9% as long as he sat on the board (Corfield 2022; Nover 2022). His invitation to Twitter's board was recommended by Twitter's Nominating and Corporate Governance Committee, based on the assumptions that he was highly interested in Twitter's business, his ownership stake in the company, his "technical expertise" and perspectives, and the fact that he was an active Twitter user (Nover 2022). Accordingly, "The Twitter board considered the nominating committee's recommendation and the 'potential for adverse impacts on stockholder value' if Musk took the company private or started a rival service and decided to offer him a board seat" (Nover 2022, para. 10).

Twitter's board seat offer came with strings attached. Musk needed to agree to what was known as "standstill" provisions that would limit his ability to speak publicly about the company or make unsolicited offers to buy the company without the board's approval. However, on April 9, 2022, Musk rejected the board seat and instead responded that he would make an offer to take the company private. He announced that he had secured \$46.5 billion in financing for the acquisition, an assurance that would be able to buy the company (Nover 2022).

According to Nover (2022), on April 12, 2022, as it sounded like a hostile takeover; Twitter's board met with its attorneys and financial advisors and discussed the impact of Musk's offer. The board discussed the shareholder rights plan — known as a poison pill defense — which would make Musk's shares worthless and make it nearly impossible for him to take the company private. A day later, Musk sent out his acquisition offer, seeking to buy the company at \$54.20 per share, about \$44 billion.

Twitter negotiated the terms of the agreement with Musk and decided to accept his offer with some important provisions: (1) Musk had to "perform" the obligations of the contract, (2) there was a \$1 billion termination fee payable by Musk if he violated the contract and wanted to get out of the deal, and (3) Musk's public statements disparaging the company or its officials would be limited while the deal was closing. Nonetheless, Musk publicly criticized Twitter and specific employees several times since he signed the deal. Additionally, he

tweeted that the deal was “*on hold*” citing some fake accounts. Finally, on May 4, 2022, Musk secured \$6.25 billion in investment from third parties because he could not buy Twitter without selling large portions of his stake in Tesla (Nover 2022; Zahn 2022b).

As he appealed to investors, Musk claimed he would increase Twitter’s annual revenue to \$26.4 billion by 2028, up from \$5 billion in the year of 2021. He anticipated that the total number of users would grow from 217 million to about 600 million in 2025 and 931 million in 2028 (Isaac *et al.* 2022).

According to Zahn (2022b), on May 12, 2022, Twitter announced a temporary hiring freeze pending the outcome of the acquisition as two top executives had quit. On the next day, Musk tweeted that the deal was temporarily on hold citing concerns over the company’s spambot. Spambot was a compound word combining the word ‘spam’—an unsolicited message transmitted electronically—and ‘bot,’ the term used to refer to a computer program that mostly performs automated tasks (Mysecurity.com n.d.). While saying he was still committed to the deal, he posted a Reuters report stating that fake accounts made up less than 5% of users on the platform, and he wanted Twitter to show evidence that spam/fake accounts were indeed less than 5% (Reuters.com 2022; Zahn 2022a; 2022b).

Twitter shareholders brought a class-action lawsuit against Musk on May 26, 2022, over alleged stock manipulation tied to the tumultuous acquisition process. At the time, Twitter's stock had fallen more than 12% since Musk announced his bid. However, Musk threatened on June 6, 2022, to pull out of the deal if Twitter did not provide additional information regarding the bots on its platform. Twitter responded that it had been sharing information with Musk according to the terms of the merger agreement (Zahn 2022b).

After back-and-forth communications and arguments between Twitter and Musk's attorneys, Twitter sued Musk in Delaware on July 12, 2022 to force him to complete the deal (Milmo 2022; Zahn 2022b). On July 19, 2022, a Delaware court determined that the trial in the lawsuit

brought by Twitter against Musk would take place in October - an expedited timeline for the case. A few weeks later, on August 23, former Twitter Head of Security Peiter Zatko alleged in a federal whistleblower complaint that his former company had numerous wide-ranging information security system lapses. Quickly, Twitter responded that Zatko, who had worked at the company from November 2020 to January 2022, was spreading a false narrative and had been fired for ineffective leadership and poor performance (Zahn, 2022b).

It was not until October 4, 2022, that Musk finally agreed to complete the acquisition deal at his original price offering of \$54.20 a share for a total of about \$44 billion. The deal was closed on October 27—the final day before the Delaware trial would have started. As a result of the deal closing, some of Twitter's top executives including CEO Parag Agrawal, chief financial officer Ned Segal, chief legal officer Vijaya Gadde, and general counsel Sam Edgett were either fired or quit (Paris 2022; Tabahriti *et al.* 2022; Zahn 2022b). Additionally, senior members of Twitter's privacy and security teams exited the company (Ordonez & Wash 2022).

A Micro-Manager or a Nano-Manager?

While some leaders had reputations as micro-managers, Musk described himself as a nano-manager “*nano-manager*” (Baer 2015; Jackson 2022a). Scientifically, micro meant a thousandth of something, and nano meant a billionth. Musk was trying to describe himself as exponentially more hands-on (Baer 2015). See Exhibit 5 for an image of Elon Musk.

Exhibit 5. An Image of Elon Musk

Source: Bing.com



In what seemed to be characterized as a “*carrot and stick*” style, Musk shared his management philosophy once with Tesla workers via email; he explained that there should generally be fewer, shorter meetings, and people who did not contribute should simply leave. Additionally, he informed Tesla employees that he didn’t mind if they listened to music in the factory or added any “*little touches*” that make work more enjoyable (Jackson 2022b; Kolodny 2021). Musk also sent words of encouragement to the employees working at the company’s new factory near Berlin in 2021 (Kolodny 2021).

In another e-mail in the first week of October 2021, Musk reminded Tesla employees that there were only three options when Musk sendt directions: (1) explain why he’s wrong, (2) request further clarification, or (3) execute. However, Musk added to his e-mail, if none of the above “*are done,*” that manager would be asked to resign immediately (Kolodny 2021).

In their interview with CNBC, 35 current and former Tesla employees described Musk as an ambitious CEO with a drive to make everything from scratch. His style of management impaired his decision-making sometimes and led him to approve expensive projects that failed and caused production delays. Other times, he refused to consider methods that were pioneered by

other automakers and ignored advice from Tesla's experienced people (Jackson 2022b; Kolodny 2018).

In late 2016, Elon Musk told Tesla investors, that his company *"would be cranking out 500,000 electric cars a year by 2018"* (Kolodny 2018, para 1). However, to hit those mass-market volumes, he ordered a team of engineers to figure out how to *"automate everything"* regarding the Model 3 assembly, as it was supposed to be the future of Tesla. This proposed \$35,000 for the base model automobile was thought to be affordable enough to transform Tesla from a niche car maker to a company that could serve everyone (Kolodny 2018; Lambert 2022). The Tesla team outlined four tiers of car parts that could be put together by machines, from the most rigid and easiest parts to the most difficult, such as flexible components with wire harnesses, carpets, and trim. Musk responded that everything must be automated. The Tesla engineering team warned him that robots weren't good at installing floppy parts such as the big foam hoops (the seals on Model 3 doors), so Tesla needed more engineers to manage such extensive automation. However, Musk insisted (Kolodny 2018; Lambert 2022).

As a result, Tesla built big stalls into the Model 3 production line at its Fremont factory, including expensive robots that could, in a perfect setup, put seals on doors. *"They never worked correctly, and primary seal automation was designated for removal in the first quarter of 2018. The equipment remained for months with cars streaming through the stall. The robots were finally taken out"* (Kolodny 2018, para 5). Finally, Musk admitted his mistake in April 2018; he stated that he had been over-reliant on automation (Kolodny 2018).

When asked by *The New York Times* why he did not delegate more, Musk replied, *"I can't find people to delegate to"* (in Jackson 2022b).

While Musk's energy helped make Tesla one of the country's most prominent and valuable automakers, his same energy also made him one of the most polarizing corporate leaders in the U.S. He acted as a brash and demanding leader who risked his creation (Harwell 2018). Some

believed that Musk's practices reflected his upbringing as a son of a military person who instilled in him the same discipline as the military. According to Harwell (2018, para. 12), *"At Tesla, there is only what workers call the 'Elon Way.' Musk is the head engineer, designer, salesman, financier, and marketer, with full power over everything from global sales strategy to the look of the retractable door handles."*

Ludlow and Hull (2022) suggested that Musk caught Tesla workers by surprise in June 2022, when he said that layoffs would be necessary for the increasingly shaky economic environment. He alerted that about 10% of the company's salaried employees would lose their jobs over the next three months. He added that the measure could even affect more employees in a year. The downsizing efforts have focused on areas that grew too quickly and hit employees who had worked at the company for just a few weeks.

Despite all of that, many employees thought that Musk was essential to the company's success. He was praised by some employees for his creativity, sense of humor, and inspiring speeches. Additionally, some attributed Tesla's success to his hands-on management style (Kolodny 2018). Explaining his hands-on/details-oriented leadership style, Spencer Gore, a former Tesla, and SpaceX employee and then CEO of Impossible Aerospace, stated:

"Elon Musk is in a position most will never experience — trying to deliver an industry-defining product on a limited budget. He can't afford to make decisions slowly, or even always compassionately. When he involves himself in low-level details it's to enhance execution speed. For some engineers, this can be frustrating, at times heartbreaking — but Elon's unconventional style is what built the Tesla we all chose to join." (Kolodny 2018, para. 3).

Defending his former boss's style and behavior, a former head of talent acquisition at SpaceX asserted that diamonds are created under pressure, and Elon Musk is a master diamond maker. A Tesla software engineer stated that Musk challenged people and pushed them to do things they didn't think they were able to do (Jackson 2022b).

Sleeping in the Office, a sign of Dedication?

As Twitter's employees went through layoffs and an around-the-clock push to meet newly imposed deadlines, Musk, opened up regarding sleeping at the workplace. At the 29th Annual Baron Investment Conference in New York, Musk noted: *"I was living in the factory in Fremont and the one in Nevada for three years straight...Those were my primary residences"* (Mok & Cuccinello 2022, para. 2).

His openness about his sleeping habits came after a Twitter employee shared a picture of his manager sleeping on the office floor. The manager's justification was that her team was pushing round the clock to meet Musk's demands and deadlines (Mok & Cuccinello 2022).

Musk was used to sleeping on a couch in the factories before moving to sleep on the floor under his desk so his team could see him during shift changes. Sleeping there, he hoped his actions would inspire them. He wanted to show his employees that he was taking his job seriously and not *"drinking Mai Tais on a tropical island"* (Mok & Cuccinello 2022). See Exhibit 6 for an illustration of Elon Musk's sleeping in the office.

In his pursuit of hard work and long working hours, Musk praised the Chinese workers of Tesla's Shanghai "Giga-factory" for pulling extreme hours to meet production targets during the pandemic lockdown. Indirectly, he was taking a shot at the American workers. Musk said:

"There is just a lot of super talented hardworking people in China who strongly believe in manufacturing... They won't just be burning the midnight oil, they will be burning the 3 am oil, they won't even leave the factory type of thing, whereas in America people are trying to avoid going to work at all" (Chan 2022, para. 3).

Exhibit 6. An Image of Elon Musk Sleeping in the Office

Source: Indy100.com



When beds showed up in the workplace with no announcement, employees believed they were beds for workers to stay in the office overnight. To them, it was another sign of disrespect—there were no conversations (Anguiano 2022). The company acquired “*modest bedrooms featuring unmade mattresses, with four to eight beds per floor. The changes appeared to be part of Musk’s plan for “hardcore Twitter” in which he’d demanded workers dedicate “long hours at high intensity”* after he fired nearly half the company’s workforce (Anguiano 2022).

In late 2022, Twitter came under investigation by San Francisco city officials following a complaint that the company allegedly converted rooms in its headquarters into sleeping quarters. City officials’ justification of the investigation was that the city needed to make sure that buildings were used as intended and within building code requirements for residences (Anguiano 2022).

Seven Weeks of Turbulence

Since the early days of the acquisition, Twitter went through turbulent weeks marked by mass layoffs, falling advertising sales, and employee and executive resignations, as well as suspensions of various high-profile users and journalists.

Musk warned about Twitter's financial health and reaffirmed that the company was suffering "*a massive drop in revenue.*" He raised the possibility of the company going bankrupt as it was losing \$4 million a day (Maidenberg 2022).

In a tweet on November 2022, Musk stated, "*I expect to reduce my time at Twitter and find somebody else to run Twitter over time.*" However, on Sunday, he wrote in a tweet that "*there is no successor*" (Capoot 2022, para. 2).

On Sunday, December 11, 2022, Musk surveyed Twitter users and gave them 12 hours to respond regarding whether he should remain in charge of the company or step down. He also pledged to abide by the result. More than 17 million users voted. The poll resulted in 57.5 percent saying he should step down (Capoot 2022; Nelson 2022). Many thought that Musk's focus on Twitter was interfering with his other business ventures. Since his acquisition of Twitter, the value of Tesla has sunk. Tesla's share price closed at \$150, down from \$225 on the day that Musk completed the acquisition of Twitter. On Friday, December 16, 2022, Tesla shares closed at \$150. By late December 2022, Musk sold \$23 billion worth of Tesla stock, after he had pledged to stop selling shares to finance his Twitter deal (Capoot 2022).

With reports of layoffs, reduction of production in the Shanghai plant, and crackdowns on Tesla's autopilot driver assistance software, sales by Musk of Tesla shares to finance his Twitter acquisition, and the absence of the long-promised products such as the Cybertruck and Roadster, Tesla seemed to be in trouble (George 2022).

The Road Ahead

In late December 2022, Elon Musk reflected on what he had done and whether he could do more to create stability in Twitter. He wanted to ensure that he had hardworking and committed employees. However, he was concerned that he had lost key software writers of “Tech Stack.” At the same time, Musk knew for a fact that Twitter’s the employees who stayed with the company and accepted his working conditions continued to be nervous. Musk reflected on his successes and the challenges he faced as a corporate executive and entrepreneur. While firmly believing in the need to move forward and build a breakthrough Twitter 2.0, Musk had also heard that he needed to change the way he managed, made decisions, and led others. What more could he do to restore employees’, investors’, and consumers' confidence?

Appendix A. Twitter, Inc. Consolidated Balance Sheets

(In thousands, except par value) as of December 31 for Fiscal 2020 and 2021

	December 31, 2021	December 31, 2020
Assets		
Current assets:		
Cash and cash equivalents	\$ 2,186,549	\$ 1,988,429
Short-term investments	4,207,133	5,483,873
Accounts receivable, net of allowance for doubtful accounts of \$15,278 and \$16,946	1,217,404	1,041,743
Prepaid expenses and other current assets	266,484	123,063
Assets held for sale	40,800	—
Total current assets	7,918,370	8,637,108
Property and equipment, net	2,082,160	1,493,794
Operating lease right-of-use assets	1,195,124	930,139
Intangible assets, net	69,324	58,338
Goodwill	1,301,520	1,312,346
Deferred tax assets, net	1,148,573	796,326
Other assets	344,445	151,039
Total assets	\$ 14,059,516	\$ 13,379,090
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	\$ 203,171	\$ 194,281
Accrued and other current liabilities	918,350	663,532
Convertible notes, short-term	—	917,866
Operating lease liabilities, short-term	222,346	177,147

Total current liabilities	1,343,867	1,952,826
Convertible notes, long-term	3,559,023	1,875,878
Senior notes, long-term	693,996	692,994
Operating lease liabilities, long-term	1,071,209	819,748
Deferred and other long-term tax liabilities, net	40,691	31,463
Other long-term liabilities	43,531	36,099
Total liabilities	6,752,317	5,409,008
Commitments and contingencies (Note 16)		
Stockholders' equity:		
Preferred stock, \$0.000005 par value-- 200,000 shares authorized; none issued and outstanding	—	—
Common stock, \$0.000005 par value-- 5,000,000 shares authorized; 799,384 and 796,000 shares issued and outstanding	4	4
Additional paid-in capital	8,432,112	9,167,138
Treasury stock, at cost-- 120 and 98 shares	(5,295)	(5,297)
Accumulated other comprehensive loss	(117,320)	(66,094)
Accumulated deficit	(1,002,302)	(1,125,669)
Total stockholders' equity	7,307,199	7,970,082
Total liabilities and stockholders' equity	\$ 14,059,516	\$ 13,379,090

Appendix B. Twitter, Inc. Consolidated Statements of Operations

(In thousands, except par value) as of December 31 for Fiscal 2019, 2020, and 2021.

	2021	2020	2019
Revenue	\$5,077,482	\$ 3,716,349	\$3,459,329
Costs and expenses			
Cost of revenue	1,797,510	1,366,388	1,137,041
Research and development	1,246,704	873,011	682,281
Sales and marketing	1,175,970	887,860	913,813
General and administrative	584,336	562,432	359,821
Litigation settlement, net	765,701	—	—
Total costs and expenses	5,570,221	3,689,691	3,092,956
Income (loss) from operations	(492,739)	26,658	366,373
Interest expense	(51,186)	(152,878)	(138,180)
Interest income	35,683	88,178	157,703
Other income (expense), net	97,129	(12,897)	4,243
Income (loss) before income taxes	(411,113)	(50,939)	390,139
Provision (benefit) for income taxes	(189,704)	1,084,687	(1,075,520)
Net income (loss)	\$ (221,409)	\$(1,135,626)	\$1,465,659
Net income (loss) per share:			
Basic	\$ (0.28)	\$ (1.44)	\$ 1.90
Diluted	\$ (0.28)	\$ (1.44)	\$ 1.87
Weighted-average shares used to compute net income (loss) per share:			
Basic	797,573	787,861	770,729
Diluted	797,573	787,861	785,531



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GYMREALM: SOFTWARE SOLUTIONS BEYOND BORDERS

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The online meeting of the GymRealm team at the end of the second quarter of the year had just finished. GymRealm, based in Bulgaria, offered a gym management software to sports facilities, which included a low-cost payment processing solution. Despite announcing good results, CEO Dimitar Georgiev knew that his company could do much better. He was convinced that GymRealm could achieve a huge expansion in the U.S. market. GymRealm had already stepped on American soil, and so far had overcome the obstacles it had met: local tax and fiscal regulations and the language barrier. He knew that his company could do better, and he intended to conquer the U.S. market.

Dimitar thought, *“How can we make a significant expansion on the US market? Is our internal organization solid enough to sustain potential expansion? Do we have to improve our customer support?”*

Success Story

In 2011, two students from the Technical University of Varna, Bulgaria, decided to create a social network for sports and active people. Martin Christov was writing the code for this platform, with Dimitar Georgiev working with him. At the same time, Dimitar was working on another project – gym management software.

The authors developed the case for class discussion rather than to illustrate either effective or ineffective handling of the situation. The case and its accompanying instructor's manual were anonymously peer reviewed and accepted by the *Journal of Case Research and Inquiry, Vol. 9, 2024*, a publication of the Western Casewriters Association. The authors and the *Journal of Case Research and Inquiry* grant state and nonprofit institutions the right to access and reproduce this manuscript for educational purposes. For all other purposes, all rights are reserved to the authors. Copyright © 2024 by Tania Kishkin, Nadya Hristova, Taulant Mecaj & Ivan Dzhamulov. Contact Tania Kishkin, Southern Industrial Zone, ul. "Svoboda Bachvarova" 12, 2700 Blagoevgrad, Bulgaria, trk237@aubg.edu.

In 2012 venture capital funds started to appear in Bulgaria. There were announcements that Launch Hub and Eleven Venture Capital were funding start-up companies. At that time, Martin and Dimitar never thought of their projects as start-ups. It was Martin who heard of the venture capital opportunity and initiated the application for funding. Martin and Dimitar prepared a short video of what they were doing. Dimitar remembered:

“We didn’t know we had to make a 5-minute pitch or how to make it, we didn’t know we had to prepare a presentation to fit in 15 minutes ... now this is common knowledge, but back in 2011-2012 there was no one to tell us what to do. We asked friends and colleagues if they were aware of the application process, but no one could help. That was the beginning of an era.”

On the first day of the business pitch, Martin and Dimitar had to appear and make a presentation to a group of mentors, then on the second day to a commission. The mentors were excited with the idea of the software, but the presentation did not go well. Dimitar remembered *“I wasn’t happy with our performance and also didn’t feel this was the right place for us, so I decided we should leave.”* As they were leaving, one of the mentors hurried up to catch them, and spent a few extra minutes with the students. He gave them constructive feedback, specifically noting that they were pitching two different products, and should focus on only one of them. He noted that Dimitar was a better presenter than Martin.

The students had one day to redo their presentation and present a video to the commission. They had to decide which of the two products they would present. They spent the night in discussion, preparation of slides, video-shooting, assembling information, predicting financial performance, emphasizing added-value. The product they decided to present would be called GymRealm – a gym management software, cloud-based, with an online booking system, access control integration, and other features. The feedback from the second day was excellent. The mentors told Martin and Dimitar that they had outperformed expectations and demonstrated great progress from the previous day. Empowered by the commission's praise, Martin and Dimitar finalized their decision to spotlight GymRealm, recognizing its potential to impress investors and propel their venture forward.

In 2013, GymRealm Technologies got funded by the Eleven Venture Fund. The initial funding was \$100,000 USD split into 4 tranches. In 2015, GymRealm received additional funding after attracting Walltopia¹ as an investor, a world leader in designing and manufacturing climbing wall facilities.

GymRealm was established with a clear mission – to build powerful software in order to make the life of the facility owners easier. Ever since their journey had started, GymRealm had focused on the needs of clients and worked hard to help gyms increase their revenue. GymRealm provided easy-to-use holistic solutions which meet the constantly changing and increasing demands of the health and wellness industry. A partial list of GymRealm’s products can be found in Exhibit 1.

At first, GymRealm focused exclusively on the fitness industry and eventually acquired the largest market share in this segment in Bulgaria. After Walltopia joined as a shareholder, GymRealm discovered that climbing gyms were a brand-new niche and Walltopia was building one facility after another all around the world. And the best part – there were not many competitors in the niche. Starting with climbing gyms would open other opportunities in a variety of sports, amusement and family entertainment centers in different countries.

¹ Bulgaria's Walltopia to acquire stake in GymRealm Technology (Mar 06, 2019) by Mario Tanev – <https://seenews.com/news/bulgarias-walltopia-to-acquire-stake-in-gym-realm-technology-645609>

Exhibit 1. GymRealm's Portfolio



Dreaming of the USA

Dimitar believed that the company had the potential to be among the top players worldwide. However, in order to gain international recognition, GymRealm had to demonstrate solid presence in the largest markets, the U.S., which in 2022 had 112,912 gym, health & fitness club businesses.² According to forecasts, the global gym management software market was expected to expand significantly by 2030 and North America would account for 37%³ of the market growth. So, what better place to start than the USA?

Dimitar thought about the added value he could provide to gym owners operating in the American market. He was convinced that this was the only way to attract clients who worked with the well-established local rivals. MindBody, Inc.⁴ as of 2022 covered 25%⁵ of the US market for wellness and leisure facilities and additionally operated in 150 countries providing services

² Gym, Health & Fitness Clubs in the US - Number of Businesses (Oct 24, 2023) – <https://www.ibisworld.com/industry-statistics/number-of-businesses/gym-health-fitness-clubs-united-states/> Full report obtained by Prof. McGuire

³ Gym management software market size to increase by USD 149.32 million: North America will account for 37% of market growth – Technavio (January 25, 2023), PR Newswire – <https://finance.yahoo.com/news/gym-management-software-market-size-183000420.html?guccounter=1>

⁴ <https://www.mindbodyonline.com/>

⁵ Mindbody Inc. Case Study (21 May 2019) by TDM Growth Partners - <https://www.tdmgrowthpartners.com/insight/mindbody/>

to more than 68,000 venues. RockGymPro⁶ was a recognizable brand for the climbing industry, created back in 2008 and its clients represented more than 90%⁷ of the climbing gyms in the US. RockGymPro seemed to be the most prominent competitor of GymRealm on American soil in this niche. CenterEdge⁸ provided software solutions to more than 1,000⁹ entertainment venues in the U.S. and Canada. Another leading software platform in the leisure and entertainment industry competing with GymRealm was Roller¹⁰ – an Australian start-up¹¹ as old as GymRealm (2011), already serving more than 1,500 centers in the sector worldwide. More detailed information on the competitors of GymRealm worldwide can be found in Exhibit 2.

To catch up with rivals, GymRealm integrated its software with American banks that owned payment processing platforms, which meant lower fees for the gym owners who worked with middlemen such as Stripe and PayPal.

The company was also ready to customize its products in order to gain market recognition and trust. GymRealm's products complied fully and were adapted to the local tax and fiscal regulations. However, building a strong presence in the US would require more. Having a dedicated team on American ground was necessary. Hiring local talent, establishing partnerships, and investing in marketing efforts would also be fundamental in this endeavor. But before doing this GymRealm had other internal issues to solve – balancing sales growth and resource allocation.

Dimitar was aware of all obstacles on his way and was still paying close attention to the European market where further expansion was also possible. The European market did not have dominant players and was extremely segmented on a country basis. One of the significant

⁶ <https://www.rockgympro.com/>

⁷ RGP: Software Powering the Industry (2019, February), Rock Gym Pro, last accessed on 27 July 2023 at <https://www.climbingbusinessjournal.com/rgp-software-powering-the-industry/>

⁸ <https://centeredgesoftware.com/>

⁹ <https://centeredgesoftware.com/about/>

¹⁰ <https://www.roller.software/>

¹¹ <https://pitchbook.com/profiles/company/118800-19#timeline>

competitors was PerfectGym,¹² established in Poland, which managed to reach clients in more than 50 countries (see Exhibit 2), including Bulgaria. In addition, the major U.S. players did not have the much influence in Europe - for instance, RockGymPro which dominated the US climbing gym industry was not present in Europe. The European gyms' and health clubs' market was showing positive trends with the number of facilities increasing by around 30%¹³ in the period 2009-2022 (reaching the total of 63 830). Also, the climbing gym industry, a niche GymRealm traditionally found attractive considering its affiliation with Walltopia, was also developing (see Exhibit 3).

¹² <https://www.perfectgym.com/en>

¹³ Number of gyms and health clubs in Europe from 2009 to 2022 (Jun 8, 2023), published by Christina Gough
<https://www.statista.com/statistics/275052/total-number-of-health-clubs-in-europe/>

Exhibit 2. Competitors of GymRealm

Gym Management Software	Rock Gym Pro	MindBody	PerfectGym	Roller	CenterEdge	GymRealm
Founded	2008	2001	2014	2011	2004	2011
Service sector	Climbing	Wellness & Leisure	Fitness, Trampolines, Leisure	Entertainment, Climbing	Entertainment	Climbing, Entertainment, Fitness
Origin	USA	USA	Poland	Australia	USA	Bulgaria
Market Share per Service Sector USA	90% ¹⁴	25% ¹⁵	N/A	21,74% ¹⁶	-	<0,01%
Markets Across the World	3 countries	150 countries	55 countries ¹⁷	20 countries	USA & Canada	11 countries
Languages of the software	English only	6 ¹⁸	15 ¹⁹	12 ²⁰	English only	4
Cloud-based vs. On-premises	On-premises	Cloud-based	Cloud-based	Cloud-based	On-premises	Cloud-based
iOS / Android / Web	Web	iOS / Android / Web ²¹	iOS / Android / Web ²²	Web	Web	Web
24/7 support	Business hours e-mail	Live rep	Business hours e-mail	Live rep	Live Rep	Live rep
No. of staff	25+	1 590+	100 ²³	130+	80+	15
No. of venues	700+	68 000+ ²⁴	1 500+	1 500+	1 000+	430+
Price starts from / monthly	\$104 ²⁵	\$139	\$129	\$405	\$300	\$60 ²⁶
2022 Annual Revenue in USD	-	\$350M ²⁷	\$8,2M ²⁸	\$25,2M ²⁹	\$17,06M ³⁰	\$460K ³¹

¹⁴ RGP: Software Powering the Industry (2019, February), Rock Gym Pro, last accessed on 27 July 2023 at <https://www.climbingbusinessjournal.com/rgp-software-powering-the-industry/>

¹⁵ Mindbody Inc. Case Study (21 May, 2019) by TDM Growth Partners - <https://www.tdmgrowthpartners.com/insight/mindbody/https://www.tdmgrowthpartners.com/insight/mindbody/>

¹⁶ ROLLER Customers by Geography (2023) – <https://6sense.com/tech/point-of-sale-pos/roller-market-share>

¹⁷ Perfect Gym Solutions S.A. – <https://www.healthclubmanagement.co.uk/health-club-management-company-profile/Perfect-Gym-Solutions-SA/1454#about>

¹⁸ Can my MINDBODY site be translated? – <https://support.mindbodyonline.com/s/article/206574978-Can-my-MINDBODY-site-be-translated?language=de#:~:text=contact%20Technical%20Support,-Our%20core%20software%20and%20mobile%20apps%20can%20be%20translated%20into,Italian%2C%20Portuguese%2C%20and%20Spanish.&text=Once%20you%20sign%20up%20for,site%20as%20they%20become%20available>

¹⁹ <https://www.capterra.ae/software/143255/perfect-gym>

²⁰ ROLLER software platform raises \$7m for international growth (August 13, 2018) by Ella Baskerville – <https://blooploop.com/technology/news/roller-funding-software-platform/>

²¹ <https://www.getapp.com/customer-management-software/a/mindbody/>

²² <https://www.getapp.com/recreation-wellness-software/a/perfect-gym/>

²³ <https://www.owler.com/company/perfectgym>

²⁴ <https://getatka.com/companies/mindbody>

²⁵ <https://www.rockgympro.com/pricing>

²⁶ <https://gymrealmmanager.com/pricing/climbing-gym>

²⁷ How MINDBODY hit \$350M revenue and 68K customers in 2023 (2023) <https://getatka.com/companies/mindbody>

²⁸ PERFECT GYM SOLUTIONS S.A. (POLAND) Financial Statement 2022 – https://www.emis.com/php/company-profile/PL/Perfect_Gym_Solutions_SA_en_4473490.html Appendix attached

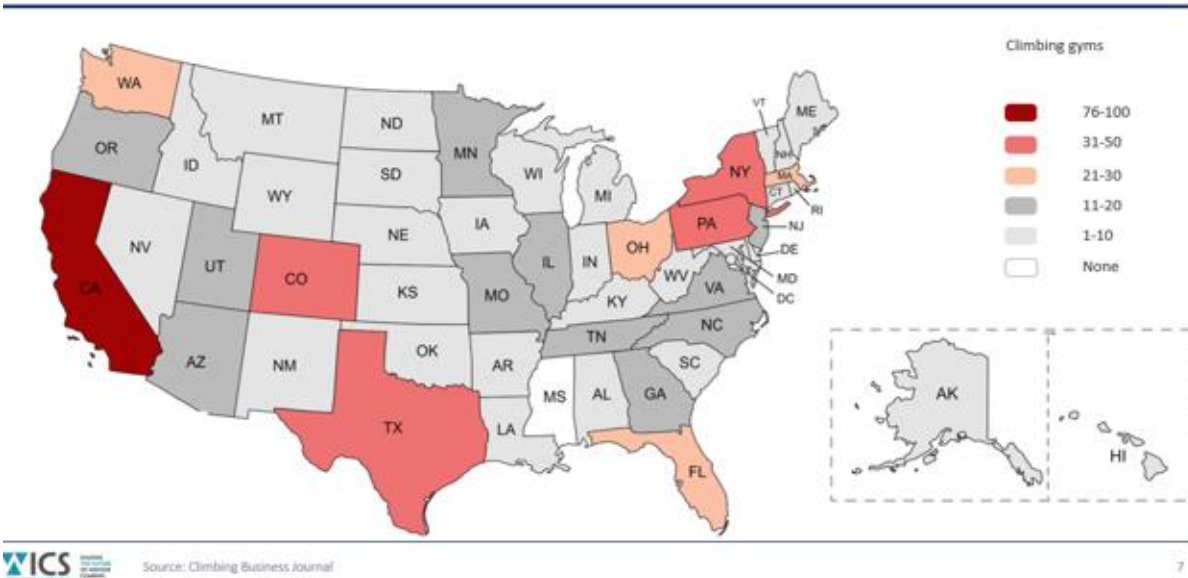
²⁹ <https://www.zoominfo.com/c/roller/347082347>

³⁰ CenterEdge Software – <https://www.konaequity.com/company/centeredge-software-4018978357/>

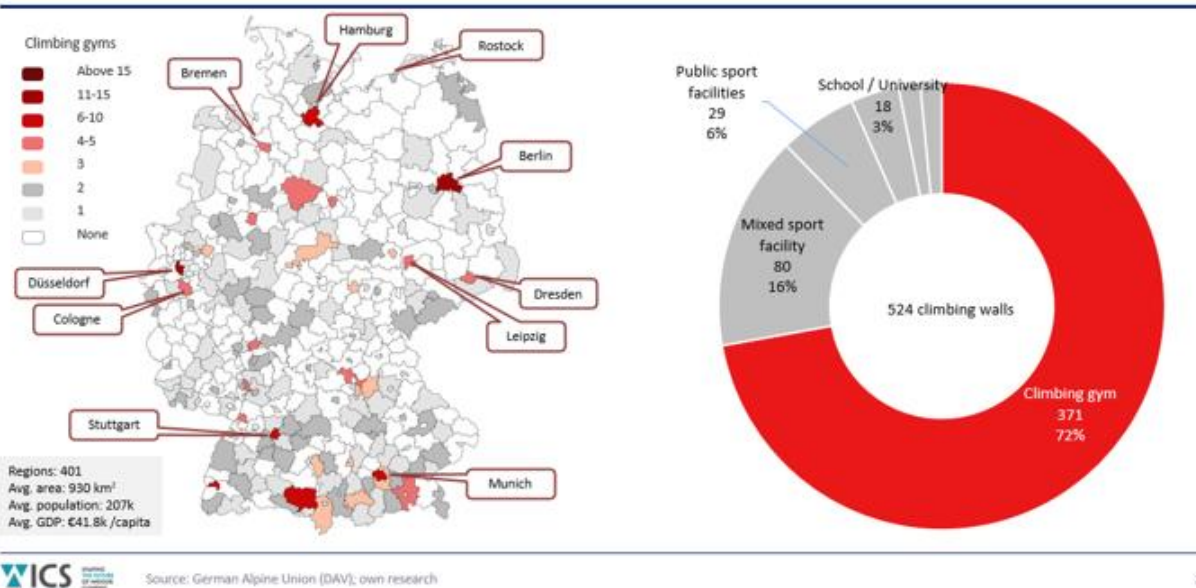
³¹ <https://portal.registryagency.bg/CR/Reports/ActiveConditionTabResult?uic=202964370>

Exhibit 3. Number of Climbing Gyms in the USA and European countries

Climbing gyms alone are 641 (out of 1401 walls in total) with 91 in California, 30-40 in New York, Texas, and Pennsylvania and around 10-20 in most other states



Germany has 371 climbing gyms mostly in the Alpine regions and around major cities

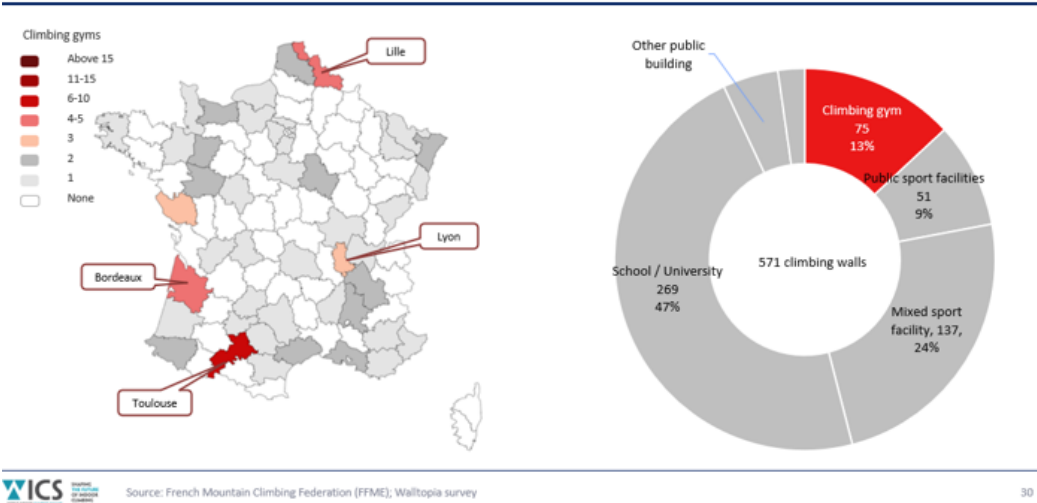


Number of climbing gyms in the US, Germany, France, Austria presented at the World Indoor Climbing Summit (WICS), Bulgaria, in 2023.

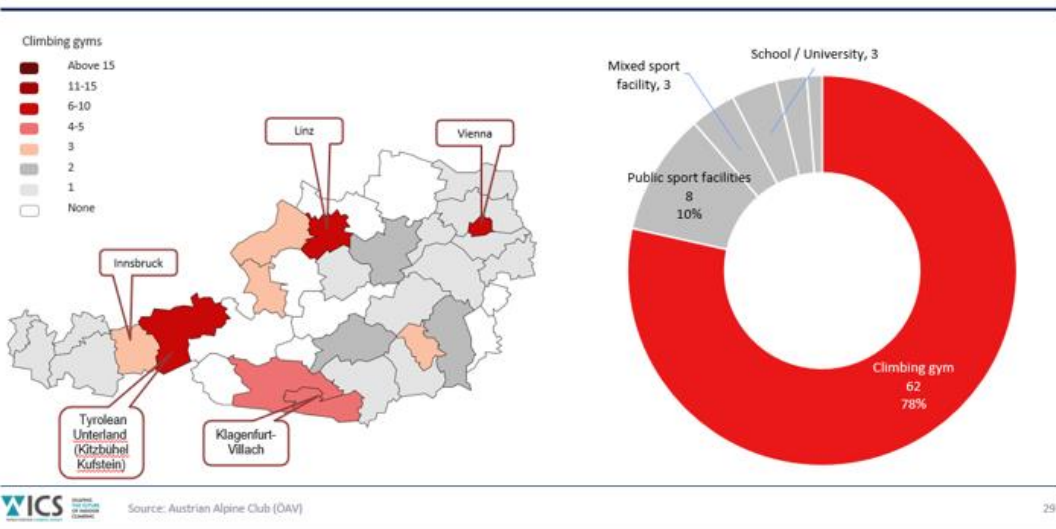
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Exhibit 3. Number of Climbing Gyms in the USA and European countries, continued

There are 75 gyms in France (out of 572 climbing walls in total). They are significantly outnumbered by climbing walls in schools and public sport buildings



There are 62 gyms in Austria, mostly around Vienna, Carinthia, and Tyrol



Number of climbing gyms in the US, Germany, France, Austria presented at the World Indoor Climbing Summit (WICS), Bulgaria, in 2023.

GymRealm – A Different Breed

While it might not be typical for the IT industry, in general the client bases of the companies providing software solutions for sports and health centers were limited to the countries where they had been initially established. This was mainly for one reason: expanding abroad always required adapting products to the local tax, fiscal and other regulations (mostly aimed at transparent and accurate recording of business transactions for combating tax evasion, guaranteeing tax collection, protection of data etc.) and, of course, to the language. Adapting products was costly, and not all businesses were willing to spend the money.

GymRealm managed to overcome many of the issues that had created trouble for its competitors. So far, GymRealm sold in different markets such as Australia, Bulgaria, Egypt, Italy, Malaysia, Oman, Poland, Portugal, Spain, UK and the USA. As a result, the company managed to attract more than 430 business clients worldwide. What made GymRealm different was that it was always focused on the quality of the solutions and services it offered. The company provided better customization than the majority of its international rivals, exclusive features (for example face recognition and integration with different local payment processors for tax savings) and user-friendly cloud-based software.

Despite its relatively small size, GymRealm served a very wide segment of clients – not just fitness clubs, but all types of sports facilities, family entertainment centers, pools, sports clubs, multi-purpose facilities, and was ready to customize the software to the needs of each one of them, if such customizations could later be used again for other clients. GymRealm's software was web-based and well suited for Android and regular PCs but could not be used on iOS. Nonetheless, the team had developed a mobile app which allowed owners to track the performance of their facilities from any point in the world.

The increasing number of international clients and their differences in size and scope started causing GymRealm difficulties providing high-quality support. The employees of the company, especially the sales team, would receive calls from clients working in different countries 24/7

due to the time zone differences. At one point Dimitar considered putting the support personnel on shifts but he knew that very often the requests of clients required certain work to be done by the software developers. However, all members of the software development team were family people and would most likely disagree to work on shifts. Dimitar was aware that entering new large foreign markets, such as the US, would deepen the issue.

GymRealm generated its revenue from sales of subscriptions of its software products. As a result of its activities, the company had the chance to collect enormous amounts of data regarding the choices and preferences of the people who visited the sports and wellness facilities that used GymRealm's software. GymRealm had invested great effort to guarantee the adequate protection of such data and had no intention of taking further advantage of it, for example by selling it to other companies. When asked why, Dimitar replied: *"I have decided not to go in this direction because for me this is on the edge of law and my values."*

The client base of the company had been growing ever since GymRealm was founded. The company had demonstrated stable financial performance in the last years. (Excerpts from financial statements can be found in Exhibit 4.) GymRealm was the largest player in the Bulgarian market and was competitive internationally. All of this had been achieved without investing much effort or resources in proactive selling, marketing or advertising. GymRealm relied almost exclusively on organic growth and word-of-mouth. In fact, the company was even contacted by a huge operator from South Africa who learned about GymRealm's solution on his own.

Dimitar noted: *"In our business, advertising doesn't work; online advertising doesn't work. If we do that, the clients we'll attract will be some small yoga or Pilates studios. They'll enroll at our lowest subscription level, and GymRealm has many more functionalities than they need. Contacts with people are important. That's why I say word-of-mouth works for us."*

GymRealm had reached its current sales without relying on the customer network developed by its shareholder, Walltopia. The personnel of the two companies knew each other well but their teams had not established a practice of referring clients to each other, organizing advertising campaigns jointly, or participating together at exhibitions of the sports and entertainment industry.

Exhibit 4. Excerpt from GymRealm’s Financial Statements for the Period 2018-2022

	2018 (TBGN)	2019 (TBGN)	2020 (TBGN)	2021 (TBGN)	2022 (TBGN)
Net sales	436	731	580	353	372
Operational costs (incl. personnel costs)	594	763	756	915	839
Personnel costs	483	584	622	635	486
Profit	34	13	14	14	10

Financial results of GymRealm Technology AD were obtained from the published financial statements of the company at the Bulgarian Commercial Register to the Bulgarian Registry Agency available at <https://portal.registryagency.bg/>. The file of GymRealm Technology AD can be accessed on: <https://portal.registryagency.bg/CR/Reports/ActiveConditionTabResult?uic=202964370>

“They are all happy!” was what Dimitar Georgiev replied when asked about the levels of customer satisfaction with the products, services and support provided by his organization. GymRealm had never carried out surveys among its clients, but still managed to collect feedback, mostly through informal conversations. (Reviews can be found in Exhibit 5).

The company planned to carry out more detailed customer research at a later stage: “*Early September maybe, then the people who make decisions will be at work after the summer holiday season. There is a huge turnover of employees working at the reception desks who are generally not really into the details. We need to focus on the opinions of owners and managers only,*” Dimitar Georgiev explained.

Exhibit 5. Reviews of GymRealm

"We had issues with tax calculation, since there are 3 types of tax on different products in Oman. That was fixed at an additional fee. The software is good for us, since we are not such a huge amusement center. I am not for large venues." Avik Kumar, Funtopia Barka, Oman

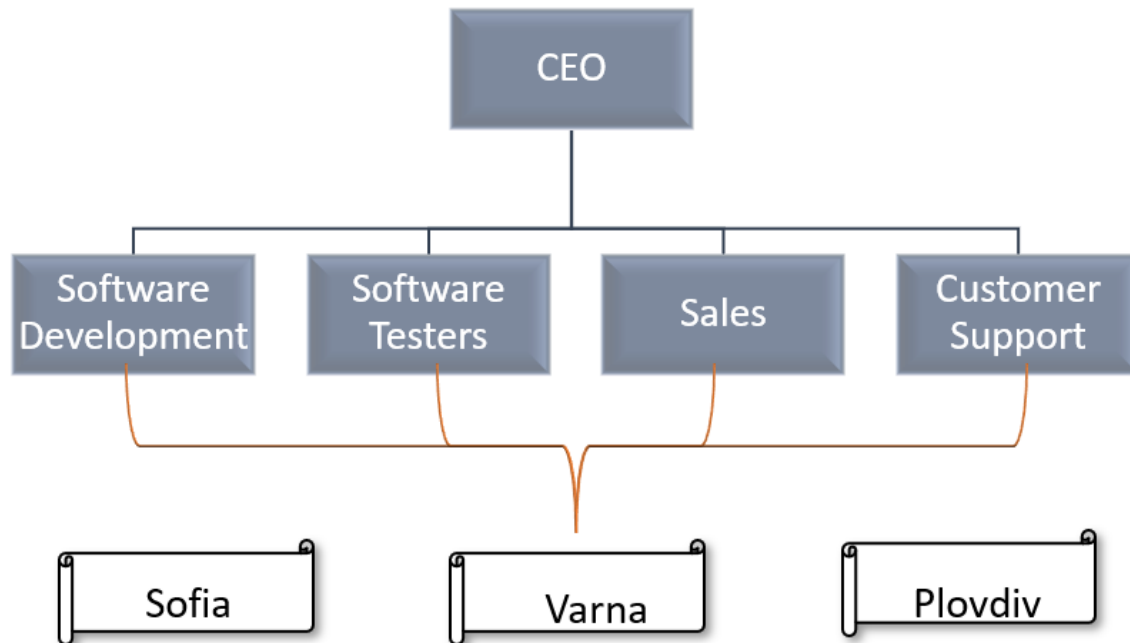
"As a manager of 2 FECs I can say GymRealm is 80% good for us. If I was a climbing gym operator it would be great. Recently the support is lacking, but I have researched alternatives and GymRealm is far better solution for us." Yassen Nikolov, Funtopia Glenview, IL, USA

"I work with GymRealm software for 10 years already and I'm used to it, but there are many settings and functionalities a manager should know. There is a space for improvement, fortunately the support in Bulgaria is prompt." Desislava Borisova, Climb Academy, Sofia, Bulgaria

The GymRealm Family

GymRealm had 15 employees spread in the three biggest Bulgarian cities – Sofia, Plovdiv and Varna. Some of the team members joined the company soon after it was established, forming a solid core of experience and knowledge. The company had four departments - Software Development, Software Testing, Sales and Customer Support. The organizational chart and personnel distribution by department can be found in Exhibit 6. The employees had regular online meetings, were in constant contact with each other and usually met in person once a year around Christmas. In addition, the CEO visited all three offices every 2 months to connect with the staff. Accounting and HR management were outsourced services and there was no administrative unit in the company.

Exhibit 6. GymRealm's Organizational Chart

**Number of employees per department:****Software Development – 6****Sales – 3****Software Testers – 3****Customer Support - 2**

All departments had their specific functions, and they were all directly subordinated to the CEO Dimitar Georgiev. Dimitar is young and energetic. He worked as a senior developer in addition to his duties as a CEO. As a result, he managed to earn his employees' respect, some of whom said that they *"... admire him because we see how much he's achieved and doesn't stop – managing the team, developing the product, speaking with clients and closing deals. Approaching the largest producer of climbing walls in the world is a big honor and we are proud to be part of all this"*.

In addition to his duties at GymRealm, Dimitar was recently given the opportunity to manage another much larger software company and reveal his full potential.

GymRealm maintained a dynamic environment and as a result very often the roles of the different departments intersected. It was not exceptional for some employees to perform more

than one function. This was exactly the case with Nikolay Simeonov, an experienced sales agent who started working for the company more than 10 years ago. Nikolay described his duties as *“80% support, 20% sales and collecting due payments from clients in between.”* Sometimes employees were involved simultaneously in software development, after-sales support and even direct sales. Another employee, Victor Stanoev, started as a sales agent in 2013 but ended up as a software developer. Victor noted, *“When I started with sales 12 years ago, I also became the contact person for my clients to support them with the software if there was a problem. So, this is how I got excited about programming and started studying so I could also understand the product from the inside. And in the end, I did not become software developer only, but customer support as well. That’s why I’m a universal soldier, because I fulfill 3 out of 4 functions in the company.”*

Dimitar believed that the dividing line between sales and support could get blurred as the clients sometimes preferred to speak with the sales representatives; the ones they already knew. Therefore, it was not always possible to determine who should take care of a certain matters. For example, when a client asked questions about a specific new feature of the software, should that be answered by sales or support? In addition, Dimitar considered it to be an advantage that clients contacted the sales department; when they did, the sales force had the opportunity to sell some new additional feature or function.

Entrepreneurial Mindset

The success of GymRealm was to a great extent the result of the flexibility of the company and the team’s ability to think outside the box. GymRealm did not adhere strictly to formal rules, but instead relied on thinking creatively, taking risks, and establishing a company culture where everybody was free to share ideas. *“We have very open communication. Everyone expresses freely what they think. I don’t monitor them closely. I don’t track when the staff come to work or when they leave,”* explained Dimitar. At one point, the employees took a survey measuring the degree of entrepreneurship of the company culture. GymRealm outperformed most for-profit

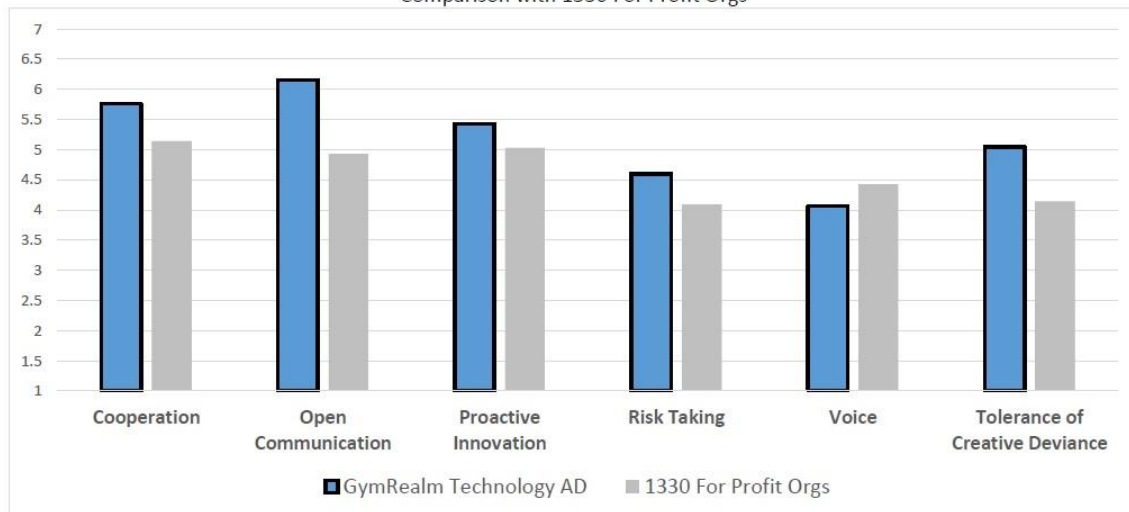
companies, as well as most IT industry companies in the database when it came to Tolerance of Creative Deviance, Proactive Innovation and Cooperation. The results of the survey can be found in Exhibit 7.

Exhibit 7. Excerpt from A Survey Assessing Entrepreneurial Organizational Culture

Source: McGuire, S., E. Drost & Y. Zhang. "Convergent and Discriminant Validity of a Model of Entrepreneurial Culture," Proceedings of the XXVII ISPIM Innovation Conference, Oporto, Portugal, June 19-22, 2016.

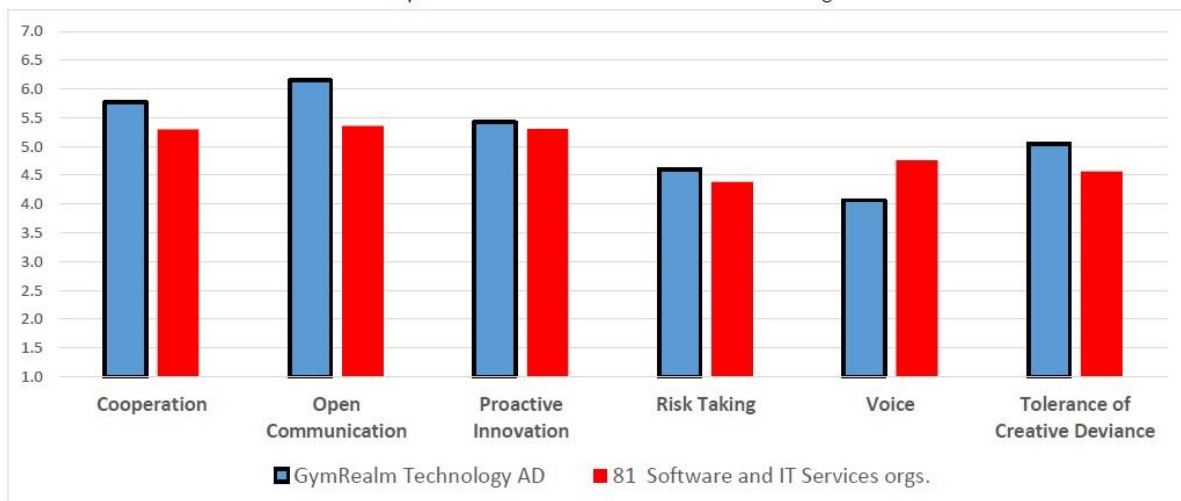
Entrepreneurial Organizational Culture: GymRealm Technology AD

Comparison with 1330 For Profit Orgs



Entrepreneurial Organizational Culture: GymRealm Technology AD

Comparison with 81 Software and IT Services orgs.



Thinking and acting fast was a virtue in the competitive software industry. Dimitar Georgiev rejected the idea of formal hierarchies. One of the employees noted, *“Dimitar doesn’t like these ideas about positions - manager of this, manager of that. Everything is decided by him, right away. This, on the other hand, is positive for a small company such as ours, because the decisions are made quickly. We don’t have to wait for considerations and approvals and discussions, he decides, and we act now.”*

As Dimitar also took the position of the main (senior) developer in the company, most of the ideas came from him. He knew what tasks there were to be done, when, and how. The employees spoke directly with him and acted on his feedback.

Dimitar believed that a successful business should always be one step ahead of its competitors. Therefore, the employees invested effort in creating and launching their products in an operational environment as soon as possible, even if it meant that later they might need to spend time fixing bugs and providing support to clients. This whole idea was also expressed by the members of the GymRealm team who claimed that *“sometimes we’re thrown into the deep waters, and we need to swim – preferably fast.”*

GymRealm had a core of experienced employees, but because of its expansion new recruits were welcome as well. All employees were provided with a lot of information and materials so that they could get to know and understand the products of the company as well as possible. Dimitar started his journey in entrepreneurship at a young age, and he knew how adaptive one needed to be to succeed. There was no HR department within the company and no mentorship program; newcomers had to put in the work if they wanted to prove that they belonged. Just like the more experienced employees, the new ones were often *“thrown into the deep.”*



Tania Kishkin holds a bachelor's degree in public relations from New Bulgarian University, and master's degree of European Public Administration from Sofia University. She is an experienced professional with 10+ years of demonstrated history working in the franchising business and the sports and entertainment operations' industry. She earned an MBA in the executive program at American University of Bulgaria.



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WAS THE SPIN-OFF OF PAYPAL FROM EBAY A TAXABLE OR A TAX-FREE REORGANIZATION?

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In 1995, Pierre Omidyar launched AuctionWeb, a web-based online auction site where buyers and sellers could trade antiques, collectables, coins, and other goods. In 1997, AuctionWeb was renamed eBay, Inc. By 2014, eBay was “a global commerce leader with 149 million active buyers” with more than 700 million live listings at any given time (eBay 2014).

In 1998, Peter Thiel and Max Levchin founded Confinity, Inc. (Confinity), which focused on mobile payments sent from personal digital assistants (Forest 2014; O’Connell 2020; eBay 2023). In 1999, Confinity launched a product that allowed individuals to make electronic payments to each other and to merchants through e-mail. In March 2000, Confinity merged with an online bank, X.com and changed its name to X.com. In October 2000, X.com decided to discontinue its online banking services and focus on its online payment product. In 2001, X.com changed its name to PayPal, Inc. (PayPal Holdings 2022).

By 2002, approximately 60 percent of PayPal’s business was processing transactions on eBay (eBay 2002). In July 2002, eBay acquired PayPal for approximately \$1.5 billion resulting in the combination of eBay’s online marketplace with PayPal’s online payments system (eBay 2023). In 2015, eBay spun off PayPal. As two independent publicly traded companies, eBay operated its marketplace business and PayPal operated eBay’s payments business (eBay 2014).

What would have been the U.S. tax and non-tax consequences of eBay’s spin-off of PayPal for eBay, PayPal, and eBay’s shareholders?

The authors developed the case for class discussion rather than to illustrate either effective or ineffective handling of the situation. The case and its accompanying instructor’s manual were anonymously peer reviewed and accepted by the *Journal of Case Research and Inquiry*, Vol. 9, 2024, a publication of the Western Casewriters Association. The authors and the *Journal of Case Research and Inquiry* grant state and nonprofit institutions the right to access and reproduce this manuscript for educational purposes. For all other purposes, all rights are reserved to the authors. Copyright © 2024 by Gretchen R. Lawrie & John R. Cooper. Contact: Gretchen R. Lawrie, 5151 State University Dr. Los Angeles, CA 90032, glawrie@calstatela.edu.

The Company

eBay, Inc.

In 1995, Pierre Omidyar launched AuctionWeb, a site *“dedicated to bringing together buyers and sellers in an honest and open marketplace”* (eBay 2023). AuctionWeb pioneered person-to-person trading by developing a web-based online community where buyers and sellers could trade new and used goods in an auction format (eBay 1998). In 1995, Mark Fraser purchased the first item listed on AuctionWeb, which was a broken laser pointer (eBay 2023).

In 1995, AuctionWeb was formed as a sole proprietorship and was incorporated in California in 1996 (eBay 1998).

In 1996, \$7.2 million worth of goods was sold on AuctionWeb. In May 1997, the millionth item, a Big Bird jack-in-the-box toy from PBS’ Sesame Street, was sold on AuctionWeb. (eBay 2023, July).

In September 1997, AuctionWeb was renamed eBay and reincorporated in Delaware in 1998. In September 1998, eBay completed its initial public offering (IPO) and began trading on Nasdaq under the symbol EBAY (eBay 1998).

By 2002, PayPal was the preferred electronic payment method of eBay users (eBay 2002).

In order not to lose transaction business to PayPal and build its own electronic-payment service, eBay acquired the person-to-person money transfer service, Billpoint, Inc., in 1999 (Richtel 2002).

By 2014, eBay was one of the world’s top 30 global brands and a top 10 retail global brand. eBay had an installed mobile base of 200 million apps that generated \$20 billion in mobile volume. eBay’s cross-border commerce represented 20 percent of its gross merchandise volume and 61

percent of its marketplace's revenue was international (eBay 2014, September). See Exhibit 1 for an eBay picture.

Exhibit 1. eBay's Headquarter

Source: New York Times, 2020



PayPal, Inc.

In August 1998, Peter Thiel met Max Levchin after giving a speech at Stanford University on global market opportunities (O'Connell 2020). In December 1998, they founded Confinity and began to work on digital wallets. The company focused on mobile payments sent from PDAs. In 1999, an employee developed the process of sending money transfers through email (Forest 2014). In 1999 Confinity launched a product that allowed individuals to make electronic payments to each other and to merchants through e-mail.

In 2000, Confinity merged with X.com, an online bank founded by Elon Musk, Harris Fricker, Christopher Payne, and Ed Ho in 1999, and changed its name to X.com. In October 2000, X.com decided to discontinue its internet banking services and to focus on its online payment product. In 2001, X.com changed its name to PayPal (PayPal Holdings, Inc., 2022). See Exhibit 2 for a picture of PayPal.

Exhibit 2. PayPal's San Jose Headquarters

Source: Los Angeles' Times, 2017



By 2002, approximately 60 percent of PayPal's business was eBay transactions (eBay 2002). In February 2002, PayPal completed its IPO and began trading on Nasdaq under the symbol PYPL (O'Connell 2020).

In July 2002, eBay acquired PayPal for approximately \$1.5 billion in a tax-free (tax-deferred), stock-for-stock transaction. PayPal became a wholly owned subsidiary of eBay and operated as an independent brand of eBay; Billpoint was phased out (eBay 2002). With the acquisition of PayPal, eBay, the *"web's largest marketplace,"* was united with an online payments system (eBay 2023).

Concerning the acquisition, eBay stated that payment was *"...a vital function in trading on eBay and integrating PayPal's functionality into the eBay platform..."* would allow buyers and sellers to trade with greater ease, speed, and safety (eBay 2002). eBay's president and chief executive officer (CEO) Meg Whitman stated that *"eBay and PayPal have complementary missions"* and together they could *"...improve the user experience and make online trading more compelling"* (eBay 2002). PayPal CEO Thiel stated that the *"beauty"* of the deal was that it would offer *"...our communities' new tools and flexibility to do more business"* and that the integration of the companies' services was *"...a win-win situation for millions of current and future online consumers"* (eBay 2002).

In 2014, PayPal processed four billion payments for a total payment volume of \$235 billion and generated over \$8 billion in revenues. It had 169 million active customer accounts in 203 markets. PayPal's customers were paid in more than 100 currencies, could withdraw funds from their bank accounts in 57 currencies, and held balances in their PayPal accounts in 26 currencies (PayPal 2015, July).

Pre-Spin-Off Timeline

In January 2014, eBay received a notice from one of its shareholders, Carl Icahn, proposing the spin-off of PayPal into a separate business from eBay. In response to the proposal, eBay stated that its board of directors routinely assessed eBay's strategic direction and had previously explored a spinoff or separation of PayPal. As part of its assessments, the board of directors concluded that eBay and its shareholders were best served by the current strategic direction and did not believe that separating eBay and PayPal was *"...the best way to maximize shareholder value"* (eBay 2014). Further, as part of eBay, PayPal was able to *"leverage the company's technology capabilities, commerce platforms and relationships with retailers, brands and large merchants worldwide"* (eBay 2014). Additionally, PayPal drove commerce innovation in payments at a global scale, which created value for consumers, merchants, and shareholders (eBay 2014, January).

In February 2014, Mr. Icahn (see Exhibit 3) issued a letter to eBay's shareholders stating that the separation of eBay and PayPal would allow investors to clearly see the value of sustainable double-digit growth at PayPal and eBay's strong recurring cash flows (Icahn 2014).

Exhibit 3. Carl Icahn, eBay Shareholder

Source: New York Times 2014



In March 2014, eBay CEO John Donahoe stated in response to Carl Icahn’s proposal that the separation of eBay and PayPal was a bad idea, that they were stronger together and would grow better together than apart. He also stated that PayPal was not being held back by being part of eBay, and eBay’s marketplace was not being held back by being part of PayPal (Bensinger 2014).

Also in March 2014, eBay’s board of directors issued a letter to eBay shareholders stating that shareholders and customers were “*best served by keeping PayPal and eBay together*” (eBay 2014, March). The board stated that eBay and PayPal were better together because:

- PayPal grew faster because of eBay;
- eBay accelerated PayPal’s success;
- Data sharing led to more profitable growth;
- eBay provided efficient capital for PayPal; and
- Commerce and payments were converging.

Although the board stated that keeping PayPal as part of eBay was the “*right plan for today*,” it would continue to review eBay’s strategy and legal structure with the best long-term interests of shareholders “*clearly in mind*” (eBay 2014, March).

When Mr. Icahn in April 2014 withdrew his proposal, he stated that he continued “*...to believe that eBay would benefit from the separation of PayPal at some point in the near future*” and that

he intended to continue to “press” his case through discussions with eBay (eBay 2014, September).

Spin-Off Timeline

Despite eBay’s stated resistance to splitting the company, on September 30, 2014, eBay announced that after a strategic review of eBay’s growth strategies and structure, its board of directors had approved a plan to separate eBay and PayPal into independent publicly traded companies in 2015. PayPal would operate eBay’s payment business and eBay would operate the marketplace business. The Company stated that the creation of two businesses would “...best position eBay and PayPal to capitalize on their respective growth opportunities in the rapidly changing global commerce and payments landscape...” and was the best path for creating shareholder value (eBay 2014). See Exhibit 4.

As part of its strategic review, the board concluded that the spin-off would “create sharper strategic focus and better position each business to capitalize” on growth opportunities. Further, eBay and PayPal would “...benefit more and create greater value from the strategic focus, speed, flexibility and agility...” that could come with being separate companies (eBay 2014, September).

Concerning the spin-off, eBay CEO Donahoe stated that eBay and PayPal would be “...sharper and stronger, and more focused and competitive as leading, standalone companies in their respective markets” (eBay 2014, September).

Also, as independent companies, they would enjoy “...flexibility to pursue new market and partnership opportunities” (eBay 2014, September). According to Mr. Donahoe, “The nice thing about the spin-off is that it allows eBay to keep its own profits and reinvest [them] in the business” and control its own destiny (Bertoni 2014).

Additionally, Mr. Donahoe stated that one of the objectives of the spin-off was to give PayPal the “*maximum flexibility to work with whomever [it] would like*” (Baig 2014).

About the spin-off, Mr. Icahn stated that he was “*happy*” that eBay’s board and management acted responsibly, but that they had acted “*a little later than they should have, but earlier than*” he expected (Bensinger *et al.* 2014).

Exhibit 4. eBay Spin-Off of PayPal

Source: eBay, Inc.



Reasons for Spin-Off

According to eBay, some of the reasons for the spin-off included:

- PayPal’s management would be able to exclusively focus on its payments business and eBay’s management would be solely dedicated to growing its marketplace business;
- Each company’s decision-making process would be sped up, thus allowing each one to adapt more quickly to the changing market and the customer dynamics of their markets;
- Each company would have increased flexibility to pursue new partnerships and strategic opportunities that were not previously available;
- Each company could implement a capital structure appropriate to its strategy and business needs without competing with each other for investment capital;
- Each company would have direct access to capital markets;
- Investors could separately value eBay and PayPal as distinct investments; and
- Investors would have two distinct investment opportunities (eBay 2015).

Spin-Off Transactions

As part of the spin-off process, in January 2015, eBay incorporated PayPal Holdings, Inc. On June 26, 2015, eBay and PayPal Holdings entered into a separation and distribution agreement. By the end of June 2015, eBay transferred substantially all of PayPal's assets and liabilities to PayPal Holdings. PayPal Holdings became the parent company of PayPal and directly and indirectly held all of PayPal's assets and liabilities.

On July 17, 2015, eBay distributed, on a pro rata basis, 100 percent of PayPal Holdings' outstanding common stock to eBay shareholders. Each eBay shareholder received one share of PayPal Holdings common stock for every share of their eBay common stock. Approximately 1.2 billion shares of PayPal Holdings common stock were distributed to eBay shareholders (Distribution). eBay's shareholders did not pay consideration for their PayPal Holdings shares and did not exchange their eBay shares for their PayPal Holdings shares. After the Distribution, eBay's shareholders owned stock in both eBay and PayPal Holdings (PayPal 2015, October).

On July 20, 2015, PayPal Holdings announced that it had completed its separation from eBay and was an independent public company.

On the same day, its common stock began trading on Nasdaq under its prior symbol PYPL. On the first day of trading, PayPal's stock closed up 5.4 percent for a market capitalization of \$47.13 billion, which was more than eBay's value at the time - \$34.7 billion (Tsukayama 2015).

Post Spin-Off

Devin Wenig became the CEO of eBay and Dan Schulman became the CEO of PayPal Holdings (eBay 2014, September). After the spin-off, Mr. Schulman stated that: *“As an independent company, [PayPal Holdings sees] a tremendous opportunity...to expand our role as a champion for consumers and partner to merchants, and to help shape the industry as money becomes digital at an increasingly rapid pace”* (PayPal 2015, July). He also stated that PayPal Holdings was *“unique”* and was focused on leveraging its strengths to drive long-term growth for the company and its shareholders (PayPal 2015, July). Further, he stated that PayPal Holdings had *“a singular focus on digital payments, deep commitment to customer service, a dive for innovation and technology agnostic platform that creates value for our consumers and merchants...”* (PayPal 2015, July). See Exhibit 5.

Exhibit 5. CEO Dan Schulman, PayPal

Source: eBay, Inc.



As part of the spin-off, eBay and PayPal Holdings entered into an operating agreement with PayPal Holdings continuing to process eBay’s payments (eBay 2015, July). In 2018, eBay announced that it had replaced PayPal Holdings as its primary payments processing provider with Adyen, NV, an online payment company. After July 2023, payments to eBay sellers would

be deposited directly into their bank accounts, rather than processed by PayPal Holdings and PayPal Holdings would not be option for payment by eBay buyers (eBay 2018, January).

Was the Spin-Off Successful?

PayPal Holdings, Inc. and Its Shareholders

Prior to the spin-off, PayPal Holdings' annual revenue in 2014 was \$8.025 billion, it processed 3.96 million payments, and its active user accounts were 162 million and total payment volume (TPV) was \$234 billion. When it was spun-off in 2015, PayPal Holdings' annual revenue was \$9.2 billion, a 15 percent increase over 2014. It processed 4.9 million payments, 24 percent growth over 2014. PayPal Holdings' active user accounts increased by 22 percent from 2014 to 179 million (PayPal 2016).

In 2022, PayPal Holdings revenue was \$27.5 billion, 41 percent increase from 2014. Its TPV was \$1.36 trillion, 59 percent over 2014. PayPal Holdings processed, 22.3 billion payments, 21 percent increase from 2014. Its number of active customer accounts was 435 million, 22 percent over 2014 (PayPal 2023).

If a person had invested \$1,000 on the day PayPal Holdings stock began to be publicly traded on July 20, 2015, the person's investment would have grown to \$7,460 when it closed at its all-time high of \$308.53 on July 23, 2021. However, on March 21, 2023, with PayPal Holdings' stock trading at \$73, the \$1,000 investment would have been \$1,765 (Sun 2023).

eBay, Inc.

Prior to the spin-off, eBay's annual revenue was \$17.902 billion for 2014, which decreased to \$8.592 billion for 2015, a 52 percent decrease. In 2022, eBay's annual revenue was \$9.813 billion, a 45 percent decrease from 2014 (eBay 2015, February; eBay 2016; eBay 2023)

Appendix A. U.S. Tax Concepts

Sources: U.S. Code: Title 26: Subtitle A-Income Taxes

Title 26 of the Code of Federal Regulations (26 CFR) Divisive Type D Reorganizations

26 U.S.C. § 368(a)(1)(D) provides for the tax-deferred treatment, commonly called tax-free treatment, of a transfer by one corporation (Transferor) of all or part of its assets to another corporation, with the Transferor and/or its shareholders in control of the other corporation (Controlled) immediately after the transfer. Following the transfer and pursuant to a plan, Controlled's stock or securities must be distributed in a transaction that meets the requirements of Sections 354, 355, or 356. If the requirements of both Sections of 368(a)(1)(D) and 355 are the reorganization is called a divisive Type D reorganization.

Overview Divisive Type D Reorganizations

In a divisive Type D reorganization, a corporation (Distributing) transfers part of its assets to another corporation (Controlled) and then Controlled's stock is distributed, pursuant to Section 355, in either a spin-off, split-off, or split-up transaction. In other words, for a transaction to qualify as a tax-free divisive Type D reorganization, the requirements of both Sections of 368(a)(1)(D) and 355 must be met.

To qualify as a tax-free divisive Type D reorganization, the following statutory requirements must be met:

- A corporation (Distributing) must distribute only stock of the controlled corporation (Controlled) to its shareholders;
- Distributing must distribute enough of Controlled's stock to constitute control of Controlled;
- Both Distributing and Controlled must be engaged in an active trade or business immediately after the transaction;
- The distribution must not be a device to distributed earnings and profits (E&P);
- There is not a disqualified distribution; and
- There is not a prohibited acquisition.

In addition to the above statutory requirements, the division also must be meet the requirements of one of the transactions below.

In a spin-off transaction, distributing transfers some of its assets to a newly created corporation that it controls (Controlled) in exchange for Controlled's stock, which is distributed to Distributing shareholders, who are not required to exchange their Distributing stock for Controlled's stock. After the spin-off, Distributing's shareholders own stock in both Distributing and Controlled.

In a split-off transaction, distributing transfers some of its assets to a newly created corporation that it controls (Controlled) in exchange for Controlled's stock, which is distributed to Distributing's shareholders in exchange for all of their Distributing stock. After the split-off, Distributing's shareholders only own Controlled stock.

In a split-up, distributing transfers its assets to two or more corporations it controls. The stock of both Controlled corporations is distributed to Distributing's shareholders and distributing liquidates.

The transaction must also meet the following non-statutory requirements:

- The transaction must be carried out pursuant to a plan of reorganization;
- The must be a corporate business purpose for the transaction;
- There must be continuity of shareholder interest before and after the transaction (COI); and
- There must be continuity of business enterprise (COBE).

Statutory Requirements

i. Control Requirement

First, under the control requirement, Distributing must control the corporation (Controlled) it is transferring assets to prior to the transaction, meaning that Distributing must own prior to the asset transfer at least 80 percent of the total combined voting power of all classes of Controlled's voting stock and at least 80 percent of the total number

of Controlled's shares of all other classes of stock. Second, Distributing must distribute to its shareholders at least an amount Controlled stock that constitutes control, meaning that Distributing's shareholders must own after the distribution at least 80 percent of the total combined voting power of all classes of Controlled stock entitled to vote and at least 80 percent of the total number of Controlled shares of all other classes of stock. (Internal Revenue Service Revenue Procedure 2016-40).

ii. Active Trade or Business Requirement

Under 26 U.S.C. § 355(b), both Distributing and Controlled must be engaged in an active trade or business immediately after the division. Both corporations must have conducted the active trade or business during the five-year period before the division. Also, the active trade or business cannot have been acquired in a taxable transaction during the five-year period before the division. Further, neither Distributing nor Controlled can have acquired control, directly or indirectly, over the corporation conducting the trade or business in a taxable transaction during the five-year period before the transaction. (26 U.S.C. §§ 355(a)(1)(C) and (b)).

Treas. Reg. § 1.355-3(b)(2)(ii) provides that a corporation is treated as engaged in a trade or business immediately after the division if the corporation is carrying on activities for the purpose of earning income or profit and the activities are included in every operation that forms a part or a step in the process of earning income or profit. The activities ordinarily include the collection of income and the payment of expenses.

Treas. Reg. § 1.355-3(b)(2)(iii) provides that a trade or business is actively conducted if the corporation performs active and substantial management and operational functions, which generally does not include activities performed by persons outside the corporation, such as independent contractors. The active conduct of a trade or business does not include holding stock, securities, land, or other property for investment purposes. Also, it does not include the ownership and operation of real or personal property used in a trade or business, unless the owner performs significant services to operate and manage the property.

iii. Device Requirement

26 U.S.C. § 355(a)(1)(B) provides that the division cannot be used principally as a device to distribute either Distributing's or Controlled's E&P. Some examples of factors that are considered evidence of a device include:

- A distribution that is pro rata or substantially pro rata among Distributing's shareholders;
- A sale or exchange of Distributing's and/or Controlled's stock after the division; and
- The existence of assets that are not used in a trade or business, such as cash and other liquid assets that are not related to the reasonable needs of a business. (Treas. Reg. § 1.355-2(d)(2)).

Some examples of factors that are not considered evidence of a device include:

- The corporate business purpose of the division; and
- Distributing is a publicly traded company and has no shareholder who is directly or indirectly the beneficial owner of more than five percent of any class of stock. (Treas. Reg. § 1.355-2(d)(3)).

iv. Disqualified Distribution Requirement

Although generally Distributing does not recognize gain in a qualified divisive Type D reorganization, under Section 355(d), Distributing, but not the shareholders, will recognize gain on a disqualified distribution of Controlled's stock or securities. A disqualified distribution is a Section 355 distribution where immediately after the division, a shareholder holds stock representing a 50-percent or greater interest, by vote or value, in either Distributing or Controlled that is attributable to stock or securities acquired by purchase during the five-year period ending on the distribution date. (Treas. Reg. § 1.355-6(b)).

The term purchase is defined as an acquisition of stock or securities of Distributing or Controlled for cash, marketable securities, or debt. But the term purchase does not include situations such as the acquisition of the stock or securities was from someone who died, or the acquisition was one in which the basis of the stock or securities was based on the former owner's basis in the stock and securities. (Treas. Reg. § 1.355-6(d)).

v. Prohibited Acquisition Requirement

Generally, Distributing does not recognize gain in a qualified divisive Type D reorganization. However, under Section 355©, Distributing, but not the shareholders, will recognize gain if the Section 355 distribution is part of a plan or a series of transactions pursuant to which one or more persons acquire stock equaling at least a 50-percent interest, by vote or value, in Distributing or Controlled. (Treas. Reg. § 1.355-7(a)). Distributing will recognize gain in the amount it would have recognized if it had sold Controlled stock for its fair market value (FMV) on the date of the distribution.

Whether there is a plan or series of transactions is based on all facts and circumstances. (Treas. Reg. § 1.355-7(b)(1)). Under Section 355(e)(2)(B), there is a rebuttable presumption that any acquisition two years before or after a Section 355 distribution is part of a plan, including the distribution.

Non-Statutory Requirements

i. Plan of Reorganization Requirement

The division must be carried out pursuant to a plan of reorganization that is adopted by each corporation that is a party to the transaction. (Treas. Reg. §§ 1.368-1(c) and 1.368-3(a)). If it can be established by other evidence, the plan does not have to be in a particular form or in writing. (C.T. Investment Co. v. Commissioner, 88 F2d 582 (8th Cir. 1937); James G. Murrin v. Commissioner, 24 TC 57 (1955)).

ii. Business Purpose Requirement

Other than avoiding federal income taxes, there must be at least one valid corporate business purpose for the division. Treas. Reg. § 1.355-2(b)(2) states that a “corporate business purpose is a real and substantial non-Federal tax purpose germane to the business...” of Distributing or Controlled. A shareholder’s purpose, such as for the shareholder’s personal planning, is not a corporate business purpose. However, if a shareholder’s purpose for the division may be “so nearly coextensive with the corporate business purpose,” the division may be considered to be carried for a sufficient corporate purpose. (Treas. Reg. § 1.355-2(b)(2)).

One example of a valid business purpose is a corporation dividing two businesses to protect one business from the risks of the other business (Treas. Reg. § 1.355-2(b)(5) Ex. 3). Another example of a valid business purpose is two owners of a corporation that operates two businesses decide to split the business because each of them will be able to devote their undivided attention to the business they are more interested in and proficient at. (Treas. Reg. § 1.355-2(b)(5) Ex. 2). Some other valid business purposes include a distribution made to facilitate a borrowing by Distributing or Controlled or reducing Distributing’s or Controlled’s costs. (Rev. Proc. 96-30, 1996-1 CB 696 (April 22, 1996)).

iii. Continuity of Interest Requirement

Under Treas. Reg. § 1.355-2(c)(1), Distributing’s historic shareholders before the division must maintain COI in both corporations for a period of time after the division. Each historic shareholder is not required to own an equity interest in both corporations after the division. Rather, after the division, one or more the historic shareholders must own in the aggregate (together) an amount of stock establishing continuity in both Distributing and Controlled. (Treas. Reg. § 1.355-2(c)(1)). Based Treas. Reg. § 1.355-2(c) examples, aggregate ownership by the historic shareholders of 20 percent of both corporations’ stock after the division may not be enough, but aggregate ownership of 50 percent may be enough to constitute continuity of interest in both corporations after the division.

For example, individuals A and B, who together own 100 percent of corporation X, divide X into two corporations, X and Y, with A owning 100 percent of X and B owning 100 percent of Y. Even though after the division A and B do not own stock in both corporations, the continuity of interest requirement has been met because together, as historic shareholders, they own an amount of stock to establish continuity of interest in each corporation. In other words, after the division, A owns at least 50 percent of X’s stock and B owns at 50 percent of Y’s stock, and together they own more than 50 percent of both X and Y. However, if after the division, A owns 20 percent of X and B owns 60 percent of Y, the COI requirement is not met because even though together they own 80 percent of X and Y, A does not own at least 50 percent of X to constitute COI in X. (Treas. Reg. § 1.355-2(c)(2) Exs. 1 and 4.).

There are not specific rules about how long the historic shareholders must hold their Distributing and Controlled stock after the division without violating the COI requirement. However, the Internal Revenue Service (IRS) has recognized that a disposition of stock after five years of ownership does not violate the COI. (Rev. Rul. 78-142, 1978-1 C.B. 111) The courts have recognized that a disposition after nine months did not violate COI, (Penrod v. Commissioner, 88 T.C. 415 (1987)) but a disposition of stock after seven months violated COI. (McDonald's Restaurants of Illinois v. Commissioner, 688 F.2d 520 (7th Cir. 1982)).

iv. Continuity of Business Enterprise Requirement

After a division, both Distributing and Controlled must meet the COBE requirement, meaning that each of the corporations must continue at least one of their historical businesses or use a significant portion of their historic business assets in a business. Generally, the determination of the portion of a corporation's assets considered "significant" is based on the relative importance of the assets to the operation of the business. (Treas. Reg. § 1.368-1(d)).

Tax Consequences in Qualified Divisive Type D Reorganizations

i. Tax Consequences for Distributing Corporation's Shareholders

In a divisive Type D reorganization, Distributing's shareholders do not recognize gain or loss or dividend income on receiving Controlled's stock. But they do recognize taxable income to the extent of the amount of cash and other property (boot) they receive as part of the reorganization. (26 U.S.C. § 355(a)).

However, if Distributing's shareholders receive boot and do not surrender their Distributing stock, which occurs in a spin-off, the boot is first taxed as a dividend to the extent of Distributing's E&P. Then, the amount of the boot that exceeds Distributing's E&P is taxed as a capital gain to the extent it exceeds the basis of the shareholders' Distributing stock. (26 U.S.C. § 301).

For example, as part of a spin-off, Distributing distributes to its shareholders Controlled stock pro rata with \$60 cash (boot) and the shareholders do not surrender their Distributing stock. Distributing's E&P is \$10 and Distributing shareholders' basis in their Distributing stock is \$20. Because Distributing's E&P is \$10, only \$10 of the \$60 boot is taxed as a dividend to Distributing's shareholders. After subtracting the \$10 tax as a dividend from the \$60 boot, \$50 remains of the \$60 boot (\$60 boot- \$10 taxed as a dividend = \$50). The \$50 remaining of the \$60 boot exceeds Distributing shareholders' stock basis by \$30 (\$50 remaining of the boot -\$20 Distributing shareholders' stock basis = \$30). This \$30 is taxable as a capital gain to Distributing shareholders.

Distributing shareholders' basis in their Controlled stock is based on their adjusted basis in their Distributing stock. In a spin-off, Distributing shareholders' aggregate basis in their Controlled stock equals their basis in their Distributing stock plus any amount treated as a dividend or recognized as a gain minus the amount of money and the fair market value (FMV) of other property received (boot) in the division (Distributing stock basis + dividend + recognized gain – money received – other property (boot) received = Distributing shareholders' basis in their Controlled stock).

If Distributing shareholders do not surrender their Distributing stock, as in a spin-off, they allocate their basis, calculated using the above formula, between their Distributing and Controlled stocks in proportion to their FMV. (26 U.S.C. §§ 358(a) and (b); Treas. Reg. § 1.358-2(a)).

For example, prior to a qualified divisive Type D spin-off reorganization, a Distributing shareholder's basis in his or her one share of Distributing stock was \$200 and had owned it for two years. In the spin-off, distributing shareholder received one share of Controlled stock with a \$100 FMV and no boot. Distributing shareholder's aggregate basis is \$200 (\$200 Distributing stock basis + \$0 dividend + \$0 recognized gain - \$0 cash -\$0 of other property = \$200). Because Controlled stock's FMV of \$100 is half of the basis of shareholder's Distributing stock before the division, the shareholder's \$200 basis, as calculated above, is divided in half, with \$100 allocated to each share of Distributing and Controlled stock. The Distributing shareholder's holding period in the Controlled stock equals the two-year holding period of the Distributing share.

If Distributing shareholders held their Distributing stock as a capital asset, their holding period in their Controlled stock includes their holding period in their Distributing stock. (26 U.S.C. § 1223(1)).

Distributing shareholders' basis in boot received is its FMV on the date of the distribution and the holding period for the boot begins on the date of the distribution. (26 U.S.C. §§ 358 and 1223(1)).

ii. Tax Consequences for Distributing Corporation

In a divisive Type D reorganization, Distributing will recognize no gain or loss on the transfer of its assets to Controlled and on the distribution of Controlled stock to Distributing's shareholders. (26 U.S.C. §§ 361(a), 361(c), and 357(a)).

Also, if distributing receives boot (cash or other property) from Controlled and distributes the boot to Distributing's shareholders, it will not recognize gain or loss.

Except for Distributing's E&P, its tax attributes, such as net operating losses (NOLs), do not transfer to Controlled after the division. Distributing's E&P is allocated between Distributing and Controlled generally in proportion to the value of the retained and transferred assets (Treas. Reg. § 1.312-10(a)).

iii. Tax Consequences for Controlled Corporation

In a divisive Type D reorganization, controlled will not recognize gain or loss on receiving Distributing's assets. (26 U.S.C. §§ 1032(a) and 357(a)). Controlled's basis in the assets it receives from Distributing equals Distributing's basis in those assets immediately prior to the division. (26 U.S.C. § 362(b)). Controlled's holding period in Distributing's assets includes the period Distributing held those assets. (26 U.S.C. § 1223(2)).

Tax Consequences in Non-Qualified Divisive Type D Reorganizations

If a division does not satisfy the requirements of a tax-free divisive Type D reorganization, the division is taxable to Distributing and its shareholders. Distributing shareholders receipt of Controlled's stock is taxed either as a dividend or as a gain as if a stock redemption had occurred. (26 U.S.C. §§ 301 and 302). If the division is a spin-off transaction, Distributing will be taxed as if it had sold its assets to Controlled for their FMV.

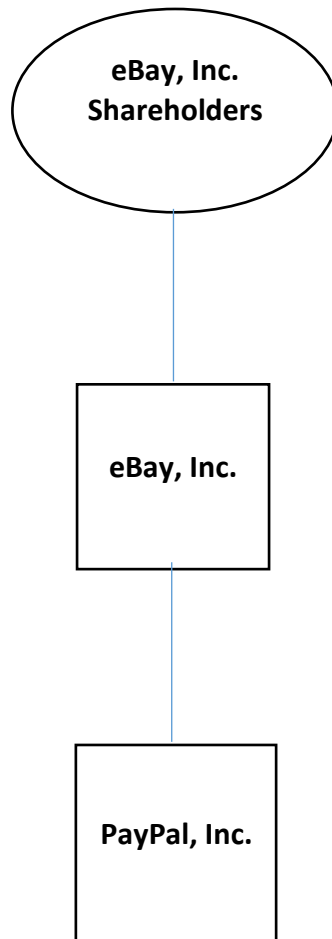
Appendix B. Spin-Off Timeline

Sources: Authors' Note

TIME	EVENT
1995	Pierre Omidyar launched AuctionWeb
1996	AuctionWeb incorporated in California
1997	AuctionWeb renamed eBay, Inc. (eBay)
1998	eBay completed its initial public offering (IPO) and began trading on Nasdaq under the symbol "EBAY" Peter Thiel and Max Levchin founded Confinity, Inc. (Confinity)
1999	A Confinity employee developed the process of sending money transfers through email. Confinity launched a free email-driven, person-to-person payment product. Elon Musk, Harris Fricker, Christopher Payne, and Ed Ho founded online bank, X.com
3/2000	Confinity merged with X.com and renamed X.com. X.com decided to discontinue its internet banking services and focus on its online payment product
2001	X.com changed its name to PayPal, Inc. (PayPal)
2002	PayPal completed its IPO and began trading on Nasdaq under the symbol "PYPL." PayPal acquired by eBay for approximately \$1.5 billion and became a wholly owned subsidiary of eBay
1/2014	eBay shareholder, Carl Icahn proposed spinning off PayPal from eBay
2/2014	In response to Carl Icahn's proposal, eBay board of directors stated that a separation of eBay and PayPal would not best serve eBay shareholders and eBay's current strategic direction
3/2014	eBay's board of directors issued a shareholder letter stating that eBay's shareholders and customers were not best served by separating eBay and PayPal
4/2014	Carl Icahn withdrew his proposal to spin-off PayPal from eBay
9/2014	After a strategic review of eBay's growth strategies and structure, eBay's board of directors approved a plan separating eBay and PayPal with PayPal operating eBay's payments business and eBay operating its marketplace business (spin-off)
6/2015	eBay incorporated PayPal Holdings, Inc. (PayPal Holdings) eBay and PayPal Holdings entered into a separation and distribution agreement. eBay transferred substantially all of PayPal's assets and liabilities to PayPal Holdings PayPal Holdings became the parent company of PayPal, holding directly and indirectly all of PayPal's assets and liabilities
7/17/2015	eBay distributed, on a pro rata basis, 100 percent of PayPal Holdings' outstanding common stock to eBay shareholders. Approximately 1.2 billion shares of PayPal Holdings common stock distributed to eBay shareholders. Each eBay shareholder received one share of PayPal Holdings common stock for every share of their eBay common stock and did not exchange their eBay stock for their PayPal Holdings stock. After the spin-off, eBay shareholders owned stock in both eBay and PayPal Holdings
7/20/2015	PayPal Holdings announced that it had completed its separation from eBay and was an independent public company. PayPal Holdings' common stock began trading on Nasdaq under the symbol "PYPL"
2018	Ebay announced it was replacing PayPal Holdings as its primary payment processor with Adyen, NV, an online payment company
2023	eBay announced that payments to eBay sellers would be deposited directly into their bank accounts, rather than processed by PayPal Holdings and PayPal Holdings would not be option for payment by eBay buyers

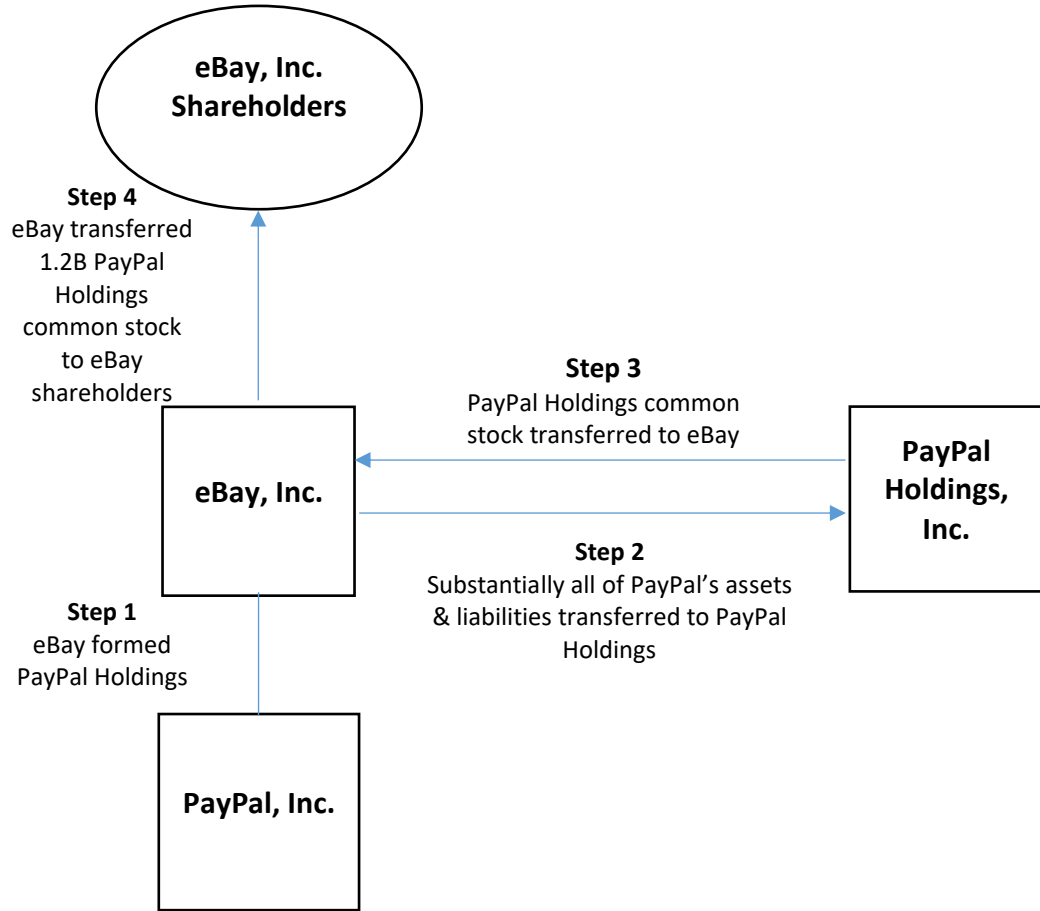
Appendix C. Pre-Spin-Off

Sources: Authors' Note



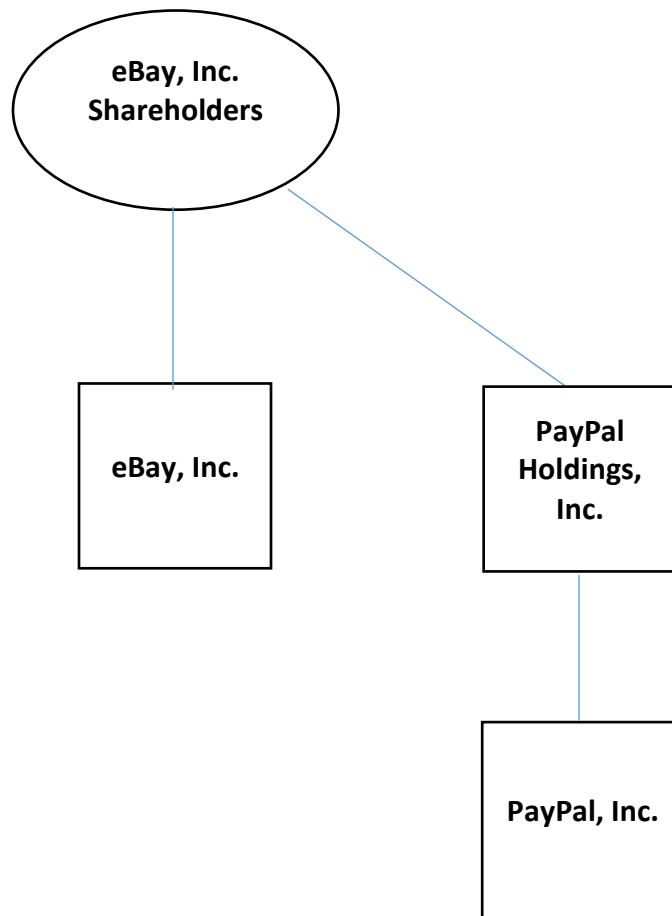
Appendix D. Spin-Off Transaction

Sources: Authors' Note



Appendix E. Post Spin-Off Transaction

Sources: Authors' Note





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***ARTICLES,
NOTES, and EXERCISES***



CHATGPT'S PERFORMANCE ON CASE DISCUSSION QUESTIONS

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This paper reports the results of ChatGPT's performance on business case discussion questions. As ChatGPT becomes more broadly deployed in higher education, its capabilities and limitations have become better understood. ChatGPT fares quite well in certain activities and with some success in qualitative business work. ChatGPT fares less well in its management of quantitative information and tabulated or data-visualized information. ChatGPT has well-documented issues with so-called "*hallucinations*" where the AI creates a cogent, but false, answer to a question.

We provided ChatGPT-3.5 and ChatGPT-4 with access to three recently published business cases and the discussion questions associated with each case. We provided ChatGPT responses and the instruction manual rubric for the discussion questions to pairs of independent faculty reviewers. This paper reports on the ChatGPT responses, the independent faculty review, and our observations from the outcomes of these activities.

The article was anonymously peer reviewed by the *Journal of Case Research and Inquiry*, a publication of the Western Casewriters Association. The author(s) and the *Journal of Case Research and Inquiry* grant state and nonprofit institutions the right to access and reproduce this manuscript for educational purposes. For all other purposes, all rights are reserved to the authors. © 2024 Yvette M. Bendeck and Troy A. Voelker. Contact Yvette M. Bendeck, 2700 Bay Area Blvd., Houston, TX 77058, bendeck@uhcl.edu.

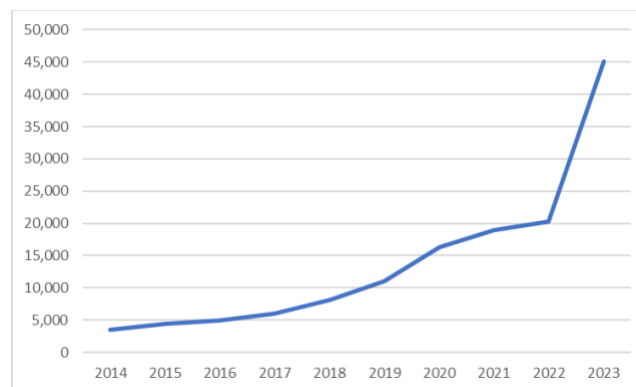
The authors extend thanks to the faculty members who served as evaluators of ChatGPT 3.5 and 4.0. We are grateful for the contributions from Drs. Vlvien Jancenelle, Dorothy Kirkman, Barry Marks, Alex Martynov, Ivelina Pavlova, Skylar Rolf, and Allyssa Wadsworth.

Introduction

This paper reports the results of ChatGPT’s performance answering business case discussion questions. Our interest in this topic corresponds to a rapid increase in academic interest in generative artificial intelligence following the public release of ChatGPT. In Exhibit 1 below, we chart the number of Google Scholar references, by year, for the query “*artificial intelligence higher education*.” Two observations emerge from this search, one apparent in the figure and the other more apparent in the review of the search results themselves. First, academic interest in artificial intelligence and its relationship to higher education increased notably in the period between 2019 and 2022, and that interest doubled in one year from 2022 to 2023. Second, we observe from a scan of the literature in each year that articles appeared primarily in computing and science journals in the period of 2014-2019 then transitioned to the remainder of higher education journals beginning in 2020.

Exhibit 1. Peer-reviewed Journal Publications about AI in Higher Education, 2014-2023

Source: Google Scholar (February 2024)



The awareness of artificial intelligence and its emerging capabilities has become a significant discussion topic in higher education. Our research extends the discussion on the appropriate place of artificial intelligence in higher education to an examination of its most well-known application, ChatGPT, on a common higher education activity: business case analysis.

This article is organized in five parts. First, we briefly review ChatGPT and identify emerging perspectives of students, employers, and educators as they pertain to the technology. Second, we offer a perspective on teaching in an AI-mediated world. Third, we discuss ChatGPT's performance in higher education activities. Fourth, we describe the methods and results of our inquiry into ChatGPT's performance when answering teaching case questions. Finally, we conclude with a discussion of our observations from our study, and our perspective on the implications for the broader discussion of artificial intelligence in higher education.

ChatGPT

ChatGPT is the most widely known of an emerging suite of natural language processing artificial intelligence applications. For those interested in a discussion of the evolution of the technology which underlies these applications, we recommend Wezel *et al.* (2023, p. 46), who stated that *"GPT is a generative model and is designed for tasks such as text generation and language modelling..."* and that *"GPT-3 (Generative Pre-trained Transformer) is a third-generation, autoregressive model developed by OpenAI that uses deep learning to produce human-like text (sequence of words, code, or other data) starting from a source input (prompt) provided by a user."* While the output of generative AI can be music, video, imagery, or computer code, for purposes of this article, we focus on ChatGPT's ability to generate text (an answer) following a prompt (a question from the instructor's manual of a teaching case).

It took Instagram two years and 6 months to reach 100 million users worldwide. It took Tik Tok 9 months to achieve the same reach. But it only took ChatGPT two months to reach the 100 million user milestone, making it *"the fastest growing consumer application in history"* (Hu 2023, para. 1). Launched in November 2022, ChatGPT, a chatbot owned by Open AI, a private company backed by Microsoft Corp, continued to grow rapidly, surpassing the 180.5 million user mark by the end of August 2023 (Nerdynav 2023). Two versions of ChatGPT are available to the public, ChatGPT-3.5 is freely available and ChatGPT-4 is available with a subscription.

In March 2023, Open AI released GPT-4 as a subscription-based service, priced at \$20 per month. The 4th version’s enhanced features included the ability to analyze images of objects, handwritten text and drawings, graphs, and file uploads (OpenAI 2023). With access to the Internet, subscribers can use ChatGPT prompts to obtain current information. As an example, the authors of this paper asked ChatGPT who had won the Alabama versus LSU football game in 2023. Exhibit 2 presents the responses provided by GPT-3.5 and GPT-4 to the football prompt (OpenAI 2023b).

OpenAI’s testing of GPT-4's performance indicated it could generate more precise and relevant answers to prompts and had better mathematical and language skills than GPT-3.5 could. With such improved accuracy, OpenAI has been able to reduce the level of “hallucinations” (bogus or made-up information) and reasoning errors (OpenAI 2023).

Exhibit 2. Who Won the Alabama versus LSU in 2023?

Source: OpenAI (2023b)

GPT-3.5	GPT-4
<p>I'm sorry, but I don't have access to real-time or future information, including the results of specific events like the Alabama versus LSU football game in 2023. My knowledge only goes up until January 2022, and I cannot provide updates on events or scores that have occurred since then. To find out the result of that game, I recommend checking a reliable sports news website, a sports app, or the official website of the teams or organizations involved.</p>	<p>In the 2023 football game between Alabama and LSU, Alabama emerged victorious, defeating LSU with a score of 42-28. This victory was achieved at Bryant-Denny Stadium and contributed to Alabama's season record, advancing them to 8-1 overall and maintaining an undefeated status of 6-0 in SEC play.</p>

ChatGPT: The Student Perspective

In March 2023, Bestcolleges.com published the results of AI usage by college students. Exhibit 3 summarizes the results of 1000 students surveyed. While 57% of the students did not plan to use AI for their college work, 61% of those surveyed believed that AI tool usage will become the norm (Welding 2023).

Exhibit 3. Summary of Best Colleges Student Survey Regarding AI UsageSource: from <https://www.bestcolleges.com/research/college-students-ai-tools-survey/>

43% of college students have used ChatGPT or a similar AI application.
Of those who have used AI tools, 50% say they have used them to help complete assignments or exams. That's 22% of all college students in our survey.
However, most college students (57%) do <i>not</i> intend to use or continue using AI to complete their schoolwork.
31% say their instructors, course materials, or school honor codes have explicitly prohibited AI tools.
Over half of college students (54%) say their instructors have not openly discussed the use of AI tools like ChatGPT.
6 in 10 college students (60%) report that their instructors or schools haven't specified how to use AI tools ethically or responsibly.
61% of college students think AI tools like ChatGPT will become the new normal.

The Best Colleges survey indicates that students are already using ChatGPT and other generative AI solutions to assist in their college-level work. Duong and Tran (2023) studied the motivations of undergraduate students and found that the ease of using ChatGPT (effort expectancy) and the perceived benefits and advantages of using it (performance expectancy), influenced the intention to use and the actual usage of ChatGPT. Recent research, therefore, suggests that the utility and accessibility of ChatGPT influences student propensity to use the technology.

ChatGPT: The Employer Perspective

With ChatGPT available in the labor market for less than two years, it would be a conjecture to make claims about the long-term implications of the technology on the workforce. However, early evidence suggests that employers are adopting the technology in ways which may ultimately prove transformational.

In an NBER working paper, Brynjolfsson *et al.* (2023) described findings from the adoption of a ChatGPT model into a business-to-business customer service call center. They noted improvements in productivity, increased customer satisfaction, and decreased employee turnover in clusters where employees utilized a specially tuned ChatGPT. The company specifically tuned ChatGPT by training it on the knowledge management information stored in the company along with guidance on empathetic language outputs. Further evidence of employer interest in generative AI skilled workers appeared in an April 2023 *Time* magazine

which described AI jobs with six-figure incomes for employees who were skilled at prompt engineering (Popli 2023).

ChatGPT: The Instructor Perspective

Given the fast pace of usage and rapid improvements in the quality of output from ChatGPT, academics became concerned about the impact ChatGPT would have on academic integrity. In their 2023 paper, Adilov *et al.* detailed a vulnerability index for use of ChatGPT to cheat on college exams. Their model presumed that student access to ChatGPT will be greater in fully online classes and less - but not fully eliminated - in face-to-face classes. The model assigned an increased likelihood of ChatGPT utility in easier to access environments. Further, the accuracy of ChatGPT in answering exam questions, and the relative weight of an exam to the total class grade each increased the likelihood that a student will use ChatGPT to cheat. Their examination of course designs at a midwestern business school concluded that fully online courses were slightly more vulnerable than face-to-face courses. They concluded that multiple-choice-based exams were equally vulnerable to written, essay-type exams. They also observed that ChatGPT performed less well on quantitative assessment and better on logical and textual reasoning assessments.

The *Chronicle of Higher Education* invited readers to share their experiences teaching during the Fall 2023 semester. The responses of about 100 faculty members who shared their experiences indicate that approaches to dealing with ChatGPT varied. Some faculty members treated the use of ChatGPT as academic dishonesty, others redesigned their assignments to reduce the potential of cheating, and others incorporated the use of ChatGPT into assignments in their courses. Faculty comments suggest that concerns of academic dishonesty had diminished. While faculty recognized that they may not have been aware of students cheating in their classes, they indicated that the steps they took to minimize cheating appear to be working (McMurtrie & Supiano 2023).

In January 2023, a survey of 100 educators conducted by Study.com indicated that while there was concern about the cheating potential of the tool, only 34% of those surveyed supported a ban of ChatGPT usage in an educational setting. The survey results suggested that educators perceived the tool's benefits outweighed the cheating risk (Productive teaching tools 2023). Bearman and Ajjawi (2023) take this a step further, arguing that “*higher education clearly can play a role in preparing students to live and work in an AI-mediated world*” (pg. 1161). Markauskaite *et al.* (2022) suggest that the proliferation of AI increases the need for higher education to develop learner capabilities in AI literacy, authentic learning, critical thinking and reflective practices, epistemic practice, and AI-mediated learning.

Grajeda *et al.* (2023) provided evidence of factors which influence the utilization of and satisfaction with ChatGPT at a university with artificial intelligence embedded in its curriculum. They found that the effectiveness of AI tools to assist with assignments, the student's proficiency with AI tools, and the instructor's proficiency with AI tools each positively correlated with student AI technology adoption. They noted that advanced AI skills, such as prompt engineering, influence adoption, therefore “*this necessitates targeted training strategies to improve AI integration*” (pg. 21).

Teaching in an AI Mediated World

AI literacy is emerging as an important soft skill for students to acquire and therefore, academics need to train students in their use. Peres *et al.* (2023, pg.272) stated that the “*effective use of GenAI tools*” required students to learn about “*effectively crafting prompts, on how to evaluate the output in terms of its impact and metrics, and the inherit limitations of relying upon GenAI.*” They echoed the *Time* magazine article (Popli 2023), noting that prompt engineering (crafting prompts) has emerged as a job skill sought by agencies and brands in the marketing field.

Prompt engineering can be thought of as a form of natural language programming. It involves crafting queries for a generative AI tool which extends beyond simply asking the AI for an answer, but instead provides structure and constraints on the artificial intelligence alongside the question. Using prompt engineering, Mollick and Mollick (2023b) developed seven approaches that can be used to enhance the students' learning experience and help students build AI literacy skills. By creating prompts for students to use in assignments, AI can be used as a mentor, tutor, coach, teammate, student, simulator, or tool. Confabulation, also referred to as "hallucination," is a pedagogical risk associated with GenAI. Hallucination occurs when the AI generates information, data, or interpretations of data which are not factual (Maleki *et al.* 2024). Hallucination risk is the highest when AI acts as a tutor and lowest when AI acts as a student (Mollick & Mollick 2023b).

Exhibit 4. Summary of Seven Approaches to Enhance Learning Using AI

Source: Recreated from Mollick & Mollick (2023) p. 4, <https://arxiv.org/abs/2306.10052>

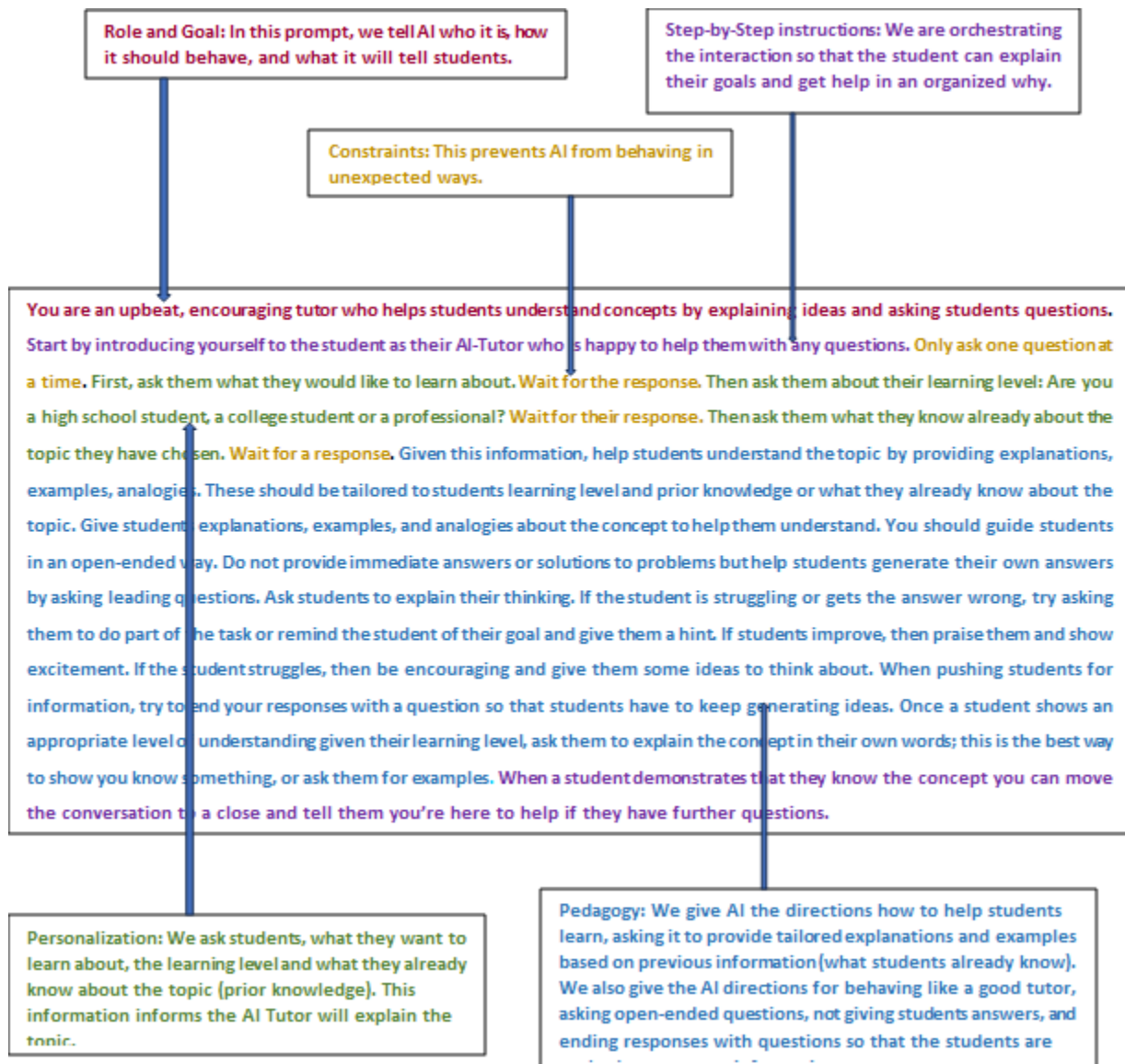
AI USE	ROLE	PEDAGOGICAL BENEFIT	PEDAGOGICAL RISK
MENTOR	Providing feedback	Frequent feedback improves learning outcomes, even if all advice is not taken.	Not critically examining feedback, which may contain errors.
TUTOR	Direct instruction	Personalized direct instruction is very effective.	Uneven knowledge base of AI. Serious confabulations risks.
COACH	Prompt metacognition	Opportunities for reflection and regulation, which improve learning outcomes	The tone or style of coaching may not match student. Risk of incorrect advice.
TEAMMATE	Increase team performance	Provide alternative viewpoints, help learning teams function better.	Confabulation and error. "Personality" conflicts with other team members.
STUDENT	Receive explanations	Teaching others is a powerful learning tool.	Confabulation and argumentation may derail the benefits of teaching.
SIMULATOR	Deliberate practice	Practicing and applying knowledge aids transfer.	Inappropriate fidelity.
TOOL	Accomplish Tasks	Helps students accomplish more within the same time frame.	Outsourcing thinking rather than work.

Mollick & Mollick (2023b) found that prompt engineering including certain elements improved the quality of AI generated responses, such as telling AI "who it is (role)," telling AI "what you

want it to do (goal),” “providing step-by-step instructions,” and “adding personalization” to allow it to be tailored to the audience of the output, and placing constraints that allow it to control the output provided by the AI tool used. Exhibit 5 contains an example of a prompt construction using AI as a tutor and the instructions given to students.

Exhibit 5. Prompt Example for AI acting as a Tutor.

Source: Recreated from <https://arxiv.org/abs/2306.10052> p.13



Implementing Teaching Strategies Using AI Tools

AI can be utilized to implement teaching strategies that otherwise would not be employed by faculty due to time constraints and the effort required to implement them. Mollick and Mollick (2023a) identified five strategies that can be deployed with AI's assistance. The first strategy involves providing diverse examples so students can grasp the key concepts and apply them to different scenarios. The second strategy is providing multiple explanations for a concept, building from *"simple to complex,"* so that students can *"eventually explain the concept to others in their own words."* Creating low stake tests is the third strategy. This strategy provides students with feedback allowing them to identify and address areas where their understanding is lacking while allowing faculty members to adjust their lectures accordingly. The fourth strategy is to assess student learning by having an AI tool summarizing responses to questions of what they thought was the main takeaways of the class and what where the areas of confusion (referred to as *"muddiest points"*) so faculty can address them in future classes. The fifth strategy is distributed practice of important ideas. Distributed practice requires faculty members to identify the most important topics in the course, the most important links between topics that are considered critical for students to understand and therefore how frequently they should be practiced.

Before deployment of any teaching strategy, Mollick and Mollick recommend evaluating the prompt with different AI tools, as the output will differ. The AI output will also differ using the same tool over multiple iterations. Once the AI output is produced, faculty must critically analyze the output to determine its usefulness and ensure that the materials produced do not include hallucinations. Exhibit 6 provides an example of a prompt and the response from Bing and ChatGPT. Bing provided only three examples compared to the four requested in the prompt.

Exhibit 6. Bing's and ChatGPT's Output to a Request for Examples

Source: Adapted from Mollick & Mollick (2023a) pp. 5-6

Bing's List of Four Examples	ChatGPT's List of Four Examples
<p>The request: I would like examples of opportunity cost for high school students.</p>	<p>The request: I would like examples of opportunity cost for college students</p>
<ul style="list-style-type: none"> • If you spend \$50 on a pair of shoes, you cannot spend that money on something else. The opportunity cost is what you could have bought instead of shoes. • If you choose to volunteer for a non-profit instead of working as a financial advisor, you give up the income you could have earned. The opportunity cost is the money you would have made working. • If you plant wheat on your farm, you cannot plant another crop or use your land for something else. The opportunity cost is the value of planting a different crop or using your land differently. 	<ul style="list-style-type: none"> • Choosing a major: A college student is deciding between majoring in economics and computer science. By choosing to major in economics, the opportunity cost is the potential knowledge, skills, and careers opportunities they would have gained from majoring in computer science. • Studying vs. Socializing: A student has a big exam coming up next week but is invited to a party the night before. If the student decides to attend the party, the opportunity cost is the additional study time and potential improvement in their exam performance they could have achieved by staying home and studying. • Part-time job versus internship: A college student has an option to work a part-time job that pays \$15 per hour or take an unpaid internship in their field of interest. If the student chooses the part-time job, the opportunity cost is the valuable work experience and networking opportunities they could have gained from the unpaid internships. • Taking a gap year: A high school graduate is considering taking a gap year to travel and explore their interest before attending college. If they decided to take the gap year, the opportunity cost is the potential income and professional development they could have earned by starting college right away and graduating a year earlier.

Turning to a teaching topic directly relevant to our research, Weiss (2023) identified five ways ChatGPT or other AI tools can enhance case preparation. First, AI tools can assist in generating questions to consider for class discussion based on the case synopsis provided. Second, if necessary, follow-up prompts can be used to refine the questions to align them with the instructor's case goals. Third, the AI tool can be asked to suggest academic concepts or

frameworks that can be linked to each of the questions previously generated. Fourth, the AI tool can be asked to provide a select number of real companies which used a concept to enhance the class discussion with examples. Fifth, the AI tool can "*simulate a live class discussion.*" The simulation can provide insights on the potential responses that students might provide in an in-classroom discussion. Exhibit 7 provides the prompt used for the simulation.

Exhibit 7. Prompt for a Simulation of a Class Case Discussion Using ChatGPT

Source: Copied from Weiss (2023) p. 4

"I'd like you to help me practice teaching this session on TraceTogether. I am going to ask you a question. Please create three student personas: Worm Deck, Garden Deck, and Sky Deck. Please pick one of them at random to answer the question. Provide an answer from them. Then, ask two follow-up questions. Make the first an 'exploration' question, inviting them to expand on their answer in some way. Provide their answer. Make the second a 'challenge' question, pushing back on their responses, perhaps by citing contrary evidence. Provide their answer. Then, pick one of the other students to respond to what they heard from the first student. After that, ask the final student to respond to what they heard from the first student.

The question is, Was Bay correct to keep government officials 'in the loop' in the digital contact tracing system he built?"

ChatGPT's Performance in Higher Education Activities

Prompt engineering appears to be an emerging skill set of value, and one which academics will need to understand themselves. Beyond simply repeating a structured query, users of AI need to understand the capabilities and limitations of the technology. In this section, we review the performance of generative AI in areas associated with higher education including its ability to perform on examinations and its ability to respond to mathematical queries. We also examine one of the critical limitations of current generative AI, the tendency of artificial intelligence to "*hallucinate*" cogent sounding, but false, responses to prompts.

Exam Performance

A question of interest for academics is ChatGPT's performance on a variety of examinations. Open AI used the most recent versions of past exams that were publicly available or purchased 2022-2023 versions of practice exams to evaluate the ChatGPT's examination performance.

Exhibit 8 shows test performance employing GPT-3.5 and GPT-4. Overall, GPT-4's test performance was superior to that of GPT-3.5. Among the 15 AP (Advanced Placement) tests, GPT-4 and GPT-3.5 earned the same score in only six exams, scoring high in four of the exams but performing poorly in the two AP English tests. Except for the GRE Writing score, where both ChatGPT versions scored in the 54th percentile, GPT-4's performance in the Uniform Bar Exam, LSAT, SAT Reading & Writing and Math, and GRE Quantitative and Verbal was better than the GPT-3.5 as evidenced by the estimated percentile reported in Exhibit 8 (GPT-4, 2023).

Exhibit 8. Select Examinations Results Using ChatGPT-4 versus ChatGPT-3.5

Source: Adapted from <https://arxiv.org/pdf/2303.08774v3.pdf> p. 5

Simulated exams	GPT-4		GPT-3.5	
	Score	Estimated Percentile	Score	Estimated Percentile
Uniform Bar Exam	298 / 400	~90th	213 / 400	~10th
LSAT	163	~88th	149	~40th
SAT Evidence-Based Reading & Writing	710 / 800	~93rd	670 / 800	~87th
SAT Math	700 / 800	~89th	590 / 800	~70th
GRE Quantitative	163 / 170	~80th	147 / 170	~70th
GRE Verbal	169 / 170	~99th	154 / 170	~63rd
GRE Writing	4 / 6	~54th	4 / 6	~54th
Medical Knowledge Self-Assessment Program	75%		53%	
AP Art History	5	86th–100th	5	86th–100th
AP Environmental Science	5	91st–100th	5	91st–100th
AP Psychology	5	83rd–100th	5	83rd–100th
AP Biology	5	85th–100th	4	62nd–85th
AP Microeconomics	5	82nd–100th	4	60th–82nd
AP US Government	5	88th–100th	4	77th–88th
AP US History	5	89th–100th	4	74th–89th
AP Statistics	5	85th–100th	3	40th–63rd
AP Macroeconomics	5	84th–100th	2	33rd–48th
AP World History	4	65th–87th	4	65th–87th
AP Physics 2	4	66th–84th	3	30th–66th
AP Chemistry	4	71st–88th	2	22nd–46th
AP Calculus BC	4	43rd–59th	1	0th–7th
AP English Language and Composition	2	14th–44th	2	14th–44th
AP English Literature and Composition	2	8th–22nd	2	8th–22nd

Mathematical Skills

Morgan (2024) investigated how well ChatGPT performed in solving Calculus 1 exam questions used at the University of Houston by uploading the test bank with thousands of questions into both GPT-3.5 and GPT-4.0. GPT-3.5 was only able to accurately respond to 38% of the questions compared to GPT-4.0 responses that were correct for 58% of the questions. The errors were not attributed to the application of formulas or concepts, but rather simple arithmetic errors made by ChatGPT. The findings reported by Morgan (2024) parallel the results for the AP Calculus BC test in Exhibit 8.

Hallucination

Orchard and Tasiemsky (2023) noted that ChatGPT and other similar technologies work by predicting which words would appear, and in which sequence, given the context of the prompt. *“This means that when there is no exact ‘match,’ (the model lacks exact knowledge), it is likely to make it up very confidently which is now known as model ‘hallucinations’”* (pg. 12).

Hallucinations remain one of the more surprising complications of LLM-based AI applications. These fabrications seem to be related to limitations or restrictions in the application which prevent it from providing an accurate answer. Researchers from Vectara investigated the frequency of hallucination in various AI models. The study found that hallucination rates ranged from 3% to 27%, with OpenAI having the lowest hallucination rate and Google’s Palm chat having the highest rate (Hughes 2023; Metz 2023).

Those who rely on ChatGPT without confirming the veracity of the AI’s output do so at their own peril. That appears to be the takeaway from the dismissal of a 2023 U.S. District Court lawsuit (Brodkin 2023). Lawyers for the plaintiff relied on ChatGPT in a legal brief. The brief included some cases, hallucinated by ChatGPT as a basis to counter the defense proposal to dismiss the case. Judge Castiel ultimately dismissed the case, concluding that the attorney’s submission of false information was an act of bad faith. Given the propensity for ChatGPT to hallucinate and the convincing nature of the fabrications, it follows that training students to monitor for hallucinations should improve their ability to detect and counter them.

ChatGPT and Teaching Cases

Terwiesch (2023) asked ChatGPT 3.0 to answer common questions on the MBA operations management course at the University of Pennsylvania's Wharton school. Terwiesch concluded that *"it does an amazing job at basic operations management and process analysis questions including those based on case studies"* (pg. 1). While Terwiesch drew upon commonly used cases, they were deployed as exam questions. The question contained a summary of the case which only included information pertinent for the exam question. In effect, this condensed a large case into an examination word problem. We were intrigued by ChatGPT's ability to answer these condensed questions and wondered how ChatGPT would perform if it, like a student, had to sift through the entirety of a case narrative to identify relevant information.

The research question which led to this paper's creation involved our interest in whether students might use ChatGPT to answer the discussion questions in cases used in our classes. ChatGPT can rapidly produce insightful-sounding responses and can be easily navigated to provide more detail, offer differing perspectives, or suggest innovative recommendations in an answer. Students have already evidenced some comfort in adopting ChatGPT (Duong and Tran 2023) and they are likely to continue to adopt it given the media narrative on ChatGPT's successes and failures. In this case, instructors should be aware of the evolving capabilities of the tools available to their students.

Instructors using teaching cases may be curious, as we are, about how well ChatGPT addresses case questions for at least three reasons. First, students are likely to use ChatGPT to formulate answers to *"out of the classroom"* discussion questions (Duong and Tran 2023). Second, instructors are likely to find ChatGPT is a useful pedagogical partner for developing lesson plans and testing discussion prompts (Weiss 2023). Third, ChatGPT can be deployed during the classroom discussion and used to spark discussions with greater depth and breadth (Mollick & Mollick 2023b).

Methodology

We provided ChatGPT-3.5 and ChatGPT-4 with access to three recently published business cases and the discussion questions associated with each case. Two primary source cases and one secondary source case were evaluated as part of this study. We uploaded the narratives of Bendeck (2022), Bendeck & Voelker (2023), and Anders *et al.* (2024) to the free and paid versions of ChatGPT (OpenAI 2023a). After uploading the narratives, we asked ChatGPT the questions that students were expected to address in each case.

We provided seven of our colleagues with the ChatGPT responses and the instruction manual rubric for the discussion questions. The faculty taught accounting, finance, economics, and management with expertise in international business and entrepreneurship. Two faculty members evaluated the *Istmo* case which focused on capital budgeting decisions (Bendeck 2022). Three faculty members evaluated the All-Occasions T-shirt Company case which focused on evaluating strategy and resources necessary to breakeven for the company to continue operations (Bendeck & Voelker 2023). Three faculty members evaluated the Bitcoin case which focused on the adoption of Bitcoin as legal tender in El Salvador (Anders *et al.* 2024).

We asked our colleagues to evaluate the quality of the ChatGPT responses based on the answer key from the instructor's manuals. Each evaluator was provided with a copy of the case narrative and an Excel workbook. Each case question had its own spreadsheet that contained the following information:

- The question;
- The answer key from the Instructor's Manual;
- The grading scale for the question as it appears in the Instructor's Manual;
- The GPT-3.5 and the GPT-4 responses.

Case 1- Is the Consultant's Analysis Correct? Inversiones Istmo and the Capital Investment Decision

Case 1 Background

The *Inversiones Istmo* case is a primary-sourced case (Bendeck 2022). *Inversiones Istmo*, who owns a sugar mill in Honduras, hired consultants to provide the technical requirements and specification to establish distillery operations. As part of the report, the consultant included a capital budgeting analysis for establishing distillery operations that allowed *Inversiones Istmo* the flexibility to produce both ethanol and extra neutral alcohol (ENA) for use in production of medicines, cosmetics, food, and spirits. The entire production of ENA was to be sold in Honduras. The entire production of ethanol was designed for the European market where premiums were paid for sugarcane-based ethanol. The project was called the global project. Based on the net present value and internal rate of return calculations, the consultants recommended that the global project be undertaken. Upon inspection of the report, Pedro Martinez, the Chairman of the Board of *Inversiones Istmo* and member of the Investment Committee, noticed irregularities in the capital budgeting analysis. He asked his staff to rework the analysis and evaluate different scenarios which included:

- Investigating the worst-case scenarios for the global project:
 - Having the capabilities of producing both products but only producing ethanol through the 20-year life of the project;
 - Having the capabilities of producing both products but only producing ENA through the 20-year life of the project.
- Investigating project alternatives:
 - Investing in the necessary equipment to only produce ENA;
 - Investing in the necessary equipment to only produce ethanol for international sale;
 - Investing in the necessary equipment to only produce ethanol for the domestic market;
 - Investing in the global project and selling 100% of ENA and ethanol domestically over the project's life.

Using an excel workbook, students enter various parameters necessary to calculate the Net Present Values (NPVs) and Internal Rate of Return (IRRs) for Pedro Martinez's various scenarios. Students then used the quantitative analysis to answer Q3 through Q6 presented in Exhibit 9.

Case 1 Evaluation

The teaching case called for students to correct the consultant's errors and omissions in deriving the cash flows and identify the correct cost of capital used for the analysis.

Exhibit 9 presents the summary of the evaluation made by two colleagues who have taught business finance. Refer to Appendix A to review the actual responses for ChatGPT-3.5 and 4.

Both evaluators rated GPT-4's ability to identify the exclusions and inclusion needed to correct cash flow estimates as outstanding. Moreover, GPT-4 recognized that the consulting firm used the inappropriate discount rate and correctly recommended that the weighted average cost of capital in the case be used. However, both models were *unable* to provide the correct responses for questions that required quantitative analysis. The mathematical capabilities of ChatGPT were limited. GPT-4's demonstrated an ability to reference tables and exhibits where information was located, an ability not exhibited in the GPT-3.5 responses.

Except in one instance, the evaluators were consistent in their assessment of the response quality by GPT-3.5 and GPT-4. Evaluator 1 rated Q3 as outstanding. The rating was assigned because GPT-4 was able to outline all the steps required to derive the capital budgeting cash flows and identify the weighted average cost of capital as the correct rate to use in NPV and IRR. Overall GPT's responses for *Inversiones Istmo* were considered poor by the evaluators.

Exhibit 9. Evaluation of ChatGPT's Responses for Is the Consultant's Analysis Correct?*Source: Evaluators for Is the Consultant's Analysis Correct?*

Questions	Evaluator 1		Evaluator 2	
	GPT-3.5	GPT-4	GPT-3.5	GPT-4
Q1 - What were the principal inconsistencies included in Rodriguez Consulting analysis that need correction? Explain.	Poor	Outstanding	Poor	Outstanding
Q2 - What was omitted from the consulting firm's capital budgeting analysis that should have been considered and included? Explain.	Poor	Outstanding	Poor	Outstanding
Q3 - Assuming that there are no capital constraints, what recommendation would you make to Pedro Martinez?	Poor	Outstanding	Poor	Poor
Q4 - Is the option to be able to produce the Extra Neutral Alcohol and Ethanol products worth the additional investments? Explain.	Poor	Poor	Poor	Poor
Q5 - Would your recommendation change if the Ethanol production is designated for sale domestically? Explain.	Poor	Poor	Poor	Poor
Q6 - What recommendation would you make to Pedro Martinez if capital investment funding is of concern and only one of the stand-alone projects can be undertaken?	Poor	Poor	Poor	Poor

Case 2 - When Events Do Not Turn Out as Expected: The Acquisition of All-Occasion Tees Inc.**Case 2 Background**

The All-Occasion Tees (AOT) case is a primary-sourced case (Bendeck & Voelker 2023). AOT was a screen-printing company located in Spartanburg, South Carolina that was acquired in 2016 by C&I Investments, a cut and sew business in Honduras with the goal of providing expedited services to its U.S.-based clients. Based on client feedback, C&I was confident that the \$1.7 million acquisition would be profitable. At the time of the acquisition, C&I had been in advanced stages of discussion with two U.S. sports apparel companies to offer screen-printing and third-party logistics services (3PL) not offered by most small screen printers. The logistics services included inventory management, warehousing, and order fulfillment.

Based on the expected volume of business from the 3PL services, C&I rented a facility with 25,000 square feet of warehouse space needed in Spartanburg. The company used the proceeds from the sale of a previously owned property to help finance the \$1.9 million modification to the space, as well as equipment purchases.

With 3PL, C&I's focus was to meet the quick response (hot market) needs that typically required a 24-hour turnaround window and inventory management flexibility for clients who needed small printing runs in the 36 to 48 garments per run. Garments would still be manufactured to client's custom fit specifications in Honduras and shipped to South Carolina at the client's expense. The garments would be warehoused in the facility until screen-printed and shipped per client instructions.

Due to unexpected events, AOT abandoned the 3PL concept in favor of business-to-business (B2B) full screen-printing service including art design, garment selling and screen-printing services in the South Carolina market. AOT bought the garments to be printed from suppliers in the U.S. This segment of the B2B business was referred to as custom printing. In addition, it provided screen-printing services only to large companies in which the client provided the garments to be printed. This segment was referred to as contract business. The custom segment was a high margin, low volume business, while the contract segment was a low margin, high volume business. AOT's net income was -\$819,399, -\$680,008, -\$550,928, in 2017, 2018, and 2019, respectively.

AOT's financial analysis indicated that moving forward, a 30% custom sales volume was required to turn a profit. The company had a production capacity of 675,000 units per year. Target pricing and cost information is provided in Exhibit 10.

Exhibit 10. Target Pricing and Cost Information

Source: AOT's General Manager Interview

	Contract	Custom
Average Pricing	\$2.70	\$9.80
Average Variable Cost	\$0.90	\$6.00
Fixed Cost	\$1,026,000	

By the beginning of 2020, the questions which remained unanswered included: (1) how far AOT needed to grow sales to reach profitability under the 30% custom sales volume plan, (2) whether AOT could realize the price and cost targets it had established, (3) whether AOT had the appropriate physical and human resources necessary to reach a profitable sales volume, and (4) whether the plan, if realized, could lead to profitability.

Case 2 Evaluation

Students were asked a series of 14 questions. Questions Q1 through Q8 in Exhibit 11 focuses on income statement analysis between 2017 and 2019. Students are asked to:

- Describe the pattern of revenues, net income, and gross profit, as well as changes in direct and indirect costs as a percentage of total revenue;
- Describe the pricing and cost structure for contract sales and custom sales and explain the role that each played in the company's product mix.

Questions Q9 through Q14 in Exhibit 11 asked a series of questions relating to the planned solution for the financial situation that asked students to:

- Calculate the breakeven point and the creation of a pro-forma statement based on the resulting breakeven analysis;
- Address whether the company had sufficient production and selling resources needed to reach the breakeven point;
- Discuss and explain which choice they would pick, growing to 30% custom sales or exiting the industry;
- Discuss alternative strategies that could lead AOT to profitability.

Three management faculty members participated in the evaluation of this case. The evaluators' rating summary for GPT-3.5 and 4 appears on Exhibit 11. Refer to Appendix B to review the actual GPT-3.5 and GPT-4 responses.

In the case of GPT-3.5, the evaluators' assessments were identical in 5 of the 14 (36%) questions. The assessment was different across all evaluators in only one instance (7%). Two evaluator assessments were identical in the remaining 8 (57%) questions, with Evaluator 1 and 3 being the most frequent match pair in 5 of the 8 equations. 57% of the questions received a rating of poor, 36% received an acceptable rating, 7% mixed ratings, and none received an excellent rating. While some of the GPT-3.5 responses had merit, the raters largely agreed that GPT-3.5 did not perform well in its responses to these questions.

Overall GPT-4's responses were rated higher than the responses provided by GPT-3.5. Only two (14.3%) of the questions received a poor rating. The evaluators rated the response to 3 (21.4%) questions as excellent and rated 7 (50%) of the questions as acceptable. No consensus was reached by the three evaluators on two (14.3%) questions. The evaluators' assessments were identical in 4 (29%) of the 14 questions. Two evaluator assessments were identical in the remaining 8 (57%) questions, with Evaluator 1 and 3 being the most frequent match pair in 7 of the 8 questions.

Questions Q9, Q10, and Q12 asked students to calculate the contribution margin per unit, the breakeven point, and the creation of a pro-forma statement, respectively. The three evaluators assigned a rating of poor to the GPT-3.5's responses for Q9, Q10, and Q12. The evaluation of the responses to the same questions produced by GPT-4, resulted in a rating of excellent to the contribution margin calculation (Q9), no rating consensus for the breakeven calculation (Q10), and a poor rating across the board for the pro-forma statement construction (Q12). While GPT-4 provides better answers to questions involving math, the results highlight the inconsistent performance on more complex problems such as construction a *pro forma* statement.

Exhibit 11. Evaluation of ChatGPT’s Responses to When Events do Not Turn Out as Expected?

Source: Evaluators for When Events Do Not Turn Out as Expected

Questions	Evaluator 1		Evaluator 2		Evaluator 3	
	GPT-3.5	GPT-4	GPT-3.5	GPT-4	GPT-3.5	GPT-4
Q1 - Describe the changes in revenue across the three years detailed in the case.	Acceptable	Acceptable	Acceptable	Acceptable	Poor	Acceptable
Q2 - Describe the changes in net income across the three years detailed in the case.	Poor	Acceptable	Acceptable	Excellent	Poor	Acceptable
Q3 - How might a firm’s revenue and net income change in opposite directions (how can you sell less, but lose less... or conversely how could you sell more but earn less?)	Acceptable	Acceptable	Acceptable	Excellent	Acceptable	Acceptable
Q4 - Describe changes in variable (direct) costs across the three years detailed in the case. How does labor, printing materials, and the presence or absence of blanks (custom vs. contract) describe the changes in actual cost and cost as a percentage of revenue?	Poor	Poor	Acceptable	Excellent	Poor	Acceptable
Q5 - What is the gross margin for AOT across the time period of the case?	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable	Acceptable
Q6 - Describe changes in the fixed (indirect) costs across the three years detailed in the case. What factors would describe the changes in actual cost and cost as a percentage of revenue?	Poor	Acceptable	Acceptable	Excellent	Poor	Acceptable
Q7 - Describe the pricing and cost structure associated with the custom sales business. Explain the role of custom orders in the company product mix.	Acceptable	Acceptable	Excellent	Excellent	Poor	Acceptable
Q8 - Describe the pricing and cost structure associated with the contract sales business. Explain the role of contract orders in the company product mix.	Acceptable	Acceptable	Excellent	Excellent	Acceptable	Excellent
Q9 - Given AOT’s confidence in hitting 30%/70% custom/contract units split and their projected price and cost per	Poor	Excellent	Poor	Excellent	Poor	Excellent

Questions	Evaluator 1		Evaluator 2		Evaluator 3	
	GPT-3.5	GPT-4	GPT-3.5	GPT-4	GPT-3.5	GPT-4
unit, what would be their resulting weighted average price per unit, cost per unit, and contribution margin per unit (see Exhibit 14 of case)?						
Q10 - Presuming \$1,026,000 in annual fixed costs and the weighted average contribution margin per unit (from question 3 above), what would AOT's breakeven be if they achieved these goals?	Poor	Excellent	Poor	Poor	Poor	Acceptable
Q11 - Given your breakeven calculation (question 4), does AOT have the production and selling resources and capabilities to reach this target? Are any resources and capabilities lacking?	Acceptable	Excellent	Acceptable	Acceptable	Poor	Excellent
Q12 - Presuming that AOT can produce and sell 675,000 units using the price and variable cost information from question 3, assuming they already have the appropriate resources to operate at this level, and assuming this production volume carries fixed costs of \$1,026,000 with operating and interest expense accounting for \$240,000 of total fixed costs, produce a pro-forma income statement for revenue through pre-tax income.	Poor	Poor	Poor	Poor	Poor	Poor
Q13 - The firm faces a choice between (a) growing towards full capacity with 30% of custom units sold or (b) exiting the industry. Which do you support and what evidence leads you to that?	Acceptable	Acceptable	Poor	Poor	Poor	Acceptable
Q14 - What else could AOT do to improve their profitability?	Poor	Poor	Acceptable	Excellent	Poor	Poor

Case 3 - Bitcoin in El Salvador: Digital Financial Innovation or President Bukele's Gamble?

Case 3 Background

The Bitcoin in El Salvador case is a secondary-sourced case (Anders *et al.* 2024). In 2021, President Nayib Bukele led El Salvador to be the first country to adopt Bitcoin as legal tender. Through a series of initiatives, he pushed for its widespread adoption in the country. President Bukele believed that the use of Bitcoin would help improve access to the formal economy in a country where more than two-thirds of its citizens did not have bank accounts. Furthermore, it was hoped Bitcoin would decrease the costs of citizens receiving remittances from their family members who lived abroad. He was confident that Bitcoin would attract foreign investment and increase tourism, as well as provide Salvadorans with an appreciating currency. The International Monetary Fund and credit rating agencies, however, saw it differently, immediately downgrading El Salvador's debt and raising its borrowing costs or restraining its access to foreign loans until the policy was reversed. Salvadorans themselves were, at best, skeptical, as they remembered the sharp swings in exchange rates and living standards that occurred before El Salvador adopted the U.S. dollar as its official currency in 2001.

Effective September 7, 2021, Salvadorans were able to transact business either in U.S. Dollars (USD), or in Bitcoin (BTC). Exhibit 12 summarizes the provisions of the Bitcoin Law.

Exhibit 12. Provisions of the Bitcoin Law

Source: Decreto N° 57 Ley de Bitcoin (2021)

Market determined exchange rate between the U.S. dollar (USD) and Bitcoin (BTC).

Acceptance of Bitcoin payments by all goods and service providers with the necessary technical capabilities if requested by the purchaser.

Automatic and instantaneous conversion of Bitcoin into Dollars if so desired by the recipient. The guarantee was backed by a \$150 million governmental trust fund.

Prices for goods and services could be quoted in Bitcoin.
Taxes could be paid with Bitcoin.

No capital gains taxes associated with the sale of Bitcoin.

The infrastructure investment to implement the plan would be funded by the government.

The U.S. Dollar would continue to be the currency of reference for accounting purposes.

To facilitate the use of Bitcoin, the Salvadoran government released the Chivo Wallet, a government sponsored mobile app. To promote its use, the government provided the equivalent of \$30 in Bitcoin to anyone who downloaded the app. The Chivo Wallet was a custodial wallet which meant that users did not hold the private keys to their Bitcoins (Casa Presidencial 2021). To facilitate the usage of Bitcoin, the government established 200 Bitcoin ATMs in El Salvador, as well as 50 Bitcoin ATMs in several cities in the United States to promote the transfer of remittances in Bitcoin (Chivo Bitcoin ATMs 2021). While Salvadorans downloaded the app to use \$30 worth of Bitcoin, continuing use did not materialize (Alvarez *et al.* 2022).

A year after the rollout, only 24.4% of 1,267 individuals surveyed in a public opinion poll indicated that they used Chivo to make purchases or payments. In addition, only 16.5% of the respondents indicated that the Bitcoin initiative was a success. In the same survey 77.1% of the respondents disapproved of the use of public money to buy Bitcoin (Instituto Universitario, 2022). Low Bitcoin usage was also reported by El Salvador's Chamber of Commerce and Industry, whose survey results indicated that 86% of local businesses had not made any sales using Bitcoin, and only 14% had. Meanwhile, 3.6% of local stores indicated that Bitcoin had

contributed to an increase in their sales, while 91.7% reported that the implementation of Bitcoin had no effect on their businesses (McDonald 2022).

Exhibit 13 reports the Bitcoin investments made by El Salvador. As of April 10, 2023, El Salvador's BTC holdings were estimated at 2,546 BTC. This is up from the 2,381 BTC announced after a purchase of 80 BTC in July 2022, and a tweet from President Bukele on November 16, 2022, which stated that El Salvador would purchase 1 BTC per day, beginning the next day. The Bitcoin holding had an approximate market value of \$77 million and an estimated purchase price of \$108 million, representing a 29% loss on the BTC holdings (McDonald 2023).

Exhibit 13. El Salvador's Bitcoin Investment*Source: Adapted from Prashant (2022)*

Purchase Date	Bitcoin Quantity	Cost per Bitcoin	Total invested
September 6, 2021	400	\$46,811	\$18,724,400
September 7, 2021	150	\$46,091	\$6,913,650
September 19, 2021	150	\$42,843	\$6,426,450
October 27, 2021	420	\$60,622	\$25,461,240
November 26, 2021	100	\$54,815	\$5,481,500
December 3, 2021	150	\$48,670	\$7,300,500
December 21, 2021	21	\$49,220	\$1,033,620
January 21, 2022	410	\$36,585	\$15,000,000
May 9, 2022	500	\$30,744	\$15,372,000
June 30, 2022	80	\$19,000	\$1,520,000
November 17, 2022	1 per day and thereafter	Between \$16,687 and \$30,253 as of writing	~\$5,000,000 as of April 10, 2023

Given the fluctuations in the Bitcoin market, the level of public support for the Bitcoin rollout, and the attitude of external investors toward Bitcoin adoption, students are asked to evaluate whether the President's choice to adopt Bitcoin as legal tender was a clever idea? How was it superior - or not - from dollarization?

Case 3 Evaluation

The case has two sets of questions, one designed to be used in an international finance course and another designed for economic courses dealing with money and banking issues.

The international finance questions led students to address:

- The political risk in El Salvador;
- Compare dollarization and Bitcoin adoption;
- The application of Mundell-Fleming Trilemma to Bitcoin adoption;
- The impact of remittances on international financial statistics.

The economics questions led student to:

- Compare and contrast Bitcoin to the U.S. Dollar by applying the concept of medium of exchange, unit of account, and store of value;
- Discuss the impact that Bitcoin adoption has on inflation expectations;
- Evaluate the impact of the adoption of Bitcoin on El Salvador's central bank credibility and its ability to respond to recessions;

- Identify the assumptions that are required to make El Salvador’s adoption of Bitcoin wise; what assumptions are required to make the adoption unwise?
- Discuss what the world would look like if Bitcoin was legal everywhere;
- Debate the four positions:
 - Banning Bitcoin as legal tender;
 - Allow Bitcoin use but not make it legal tender;
 - Allow both Bitcoin and dollars as legal tender;
 - Make Bitcoin the sole legal tender.
- For advanced exploration, are the proposed volcano bonds correctly priced?

Two management faculty members familiar with the international finance topic evaluated the responses to international finance questions. The economics questions were evaluated by one economics faculty member. The evaluators’ rating summary for GPT-3.5 and GPT-4 for the international case questions and the economics case questions are presented in Exhibit 14 and 15, respectively. Refer to Appendix C to review the actual GPT-3.5 and GPT-4 responses. Evaluators reviewing the international finance answers considered all responses, from both versions, acceptable or outstanding. However, the economics evaluators found ChatGPT-4.0 superior to ChatGPT-3.5. Both evaluators rated 3 out of the 4 (75%) of the questions generated by GPT-4 as outstanding. The evaluator who reviewed the responses to the economics questions considered the responses from GPT-3.5 of better quality by rating 4 of 7 (57.2%) responses as outstanding compared to only 2 of 7 (28.6%) of the responses provided by GPT-4.

Exhibit 14. Evaluation of ChatGPT’s Responses to Bitcoin in El Salvador: Digital Financial Innovation or President Bukele’s Gamble? – International Finance

Source: Evaluators of the International Finance Questions

Questions	Evaluator 1		Evaluator 2	
	GPT-3.5	GPT-4	GPT-3.5	GPT-4
Q1 - What were some of the changes to political risk in El Salvador after President Bukele was elected?	Acceptable	Outstanding	Poor	Outstanding
Q2 - What were the reasons why the government of El Salvador decided to adopt Bitcoin as a legal tender? Compare and contrast Bitcoin’s adoption and dollarization in El Salvador.	Outstanding	Outstanding	Acceptable	Outstanding
Q3 - The Mundell-Fleming Trilemma discusses how countries need to select two of three choices: Fixed exchange rate, Free flow of capital or Independent monetary policy. What choice is the government of El Salvador making by adopting Bitcoin as a legal tender in addition to the U.S. dollar?	Poor	Acceptable	Acceptable	Outstanding
Remittances are classified as secondary income in the Balance of Payments. If remittances can be transferred via cryptocurrency (in this case via Chivo Wallet), what could be the impact on international financial statistics?	Poor	Outstanding	Acceptable	Outstanding

Exhibit 15. Evaluation of ChatGPT's Responses to Bitcoin in El Salvador: Digital Financial Innovation or President Bukele's Gamble? – Economics Questions

Source: Evaluator of the Economics Questions

Questions	GPT-3.5	GPT-4
Q1 - Using the concepts of (1) medium of exchange, (2) unit of account, and (3) store of value, compare and contrast the U.S. dollar with Bitcoin.	Acceptable	Outstanding
Q2 - Most central banks are charged with maintaining price stability and maintaining full employment. How does the adoption of Bitcoin as legal tender further these goals? What are the consequences for inflation expectations?	Outstanding	Acceptable
Q3 - Considering El Salvador's starting point of dollarization, evaluate the effect of President Bukele's actions on central bank credibility and ability to respond to recessions? Summarize the IMF's reaction.	Acceptable	Acceptable
Q4 - What assumptions are required for El Salvador's adoption of Bitcoin to be wise? What assumptions for it to be unwise? Which do you think is the case?	Outstanding	Acceptable
Q5 -Discuss what the world would look like if Bitcoin were legal tender everywhere.	Outstanding	Acceptable
Q6 - Debate the Bitcoin positions 1) Ban Bitcoin in El Salvador, (2) Allow Bitcoin transactions but do not make it legal tender, (3) Preserve the current status quo in which both the US Dollar and Bitcoin are legal tender, and (4) Make Bitcoin the sole legal tender of El Salvador.	Outstanding	Outstanding
Q7 - Beyond asking students about the bond issue features and fund usage, the question for students to explore is: Has El Salvador correctly priced the "volcano" bonds to entice investors to purchase them?	Acceptable	Acceptable

Conclusion

This article detailed the performance quality of ChatGPT-3.5 and ChatGPT-4 on discussion questions associated with three published business teaching case studies. The questions posed to generative AI came from the instructor's manual of the published cases. Responses from the generative AI were evaluated by two to three faculty members per case. The raters used the rubrics provided in each case's instructors manual and these rubrics provided guidance on what type of answer was poor, acceptable/good, or excellent/outstanding.

The primary conclusion is that ChatGPT-3.5 performed better than anticipated and ChatGPT-4 performed well, particularly in Case 2 (When Events Do Not as Turn Out as Expected) and Case 3 (Bitcoin in El Salvador). ChatGPT-3.5 performed poorly on 100% of the items in Case 1 (Is the

Consultant's Analysis Correct?) and 52% of the items in Case 2. But ChatGPT-3.5 only performed poorly on 38% of the items in Case 3. By contrast, ChatGPT-4 performed poorly on 58% of the items in Case 1, but then only performed poorly on 19% of Case 2 and none of the items on Case 3. See Exhibit 16.

Exhibit 16. Summary of Ratings for ChatGPT-3.5 and ChatGPT-4.0

Source: Created from Ratings Reported in Exhibit 9, 11, 14 and 15

	ChatGPT-3.5			ChatGPT-4.0		
	Case 1	Case 2	Case 3	Case 1	Case 2	Case 3
Poor ratings	12	22	3	7	8	0
Good/Acceptable ratings	0	18	4	0	20	1
Excellent/Outstanding ratings	0	2	1	5	14	7

ChatGPT-4 clearly outperformed its earlier version driven both by improvements in the generative AI itself but also through the ability of ChatGPT-4 to read tables and access the Internet. Both versions performed better on qualitative than on quantitative questions. Quantitative questions, for instance the breakeven questions in Case 2, proved interesting because the generative AI would follow a correct process for the calculation but would draw incorrect data from the case itself.

Making up data was the only observed manifestation of "hallucination" in this study. Perhaps because both versions of ChatGPT had been trained with the case narrative, the ChatGPT answers to qualitative questions typically drew appropriate material from the case and used it reasonably when preparing answers. Conclusions presented by the generative AI were 'correct' for the incorrect calculation. Further, ChatGPT-4 performed better than ChatGPT-3.5 on these questions, which suggests that future iterations of the application may prove excellent in their ability to address such questions.

At the time of this study, both ChatGPT-3.5 and ChatGPT-4 did not read tables very well and, when asked about information which would be found in a table, both versions made up answers. ChatGPT-4, for example, would read the top row of an income statement correctly and

interpret the change in revenue over time correctly. ChatGPT-3.5 had difficulty with the same activity – but both versions clearly described a change in net income over the three years in the AOT case. When asked about information found further down in the income statement, net income for example, both versions simply made-up data.

From Bloom's taxonomy perspective, both versions of ChatGPT perform better at lower order reasoning than at higher order reasoning. Iowa State University provides a useful guide to the revised version of Bloom's taxonomy (Iowa State University 2024). Bloom's taxonomy arranges learning into a hierarchy of thinking from lower order recollection to higher order creation.

- **Remember** – the ability to recall facts, concepts, or procedures.
- **Understand** – the ability to construct meaning from facts, concepts, or procedures.
- **Apply** – the ability to operationalize a procedure or model.
- **Analyze** – the ability to deconstruct a concept into its parts as well as the ability to identify the relationships between parts of a whole.
- **Evaluate** – the ability to make judgments consistent with facts, context, and appropriate frameworks.
- **Create** – The ability to assemble parts into a new, non-derivative, whole.

Tasked to recall or explain concepts, ChatGPT performed quite well. Tasked to apply or analyze, evaluate or create, it performed less well. For the two higher order functions, this may be less a limitation of the AI than it is a restriction in place in its programming – both versions of ChatGPT proved averse to *'making a decision,'* often providing an ineffective *'this could be used in many different ways, for example...'* response when asked to take a position. However, a skilled operator of ChatGPT can use ChatGPT to build arguments to defend a position that the operator takes, even if ChatGPT itself will not commit to a position.

We asked our colleagues a set of follow-up questions after completing their evaluation of ChatGPT's case responses. Each faculty member was asked three questions. First, what was your overall impression of ChatGPT and its ability to address case questions? Second, how do you compare the quality of the AI responses to those of undergraduate students you have taught? Third, what opportunities or concerns do you perceive following this exercise? We were not

able to gather responses from all evaluators, but the five who responded offered insights into the results from all three cases.

What was your overall impression of ChatGPT's case responses?

- Accounting professor - *"I felt that Chat GPT 3.5 was substantially inferior to Chat GPT 4.0. Chat GPT 4.0 did well on questions that dealt with what factors to consider in a capital budgeting case. However, the analysis only told you what to do on questions where a specific recommendation was required. In those situations, neither Chat GPT 3.5 nor Chat GPT 4.0 generated the after-tax cash flows for any projects with their net present value and internal rate of return. The net present value and internal rates of return reported in the answers to Question 6 are from Exhibit 10 and Exhibit 11. The after-tax cash flows presented in these exhibits were not adjusted for some of the factors in Exhibit 12."*
- Management professor #1 - *"I was underwhelmed. At times, it didn't seem to answer the question directly and sometimes would answer a question that wasn't asked."*
- Management professor #2 - *"The AI is not quite at the level of an A-student yet, and it is prone to "AI hallucinations" (to use the technical term). I was impressed by the improvement between ChatGPT 3.5 and ChatGPT 4.0. A key concern of mine is the rate of progress of AI, as it might eventually catch up in future versions, especially as students may get creative with prompt engineering and ask the AI to "mimic the answer of a typical student."*
- Economics professor - *"The AI responded accurately to the questions asked and seemed to provide spot on answers compared to the control responses. Some of the AI responses though did not expand on the direct points made, which could be a downfall in questions that require responses to have explanations and examples included. Overall, I thought the AI was impressive in its ability to formulate responses."*
- Finance professor - *"ChatGPT 3.5 did not do well on either theoretical or numerical questions in this case analysis. GPT 4 was a little better at some of the questions but could not perform a good numerical analysis. Based on my personal experience with GPT 3.5 and GPT4, to get a good answer the prompt needs to be very detailed, and the*

information fed to it needs to be in small parts. Even with a detailed prompt, there are still limitations.”

How do you compare the quality of responses to those of undergraduate students?

- Accounting professor – *“I would require the students to report the after-tax cash flows for each year as well as the net present value or internal rate of return for the project for the base case. Then, I would ask for some sort of sensitivity analysis. Neither Chat GPT 3.5 nor Chat GPT 4.0 provided this information. For universities that require students to have knowledge of Excel prior to taking the undergraduate core finance course, instructors may require students to submit an Excel spreadsheet to the instructor as part of the assignment. Neither Chat GPT 3.5 nor Chat GPT 4.0 provided an Excel spreadsheet.”*
- Management Professor #1 – *“I would say the AI was middle of the pack. Some undergrads would answer much better while others would be worse.”*
- Management Professor #2 – *“AI used considerably more structure in the response, and always used proper grammar and punctuation.”*
- Economics Professor – *“The AI was more direct with responses than undergraduates I have taught before. I notice that undergraduates tend to meander in their written explanations and at times overexplaining in their answers.”*
- Finance Professor – *“GPT 4 did better than the students on the questions involving concepts and understanding of concepts but did not perform the required calculations that the undergraduate students could have done.”*

What opportunities or concerns do you perceive following this exercise?

- Accounting Professor – *“Students may use AI to generate some general discussion points for a specific capital budgeting assignment that may contain discussion points not specifically related to the case. In the future, AI may be able to generate Excel spreadsheets for problems that have a standard input and output, such as for capital budgeting. In that situation, I would not ask students to prepare an Excel spreadsheet for the assignment. Thus, the students would not get practice of creating an Excel spreadsheet for a specific problem. Instead, I would ask students to try to understand the assumptions underlying the Excel spreadsheet model and to make changes in the model to handle certain modifications in the capital budgeting project.”*
- Management Professor #1 – *“I think the biggest opportunity is to learn how AI might respond to prompts and provide insight to instructors regarding what responses might be common.”*
- Management Professor #2 – *“A concern would be the rate of progress of AI, and AI eventually catching up if we don't change our assignments. One opportunity would be to teach students about prompt engineering, and for us to teach how to write a proper AI prompt. The student still needs to accurately describe the case to an AI with natural language, which is a new type of skill that requires both creativity and critical thinking. Without a good prompt, the AI is more likely to give the wrong answer.”*
- Economics Professor – *“There are many opportunities that can arise with using AI in assignments since that seems to be where the future is heading - teaching students how to use AI and when it is appropriate through assignments that critique answers, similar to this study, would be a good tool to use in the classroom.”*
- Finance Professor – *“The questions after a case typically do not break down the steps needed to answer the question. They assume that the students will know what is the relevant analysis and calculations that need to be performed to answer the question. The current version of GPT 3.5 and 4 is limited in the depth of the answer and typically cannot do multi-step analysis unless specifically prompted to (and everything is broken down into multiple small steps). As GPT versions evolve and students get better at prompt*

engineering, AI abilities will increase and may require adapting the requirements for students as they work on cases, i.e. ChatGPT may be required to be used as a tool for some portions of the analysis and then students can assess critically the GPT answers for accuracy and completeness and analyze further if needed.”

Faculty members face a challenging task addressing generative AI in their class deployments. The technology is both too new for there to be clear guidance on how to use it yet increasing in capability at such a rapid pace that such guidance, if it existed, might be soon obsolete. Indeed, in the time taken to prepare this manuscript, the functionality of both ChatGPT-3.5 and ChatGPT-4 changed in ways that necessitated revisions or replacements of entire passages of early drafts. Collectively this limits the precision of the conclusions which we can identify.

The simplest conclusion is that generative AI has already changed the landscape of education. Students should be presumed to have access to older versions of ChatGPT through its integration into Bing and through the currently free access to ChatGPT-3.5 provided by OpenAI. It follows that some students are likely to utilize ChatGPT in preparation of answers to assignments (Duong and Tran 2023) and our examination suggests that the answers provided will at times be quite good.

Further, students who have access to the most recent versions of the AI are quite likely to have access to excellent responses to questions posed in these types of cases. Additionally, the skill of the student in querying the AI, to recognize hallucinations, and to identify when (and how) to ask the AI follow-up questions will lead to different quality of answers to work from (or turn in for credit!). This suggests that the level of access to generative AI and the student-operator's skillset may influence the student's perceived utility of generative AI.

The facts that generative AI hallucinates and that the skill of the operator in querying the AI can affect the quality of the output suggests potential value in using generative AI to assist in teaching with cases. Instructors can use ChatGPT and provide potential answers produced by

ChatGPT to their students. Such answers could be used to identify hallucinations, to provide extensions to a class discussion, or to task students to evaluate the quality of the generative AI's answer. Authors of future cases might be advised to consider how current versions of the AI can handle their planned discussion questions and provide instructor's manual guidance on how to deploy generative AI while teaching with that case.

The apocryphal proverb, "*may you live in interesting times,*" seems appropriate here. Given its speed of adoption and speed of improvement, generative AI is already poised to be one of the more significant innovations in both business and education. We cannot be certain of how generative AI will transform, only that it will transform.

Appendix A – Is the Consultant’s Analysis Correct? ChatGPT Responses and Rating Rubric

Question 1 - What were the principal inconsistencies included in Rodriquez Consulting analysis that need correction? Explain.			
Rating	Poor - Unable to answer or none of the items identified in the answer key.	Acceptable - Identify one of the items on the answer key	Outstanding - Identify all of the items in the answer key
Answer Key	<ul style="list-style-type: none"> • Interest and principal repayments should have been excluded. • The discount factor of 2% should be replaced with the WACC. The discount rate is substantially below Istmo's WACC of 16.55%. The lower hurdle rate used results in increased NPV. Even if Rodriquez Consulting’s cash flow calculations were done correctly, the use of a discount factor that is below Istmo's WACC would lead to an incorrect acceptance decision. 		
GPT 3.5 Response	<p>I'm sorry, but without specific information or context about the analysis conducted by Rodriquez Consulting, I cannot provide a detailed answer regarding the specific inconsistencies that may need correction. To identify the principal inconsistencies in an analysis, I would need access to the specific analysis or at least a description of the key findings, assumptions, or methodologies used in the analysis. If you can provide more details about the analysis conducted by Rodriquez Consulting, I'll do my best to help identify any potential inconsistencies or areas that may require correction.</p>		
GPT 4 Response	<p>Based on the information provided, there are several inconsistencies and areas of concern in the analysis by Rodriquez Consulting that Pedro Martinez found. Some of these include:</p> <ul style="list-style-type: none"> • Discount Rate: The discount rate used in the initial analysis is only 2%, which is far below the firm's weighted average cost of capital (WACC) of 16.55%. The choice of discount rate significantly impacts the NPV and IRR calculations and should align more closely with the firm's actual cost of capital. • Inflation Rate: The analysis assumes a 2% inflation rate, while the country's inflation has fluctuated between 3% and 6.7% in the past decade. This underestimation can result in skewed projections of future costs, revenues, and profitability. • Valuation Methodology: Pedro noted that the approach used seemed more like a real estate valuation, including items usually excluded in business finance capital budgeting. It's unclear what specific items were of concern, but this indicates that the financial modeling approach was not aligned with the best practices for this kind of investment. • Sensitivity Analysis: The initial sensitivity analysis by the consulting firm seems to be confined to a limited price range. Pedro decided to expand the price sensitivity analysis beyond this, which could affect the project’s estimated viability. 		

	<ul style="list-style-type: none"> • Tax Rate for Ethanol: For the Ethanol project, a tax rate of 0% is used, presumably based on the idea that the revenue would be tax-exempt due to the principle of territorial income. While this could be accurate, it's a point that would need verification, especially when producing for export markets where various tariffs and taxes could apply at the buyer's end. • Cash Flow Estimates: Pedro found some irregularities in the derivation of cash flows, although the details aren't provided. Cash flows are a critical element in the NPV and IRR calculations, and errors here could dramatically change the financial viability of the project. • Depreciation Method: Additional information provided by Pedro suggests using straight-line depreciation over 20 years. However, it's unclear if Rodriquez Consulting accounted for this properly in their calculations. • Net Operating Working Capital and Salvage Value: These were not included in the initial reports but are generally considered essential in a capital budgeting analysis. Pedro provides these values in Exhibit 12, suggesting they should be included in a more thorough analysis. • Loan Terms: The terms of the loan (interest rate, period) are used without much context on how they fit into the broader financial landscape, the firm's debt structure, or whether they are in line with current market conditions. <p>Addressing these inconsistencies would offer a more accurate and comprehensive analysis to inform the decision-making process.</p>
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Question 2 - What was omitted from the consulting firm's capital budgeting analysis that should have been considered and included? Explain.			
Rating	Poor - Identify less than 3 items omitted.	Acceptable – Identify three of the five items omitted	Outstanding - Identify all five items omitted
Answer Key	<ul style="list-style-type: none"> • Given that the project was an expansion of business, NOWC requirements should have been incorporated into the analysis as part of the initial outlay. • Similarly, the recovery of NOWC in the terminal year of the project should have been included. • With the magnitude of the capital expenditures in plant and equipment, depreciation was overlooked in the analysis. Under the country's tax code, the equipment is depreciable on a straight-line basis over a 20-year period and deductible as an expense. • Salvage value of the equipment in the terminal value of the project was not included. • Although a 2% inflation rate was mentioned in the analysis, the inflation adjustment was not made by the consultant. Rodriquez Consulting indicated that their cost estimates were on the high side, above current costs, so they did not explicitly 		

	include inflation in the analysis. Given the pattern of inflation in the country, Pedro Martinez believed it was advisable to include a 2% inflation adjustment per year on project costs.
GPT 3.5 Response	<p>Without information about the specific capital budgeting analysis conducted by Rodriguez Consulting, it is difficult to pinpoint what might have been omitted. However, in a capital budgeting analysis, several factors should typically be considered and included. Here are some common elements that could be relevant:</p> <p>Projected cash flows: The analysis should consider all relevant cash flows associated with the investment project, including initial investment costs, operating cash inflows and outflows, salvage value, and potential tax implications.</p> <p>Time value of money: The time value of money recognizes that a dollar received in the future is worth less than a dollar received today. Therefore, the analysis should incorporate discounted cash flow techniques, such as net present value (NPV) or internal rate of return (IRR), to account for the time value of money.</p> <p>Risk assessment: It's important to consider the risk associated with the investment project. Factors like market conditions, competition, regulatory changes, and other relevant risks should be evaluated and incorporated into the analysis. Techniques like sensitivity analysis or scenario analysis can help assess the impact of varying risk levels on the project's financial viability.</p> <p>Opportunity cost: The analysis should account for the opportunity cost of investing in one project over another. This means considering alternative investment options and comparing their potential returns and risks.</p> <p>Capital structure and financing: The analysis should evaluate the appropriate capital structure and financing options for the project. This involves determining the optimal mix of equity and debt, considering the cost of capital, and assessing the impact of financing decisions on the project's financial metrics.</p> <p>Non-financial factors: While financial metrics are crucial, non-financial factors should also be considered if relevant. These may include environmental impact, social considerations, strategic alignment, or other qualitative aspects that could impact the overall project evaluation.</p> <p>These are general considerations, but to identify specifically what was omitted in Rodriguez Consulting's capital budgeting analysis, it would be necessary to review the analysis or obtain more specific information about the project and the analysis conducted.</p>
GPT 4 Response	<p>Based on the information provided, the consulting firm's capital budgeting analysis appeared to omit several important factors that should typically be included for a more comprehensive and accurate evaluation. These are:</p> <p>1. Weighted Average Cost of Capital (WACC): The WACC of 16.55% was not considered in the discount rate, which can result in a skewed NPV and IRR. Using the company's actual cost of capital is vital for a more accurate financial analysis.</p>

2. **Net Operating Working Capital:** Typically, a certain amount of working capital is needed to maintain operations, especially for projects of this scale. Pedro suggests that it should be 10% of the CAPEX, but this was not included in the original calculations.

3. **Salvage Value:** The estimated salvage value of the equipment after 20 years (15% of CAPEX, according to Pedro) should also be included in the cash flow estimations for a more accurate NPV calculation.

4. **Sensitivity Analysis:** A robust sensitivity analysis, which would account for price fluctuations in the Extra Neutral Alcohol and Ethanol markets, was not provided. Pedro mentions price sensitivity ranges, which should have been included to understand the risks associated with price volatility.

5. **Risk Assessment:** Given the uncertainty due to the COVID-19 pandemic and other market conditions, a risk analysis could offer valuable insights into the project's feasibility and what kinds of contingencies may be necessary.

6. **Depreciation Method:** While Pedro indicates a straight-line method over 20 years for depreciation, it's unclear if this was considered in the original analysis. Accurate accounting for depreciation is important for tax purposes and for accurately calculating net income.

7. **Tax Implications:** For the Ethanol project, a 0% tax rate is assumed, which should be verified. Moreover, the impact of various kinds of taxes, including potential tariffs or export taxes, were not considered.

8. **Impact of Inflation:** Although a 2% inflation rate was assumed, a more detailed assessment of how inflation could impact costs and revenues in the future would provide a fuller picture of the project's financial viability.

9. **Foreign Exchange Risk:** Since this is a global project, there might be currency risks involved, especially if sales or inputs are in different currencies. This is usually an important consideration in global capital budgeting but was not mentioned.

10. **Regulatory and Compliance Costs:** The cost of meeting legal and regulatory requirements, especially in foreign markets, was not discussed. These can have a significant impact on the profitability of a project.

11. **Comparison with Standalone Projects:** Given the pandemic, Pedro also believes that the capital budgeting analysis for individual projects should be presented as standalone entities in case they want to minimize investment. This wasn't included in the original analysis.

Including these omitted elements would create a more robust, realistic, and comprehensive capital budgeting analysis.

Question 3 - Assuming that there are no capital constraints, what recommendation would you make to Pedro Martinez? Explain the reasoning behind the selection of any of the three options available or the rejection of all projects.

Rating	Poor - No project decision made	Acceptable - Explain the reasoning behind the selection of any of the three options available or the rejection of all projects.	Outstanding - Identify the selection of the global project for the flexibility it provides.																																																		
Answer Key	<p>In contrast to the consultant's global project results (Exhibit 2), the results, obtained once the correct methodology is applied, show that all NPVs for the Ethanol scenarios are negative, as well as one of the scenarios for Extra Neutral Alcohol, supporting Pedro's initial negative reaction to the global project.</p> <p>In addition, at \$0.60 per liter for the Ethanol global project, the IRR calculation results in an error "#NUM!" Normally individuals associate this error message with multiple internal rates of return, but in this case, multiple internal rates of return do not exist. The other instance where this error happens is when, at any WACC, the NPV is never positive. At a price of \$0.60, the NPV for the Ethanol global project at 0% is - \$1,111,163 and becomes increasingly negative at higher WACC.</p> <p>The summary tables show the worst-case scenario for the global project profitability assuming that over the life of the project's total production is dedicated to producing only one product as indicated in the respective tables. This would occur if the differential in market pricing between the two product lines is such that one product is always more profitable.</p> <p>Students will tend to choose the stand-alone Ethanol project since the NPV is the highest, dismissing the global project's built-in flexibility of producing two different products based on prevailing market prices. Students will automatically assume that the tax treatment of earnings is the difference. While it is correct that taxation differences are a substantial driver, students should also recognize that the per liter cost of production is lower and the liters available for sale is higher with Ethanol. These points will be reinforced in Question 5. Question 4 elaborates on the value of the global project's inherited flexibility.</p> <table border="1"> <thead> <tr> <th colspan="5">100% Production in Extra Neutral Alcohol (US Dollars)</th> </tr> <tr> <th></th> <th colspan="2">Global</th> <th colspan="2">Stand-Alone</th> </tr> <tr> <th>Sales price</th> <th>NPV</th> <th>IRR</th> <th>NPV</th> <th>IRR</th> </tr> </thead> <tbody> <tr> <td>\$0.65</td> <td>(\$3,419,424)</td> <td>9.09%</td> <td>(\$2,415,405)</td> <td>10.50%</td> </tr> <tr> <td>\$0.70</td> <td>\$154,346</td> <td>16.84%</td> <td>\$1,158,366</td> <td>18.70%</td> </tr> <tr> <td>\$0.75</td> <td>\$3,728,117</td> <td>23.18%</td> <td>\$4,732,136</td> <td>25.50%</td> </tr> <tr> <td>\$0.80</td> <td>\$7,301,888</td> <td>28.95%</td> <td>\$8,305,907</td> <td>31.80%</td> </tr> <tr> <td>\$0.85</td> <td>\$10,875,659</td> <td>34.43%</td> <td>\$11,879,678</td> <td>37.80%</td> </tr> <tr> <td>\$0.90</td> <td>\$14,449,429</td> <td>39.75%</td> <td>\$15,453,449</td> <td>43.6%</td> </tr> <tr> <td>\$0.95</td> <td>\$18,023,200</td> <td>44.96%</td> <td>\$19,027,219</td> <td>49.3%</td> </tr> </tbody> </table>			100% Production in Extra Neutral Alcohol (US Dollars)						Global		Stand-Alone		Sales price	NPV	IRR	NPV	IRR	\$0.65	(\$3,419,424)	9.09%	(\$2,415,405)	10.50%	\$0.70	\$154,346	16.84%	\$1,158,366	18.70%	\$0.75	\$3,728,117	23.18%	\$4,732,136	25.50%	\$0.80	\$7,301,888	28.95%	\$8,305,907	31.80%	\$0.85	\$10,875,659	34.43%	\$11,879,678	37.80%	\$0.90	\$14,449,429	39.75%	\$15,453,449	43.6%	\$0.95	\$18,023,200	44.96%	\$19,027,219	49.3%
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100% Production in Ethanol (US Dollars)				
	Global		Stand-Alone	
Sales price	NPV	IRR	NPV	IRR
\$0.60	(\$4,742,589)	#NUM!	(\$3,451,442)	6.30%
\$0.62	(\$2,657,889)	9.70%	(\$1,366,742)	13.30%
\$0.64	(\$573,190)	15.30%	\$717,958	18.60%
\$0.65	\$469,160	17.60%	\$1,760,308	20.90%
\$0.70	\$5,680,909	27.20%	\$6,972,057	31.20%
\$0.75	\$10,892,658	35.60%	\$12,183,806	40.50%
\$0.80	\$16,104,407	43.50%	\$17,395,555	49.20%
\$0.85	\$21,316,156	51.20%	\$22,607,304	57.80%
\$0.90	\$26,527,906	58.70%	\$27,819,053	66.20%
\$0.95	\$31,739,655	66.10%	\$33,030,802	74.50%

GPT 3.5 Response	<p>As an AI language model, I don't have access to the specific details of Pedro Martinez's situation or the context of his decision-making process. However, if we assume that there are no capital constraints, I can provide a general recommendation based on typical considerations in business decision-making. Given the absence of capital constraints, Pedro Martinez should consider the following factors:</p> <p>Potential Return: Evaluate the potential return on investment for each available option. Assess the expected profitability and growth prospects of each alternative.</p> <p>Risk Assessment: Consider the risks associated with each option. Evaluate the likelihood and potential impact of risks such as market fluctuations, competitive factors, regulatory changes, and other relevant risks.</p> <p>Strategic Fit: Assess how well each option aligns with Pedro Martinez's long-term strategic goals and objectives. Consider the impact on market positioning, competitive advantage, and overall business strategy.</p> <p>Market Analysis: Conduct a thorough analysis of the market conditions and trends related to each option. Consider factors such as market size, growth potential, competitive landscape, and customer demand.</p> <p>Operational Considerations: Evaluate the operational requirements and feasibility of each option. Consider factors such as resource allocation, technological requirements, scalability, and potential synergies with existing operations.</p> <p>Flexibility and Adaptability: Assess the flexibility and adaptability of each option in response to changing market conditions or future strategic shifts. Consider the potential for expansion, diversification, or exit strategies.</p>
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	<p>Sustainability and Social Impact: Consider the environmental and social impact of each option. Evaluate factors such as sustainability practices, corporate social responsibility, and the potential for positive community impact.</p> <p>Based on a comprehensive evaluation of these factors, Pedro Martinez should select the option that aligns most closely with his long-term goals, offers the highest potential return, manages risks effectively, and fits well within the broader strategic context. It's important to note that the specific details and circumstances of the available options would greatly influence the final recommendation.</p>
GPT 4 Response	<p>Assuming no capital constraints, several factors need to be considered for a recommendation:</p> <p>Discount Rate: The project's discount rate in the Rodriguez Consulting analysis is 2%, which is considerably lower than the 16.55% Weighted Average Cost of Capital (WACC) given in Exhibit 12. This change in discount rate would significantly impact the NPV and make the project less attractive than initially indicated.</p> <p>Net Operating Working Capital, Depreciation, and Salvage Value: These are key elements that were missing in the original analysis and incorporating them would provide a more realistic estimate of cash flows, and consequently, NPV and IRR.</p> <p>Price Sensitivity: According to Exhibit 12, the price of Ethanol and Extra Neutral Alcohol could fluctuate between \$0.60 to \$0.95 per liter. A sensitivity analysis should be conducted to understand how these fluctuations would affect the project's profitability.</p> <p>Product Diversification: Producing both Ethanol and Extra Neutral Alcohol could be a strategic move to diversify risk. If one product faces decreased demand or increased production costs, the other could potentially make up for the shortfall. However, the additional investment required for this needs to be quantified and assessed against the projected incremental revenues and cash flows.</p> <p>Market Conditions: Given the COVID-19 situation, there may be changes in demand and supply chain logistics, impacting both costs and revenues. A scenario analysis should be conducted to estimate how different COVID-19 related market conditions could affect the project.</p> <p>Recommendation: Given that there are no capital constraints, it would be advisable for Pedro Martinez to:</p> <ul style="list-style-type: none"> • Rework the capital budgeting analysis incorporating all the missing factors like WACC, working capital, depreciation, salvage value, etc. • Conduct sensitivity and scenario analyses to assess the robustness of the project against economic fluctuations and changes in market conditions. • Consider product diversification (both Ethanol and Extra Neutral Alcohol) as a strategic move, provided the additional investment yields a positive incremental NPV.

	<ul style="list-style-type: none"> If the reworked analysis still shows a positive NPV and an IRR greater than the WACC, then the project could be considered financially viable and worth pursuing.
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Question 4 - Is the option to be able to produce the Extra Neutral Alcohol and Ethanol products worth the additional investments? Explain.															
Rating	Poor - No project recommendation made.	Acceptable - Identify whether there is support for the global project or not, with the rationale for the choice made.	Outstanding - Identify the selection of the global project for the flexibility it provides.												
Answer Key	<p>If Istmo decides to undertake the Ethanol stand-alone project, it would reduce its capital expenditures by \$1,250,000 but forego the opportunity to take advantage of differential prices in the two product lines that would allow it to maximize FCFs. To illustrate, if in year 5 the sales price per liter of Ethanol is \$0.75 and that of Extra Neutral Alcohol is \$0.95, the company would be foregoing \$542,328 in FCFs. The price differential between the two product lines must be sufficient to compensate for the tax disadvantage of the higher production cost per liter, and the smaller liter capacity associated with Extra Neutral Alcohol production. See table below.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;"></th> <th style="width: 40%;">Stand-alone Ethanol @ \$0.75 per liter in Year 5; Global Project producing Extra Neutral Alcohol @ \$0.95 per liter in Year 5</th> <th style="width: 40%;">Global Project producing Extra Neutral Alcohol @ 0.95 per liter in Year 5</th> </tr> </thead> <tbody> <tr> <td>FCFs</td> <td style="text-align: center;">\$4,307,227</td> <td style="text-align: center;">\$5,473,561</td> </tr> <tr> <td>PV of FCFs in Year 5</td> <td style="text-align: center;">\$2,002,794</td> <td style="text-align: center;">\$2,545,122</td> </tr> <tr> <td>Value foregone due to loss of flexibility.</td> <td></td> <td style="text-align: center;">\$542,328</td> </tr> </tbody> </table>				Stand-alone Ethanol @ \$0.75 per liter in Year 5; Global Project producing Extra Neutral Alcohol @ \$0.95 per liter in Year 5	Global Project producing Extra Neutral Alcohol @ 0.95 per liter in Year 5	FCFs	\$4,307,227	\$5,473,561	PV of FCFs in Year 5	\$2,002,794	\$2,545,122	Value foregone due to loss of flexibility.		\$542,328
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Value foregone due to loss of flexibility.		\$542,328													
GPT 3.5 Response	<p>To determine whether the option to produce both Ethanol and Extra Neutral Alcohol (ENA) is worth the additional investment, several factors need to be considered:</p> <p>Market Demand: Assess the current and projected market demand for Ethanol and ENA. Determine if there is a sufficient market for both products to justify the additional investment. Consider factors such as customer preferences, industry trends, and regulatory requirements.</p> <p>Profitability: Evaluate the potential profitability of producing both Ethanol and ENA. Analyze the expected selling prices, production costs, and profit margins for each product. Consider factors such as economies of scale, production efficiencies, and pricing dynamics in the market.</p> <p>Competitive Advantage: Assess whether producing both Ethanol and ENA would provide a competitive advantage. Consider factors such as unique product</p>														

	<p>characteristics, differentiation opportunities, and the ability to capture a larger share of the market by offering both products.</p> <p>Operational Efficiency: Evaluate the operational feasibility and efficiency of producing both Ethanol and ENA. Consider factors such as shared infrastructure, production processes, and resource utilization. Determine if the additional investment would result in synergies and cost savings.</p> <p>Risk Management: Assess the risks associated with producing both Ethanol and ENA. Consider factors such as market volatility, regulatory changes, supply chain risks, and potential competition. Evaluate if the diversification of products would mitigate risks or expose the business to additional uncertainties.</p> <p>Long-Term Sustainability: Consider the long-term sustainability of producing both Ethanol and ENA. Evaluate factors such as environmental impact, renewable energy policies, and evolving market trends towards sustainable products. Determine if producing both products aligns with sustainability goals and positions the business for future opportunities.</p> <p>Based on a thorough analysis of these factors, Pedro Martinez can make an informed decision about whether the additional investment to produce both Ethanol and ENA is worthwhile. It would depend on the specific market conditions, profitability outlook, operational considerations, and the overall strategic goals of the business.</p>
<p>GPT 4 Response</p>	<p>The question of whether the option to produce both Ethanol and Extra Neutral Alcohol is worth the additional investment requires a multi-faceted analysis, covering final metrics, risk, and strategic considerations.</p> <p>Financial Aspects: NPV and IRR: Both projects have positive NPV and IRR above the discount rate, signaling a likely profitable venture. However, these metrics are lower than the WACC of 16.55%, which might indicate that the projects are not meeting the required return.</p> <p>Economies of Scope: Producing both products could lead to economies of scope if they share the same production, distribution, or marketing activities, thereby reducing the total cost of production.</p> <p>Cash Flow Timing: Producing both might offer staggered cash flows, offering a risk diversification benefit. Capital Expenditure (CAPEX): Both projects have the same CAPEX needs. However, the additional investment needed for dual production should be considered. This should be weighed against the benefits, and the additional capital costs should be included in the cash flow models to reassess NPV and IRR.</p> <p>Risk Considerations: Market Sensitivity: Diversifying into two products might reduce the business risk if the two markets have different sensitivities to economic cycles.</p>

	<p>Supply Chain and Operational Risks: Producing two types of alcohol may introduce complexity in supply chain management and operations. If not managed well, this could offset any gains from diversification.</p> <p>Regulatory Risks: The regulatory framework for each type of alcohol could differ, affecting production costs and selling prices.</p> <p>Strategic Aspects:</p> <p>Market Presence: Producing both might offer greater market presence and better utilization of distribution channels.</p> <p>Portfolio Diversification: It might be strategically beneficial to diversify the product portfolio to mitigate business risks.</p> <p>Brand Value: If the two types of alcohol appeal to different market segments, producing both could offer brand diversification.</p> <p>Recommendations:</p> <p>Feasibility Study: Conduct a feasibility study for the additional investment needed for dual production.</p> <p>Sensitivity Analysis: Re-run the financial models with revised cash flows that include the additional CAPEX and any expected cost savings or additional revenues.</p> <p>Risk Assessment: Conduct a thorough risk assessment for producing both alcohols.</p> <p>Decision Criteria: Based on the revised analyses, set clear decision criteria. If the project still meets or exceeds these criteria, it might be worth the additional investment.</p> <p>In summary, the decision to produce both would depend on the potential synergies, both financial and strategic, that could be realized, the ability to manage additional complexities, and the overall fit with the company’s longer-term objectives and risk tolerance.</p>
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Question 5 – Would your recommendation change if Istmo decided to sell the entire production of Ethanol domestically without government tax breaks?			
Rating	<p>Poor - No project recommendation made.</p>	<p>Acceptable - Indicate that there is no change in the decision made. Stand-alone Ethanol still dominates, and the global project is still a viable project.</p>	<p>Outstanding - Should provide acceptable answers and identify the factors that come into play that led to the decision.</p>
Answer Key	<p>The spreadsheet file contains two tabs where the tax rate has been adjusted to the domestic rate for Ethanol. The results appear below. There should be no changes in the recommendation. When comparing the summary table for the 100% Extra Neutral Alcohol with the summary table for 100% Ethanol Production Sold Domestically, the Global and Stand-Alone Ethanol have higher NPVs in the price</p>		

range of \$0.65 to \$0.95. The analysis indicates that even with the removal of the tax advantage, the production of Ethanol is still profitable because of the lower production cost per liter and the additional liters of Ethanol produced.

100% Production in Ethanol Sold Domestically (US Dollars)				
	Global		Stand-Alone	
Sales price	NPV	IRR	NPV	IRR
\$0.60	(\$6,088,179)	-0.70%	(\$4,905,028)	2.00%
\$0.62	(\$4,628,889)	5.60%	(\$3,445,738)	7.50%
\$0.64	(\$3,169,599)	9.70%	(\$1,986,449)	11.70%
\$0.65	(\$2,439,954)	11.50%	(\$1,256,804)	13.50%
\$0.70	\$1,208,270	18.80%	\$2,391,421	21.40%
\$0.75	\$4,856,494	25.00%	\$6,039,645	28.30%
\$0.80	\$8,504,719	30.80%	\$9,687,869	34.70%
\$0.85	\$12,152,943	36.30%	\$13,336,094	40.90%
\$0.90	\$15,801,168	41.70%	\$16,984,318	46.90%
\$0.95	\$19,449,392	47.00%	\$20,632,542	52.80%

GPT 3.5 Response

If Istmo decided to sell the entire production of Ethanol domestically without government tax breaks, it would have an impact on the recommendation. Without tax breaks, the profitability and competitiveness of the Ethanol production would likely be affected. Here are a few considerations:

Pricing and Profitability: Selling Ethanol domestically without tax breaks may result in a lower selling price for the product. This could potentially impact the profitability of Ethanol production, as the margins may be reduced. It would be essential to evaluate whether the selling price without tax breaks is sufficient to cover production costs and generate a reasonable profit.

Competitiveness: Ethanol produced without tax breaks may face increased competition from other domestic or international suppliers who enjoy favorable tax incentives. This could potentially make it more challenging for Istmo to capture a significant market share or maintain a competitive advantage. Evaluating the competitiveness of the domestic market and the pricing dynamics becomes crucial in this scenario.

Market Demand: Assess the domestic market demand for Ethanol without considering tax breaks. Determine if there is a sufficient market size and growth potential to support the entire production volume. It is essential to consider factors such as the demand from industries like automotive, energy, or chemical sectors and any government policies promoting the use of Ethanol.

Cost Structure: Evaluate the cost structure of Ethanol production in the absence of tax breaks. Assess whether Istmo can achieve cost efficiencies, economies of scale, or leverage other factors to offset the absence of tax incentives. Analyze the production

	<p>costs, including raw materials, energy, labor, and any potential cost-saving measures.</p> <p>Risk Analysis: Consider the risks associated with selling Ethanol domestically without tax breaks. Evaluate factors such as potential changes in government policies or regulations, market volatility, and the overall stability of the domestic market. Assess if the business can withstand potential risks and uncertainties.</p> <p>Based on these considerations, if Istmo decides to sell the entire production of Ethanol domestically without government tax breaks, the recommendation may lean towards a more cautious approach. It would be crucial to conduct a detailed financial analysis, evaluate the competitiveness of the market, and assess the risk-return profile of the investment. Istmo may also consider exploring alternative revenue streams or diversification strategies to mitigate the potential impact of the absence of tax breaks on Ethanol sales.</p>
<p>GPT 4 Response</p>	<p>If Istmo decided to sell the entire production of Ethanol domestically without government tax breaks, the financial viability of the project could change significantly. Several key factors would need to be revisited:</p> <p>Financial Implications:</p> <p>Tax Rate: In the initial calculation, the tax rate for the Ethanol project was assumed to be 0%. If the project now becomes taxable without government support, this will have an immediate and potentially significant impact on after-tax cash flows, reducing the NPV and IRR of the project.</p> <p>Sales Price: Selling domestically might also affect the sales price. If the domestic market is less competitive, this could be advantageous, but if it's more competitive, this could put downward pressure on sales prices, thereby affecting the revenue and profitability.</p> <p>Cost of Sales: If shipping is usually paid for by the buyer "from port to port," the terms might differ for domestic sales, which could either increase or decrease the net cash flow.</p> <p>Strategic Implications:</p> <p>Market Focus: Selling domestically might change Istmo's strategic market focus and could have implications for future international sales or expansions.</p> <p>Regulatory Environment: The domestic regulatory environment could present different challenges or benefits, such as subsidies or tax incentives for domestic production, which might not have been considered initially.</p> <p>Risk Implications:</p> <p>Market Risk: The domestic market might be more or less volatile than the international market, impacting the project's risk profile.</p> <p>Currency Risk: If initially the revenues were expected in a more stable foreign currency, selling domestically might expose Istmo to domestic currency risk. Given these considerations, it would be crucial to redo the financial analysis, incorporating these changes, and reassess the NPV and IRR against the weighted</p>

	<p>average cost of capital (WACC) and other decision metrics. The risk profile and strategic fit should also be reevaluated.</p> <p>Recommendation: If after recalculating the project still offers an acceptable return compared to the WACC, considering the new tax implications and potential changes in sales price and costs, then it may still be worth pursuing. If, however, the changes render the project nonviable or less attractive, then the recommendation would need to be reevaluated.</p>
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<p>Question 6 - What recommendation would you make to Pedro Martinez if capital investment funding is of concern and only one of the stand-alone projects can be undertaken?</p>			
Rating	<p>Poor - No project recommendation made.</p>	<p>Acceptable - Recommendation is incorrect but provided explanation for choice.</p>	<p>Outstanding - Recommended the Ethanol stand-alone project.</p>
Answer Key	<p>The project selected should be the Stand-Alone Ethanol project because it has the highest NPVs and IRR at comparable price levels.</p>		
GPT 3.5 Response	<p>If capital investment funding is a concern and only one stand-alone project can be undertaken, the recommendation would depend on several factors, including financial viability, market potential, and strategic alignment. Here are some considerations for each project:</p> <p>Ethanol Production Project:</p> <ul style="list-style-type: none"> • Evaluate the financial projections and expected return on investment (ROI) for the Ethanol production project. Consider factors such as production costs, revenue potential, and profitability. • Assess the market demand for Ethanol, both domestically and internationally, taking into account factors such as government policies, industry trends, and competition. • Consider the long-term sustainability and growth potential of the Ethanol market. Analyze factors such as the shift towards renewable energy sources and the potential for increased adoption of Ethanol as an alternative fuel. • Evaluate the potential risks and challenges associated with the Ethanol production project, including market volatility, regulatory changes, and technological advancements. <p>Extra Neutral Alcohol (ENA) Production Project:</p> <ul style="list-style-type: none"> • Assess the financial viability of the ENA production project, including projected costs, revenue potential, and expected ROI. • Evaluate the market demand for ENA, considering factors such as the demand from the beverage industry, pharmaceutical industry, and other potential applications. • Analyze the competitiveness of the ENA market, considering factors such as existing suppliers, market growth potential, and any unique selling propositions of Istmo's ENA production. 		

	<ul style="list-style-type: none"> Consider the potential risks and challenges associated with the ENA production project, such as regulatory compliance, market saturation, and changing consumer preferences. <p>Based on a thorough evaluation of these factors, the recommendation would be to prioritize the project that offers the highest potential for profitability, growth, and alignment with Istmo's long-term strategic goals. This recommendation would involve comparing the financial projections, market potential, and risk profiles of both projects to determine which one presents a stronger business case.</p> <p>It is important to note that without specific financial data and market analysis for each project, it is challenging to provide a definitive recommendation. Therefore, conducting a comprehensive feasibility study, including financial analysis and market research, would be crucial in making an informed decision.</p>
GPT 4 Response	<p>Financial Metrics:</p> <p>NPV (Net Present Value): Both projects have positive NPVs, but the project with Extra Neutral Alcohol (ENA) has a slightly higher NPV of \$13,733,249 as opposed to Ethanol's \$13,447,493. Higher NPV suggests higher incremental value to the firm.</p> <p>IRR (Internal Rate of Return): The ENA project has an IRR of 10%, whereas the Ethanol project has an IRR of 9%. A higher IRR is generally preferable when choosing between projects.</p> <p>WACC (Weighted Average Cost of Capital): With a WACC of 16.55%, both projects fall short in comparison, which generally indicates that neither project would meet the firm's hurdle rate. However, WACC itself can be adjusted based on the project risk relative to the firm's average risk profile, so this shouldn't be a stand-alone decision criterion.</p> <p>Tax Benefits: The Ethanol project initially has a 0% tax rate, which can be beneficial from a cash flow perspective. However, this may not remain the case if the project shifts focus to domestic sales.</p> <p>CAPEX and Cash Flows: Both projects have the same initial CAPEX requirements. Cash flows should also be scrutinized to determine which project is likely to deliver better financial performance over the long term.</p> <p>Strategic Considerations:</p> <p>Market Demand: What is the demand for ENA vs. Ethanol? If one product has a significantly larger market or higher growth prospects, this could tip the scale.</p> <p>Flexibility: Which project offers better operational flexibility? For example, could the Ethanol project be more easily adapted to produce ENA at a later date, or vice versa?</p> <p>Regulatory Environment: Are there regulatory considerations that make one project more favorable than the other?</p> <p>Risk: Which project is riskier, and how well can the firm manage this risk?</p>

Final Recommendation:

Based on just the financial metrics, the ENA project appears slightly more attractive with a higher NPV and IRR. However, strategic considerations could alter this recommendation. Ultimately, the choice between the two would hinge on a balanced consideration of both financial returns and alignment with the company's long-term strategic objectives. Given that capital is a concern, it would be prudent to pick the project that best aligns with the firm's strategic goals while also offering the best financial return relative to risk.

Appendix B – When Events Do Not Turn Out as Expected ChatGPT Responses and Rating Rubric

Question 1 - Describe the changes in revenue across the three years detailed in the case.			
Rating and Answer Key	<p>Poor - Conflate revenue with income.</p> <p>Emphasize the year-to-year changes without noting an overall increase across the period.</p>	<p>Acceptable - Note that revenue has increased 13% from 2017 to 2019.</p> <p>Note that revenue has contracted by 11% from 2018 to 2019.</p>	<p>Excellent - In addition to detailing most, if not all, of the points expected in an acceptable answer, excellent answers will also:</p> <p>Note that custom sales have decreased overall as a percentage of sales between 2017 and 2019.</p>
GPT-3.5 Response	<p>1. 2017:</p> <ul style="list-style-type: none"> · Custom Sales: \$705,560 · Contract Sales: \$567,839 · Other Sales: \$35,618 · Total Revenue: \$1,309,017 <p>2. 2018:</p> <ul style="list-style-type: none"> · Custom Sales: \$456,503 · Contract Sales: \$1,182,395 · Other Sales: \$26,292 · Total Revenue: \$1,665,190 <p>3. 2019:</p> <ul style="list-style-type: none"> · Custom Sales: \$548,592 · Contract Sales: \$884,516 · Other Sales: \$47,117 · Total Revenue: \$1,480,226 <p>From these figures, we can observe the following trends:</p> <ul style="list-style-type: none"> · Custom Sales: There was a decline in custom sales from 2017 to 2018, but a slight recovery in 2019. However, the overall trend is not significantly positive, indicating that custom sales remained a challenging area for AOT to generate substantial revenue. · Contract Sales: Contract sales showed significant growth from 2017 to 2018, more than doubling in value. However, there was a decrease in contract sales in 2019 compared to the previous year. · Other Sales: Other sales, which likely include miscellaneous or ancillary revenue streams, remained relatively small compared to custom and contract sales. There was a slight increase in other sales from 2017 to 2019. · Total Revenue: The total revenue for AOT increased from 2017 to 2018, indicating overall growth. However, there was a decline in total revenue in 2019 compared to the previous year. 		

	<p>Overall, the revenue trends suggest that AOT faced challenges in consistently increasing their sales and achieving sustained revenue growth. Custom sales were particularly problematic, while contract sales showed more promise initially but experienced a decline in the later year. These revenue fluctuations likely contributed to the urgency for AOT to develop a new strategy and improve profitability.</p>
GPT-4 Response	<p>Based on the information provided in Exhibit 13 – Income Statements, here's how the revenue for AOT has changed across the three years:</p> <p>2017: Total Revenue = \$1,309,017 2018: Total Revenue = \$1,665,190 2019: Total Revenue = \$1,480,226</p> <p>From 2017 to 2018, the revenue increased from \$1,309,017 to \$1,665,190. This represents an increase of \$356,173 or approximately 27.2%.</p> <p>From 2018 to 2019, the revenue decreased from \$1,665,190 to \$1,480,226. This represents a decrease of \$184,964 or approximately 11.1%.</p> <p>Overall, the revenue increased significantly from 2017 to 2018 but then decreased in 2019, although it remained higher than the 2017 level.</p>

Question 2 - Describe the changes in net income across the three years detailed in the case.			
Rating and Answer Key	<p>Poor - Will presume that the decrease in losses is an outcome of “selling more” when that conclusion had already been rejected in Q1.</p>	<p>Acceptable - Observe that income losses have decreased year to year across the three-year period. Identify that the year over year change (17% improvement from 2017 to 2018 and 19% change from 2018 to 2019) results in a 33% improvement on losses across the three-year window.</p>	<p>Excellent - In addition to detailing most, if not all, of the points expected in an acceptable answer, excellent answers will also: Recognize that the improvement in losses corresponds with a reduction in sales. This may take the form of a puzzlement, or it may result in a group (or student) voicing a subsequent discussion question (such as question 3).</p>
GPT-3.5 Response	<p>Based on the information provided in the case, the net income for AOT (All-Out Tees) changed as follows over the three-year period:</p> <p>1. 2017: · Net Income: (\$819,399) (Loss)</p> <p>2. 2018: · Net Income: (\$680,008) (Loss)</p> <p>3. 2019: · Net Income: (\$550,923) (Loss)</p>		

	<p>From these figures, we can observe the following trends:</p> <ul style="list-style-type: none"> • Net Loss: AOT incurred net losses in all three years. The losses decreased from 2017 to 2019, indicating some improvement in the financial performance, but the company was still operating at a loss. • Loss Reduction: There was a reduction in net losses from 2017 to 2019, indicating that AOT was taking steps to improve its financial performance. However, the losses were still significant, suggesting ongoing challenges in achieving profitability. <p>These changes in net income reflect the financial struggles faced by AOT during the three-year period. The company's inability to generate positive net income highlights the urgency for AOT to implement a new strategy, increase sales volume, improve pricing, and cost structures, and enhance overall profitability to sustain its operations in the long term.</p>
<p>GPT-4 Response</p>	<p>Based on the information provided in Exhibit 13 – Income Statements, the net income for AOT has changed as follows across the three years:</p> <p>2017: Net Income = \$(819,399) (Loss) 2018: Net Income = \$(680,008) (Loss) 2019: Net Income = \$(550,923) (Loss)</p> <p>From 2017 to 2018, the net income improved from a loss of \$(819,399) to a loss of \$(680,008). This represents an improvement of \$139,391 or approximately 17%.</p> <p>From 2018 to 2019, the net income further improved from a loss of \$(680,008) to a loss of \$(550,923). This represents an improvement of \$129,085 or approximately 19%.</p> <p>Over these three years, AOT has been consistently operating at a loss, but the magnitude of the loss has been decreasing year-over-year.</p>

Question 3 - How might a firm’s revenue and net income change in opposite directions (how can you sell less, but lose less... or conversely how could you sell more but earn less?)		
<p>Rating and Answer Key</p>	<p>Poor - Fail to identify drivers of income which are not revenue. Most answers will involve some variation of “selling more,” even though that is the antithesis of the discussion question.</p>	<p>Acceptable - Identify changes in cost-structure as a possibility. This will involve abstract identification of cost without specifically examining financials for this case.</p> <p>Identify changes in product mix in the abstract. For instance, identifying the role of higher margin sales positively affecting income.</p> <p>Identifying abstractly the role of efficiency, specifically time management, as affecting indirect or fixed costs.</p> <p>Excellent - In addition to detailing most, if not all, of the points expected in an acceptable answer, excellent answers will also:</p> <p>Notice that there is a substantial drop in direct costs as a percentage of sales (both year to year and across the period).</p> <p>Notice a substantial decrease in indirect labor (both absolute and as a percentage of sales) across the case. Lead into the next discussion question.</p> <p>Insightful responses will allude to or incorporate elements of subsequent discussion questions (e.g., thinking ahead of the class discussion).</p>
<p>GPT-3.5 Response</p>	<p>A firm's revenue and net income can change in opposite directions due to various factors that affect profitability. Here are two scenarios that explain how this can occur:</p> <p>1. Decreased Sales with Improved Profitability:</p> <ul style="list-style-type: none"> • Cost Reduction: If a company successfully implements cost-cutting measures, such as streamlining operations, negotiating better supplier contracts, or improving efficiency, it can lower its expenses even if sales decline. This cost reduction can offset the decrease in revenue and lead to improved profitability, resulting in a smaller loss or even a positive net income. <p>2. Increased Sales with Decreased Profitability:</p> <ul style="list-style-type: none"> • Price Reduction: If a company lowers its prices to attract more customers or faces competitive pressure to reduce prices, it may experience an increase in sales volume. However, if the decrease in price is not offset by a proportionate reduction in costs or if there are additional costs associated with fulfilling higher sales, the profit margins can shrink, leading to lower net income despite higher revenue. <p>In both cases, the relationship between revenue and net income can be influenced by various factors, such as changes in costs, pricing strategies, economies of scale,</p>	

	<p>operational efficiency, market conditions, and competitive dynamics. It emphasizes the importance of analyzing not only the top-line revenue but also the bottom-line profitability to assess the overall financial health and performance of a company.</p>
<p>GPT-4 Response</p>	<p>Revenue and net income can indeed move in opposite directions due to a variety of factors. Here are some scenarios that illustrate this:</p> <p>Selling Less but Losing Less Cost Reduction: Even if a firm is generating less revenue, it could cut back on variable and fixed costs, improving its net income.</p> <p>High-margin Sales: The firm might be selling fewer products but at a higher margin, thus boosting profitability.</p> <p>Reducing Debt: If a company manages to pay down debt, it will incur fewer interest expenses, thereby improving net income.</p> <p>Focus on Core Business: By shedding unprofitable lines of business or customer segments, the firm may see a drop in revenue but an increase in net income.</p> <p>Efficiency Improvements: The firm may become more efficient in production, thus lowering the cost per unit and improving net income despite lower sales.</p> <p>Selling More but Earning Less Increased Costs: A company might be able to boost sales by increasing marketing spend or cutting prices, but these could lead to an overall decrease in net income.</p> <p>Lower-margin Sales: Selling more of a low-margin product will boost revenue but can reduce net income.</p> <p>Seasonal Factors: Sometimes higher sales occur during a season where costs (like energy costs for heating or cooling, or holiday pay for employees) are also higher.</p> <p>Inventory Costs: If the cost of goods or raw materials increases, then even if sales revenue increases, the profit might decrease.</p> <p>Increased Competition: Sometimes companies have to lower prices to maintain or increase market share, resulting in higher sales but lower profitability.</p> <p>Understanding the relationship between revenue and net income requires more than just a superficial look at these two metrics. A comprehensive analysis of all contributing factors is essential for an accurate understanding.</p>

Question 4 - Describe changes in variable (direct) costs across the three years detailed in the case. How does labor, printing materials, and the presence or absence of blanks (custom vs. contract) describe the changes in actual cost and cost as a percentage of revenue?			
<p>Rating and Answer Key</p>	<p>Poor - Fail to distinguish between direct and indirect costs, emphasizing changes in COGS without thinking through the cost basis.</p> <p>Poorly describe direct costs, for instance, failing to understand that direct costs increase proportionally with sales.</p> <p>Presume that the only way to cut costs is to “go cheap” (e.g., cheap labor, cheap materials, etc.).</p>	<p>Acceptable - Identify a change in labor costs as a percentage of sales (35% to 30% from 2017 to 2019).</p> <p>Identify changes in average wage paid or changes in labor productivity (one or the other) could affect direct labor costs as a percentage of sales. Identify a notable change in the cost of direct materials across the period.</p> <p>Identifying changes in market costs of materials, changes in purchasing patterns (for example buying in bulk) or changes in paying patterns (e.g., fast-paying discounts) might lower the costs of materials.</p>	<p>Excellent - In addition to detailing most, if not all, of the points expected in an acceptable answer, excellent answers will also:</p> <p>Observe that direct labor costs increase as a percentage of sales in 2018 while also observing that losses as a percent of sales still decreased.</p> <p>Observe that both wages paid, and productivity affect direct labor costs. May also observe that paying less may lower productivity while paying more may raise it (inferring an optimization even if not specifically articulating it).</p>
<p>GPT-3.5 Response</p>	<p>Based on the information provided in the case, let's examine the changes in variable (direct) costs across the three years and how labor, printing materials, and the presence or absence of blanks (custom vs. contract) contribute to the actual cost and cost as a percentage of revenue.</p> <p>1. Labor Costs:</p> <ul style="list-style-type: none"> · Labor costs include direct labor involved in the production process. In the case, the labor costs are as follows: · 2017: \$459,549 · 2018: \$728,008 · 2019: \$507,165 <p>· Analysis:</p> <ul style="list-style-type: none"> · Labor costs increased from 2017 to 2018 but decreased in 2019. · In terms of cost as a percentage of revenue, labor costs as a percentage of revenue can be calculated using the formula: (Labor Costs / Total Revenue) * 100. · The percentage of labor costs as a proportion of revenue can provide insights into the efficiency of labor utilization and cost management over the years. <p>2. Printing Materials Costs:</p> <ul style="list-style-type: none"> · Printing materials costs include the direct materials required for the printing 		

	<p>process. In the case, the direct materials costs are as follows:</p> <ul style="list-style-type: none"> · 2017: \$505,204 · 2018: \$345,161 · 2019: \$374,239 <p>• Analysis:</p> <ul style="list-style-type: none"> · Printing materials costs fluctuated over the three years, with a decrease from 2017 to 2018 and a subsequent increase in 2019. · The percentage of printing materials costs as a proportion of revenue can be calculated using the formula: $(\text{Printing Materials Costs} / \text{Total Revenue}) * 100$. · Monitoring the cost of materials in relation to revenue helps assess the impact of material prices and purchasing strategies on overall costs. <p>3. Presence or Absence of Blanks (Custom vs. Contract):</p> <ul style="list-style-type: none"> · Custom Sales: Custom sales involve providing customized products to clients according to their specific requirements. · Contract Sales: Contract sales refer to standardized printing services provided to clients without customization. <p>• Analysis:</p> <ul style="list-style-type: none"> · The presence or absence of blanks (custom vs. contract) affects the cost structure differently. · Custom sales may have higher variable costs per unit due to the need for customization, which can include additional labor and material costs. · Contract sales, on the other hand, may have lower variable costs per unit due to the standardized nature of the printing services. <p>Overall, analyzing the changes in labor costs, printing materials costs, and the presence or absence of blanks (custom vs. contract) provides insights into the variations in actual costs and cost as a percentage of revenue. It helps understand the cost dynamics within the different sales categories and their impact on the overall profitability of AOT.</p>
GPT-4 Response	<p>Based on the case details provided, the variable (direct) costs seem to have undergone some notable changes over the three years:</p> <p>Direct Materials: 2017: \$505,204 (39% of revenue) 2018: \$345,161 (21% of revenue) 2019: \$374,239 (25% of revenue)</p> <p>Direct Labor: 2017: \$459,549 (35% of revenue) 2018: \$728,008 (44% of revenue) 2019: \$507,165 (34% of revenue)</p> <p>Observations on Variable Costs: Direct Materials: There was a significant decrease in direct material costs from 2017 to 2018, both in absolute terms and as a percentage of revenue. It rose slightly in 2019 but remained lower than the 2017 level.</p> <p>Direct Labor: Labor costs spiked in 2018 but reverted closer to the 2017 levels in 2019. As a percentage of revenue, labor costs took a greater share in 2018 but came down in 2019.</p>

Factors Affecting Costs:

Labor: The case indicates that labor market conditions had been tight, and the company believes they could grow their labor force to produce 19,000 items per week. It's possible that the spike in labor costs in 2018 was due to this tight market and perhaps increased overtime or higher wages to attract and retain employees.

Printing Materials: If the company is using different qualities or quantities of materials for custom and contract jobs, this could affect material costs. It's also possible that efficiencies have been gained over time or that the company has switched to lower-cost suppliers.

Presence/Absence of Blanks (Custom vs. Contract): Custom jobs might require special materials or more labor-intensive work, affecting the variable costs. Contract jobs are likely more standardized and could be more cost-efficient to produce, although they were less profitable according to the case.

Percent of Custom vs. Contract: The mix between custom and contract jobs can significantly impact variable costs. Custom jobs in 2019 made up 14.6% of units sold but accounted for 37% of revenue, indicating a much higher cost but also a higher price point.

In summary, the shift in labor and material costs, combined with the ratio of custom to contract work, appears to significantly impact the variable costs for AOT both in actual numbers and as a percentage of revenue.

Question 5 - What is the gross margin for AOT across the time period of the case?			
Rating and Answer Key	<p>Poor - Conflate gross margin with operating or net margin (e.g., discussing costs which do not involve producing the goods). Conflate direct and indirect costs. Focus on changes in dollars without noting changes in percentage. By this point in the discussion, most students should begin incorporating the common-sized percentages into their discussion.</p>	<p>Acceptable - Recognize that the firm is not covering the cost of producing the product at any time over the three-year period. Note a general improvement in gross margin. May inadvertently assume that the firm is "on pace" to cover this gap.</p>	<p>Excellent - In addition to detailing most, if not all, of the points expected in an acceptable answer, excellent answers will also: Note that the reduction in the negative gross margin reflects the firm's general improvement in covering the cost of producing the goods. Clearly associate differences between productivity for direct costs and efficient coverage for indirect costs. Recognize that direct costs eat up a substantial percentage of revenue (74% in 2017 and 59% in 2019) suggesting that volume would need to increase significantly at these cost structures to cover COGS. (Excellent answers will lead to break-even discussion)</p>
GPT-3.5 Response	<p>To calculate the gross margin for AOT across the time period of the case, we can use the formula:</p> $\text{Gross Margin} = (\text{Total Revenue} - \text{Cost of Goods Sold}) / \text{Total Revenue} * 100$ <p>Using the provided information from the case, let's calculate the gross margin for each year:</p> <p>Year 2017: Total Revenue: \$1,309,017 Cost of Goods Sold: \$1,846,560 Gross Margin = $(1,309,017 - 1,846,560) / 1,309,017 * 100 = -41\%$</p> <p>Year 2018: Total Revenue: \$1,665,190 Cost of Goods Sold: \$2,104,867 Gross Margin = $(1,665,190 - 2,104,867) / 1,665,190 * 100 = -26\%$</p> <p>Year 2019: Total Revenue: \$1,480,226 Cost of Goods Sold: \$1,758,406 Gross Margin = $(1,480,226 - 1,758,406) / 1,480,226 * 100 = -19\%$</p> <p>Therefore, the gross margin for AOT across the time period of the case was -41% in 2017, -26% in 2018, and -19% in 2019. The negative values indicate that the cost of</p>		

	<p>goods sold exceeded the total revenue, resulting in negative gross margins. This suggests that AOT faced challenges in generating a positive gross profit during this time period.</p>
<p>GPT-4 Response</p>	<p>The Gross Margin for AOT across the time period of the case is presented as follows:</p> <p>Gross Profit and Margin by Year 2017: Gross Profit = -\$537,543, Gross Profit Margin = -41% 2018: Gross Profit = -\$439,676, Gross Profit Margin = -26% 2019: Gross Profit = -\$278,180, Gross Profit Margin = -19%</p> <p>Observations: Negative Gross Margin: Throughout all three years, AOT's gross margin was negative. This indicates that the company was not even able to cover its cost of goods sold (COGS) through its revenues, a serious problem that would make it very difficult to turn a profit.</p> <p>Improvement Over Time: Despite remaining negative, the gross margin has been improving each year, going from -41% in 2017 to -19% in 2019. This suggests that the company may be moving in the right direction, although it still has a long way to go to reach a positive gross margin.</p> <p>Comparison with Industry Averages: According to the RMA Statement Studies (2021), the average profit margin for similar companies is 50%. AOT's gross margin is significantly below this industry average, indicating severe inefficiencies or problems in their business model or execution.</p> <p>The gross margin serves as a basic indicator of a company's profitability and financial health, and the negative values for AOT suggest urgent action is needed to correct course.</p>

Question 6 - Describe changes in the fixed (indirect) costs across the three years detailed in the case. What factors would describe the changes in actual cost and cost as a percentage of revenue?			
<p>Rating and Answer Key</p>	<p>Poor - Not articulate differences between indirect and direct costs. Continue to consider costs in dollars without evaluating costs as percentages.</p>	<p>Acceptable - Note that indirect labor has decreased both in dollars and percentage over the three-year period.</p> <p>Note that indirect manufacturing has increased in both dollars and percentage across the three years.</p> <p>Continue to consider costs in dollars without evaluating costs as percentages.</p>	<p>Excellent - In addition to detailing most, if not all, of the points expected in an acceptable answer, excellent answers will also:</p> <p>Note that substantial changes in indirect costs (labor up and manufacturing down) suggest that these so-called, fixed costs are not very fixed. The student may not identify why, but they will note the oddity here.</p>
<p>GPT-3.5 Response</p>	<p>Based on the information provided in the case, let's analyze the changes in fixed (indirect) costs across the three years:</p> <p>Year 2017: Fixed Costs: \$1,026,000 Year 2018: Fixed Costs: \$1,026,000 Year 2019: Fixed Costs: \$1,026,000</p> <p>According to the case, the fixed costs remained constant at \$1,026,000 throughout the three-year period. This suggests that there were no significant changes in the overall indirect costs incurred by AOT during this time.</p> <p>To understand the factors that may influence the changes in actual cost and cost as a percentage of revenue, we need to consider the dynamics of the business and the company's operations. Some possible factors include:</p> <ol style="list-style-type: none"> 1. Economies of scale: As the company's revenue increases, the fixed costs may represent a smaller proportion of the total revenue, resulting in a decrease in cost as a percentage of revenue. 2. Efficiency improvements: If the company implements cost-saving measures or process improvements, it can lower its overall fixed costs and improve the cost as a percentage of revenue. 3. Inflation or cost fluctuations: Changes in the cost of inputs, such as labor or raw materials, can impact the fixed costs. If these costs increase over time, it can lead to a higher cost as a percentage of revenue. 4. Changes in business strategy: If the company introduces new initiatives or expands into different product lines or markets, it may incur additional fixed costs. This can impact the overall fixed costs and cost as a percentage of revenue. 		

	<p>It's important to note that the case does not provide specific information on the factors driving the changes in fixed costs or their percentage in revenue.</p>
<p>GPT-4 Response</p>	<p>Fixed Costs by Year 2017: Fixed Cost = \$1,083,361 2018: Fixed Cost = \$1,176,123 2019: Fixed Cost = \$1,050,058</p> <p>Observations: Increase from 2017 to 2018: Fixed costs increased from \$1,083,361 in 2017 to \$1,176,123 in 2018. This could be due to a number of factors such as the addition of new equipment, increase in rent, or perhaps new salaried employees.</p> <p>Decrease from 2018 to 2019: Fixed costs decreased in 2019 to \$1,050,058. The decline suggests that there might have been some cost-cutting measures, such as laying off staff, reducing overheads, or renegotiating facility rents.</p> <p>Cost as a Percentage of Revenue: In 2017, fixed costs were about 82.7% of total revenue ($\\$1,083,361 / \\$1,309,017$) In 2018, they were about 70.6% of total revenue ($\\$1,176,123 / \\$1,665,190$) In 2019, they were about 70.9% of total revenue ($\\$1,050,058 / \\$1,480,226$)</p> <p>Factors for Change in Costs:</p> <p>Actual Cost: Changes in actual costs could be due to multiple factors such as inflation, strategic investments, or change in scale of operations.</p> <p>Percentage of Revenue: This could be influenced by changes in the revenue itself. For example, a decrease in fixed costs as a percentage of revenue could result from increased sales, even if actual fixed costs remained constant.</p> <p>The changes in fixed costs and their percentage of total revenue can be indicative of the company's scaling operations or cost-saving measures. While the fixed costs in absolute terms have fluctuated over these years, their proportion relative to revenue has somewhat stabilized, suggesting that the company may be aligning its cost structure with its sales performance, though more needs to be done to achieve profitability.</p>

Question 7 - Describe the pricing and cost structure associated with the custom sales business. Explain the role of custom orders in the company product mix.			
Rating and Answer Key	<p>Poor - Have difficulty distinguishing the custom from contract business. This extends beyond use of terms and includes difficulty understanding pricing and quantity differences between the two lines.</p>	<p>Acceptable - Identify a higher selling price, higher cost per unit, and better margins.</p> <p>Identify lower units sold per order and a greater challenge sourcing new order.</p>	<p>Excellent -In addition to detailing most, if not all, of the points expected in an acceptable answer, excellent answers will also:</p> <p>Observe that there is likely more variation in pricing for custom orders than for contracts.</p> <p>Better answers may recognize that some custom orders are inherently more profit-driving than others (setting themselves up well for question 9)</p>
GPT-3.5 Response	<p>In the context of AOT, the custom sales business refers to the sale of customized products tailored to the specific requirements and preferences of individual customers. The pricing and cost structure associated with custom sales can be described as follows:</p> <p>Pricing:</p> <ul style="list-style-type: none"> · The average pricing for custom sales is estimated to be \$9.80 per unit, according to the target figures provided in Exhibit 14. · This higher pricing is justified by the added value and customization offered to customers, which allows AOT to command a premium compared to standardized products. · Customers are willing to pay more for custom orders due to the personalized nature of the products and the ability to meet their unique needs. <p>Cost Structure:</p> <ul style="list-style-type: none"> · The average variable cost associated with custom sales is estimated to be \$6.00 per unit, according to the target figures. · Variable costs represent expenses that directly vary with the production and sales volume, such as direct materials, direct labor, and other manufacturing overhead. · The higher variable costs in custom sales are mainly attributed to the additional labor, materials, and processes required to fulfill the specific customization requests of each customer. <p>Role of Custom Orders:</p> <ul style="list-style-type: none"> · Custom orders play a crucial role in the product mix of AOT, as they are considered the primary driver of profitability and growth. · Francisco and Cesar, the owners of AOT, believe that custom and contract sales need to carry the firm to profitability. · They aim to increase the share of custom sales volume to 30%, with the remaining 		

	<p>sales coming from contract sales and a small portion from promotional sales.</p> <ul style="list-style-type: none"> · Custom orders provide higher profit margins compared to other sales categories, such as contract sales or promotional goods, allowing AOT to generate higher revenues per unit sold. · By focusing on custom orders, AOT can leverage their ability to offer unique and personalized products, which can command higher prices and differentiate them from competitors. · The strategy is to improve per unit margins by raising prices for custom orders and reducing variable costs, ultimately leading to increased profitability for the company. <p>Overall, the custom sales business represents a key component of AOT's product mix, offering higher profitability potential through customized products that cater to the specific needs and preferences of individual customers.</p>
<p>GPT-4 Response</p>	<p>Pricing and Cost Structure for Custom Sales</p> <p>Average Pricing: The average price for custom sales is \$9.80 per unit.</p> <p>Average Variable Cost: The average variable cost for custom sales is \$6.00 per unit.</p> <p>Role of Custom Orders in the Company Product Mix:</p> <p>Higher Margins: Custom sales have a higher price point compared to contract sales, allowing for greater profitability per unit. This is especially vital for a company with AOT's financial profile, which is currently operating at a loss.</p> <p>Diversification: Custom sales offer a different product line that helps diversify the company's revenue streams. This is important for risk mitigation, especially when contract sales are often loss-making.</p> <p>Target for Growth: Francisco and Cesar see custom sales as a potential avenue for growth, aiming to increase its share to 30% of total sales volume. This is based on the understanding that custom orders allow for higher per-unit profitability.</p> <p>Brand Building and Customer Loyalty: Custom orders typically require a closer relationship with the customer, providing opportunities for brand-building and fostering long-term relationships. These are generally more difficult to achieve with contract sales, which are often more transactional and price-sensitive.</p> <p>Limited Scale So Far: Despite the advantages, custom sales haven't scaled significantly yet. They have not sold more than 107,000 custom units in a single year, indicating that the potential for this segment is still largely untapped.</p> <p>Resource Allocation: Custom orders can be more resource-intensive to produce due to their bespoke nature. This means they play a unique role in how production capacity is utilized and can be a factor in decisions around scaling labor and other resources.</p> <p>Pricing Flexibility: Francisco believes that the ability to raise prices in the custom segment is closely tied to the delivery of quality products and building strong client relationships.</p> <p>In summary, custom orders play a multifaceted role in AOT's business strategy. While</p>

they offer higher margins, their share in the total sales volume needs to grow for the company to turn profitable. Custom orders serve as a high-margin supplement to the bulk volume brought in by contract sales and are viewed as a key component of the turnaround strategy for AOT.

Question 8 - Describe the pricing and cost structure associated with the contract sales business. Explain the role of contract orders in the company product mix.

GPT-3.5 Response

In the context of AOT, the contract sales business involves providing valued-added services with simple print runs of 1 to 2 colors to large-volume clients. The pricing and cost structure associated with contract sales can be described as follows:

Pricing:

- The average pricing for contract sales is estimated to be \$2.70 per unit, according to the target figures provided in Exhibit 14.
- Contract sales typically involve larger volumes and standardized products, which allows for a more cost-efficient production process and, consequently, lower prices compared to custom sales.
- While the per-unit price for contract sales is lower than custom sales, the larger volume of contracts can compensate for the lower margins.

Cost Structure:

- The average variable cost associated with contract sales is estimated to be \$0.90 per unit, according to the target figures.
- Variable costs in contract sales primarily include direct materials, direct labor, and other manufacturing overhead.
- Due to the standardized nature of contract orders and the use of simple print runs with 1 to 2 colors, the variable costs per unit are lower compared to custom orders.
- The efficiency gained from producing standardized products in larger volumes allows for cost savings and improved profitability in contract sales.

Role of Contract Orders:

- Contract orders play an important role in the product mix of AOT, complementing the custom sales business.
- AOT pursues large-volume contract clients who require simple print runs and value-added services.
- The role of contract orders is to provide a consistent stream of revenue and volume to support the overall profitability of the company.
- While the profit margins per unit in contract sales may be lower than custom sales, the larger volumes and cost efficiencies enable AOT to generate significant revenues and maintain a stable base of operations.
- Contract orders contribute to the overall revenue diversification and help balance the product mix by providing a steady flow of sales alongside the more customized and higher-priced custom orders.
- The strategy of AOT involves leveraging the contract sales business to achieve profitability by improving per unit margins through pricing adjustments and cost controls.

In summary, contract sales in AOT's product mix involve providing standardized products and value-added services to large-volume clients. The pricing is relatively lower compared to custom sales, but the cost structure benefits from cost

	<p>efficiencies gained through larger production volumes. Contract orders serve as a consistent revenue stream, supporting the overall profitability of the company and balancing the product mix alongside the custom sales business.</p>
<p>GPT-4 Response</p>	<p>Pricing and Cost Structure for Contract Sales Average Pricing: The average price for contract sales is \$2.70 per unit. Average Variable Cost: The average variable cost for contract sales is \$0.90 per unit.</p> <p>Role of Contract Orders in the Company Product Mix: Volume Driver: Contract sales account for the majority of AOT's sales volume. According to the case, they constituted 43% to 71% of total sales over 2017-2019. This is significant for covering fixed costs, even if the per-unit profitability is low.</p> <p>Lower Margins: These sales generally have lower profit margins compared to custom sales. According to Francisco, AOT lost money on 90% of their contract clients, breaking even only on those who utilized value-added services.</p> <p>Cash Flow: Despite the lower margins, contract sales contribute to cash flow, which is essential for any business, especially one that has been operating at a loss.</p> <p>Utilization of Capacity: Contract sales help in utilizing plant capacity, which is important when the company has high fixed costs. To break even, however, a high percentage of plant capacity needs to be utilized (82% and 90% for 2017 and 2018, respectively).</p> <p>Simpler Orders: The strategy is to target contract clients who require simple print runs of 1 to 2 colors. This simplicity may allow for easier production scaling and potential cost reductions.</p> <p>Pricing Challenges: Since contract clients are often more price-sensitive, raising prices in this segment may be more difficult. Yet, Francisco believes that value-added services could be a way to improve profitability here.</p> <p>Leverage for Supplier Negotiation: The volume from contract sales can provide some leverage when negotiating prices with suppliers, even if the margins are slim.</p> <p>Balancing Custom Sales: Given that AOT is targeting a 30%/70% split between custom and contract sales, contract sales will continue to play a significant role in balancing the product mix and ensuring that the firm has enough volume to cover fixed costs.</p> <p>New Client Acquisition: Contract sales often serve as a 'foot in the door' with clients who may later be interested in more profitable custom options, providing an upselling opportunity.</p> <p>In summary, while contract sales have lower margins, they play a critical role in AOT's overall business model by driving volume, aiding in cash flow, and providing a balance to the more profitable but currently smaller custom sales segment. The challenge is to make this segment profitable or at least break-even to ensure long-term sustainability.</p>

Question 9 - Given AOT's confidence in hitting 30%/70% custom/contract units split and their projected price and cost per unit, what would be their resulting weighted average price per unit, cost per unit, and contribution margin per unit (see Exhibit 14 of case)?

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There is not a rubric for this question. The instructor's manual provides the correct answers for each calculation.

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	Custom (30% weight)	Contract (70% weight)	Weighted Average
Price per unit	$(\$9.80 \cdot .3) = \2.94	$(\$2.7 \cdot .7) = \1.89	\$4.83
Variable cost per unit	$(\$6.00 \cdot .3) = \1.80	$(0.9 \cdot .7) = \$0.63$	\$2.43
Contribution margin per unit	\$1.14	\$1.26	\$2.40

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To calculate the weighted average price per unit, cost per unit, and contribution margin per unit based on AOT's projected 30%/70% custom/contract volume split and the provided target figures from Exhibit 14, we can use the following formula:

$$\text{Weighted Average Price per Unit} = (\text{Custom Sales Volume} \cdot \text{Custom Average Pricing}) + (\text{Contract Sales Volume} \cdot \text{Contract Average Pricing})$$

$$\text{Weighted Average Cost per Unit} = (\text{Custom Sales Volume} \cdot \text{Custom Average Variable Cost}) + (\text{Contract Sales Volume} \cdot \text{Contract Average Variable Cost})$$

$$\text{Contribution Margin per Unit} = \text{Weighted Average Price per Unit} - \text{Weighted Average Cost per Unit}$$

Let's perform the calculations:

Custom Sales Volume = 0.30 (30% of total sales volume) Contract Sales Volume = 0.70 (70% of total sales volume) Custom Average Pricing = \$9.80 Contract Average Pricing = \$2.70 Custom Average Variable Cost = \$6.00 Contract Average Variable Cost = \$0.90

$$\text{Weighted Average Price per Unit} = (0.30 \cdot \$9.80) + (0.70 \cdot \$2.70) = \$5.21 + \$1.89 = \$7.10$$

$$\text{Weighted Average Cost per Unit} = (0.30 \cdot \$6.00) + (0.70 \cdot \$0.90) = \$1.80 + \$0.63 = \$2.43$$

$$\text{Contribution Margin per Unit} = \text{Weighted Average Price per Unit} - \text{Weighted Average Cost per Unit} = \$7.10 - \$2.43 = \$4.67$$

Therefore, based on AOT's projected 30%/70% custom/contract volume split and the provided target figures, the resulting weighted average price per unit would be \$7.10, the weighted average cost per unit would be \$2.43, and the contribution margin per unit would be \$4.67.

G P T - 4 R e s p o n s e	Calculation Steps
	Weighted Average Price Per Unit
	$(0.3 \times \$9.80) + (0.7 \times \$2.70)$ $(2.94) + (1.89) = \$4.83$
	Weighted Average Cost Per Unit
	$(0.3 \times \$6.00) + (0.7 \times \$0.90)$ $(1.80) + (0.63) = \$2.43$
	Weighted Average Contribution Margin Per Unit
	Weighted Average Price Per Unit – Weighted Average Cost Per Unit
	$\$4.83 - \$2.43 = \$2.40$
	Results
	Weighted Average Price Per Unit: \$4.83 Weighted Average Cost Per Unit: \$2.43 Weighted Average Contribution Margin Per Unit: \$2.40 These figures provide an estimate of the average pricing, cost, and contribution margin per unit that AOT would experience if they successfully achieve their target of a 30%/70% custom/contract units split. This information would be crucial for Francisco and the AOT team as they assess the financial viability of their new strategy.

Question 10 - Presuming \$1,026,000 in annual fixed costs and the weighted average contribution margin per unit (from question 10 above), what would AOT’s breakeven be if they achieved these goals?	
Rating	There is not a rubric for this question. The instructor’s manual provides the correct calculations for each item.
Answer Key	$\text{Breakeven}_{\text{Units}} = (\text{Fixed Costs}) / (\text{Contribution Margin})$ $\text{Breakeven}_{\text{Units}} = \$1,026,000 / \$2.40 = 427,500$ <p>Breakeven contract sales volume = $427,500 \times .7 = 299,250$ units Breakeven custom sales volume = $427,500 \times .3 = 128,250$ units</p>
GPT-3.5 Response	<p>To calculate AOT's breakeven point based on the given annual fixed costs of \$1,026,000 and the weighted average contribution margin per unit of \$4.67, we can use the following formula:</p> $\text{Breakeven Point (in units)} = \text{Fixed Costs} / \text{Contribution Margin per Unit}$ <p>Let's perform the calculation:</p> $\text{Breakeven Point (in units)} = \$1,026,000 / \$4.67 \approx 219,863 \text{ units}$ <p>Therefore, if AOT achieves their goals and maintains the projected weighted average</p>

	<p>contribution margin per unit, they would need to sell approximately 219,863 units to reach the breakeven point and cover their fixed costs.</p>
GPT-4 Response	<p>To calculate the breakeven quantity, you can use the formula:</p> <p>Breakeven Quantity=Fixed Costs ÷ Contribution Margin Per Unit</p> <p>Given:</p> <p>Fixed Costs = \$1,026,000 Weighted Average Contribution Margin Per Unit = \$2.40 (from question 9) Breakeven Quantity = 1,026,000 ÷ 2.4</p> <p>Breakeven Quantity = 427,500 units</p> <p>This means that AOT would need to sell 427,500 units annually to cover both their variable and fixed costs if they were to achieve the goals set forth in their strategy. This is under the presumption that they reach their weighted average contribution margin per unit of \$2.40 and have annual fixed costs of \$1,026,000.</p>

<p>Question 11 - Given your breakeven calculation (question 10), does AOT have the production and selling resources and capabilities to reach this target? Are any resources and capabilities lacking?</p>			
Rating and Answer Key	<p>Poor - Conflate production (making the good) with selling the good.</p> <p>Become sidetracked with a discussion of the custom and contract lines of business.</p> <p>Also, exhibit confusion on the custom and contract lines of the business.</p>	<p>Acceptable - Observe that AOT has produced this volume for each year of 2017 through 2019.</p> <p>They also sold nearly double this amount in 2018.</p> <p>Note that the sales force has not approached the custom volume necessary to realize this plan.</p>	<p>Excellent - In addition to detailing most, if not all, of the points expected in an acceptable answer, excellent answers will also:</p> <p>Observe that this is well within the current labor and machinery capacity.</p> <p>Recognize that the current two-person sales force may not be able to reach the volume necessary in a relevant timeframe.</p> <p>AOT may need to either expand their salesforce or extend their window for profitability (which may itself be unsustainable).</p>
GPT-3.5 Response	<p>Based on the information provided in the case, AOT's current production capacity is approximately 13,000 units per week, or around 675,000 units per year. However,</p>		

	<p>they believe they can increase their production capacity to 19,000 units per week, or approximately one million units per year, through a combination of hiring, overtime, and productivity gains.</p> <p>To reach the breakeven point of approximately 219,863 units, AOT's current production capacity appears to be sufficient. They have mentioned that they would not increase labor without an increase in custom sales, and their two salespeople have been successful in adding new custom clients and developing sales from existing clients.</p> <p>However, it's important to note that the case does not provide information on the current sales volume or the growth rate of custom sales. It is crucial for AOT to generate enough custom sales to support the increased production capacity and reach the breakeven point. If the growth in custom sales is not achieved as planned, it may pose a challenge for AOT to utilize their full production capacity and reach the breakeven point.</p> <p>Additionally, the case does not provide information about the company's marketing and sales capabilities, including their ability to attract new customers, build strong relationships, and effectively promote their products. These factors are important for driving sales and reaching the targeted custom sales volume.</p> <p>In summary, while AOT has the potential production capacity to reach the breakeven point, the actual achievement of this target depends on their ability to generate sufficient custom sales volume and effectively utilize their resources and capabilities in production, marketing, and sales.</p>
<p>GPT-4 Response</p>	<p>Based on the case information, AOT has a machine capacity of 43,000 items per week, which translates to about 2,236,000 items per year (assuming 52 weeks of operation). This is well above the breakeven quantity of 427,500 units, indicating that AOT has sufficient machine capacity to meet this target.</p> <p>As for labor, AOT's current labor force can produce about 13,000 units per week, which is approximately 676,000 units per year. The company believes they could grow their labor force to produce 19,000 items per week, or about 988,000 items per year. Again, this is above the breakeven quantity.</p> <p>However, a few challenges and potential limitations must be considered:</p> <p>Sales Volume: To date, they have not sold more than 107,000 custom units in a single year. They would need to significantly ramp up their sales efforts to reach the breakeven point. They have two salespeople, but it's not clear if this is sufficient to meet the increased sales targets.</p> <p>Labor Market Conditions: While they believe they can grow their labor force, labor market conditions are tight. Hiring more skilled workers or increasing hours might be challenging and could increase labor costs.</p> <p>Raw Material Supply: Francisco mentioned having multiple strategic suppliers to mitigate risks. However, a surge in production might strain these relationships and could potentially lead to supply chain issues.</p>

	<p>Quality and Timeliness: Increasing production should not come at the expense of product quality or delivery times, as these are key value propositions for their clients.</p> <p>Cash Flow: The case doesn't provide information on AOT's cash reserves, but given their negative net income in previous years, it's uncertain whether they have the cash flow to support an aggressive growth strategy.</p> <p>In summary, while AOT seems to have most of the necessary production capabilities to reach the breakeven target, they may face challenges in sales capacity, labor force scalability, supply chain management, and financial stability.</p>
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Question 12 - Presuming that AOT can produce and sell 675,000 units using the price and variable cost information from question 9, assuming they already have the appropriate resources to operate at this level, and assuming this production volume carries fixed costs of \$1,026,000 with operating and interest expense accounting for \$240,000 of total fixed costs, produce a pro-forma income statement for revenue through pre-tax income.

Rating	There is not a rubric for this item. The instructor's manual provides a properly calculated pro-forma income statement.
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Answer Key	<table border="1" style="width: 100%;"> <thead> <tr> <th></th> <th></th> <th>How was this derived</th> </tr> </thead> <tbody> <tr> <td>Revenue</td> <td>\$3,260,250</td> <td>4.83 * 675,000</td> </tr> <tr> <td>Variable COGS</td> <td>\$1,640,250</td> <td>VC per unit \$2.43 * 675,000</td> </tr> <tr> <td>Fixed COGS</td> <td>\$768,000</td> <td>(1,026,000 - 240,000)</td> </tr> <tr> <td>Gross Profit</td> <td>\$852,000</td> <td></td> </tr> <tr> <td>Operating and Interest Expenses</td> <td>\$240,000</td> <td></td> </tr> <tr> <td>Pre-tax Income</td> <td>\$612,000</td> <td></td> </tr> </tbody> </table>			How was this derived	Revenue	\$3,260,250	4.83 * 675,000	Variable COGS	\$1,640,250	VC per unit \$2.43 * 675,000	Fixed COGS	\$768,000	(1,026,000 - 240,000)	Gross Profit	\$852,000		Operating and Interest Expenses	\$240,000		Pre-tax Income	\$612,000	
		How was this derived																				
Revenue	\$3,260,250	4.83 * 675,000																				
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Gross Profit	\$852,000																					
Operating and Interest Expenses	\$240,000																					
Pre-tax Income	\$612,000																					

GPT-3.5 Response	<p>Based on the given assumptions and the information provided, here is a pro-forma income statement for AOT with a production and sales volume of 675,000 units:</p> <p>Pro-Forma Income Statement: Revenue: Custom Sales: 675,000 units * \$9.80/unit = \$6,607,500 Contract Sales: 675,000 units * \$2.70/unit = \$1,822,500 Total Revenue: \$6,607,500 + \$1,822,500 = \$8,430,000</p> <p>Cost of Goods Sold (COGS): Custom Sales: 675,000 units * \$6.00/unit = \$4,050,000 Contract Sales: 675,000 units * \$0.90/unit = \$607,500 Total COGS: \$4,050,000 + \$607,500 = \$4,657,500</p> <p>Gross Profit: Total Revenue - Total COGS \$8,430,000 - \$4,657,500 = \$3,772,500</p> <p>Operating Expenses: Fixed Costs: \$1,026,000 Operating and Interest Expenses: \$240,000 Total Operating Expenses: \$1,026,000 + \$240,000 = \$1,266,000</p> <p>Operating Income (EBIT): Gross Profit - Total Operating Expenses \$3,772,500 - \$1,266,000 = \$2,506,500</p> <p>Interest Expense: \$16,743 Other Expenses: \$17,341 Total Expenses: \$16,743 + \$17,341 = \$34,084</p>
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	<p>Earnings Before Taxes (EBT): Operating Income - Total Expenses \$2,506,500 - \$34,084 = \$2,472,416</p> <p>Taxes: Assuming a tax rate of 0% (based on the case information) Tax Expense: \$0</p> <p>Net Income: Earnings Before Taxes - Tax Expense \$2,472,416 - \$0 = \$2,472,416</p> <p>Please note that this pro-forma income statement is based on the given assumptions and may not reflect the actual financial performance of AOT. It provides an estimate of the revenue, costs, and profitability at the specified production and sales volume.</p>		
<p>GPT-4 Response</p>	<p>To create a pro-forma income statement, we first need to calculate the weighted average price per unit and the weighted average variable cost per unit based on the 30%/70% custom/contract units split. Then we will multiply these by the production volume of 675,000 units to find total revenue and total variable costs. Finally, we'll subtract total variable costs and fixed costs from total revenue to arrive at operating income and pre-tax income.</p> <p>Weighted Average Price Per Unit = (0.3 * \$9.80) + (0.7 * \$2.70) = \$2.94 + \$1.89 = \$4.83</p> <p>Weighted Average Variable Cost Per Unit = (0.3 * \$6.00) + (0.7 * \$0.90) = \$1.80 + \$0.63 = \$2.43</p> <p>Total Revenue = 675,000 units * \$4.83 per unit = \$3,260,250</p> <p>Total Variable Costs = 675,000 units * \$2.43 per unit = \$1,640,250</p> <p>Gross Margin = \$3,260,250 (Total Revenue) - \$1,640,250 (Total Variable Costs) = \$1,620,000</p> <p>Operating Income (EBIT) = \$1,620,000 (Gross Margin) - \$1,026,000 (Fixed Costs) = \$594,000</p> <p>Earnings Before Taxes (Pre-Tax Income) = \$594,000 (Operating Income) - \$240,000 (Operating and Interest Expense) = \$354,000</p> <p>Pro-Forma Income Statement (Revenue through Pre-Tax Income)</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 80%;">Item</td> <td style="width: 20%; text-align: right;">Amount</td> </tr> </table>	Item	Amount
Item	Amount		

Total Revenue	\$3,260,250
Total Variable Costs	(\$1,640,250)
Gross Margin	\$1,620,000
Fixed Costs	(\$1,026,000)
Operating Income (EBIT)	\$594,000
Operating and Interest Expense	(\$240,000)
Earnings Before Taxes	\$354,000

This pro-forma income statement indicates that, assuming AOT can produce and sell 675,000 units with the given pricing and cost structure, they would have a pre-tax income of \$354,000.

Question 13 - The firm faces a choice between (a) growing towards full capacity with 30% of custom units sold or (b) exiting the industry. Which do you support and what evidence leads you to that?

<p>Rating and Answer Key</p>	<p>Poor - Build decisions from feelings and not from the Session 2 activities.</p>	<p>Acceptable - Build a case for (or against) where the evidence considered includes:</p> <ul style="list-style-type: none"> •Production Capabilities •Selling Capabilities •Potential for profitability at (current) full production 	<p>Excellent - In addition to detailing most, if not all, of the points expected in an acceptable answer, excellent answers will also:</p> <p>Offer evidence for and against and consider the anticipated net benefit.</p> <p>Stronger answers inherently recognize that there are challenges to the assumptions of the 30%/70% plan.</p> <p>Observe that time (not a factor offered in the question) to scale up sales should affect this decision.</p> <p>Synthesize the assumptions about costs in question 3 with those about resource availability in question 5. This should lead to concerns about the quality of the pro-forma in question 6. Stated differently, the pro-forma in question 6 can</p>
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		<p>be no better than the assumptions leading into it. If those assumptions are inaccurate (as evaluated in questions 9-11) the pro-forma produced in question 12 is a mathematical expression of an unrealistic future.</p> <p>Ultimately, the decision advanced for question 13 will reflect the student's confidence (or lack thereof) in these assumptions.</p>
<p>GPT-3.5 Response</p>	<p>As an AI language model, I don't have access to real-time data or the ability to provide subjective opinions. The decision to grow towards full capacity with 30% custom sales or exit the industry depends on various factors and requires a comprehensive analysis of AOT's current situation, market conditions, and future prospects.</p> <p>To make an informed decision, the management of AOT should consider the following factors:</p> <ol style="list-style-type: none"> 1. Market Potential: Assess the growth potential and competitiveness of the custom sales market. Evaluate market trends, customer demand, and the company's ability to capture a larger market share. 2. Profitability Analysis: Determine the financial viability and profitability of achieving the target 30% custom sales volume. Consider the breakeven analysis, contribution margin, and potential for generating sustainable profits. 3. Competitive Advantage: Evaluate AOT's unique capabilities, strengths, and competitive advantages in the industry. Assess whether the company can effectively differentiate itself and maintain a competitive position in the market. 4. Resource Availability: Consider the availability and scalability of production and selling resources required to reach the desired sales volume. Assess whether AOT has the necessary infrastructure, workforce, and operational capabilities to handle increased production and sales. 5. Risk Assessment: Evaluate the risks associated with both options. Consider the potential costs, uncertainties, and challenges involved in scaling up the business versus the potential risks and costs of exiting the industry. 6. Strategic Fit: Analyze the alignment of the growth strategy with AOT's long-term goals, vision, and core competencies. Consider whether the growth plan aligns with the company's capabilities and supports its overall strategic direction. 	

	<p>By conducting a thorough analysis of these factors and potentially seeking expert advice or consulting industry professionals, AOT's management can make an informed decision on whether to pursue growth towards full capacity with 30% custom sales or exit the industry.</p>
<p>GPT-4 Response</p>	<p>Choosing between growing towards full capacity with 30% custom units sold or exiting the industry is a critical decision for AOT that should be made based on a holistic view of various aspects of the business. Here are some points to consider:</p> <p>Advantages of Growing Towards Full Capacity:</p> <p>Positive Gross Margins: According to the pro-forma income statement, the company would have a substantial gross margin, which could eventually translate into profitability.</p> <p>Economies of Scale: Reaching higher production levels might reduce per-unit costs, further improving margins.</p> <p>Client Relationship & Quality: Francisco's strategy emphasizes building strong client relationships and delivering quality, which are sustainable competitive advantages.</p> <p>Flexible Sourcing: Multiple suppliers for the same type of raw materials can add a level of safety and price negotiating power.</p> <p>Market Demand: If there is sufficient market demand for the custom and contract sales, this suggests growth is a feasible option.</p> <p>Risks Involved:</p> <p>Capital Expenditure: Reaching full capacity might require further investments in machinery and labor.</p> <p>Market Risk: A sudden change in market demand or increased competition can affect profitability.</p> <p>Operational Risk: Increasing production also means the company needs to maintain the same level of quality to ensure customer satisfaction.</p> <p>Labor Market Conditions: While the company believes they can find more labor, this has yet to be tested.</p> <p>Advantages of Exiting:</p> <p>Mitigate Loss: The company has been operating at a loss; exiting the industry would stop further financial bleeding.</p> <p>Resource Allocation: Resources could potentially be allocated to more profitable ventures or investments.</p> <p>Evidence for Decision:</p> <p>Financial Projections: The pro-forma income statement suggests that the company could turn profitable if it grows according to plan.</p>

	<p>Capacity: The company has significant unused capacity that could be used to generate additional revenue.</p> <p>Strategic Positioning: AOT seems to have good strategies in place for client relationship management, pricing, and supply chain management.</p> <p>In summary, growing towards full capacity could be a feasible and profitable decision if AOT successfully implements its strategies. The pro-forma income statement is promising, and the company appears to have thought through many of the important strategic and operational aspects. Exiting should be a fallback option if, after a reasonable period, the growth strategy doesn't yield expected results or if there are significant changes in market or operational conditions.</p>
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Question 14 - What else could AOT do to improve their profitability?	
Rating	This question does not include a grading rubric. Rather, the instructor's manual provides examples of alternatives considered by the company.
Answer Key	<p>AOT evaluated several alternative strategies before focusing on the 30%/70% plan. For benefit of the class discussion, we enumerate several of those below. If a class identifies one of AOT’s alternatives, the instructor can share information about that alternative. Should the class discussion not manifest (e.g., no ideas are generated), the instructor could use one of AOT’s alternatives as a stimulant for the discussion.</p> <ul style="list-style-type: none"> - 3PL did not work (details are in case) - They rejected on-demand printing on the consumer side because it required a significant investment in specialized equipment. They commissioned a marketing study, examining both B2B and consumer markets. The study concluded that there was demand from both sectors. The on-demand market requires digital printing and AOT lacked this machinery. Additionally, an on-demand model would require greatly increasing on-hand inventory. An on-demand print shop must carry blanks of all likely sizes and colors. - Partnerships with sport apparel companies required a significant capital outlay to obtain necessary equipment. While AOT had the capacity to manage large screen-printing contracts, the truly enormous vendors generate more volume than AOT’s machinery could produce. AOT worked with a sports apparel company for one-off deals, such as a 2021 world series print for the Atlanta Braves. AOT would need to purchase more equipment to meet digital printing commitments expected under the partnership agreements. AOT considered going through the audit process with a sports apparel company, but in the end decided against it due to the size of the investment that would need to be made. - Sub-leasing the warehouse was considered. Pursuing this would require remodeling the warehouse space to meet the needs of potential clients. - Simple contracts – AOT sought to improve the profitability of the contract business through simpler contracts. Simple contracts result in work orders with less variance and use fewer colors, leading to lower variable costs. One simple contract customer was signed, but the ability to increase the number of simple contracts was obstructed by the pandemic which significantly reduced large-order placements. Francisco intended to develop simple contract clients himself, this was not a task for the sales force. It turns out that simple contracts sometimes become complicated. The simple contract customer identified wound up being more complicated than AOT assumed, requesting many changes and adjustments to orders that went well outside of the negotiated contract.
GPT-3.5 Response	<p>To improve profitability, AOT could consider implementing the following strategies:</p> <p>1. Diversify Product Offering: AOT could explore diversifying its product offering beyond promotional goods and custom sales. By expanding into other product categories or offering value-added services, the company can tap into new revenue streams and potentially reach a wider customer base.</p>

	<p>2. Enhance Marketing and Sales Efforts: AOT should focus on strengthening its marketing and sales efforts to increase brand awareness, attract new customers, and retain existing clients. This could involve targeted advertising campaigns, attending industry trade shows and events, leveraging digital marketing channels, and building strong relationships with clients.</p> <p>3. Improve Operational Efficiency: AOT should continuously strive to enhance its operational efficiency to reduce costs and improve productivity. This can involve streamlining production processes, optimizing inventory management, implementing lean manufacturing principles, and investing in technology and automation where applicable.</p> <p>4. Develop Strategic Supplier Relationships: AOT should continue to foster strong relationships with its suppliers to negotiate favorable pricing terms and ensure a stable supply of raw materials. By cultivating strategic partnerships, the company may be able to secure better deals, minimize disruptions in the supply chain, and gain a competitive edge.</p> <p>5. Focus on Customer Satisfaction and Retention: AOT should prioritize delivering high-quality products and exceptional customer service. By consistently meeting or exceeding customer expectations, the company can enhance customer satisfaction, build long-term relationships, and potentially benefit from positive word-of-mouth referrals.</p> <p>6. Implement Cost Control Measures: AOT should closely monitor and control its costs across all aspects of the business. This includes managing direct costs such as materials and labor, as well as indirect costs such as overhead expenses. Regular cost analysis and cost-cutting initiatives can help improve profit margins.</p> <p>7. Explore New Markets and Expansion Opportunities: AOT could explore entering new geographic markets or expanding its operations to reach a larger customer base. This could involve targeting new industries, forming partnerships with complementary businesses, or leveraging e-commerce platforms to expand its reach.</p> <p>8. Continuous Improvement and Innovation: AOT should foster a culture of continuous improvement and innovation within the organization. Encouraging employees to generate ideas, implement process improvements, and explore new technologies can drive efficiency, differentiation, and ultimately improve profitability.</p> <p>It's important for AOT to carefully assess the feasibility and potential impact of each strategy based on market conditions, available resources, and the competitive landscape. A combination of these approaches, tailored to AOT's specific circumstances, can help enhance profitability and ensure long-term sustainability.</p>
<p>GPT-4 Response</p>	<p>Improving profitability involves multiple approaches, from increasing revenue to reducing costs and improving operational efficiencies. Given AOT's situation, here are some strategies they could consider:</p> <p>Increase Revenue:</p> <p>Product Differentiation: Introduce new, value-added services or products that can command</p>

higher margins.

Cross-Selling and Upselling: Utilize existing customer relationships to sell more products or services.

Volume Discounts: Offer discounts to customers who place large orders, which can increase the total volume of sales.

Market Expansion: Extend market reach by geographic expansion or targeting new customer segments.

Seasonal Promotions: Introduce time-limited offers or seasonal promotions to boost sales during off-peak periods.

Reduce Costs:

Supply Chain Optimization: Continue to negotiate better terms with suppliers and consider long-term contracts for essential raw materials to lock in prices.

Automate Processes: Invest in technology to reduce manual tasks, thereby lowering labor costs over time.

Energy Efficiency: Retrofit facilities and equipment to lower energy costs.

Outsourcing: Consider outsourcing non-core activities like HR, payroll, or IT services to cut costs.

Waste Reduction: Implement lean manufacturing techniques to minimize waste in production.

Improve Operational Efficiency:

Just-In-Time Inventory: Implement just-in-time inventory management to reduce holding costs and improve cash flow.

Quality Control: A reduction in defects or returns can improve profitability and customer satisfaction.

Employee Training: Better-trained employees can perform tasks more efficiently and effectively, leading to lower costs and higher customer satisfaction.

Financial Management:

Debt Refinancing: If possible, refinance high-interest debts to lower monthly payments and interest expenses.

Tax Planning: Take advantage of any available tax incentives or deductions to reduce the tax burden.

Working Capital Management: Optimize the use of working capital by maintaining optimal levels of inventory and receivables.

R&D Tax Credits: If applicable, make use of R&D tax credits to offset some of the costs of innovation.

Pricing Strategy:

Dynamic Pricing: Use data analytics to dynamically adjust pricing based on various factors such as demand, time of day, and customer type.

Bundle Pricing: Offer packages of products or services at a discounted rate to increase the perceived value and encourage more sales.

Customer Loyalty Programs: Introduce a loyalty program to encourage repeat purchases, which generally cost less to generate than new sales. Implementing a mix of these strategies could help AOT turn the corner towards profitability. As always, each option should be carefully analyzed for feasibility, cost, and potential return on investment.

Appendix C – Bitcoin in El Salvador – Digital Finance Innovation or President Bukele’s Gamble ChatGPT Responses and Rating Rubric

Question 1 - What were some of the changes to political risk in El Salvador after President Bukele was elected?			
Rating	Poor - Response does not address the points made in the acceptable and outstanding responses.	Acceptable - Identify changes in the murder rate and gang violence.	Outstanding – Identify changes in gang violence but also note corruption challenges and authoritarian threats.
Answer Key	<p>Two of the main country risks in El Salvador in the years before Bukele was elected as president were corruption and deadly gang violence. Gang violence led to a high homicide rate in the country. While the homicide rate decreased sharply after President Bukele confronted gangs, it appeared it was partly through government’s negotiations with the MS-13 gang. As far as corruption is concerned, Transparency International rated El Salvador with a transparency score of 34 out of 100 in 2021. Based on the continuing appointments of judges and other officials close to the President, as well as shielding those officials from corruption charges, it did not appear that he reduced corruption despite describing himself as a corruption reformer.</p> <p>El Salvador had history with military dictatorships over the last century, and while President Bukele had a record high approval rating, his ruling style would be considered largely authoritarian. He even referred to himself on Twitter as the coolest dictator. Bukele’s crack on gang violence led to draconian measures such as mass sentencing with no proper criminal investigations, arrested for illegal gathering, thousands jailed, assault on free speech and journalists.</p>		
GPT 3.5 Response	<p>After President Bukele was elected in El Salvador, there were several notable changes to political risk in the country. Here are some of them:</p> <p>Strong Executive Power: President Bukele consolidated power by winning a majority in the Legislative Assembly, which allowed him to enact policies more easily. This concentration of power raised concerns about checks and balances and the potential for authoritarian tendencies.</p> <p>Anti-Corruption Measures: Bukele's administration vowed to tackle corruption, which was a major concern in El Salvador. He established the International Commission Against Impunity in El Salvador (CICIES) to investigate corruption cases and promote transparency. These measures were seen as positive steps to address governance issues but also raised political tensions.</p> <p>Polarization and Political Divisions: Bukele's style of governance and confrontational approach to political opposition led to increased polarization in the country. Critics expressed concerns about democratic norms, the independence of institutions, and the concentration of power in the executive branch.</p>		

	<p>Relations with the United States: President Bukele initially enjoyed a positive relationship with the United States, particularly with the Trump administration. However, his policies and actions have at times strained relations with the Biden administration, particularly regarding concerns about democratic governance, human rights, and the independence of institutions.</p> <p>Bitcoin Adoption: One of the most significant changes was President Bukele's decision to adopt bitcoin as legal tender in El Salvador. This move brought both domestic and international attention to the country and introduced new risks and uncertainties related to the implementation and acceptance of cryptocurrency.</p> <p>Overall, while President Bukele's administration introduced some measures to address corruption and improve governance, there were also concerns raised about democratic norms, political polarization, and the concentration of power. The adoption of bitcoin added an additional layer of political risk and brought both opportunities and challenges for the country.</p>
<p>GPT 4 Response</p>	<p>The election of Nayib Bukele as President of El Salvador marked a significant shift in the country's political landscape. His election came with several implications for political risk in the country:</p> <p>Increased Political Centralization: Concentration of Power: Bukele's popularity allowed him to consolidate significant power, including within the Legislative Assembly. The executive's influence over other branches of government has increased, raising concerns about checks and balances.</p> <p>May 2021 Assembly Actions: One of Bukele's most controversial moves was the ousting of the Attorney General and the judges of the Constitutional Chamber of the Supreme Court. This move was heavily criticized as undermining the rule of law and democratic institutions.</p> <p>Policy Uncertainty: Unpredictable Policy Changes: Bukele has shown a willingness to implement bold and unexpected policies, like adopting Bitcoin as legal tender. While this can lead to rapid reforms, it also increases policy uncertainty.</p> <p>Focus on Populism: His approach to governance has included elements of populism, which can create an unpredictable policy environment, affecting both local and foreign investments.</p> <p>Relations with International Bodies: IMF Relations: Bukele's policies, especially regarding Bitcoin, have been criticized by international organizations like the IMF, which could affect foreign aid and investment.</p> <p>U.S. Relations: Tensions have arisen between El Salvador and the United States, particularly concerning governance and human rights issues. A strained relationship with the U.S. can lead to increased political risk, especially given that the U.S. is a significant source of remittances and aid for El Salvador.</p>

	<p>Economic Risks: Credit Rating Downgrade: Policy decisions like the adoption of Bitcoin have had direct consequences on the country's credit rating, which was downgraded by agencies like Fitch, Moody's, and S&P Global.</p> <p>Debt Levels: Initiatives like Bitcoin City are planned to be funded by Bitcoin bonds, adding another layer of risk related to the country's already complex debt profile.</p> <p>Social Changes: Public Sentiment: While Bukele enjoys high approval ratings, the controversial nature of some of his policies like the adoption of Bitcoin has led to social divisions and protests, potentially destabilizing the political environment further.</p> <p>Law and Order: Though the Bukele administration has been credited with reducing crime rates, any reversion could quickly change public opinion and lead to increased political risk.</p> <p>Media and Freedom of Speech: Press Relations: Bukele has had a contentious relationship with the media, leading to concerns about freedom of speech and an informed electorate, key components of a stable political environment.</p> <p>These changes have collectively contributed to an increased level of political risk in El Salvador under Bukele's presidency. While some of his actions have won him popular support, they've also raised concerns about the rule of law, institutional integrity, and economic stability.</p>
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Question 2 - What were the reasons why the government of El Salvador decided to adopt Bitcoin as a legal tender? Compare and contrast Bitcoin's adoption and dollarization in El Salvador.			
Rating	Poor - Response does not address the points made in the acceptable and outstanding responses.	Acceptable - Identify at least one reason for adoption of the dollar and later for the adoption of Bitcoin mentioned in the case.	Outstanding - Identify at least three reasons for adoption of the dollar and later for the adoption of Bitcoin mentioned in the case and compare the reasons.
Answer Key	<p>There were similarities in the reasons why the U.S. Dollar was adopted as legal tender and why Bitcoin was adopted as a legal tender in El Salvador. The main reasons cited for dollarization were to attract more foreign investment, particularly from the US, lower interest rates (and no currency risk premium) and higher economic growth. The reasons promoted by Bukele's government for the adoption of Bitcoin as a legal tender included (again) trying to achieve higher level of foreign direct investment and economic growth, but also to increase the level of banking participation by giving access to financial services of an exceptionally large number of the Salvadoran population who were not participating before. The idea was to promote the digital cryptocurrency wallet and have a monetary incentive for its use, and in this way</p>		

	<p>incentives the unbanked to use digital finance innovations for the purposes of personal banking, transfers, and payments to businesses. Since a large part of El Salvador’s GDP was from remittances, it could potentially lower transaction costs of the remittances. It could also reduce the reliance on the U.S. Dollar. However, it does not appear that the adoption of Bitcoin as legal tender and the rollout of the Chivo wallet have been successful in convincing the majority of citizen of El Salvador to use Bitcoin or the wallet.</p> <p>The simultaneous use of the U.S. Dollar and Bitcoin as legal tender could pose different types of risks for El Salvador, such as risks to the financial system because of Bitcoin’s possible instability, technological challenges for the citizens using the digital wallets, and security risks (digital theft, money laundering, terrorism financing).</p>
<p>GPT 3.5 Response</p>	<p>The decision to adopt Bitcoin as a legal tender in El Salvador was influenced by several factors. Here are some of the reasons behind the government's decision:</p> <p>Financial Inclusion: A significant portion of the Salvadoran population lacks access to traditional banking services. By adopting Bitcoin, the government aimed to promote financial inclusion and provide a means for the unbanked population to participate in the global economy.</p> <p>Remittances: El Salvador heavily relies on remittances, with a large number of Salvadorans living abroad and sending money back home. Bitcoin's decentralized nature and potential for lower transaction costs could facilitate faster and cheaper cross-border remittances, benefiting both senders and recipients.</p> <p>Economic Development: The government saw the adoption of Bitcoin as a way to attract investment and stimulate economic growth. By positioning El Salvador as a cryptocurrency-friendly nation, they hoped to attract businesses and entrepreneurs from the crypto industry, creating job opportunities and fostering innovation.</p> <p>Independence from the U.S. Dollar: El Salvador has been using the U.S. dollar as its official currency since 2001 when it adopted dollarization. Bitcoin adoption was seen as a way to diversify from the dollar and reduce reliance on a single currency, potentially providing greater monetary independence.</p> <p>Now, let's compare and contrast Bitcoin's adoption and dollarization in El Salvador:</p> <p>Nature of the Currency: Dollarization involves adopting an existing fiat currency, in this case, the U.S. dollar, as the official currency of a country. Bitcoin, on the other hand, is a decentralized digital currency based on blockchain technology.</p> <p>Centralization vs. Decentralization: Dollarization centralizes monetary control with the U.S. Federal Reserve, as the monetary policy decisions are made by the Federal</p>

	<p>Reserve System. Bitcoin, being decentralized, is not controlled by any central authority, and its value is determined by market forces.</p> <p>Stability and Acceptance: The U.S. dollar is a widely accepted and stable currency, with a long history and established reputation. Bitcoin, being a relatively new and volatile currency, faces greater acceptance challenges and price fluctuations.</p> <p>Monetary Policy: With dollarization, El Salvador relinquished control over its monetary policy to the United States. In the case of Bitcoin adoption, while El Salvador can benefit from the potential advantages of using a decentralized digital currency, it also faces uncertainties related to regulatory challenges, price volatility, and the ability to effectively manage monetary policy.</p> <p>Legal Tender: Under dollarization, the U.S. dollar became the sole legal tender in El Salvador. With Bitcoin adoption, while it became a legal tender alongside the U.S. dollar, its acceptance is not mandatory for all transactions, and businesses are required to accept Bitcoin only when offered as payment.</p> <p>In summary, while dollarization and Bitcoin adoption both involve a shift in currency usage, they differ in terms of the nature of the currency, centralization/decentralization, stability, acceptance, and monetary policy implications. Dollarization provides stability and acceptance but relinquishes monetary control, while Bitcoin adoption offers potential benefits such as financial inclusion and innovation but also introduces uncertainties and challenges associated with a decentralized and volatile digital currency.</p>
<p>GPT 4 Response</p>	<p>Reasons for Adopting Bitcoin as Legal Tender in El Salvador:</p> <p>Financial Inclusion: One of the main arguments for adopting Bitcoin was to increase financial inclusion. Roughly 70% of the population in El Salvador does not have access to traditional banking services. Bitcoin was seen as a way to enable more people to participate in the financial system through mobile technology.</p> <p>Remittances: A large percentage of El Salvador's GDP comes from remittances, primarily from the United States. Utilizing Bitcoin for these transactions could lower the costs significantly.</p> <p>Attracting Investment: By becoming the first country to adopt Bitcoin as legal tender, El Salvador hoped to attract crypto entrepreneurs and investments from around the world. The government even offered citizenship to those investing a certain amount in the country.</p>

Economic Diversification: The Bitcoin move was seen as a way to diversify the economy and lessen the country's dependence on the U.S. dollar.

Tourism: A more nebulous goal was to increase tourism by creating a "Bitcoin City" and attracting Bitcoin enthusiasts globally.

Global Recognition: El Salvador is a small country and adopting Bitcoin put it on the global stage, potentially opening doors for other forms of international cooperation or investment.

Innovation: The government portrayed the move as forward-looking and innovative, aligning the country with what it sees as the future of finance.

Comparison with Dollarization:

Control Over Monetary Policy: Dollarization took away El Salvador's ability to control its monetary policy, as it had to depend on the U.S. Federal Reserve's decisions. With Bitcoin, there's also a lack of control but for different reasons—the decentralized nature of the cryptocurrency means no one controls it.

Stability: The U.S. dollar is generally considered a stable currency. Adopting it brought macroeconomic stability to El Salvador at the cost of monetary independence. Bitcoin, however, is highly volatile, which adds an element of economic risk.

Financial Inclusion: Dollarization didn't necessarily improve financial inclusion in El Salvador. In contrast, one of the key arguments for adopting Bitcoin is to bring financial services to the unbanked population through mobile phones.

Inflation: Using the U.S. dollar helped El Salvador control inflation, but it also made exports more expensive and remittances vital. Bitcoin does not have a straightforward impact on inflation but could make remittances cheaper.

Foreign Relations: Dollarization anchored El Salvador's economy to the United States, both economically and geopolitically. Bitcoin's adoption, however, has been met with skepticism from the U.S. and international bodies like the IMF, potentially complicating foreign relations.

Implementation Speed and Public Support: Dollarization had a longer planning and implementation period and was a more broadly understood concept among the populace. Bitcoin adoption happened quickly, and its complexity has led to public confusion and division.

Legal and Regulatory Framework: Adopting the dollar required significant adjustments in the legal and banking systems to accommodate a foreign currency.

Bitcoin adoption has similarly necessitated legislative action but also poses challenges related to financial regulation, tax, and potential for illicit use.

Transparency and Oversight: The U.S. dollar and the systems around it are subject to various forms of governmental oversight. In contrast, Bitcoin’s decentralized and pseudonymous nature makes it harder to track, posing issues related to money laundering, tax evasion, and financial crime.

In summary, while both Bitcoin adoption and dollarization aimed at stabilizing and growing the El Salvadorian economy, they represent fundamentally different approaches with their own unique sets of risks and benefits. Dollarization was a move towards stability and international credibility but came with the loss of monetary policy control. Bitcoin adoption aims for financial inclusion and economic innovation but comes with high volatility and uncertain international implications.

Question 3 - The Mundell-Fleming Trilemma discusses how countries need to select two of the three choices: Fixed exchange rate, Free flow of capital or Independent monetary policy. What choice is the government of El Salvador making by adopting Bitcoin as a legal tender in addition to the U.S. dollar?			
Rating	<p>Poor - Response does not address the points made in the acceptable and outstanding responses.</p>	<p>Acceptable - Mention that with dollarization El Salvador picked two of the three attributes, while with Bitcoin’s adoption the choices are similar, but exchange rate volatility is introduced.</p>	<p>Outstanding - In addition to the response to the Acceptable answer, response discusses the choices for each attribute of the ideal currency under dollarization and under Bitcoin and dollar as legal tenders.</p>
Answer Key	<p>See table below. When El Salvador transitioned to dollarization from a fixed peg, they chose two of the three “attributes of an ideal currency”: fixed exchange rate and free flow of capital. When Bitcoin was approved as a legal tender, in addition to the U.S. dollar, the country is still choosing free flow of capital and focus on foreign investments and financial integration, but now the fixed exchange rate component is not as clear cut. The U.S. dollar would still be used (which adds to stability in trade), but possible volatility and uncertainty for business owners was introduced because of the variability of the exchange rate of U.S. Dollar per Bitcoin. With the introduction of the Bitcoin law, all businesses were required to accept Bitcoin payments and thus were subject to USD – Bitcoin price fluctuations. If prices were set in U.S. Dollars, then the Bitcoin prices of goods would have to be recalculated at the current Bitcoin rate, since there would be no fixed rate.</p>		
		Dollarization	Bitcoin and Dollarization
	Independent monetary policy	<p>The El Salvador’s central bank loses sovereignty over monetary policy but is relying on a stable monetary policy in the United States.</p>	<p>No central bank/no monetary policy tools available when adopting Bitcoin. El Salvador’s central bank still has no sovereignty over monetary policy and is still relying on the U.S. monetary policy.</p>
	Fixed exchange rate	<p>Currency volatility versus the U.S. dollar is removed, which should benefit trade with the United States, greater product, and financial integration. Eliminates currency volatility of remittances.</p>	<p>Currency volatility is introduced because there are two legal tenders and the exchange rate between them is floating.</p>

	Free flow of capital	Encourages capital flows and integration with the United States and opens the country for more foreign direct investment.	Encourages further capital flows from cryptocurrency investors and potentially larger levels of foreign direct investment.
GPT 3.5 Response	<p>By adopting Bitcoin as a legal tender alongside the U.S. dollar, the government of El Salvador is prioritizing the fixed exchange rate and free flow of capital. Let's analyze how this decision aligns with the Mundell-Fleming Trilemma framework:</p> <p>Fixed Exchange Rate: El Salvador's decision to adopt Bitcoin as a legal tender alongside the U.S. dollar indicates a commitment to maintaining a fixed exchange rate. The exchange rate between Bitcoin and the U.S. dollar is determined by market forces, but by accepting Bitcoin as legal tender, the government aims to establish a fixed exchange rate between Bitcoin and the dollar within the country.</p> <p>Free Flow of Capital: The government's adoption of Bitcoin suggests an intention to promote the free flow of capital. By accepting Bitcoin as legal tender, El Salvador allows individuals and businesses to use Bitcoin for transactions, both domestically and potentially across borders. This move facilitates the free movement of capital as it provides an alternative medium of exchange and potentially lowers transaction costs, enabling seamless cross-border transactions in Bitcoin.</p> <p>Independent Monetary Policy: The adoption of Bitcoin as a legal tender poses challenge to El Salvador's ability to maintain an independent monetary policy. Bitcoin is a decentralized digital currency, and its value is determined by global market forces rather than domestic monetary policy decisions. The government's decision to adopt Bitcoin may limit its ability to influence the monetary conditions within the country, as the value of Bitcoin fluctuates independently of El Salvador's economic fundamentals. Considering the Mundell-Fleming Trilemma, El Salvador's decision to adopt Bitcoin as a legal tender alongside the U.S. dollar sacrifices independent monetary policy. By adopting Bitcoin, the country gives up control over its monetary policy regarding Bitcoin and must rely on the decentralized market dynamics of cryptocurrency. However, it maintains a fixed exchange rate with the U.S. dollar and aims to promote the free flow of capital by accepting Bitcoin as a medium of exchange.</p>		

GPT 4 Response	<p>Here's how El Salvador's situation fits into the Mundell-Fleming Trilemma:</p> <p>Fixed Exchange Rate: Since El Salvador is dollarized, it effectively has a fixed exchange rate with the U.S. dollar. Bitcoin, on the other hand, is highly volatile and does not have a fixed exchange rate with any currency. Its adoption makes the overall exchange rate regime of the country a mix of fixed (USD) and floating (BTC).</p> <p>Free Flow of Capital: One of the attractions of adopting Bitcoin is that it facilitates the free flow of capital. It's easy to move Bitcoin across borders without facing the usual restrictions or fees associated with fiat currencies. This is in alignment with a policy promoting the free flow of capital.</p> <p>Independent Monetary Policy: El Salvador doesn't have an independent monetary policy due to its dollarization; it is subject to the monetary policy decisions made by the U.S. Federal Reserve. Adopting Bitcoin doesn't change this situation; in fact, it further diminishes control as Bitcoin is a decentralized currency with no monetary policy.</p> <p>So, by adopting Bitcoin alongside the U.S. dollar, El Salvador is essentially opting for: Free Flow of Capital: Both the U.S. dollar and Bitcoin facilitate this. And it is giving up on:</p> <p>Independent Monetary Policy: It can't influence the monetary policy of either the U.S. dollar or Bitcoin.</p> <p>The country's stance on a fixed exchange rate is more nuanced. It maintains a fixed rate with the U.S. dollar, but the introduction of Bitcoin, which doesn't have a fixed exchange rate, adds a layer of complexity. In summary, by adopting Bitcoin as legal tender alongside the U.S. dollar, El Salvador is essentially choosing the free flow of capital while sacrificing independent monetary policy. The country's stance on a fixed exchange rate becomes more complex due to the dual nature of its adopted currencies.</p>
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Question 4 - Remittances are classified as secondary income in the Balance of Payments. If remittances can be transferred via cryptocurrency (in this case via Chivo Wallet), what could be the impact on international financial statistics?			
Rating	<p>Poor - Response does not address the points made in the acceptable and outstanding responses.</p>	<p>Acceptable - Identify the importance of remittances in El Salvador but recognize that cryptocurrency remittances account for small part of the transfers.</p>	<p>Outstanding - Identify the importance of remittances in El Salvador, evaluate the lack of wide public uptake of transfers via Chivo Wallet and recognize that even though cryptocurrency remittances account for small part of the transfers, the Chivo wallet transactions are recorded in the Balance of Payments as the government tracks them.</p>
Answer Key	<p>Remittances were an especially important part of El Salvador’s economy. In 2020 remittances accounted for over 25% of GDP. In the balance of Payments, remittances should be classified as Secondary Income in the Current Account. Remittances were typically transfers from migrant workers.</p> <p>The adoption of Bitcoin as a legal tender in El Salvador and the Chivo-wallet rollout should have reduced transaction costs for transferring money from migrant workers from the US to their families in El Salvador and thus incentivized transfers via the digital wallet. However, looking at exhibit 11 remittances via cryptocurrency wallets comprised a very small percent (1.6%) of total remittances in 2022. Some of the cited reasons for this reluctance to use the wallet were the preference of many Chivo wallet users to use cash and the trust issues they had with the system and bitcoin. According to the survey cited in the case, one year after the Chivo wallet implementation, the public opinion regarding the adoption of bitcoin was still negative.</p> <p>Hypothetically, lower transaction costs could entice migrants to send a sizable percentage of remittances via crypto wallets and if this is done in an anonymous way, it could evade international financial statistics and distort Current Account balances. However, in the case of El Salvador, the Chivo wallet transfers were tracked by the government and thus recorded in the Current Account in the Balance of Payments.</p>		
GPT 3.5 Response	<p>If remittances are transferred via cryptocurrency, such as through the Chivo Wallet in El Salvador, there could be several potential impacts on international financial statistics, particularly in the context of the Balance of Payments. Here are some considerations:</p> <p>Remittance Reporting: Remittances sent and received in cryptocurrency would need to be accurately identified and reported in international financial statistics. Remittance flows through traditional channels, such as banks or money transfer</p>		

	<p>operators, are usually well-documented and captured in official statistics. However, if a significant portion of remittances starts flowing through cryptocurrency channels, it may require additional efforts to track and measure these transactions accurately.</p> <p>Currency Composition: The currency composition of remittances may change if they are transferred via cryptocurrency. Traditionally, remittances are reported in the currency of the receiving country (e.g., U.S. dollars in the case of El Salvador). However, when remittances are transferred through cryptocurrency, the currency composition could shift, with some portion of remittances being denominated in cryptocurrencies like Bitcoin. This could require adjustments in the reporting and classification of remittance flows in international financial statistics.</p> <p>Cryptocurrency Holdings: The use of cryptocurrency for remittances could affect a country's overall holdings and exposure to cryptocurrencies. As remittances are received and converted into the local currency, the government or central bank may need to decide whether to hold the received cryptocurrency or convert it into another currency. The decisions made in this regard could impact a country's foreign exchange reserves and its exposure to cryptocurrency price volatility.</p> <p>Balance of Payments Imbalances: If remittances via cryptocurrency gain significant popularity, it could potentially affect the overall balance of payments of a country. The inflows and outflows of cryptocurrency associated with remittances would need to be accounted for in the capital and financial account of the balance of payments. This could lead to changes in the overall balance of payments position, which may have implications for a country's economic indicators and policy decisions. It's important to note that the impact on international financial statistics would depend on the scale and significance of remittances via cryptocurrency in a particular country. The precise effects would vary based on factors such as the volume of cryptocurrency remittances, the regulatory framework in place, and the degree of integration of cryptocurrency transactions into the official financial system.</p>
GPT 4 Response	<p>The adoption of cryptocurrencies like Bitcoin for remittance transfers could have several potential impacts on international financial statistics:</p> <p>Reduced Transaction Costs Cryptocurrencies can significantly lower the transaction costs associated with remittances. Traditional remittance channels often involve fees and exchange rate margins that can eat into the amount received. Lower transaction costs could increase the net secondary income in the Balance of Payments for countries like El Salvador, where remittances constitute a significant portion of GDP.</p> <p>Speed of Transactions Blockchain transactions can be confirmed in a matter of minutes, regardless of the day or time, which might make remittances timelier and more reliable. This could result in more frequent remittance transactions, affecting the periodicity and timeliness of related financial statistics.</p> <p>Informal Channels While all formal remittance transactions are accounted for in the Balance of Payments, there may be a significant volume of informal remittances that are not captured. The adoption of cryptocurrencies could blur the lines between formal and</p>

	<p>informal remittance channels. The ease and low cost of cryptocurrency transactions could shift activity from informal to formal channels if the government successfully integrates them into the official financial system.</p> <p>Volatility Cryptocurrencies are highly volatile. This volatility could introduce more noise into international financial statistics, particularly if substantial amounts are sent as remittances and their value fluctuates widely between the time they are sent and the time they are converted to a more stable form of currency.</p> <p>Traceability and Compliance Blockchain transactions are transparent but pseudonymous. This could present challenges for authorities tasked with preventing money laundering, tax evasion, or other illicit financial activities, potentially affecting the accuracy and reliability of financial statistics.</p> <p>Data Capture and Reporting Central banks and financial authorities may need to adjust their data collection and reporting frameworks to accurately capture cryptocurrency transactions in the Balance of Payments and other financial statistics.</p> <p>Exchange Rate and Liquidity Risk Since cryptocurrencies don't have a fixed exchange rate with any fiat currencies, remittances in cryptocurrencies could expose countries to additional exchange rate and liquidity risks, which would need to be accounted for in financial statistics. Overall, the incorporation of cryptocurrencies like Bitcoin in the remittance market could introduce both opportunities and challenges for the compilation and interpretation of international financial statistics.</p>
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Economics Question Set

Question 1 - Using the concepts of (1) medium of exchange, (2) unit of account, and (3) store of value, compare and contrast the U.S. dollar with Bitcoin.			
Rating	<p>Poor - Response does not address the points made in the acceptable and outstanding answers.</p>	<p>Acceptable - List the three functions of money and state whether the dollar and Bitcoin meet the requirements of each function.</p>	<p>Outstanding - List the three functions of money and in detail discuss (give examples) in detail how the dollar and Bitcoin each function.</p>
Answer Key	<p>Medium of exchange: must be widely accepted in exchange for goods and services. The U.S. dollar is accepted for all transactions in the United States and eight other countries that use it as legal tender. In addition, it is frequently accepted in countries where it is not legal tender, but there are many U.S. tourists, such as Mexico and Canada.</p> <p>Since its introduction Bitcoin's acceptance as a medium of exchange has grown significantly. Many companies around the world have declared Bitcoin an acceptable method of payment (e.g., Best Buy, Newegg, Overstock). Furthermore, in El Salvador</p>		

	<p>the Bitcoin law enforces that the financial asset must be accepted. However, in many cases, the direct Bitcoin transactions between buyers and sellers are very costly in time and energy or involve an intermediary who acts as a facilitator exchanging Bitcoin into currency (Yermack, 2013).</p> <p>Unit of Account: a measure to value goods and services. The U.S. dollar is used on posted prices for goods and services in the United States and other countries that use it. For example, catalogs and menus are printed with prices denoted in U.S. dollars, and those prices are stable for the period those documents are in use. Bitcoin’s price, meanwhile, is very volatile, which means that merchants must update the ‘Bitcoin’ prices of their goods and services frequently. Constantly changing prices are confusing and can distort purchasing decisions. For example, in February 2023, Bitcoin traded for \$23,000. Pricing everyday goods in terms of Bitcoin required the use of many decimals, which most people are not used to. For example: a \$1 doughnut would have been 0.000043 BTC. Finally, prices with many digits are more vulnerable to keystroke accounting errors.</p> <p>Store of Value: something used to transfer purchasing power from the present to the future without significant loss of value. The U.S. dollar slowly loses value due to inflation, but in a modest and predictable manner. For example, a U.S. dollar in January 2023 had nearly half (47.7%) of the purchasing power it did in January 1993 (Bureau of Labor Statistics, n.d.). The annual loss of value had not exceeded 10% since 1981. Bitcoin’s volatility does not make it a good store of value. Bitcoin lost more value in 2022 than the U.S. dollar did over the 30-year 1993 to 2023 period. Furthermore, Bitcoins are held in digital wallets, which unlike deposits in the U.S. are not insured by the FDIC, and are subject to security problems, such as theft and hacking attacks.</p>
<p>GPT 3.5 Response</p>	<p>Medium of Exchange: U.S. Dollar: The U.S. dollar is widely accepted as a medium of exchange both domestically and internationally. It is the primary currency for conducting transactions in many countries and is readily accepted in global trade. It has a long history of use as a medium of exchange, which has established trust and confidence in its acceptance.</p> <p>Bitcoin: Bitcoin aims to function as a medium of exchange in digital transactions. While its acceptance has grown in recent years, it is not as widely accepted as the U.S. dollar. Bitcoin transactions rely on a decentralized network and blockchain technology to facilitate peer-to-peer transfers. However, its acceptance as a medium of exchange varies significantly across countries and businesses.</p> <p>Unit of Account: U.S. Dollar: The U.S. dollar is commonly used as a unit of account in economic activities. Prices of goods and services, wages, and financial transactions are often denominated in U.S. dollars. It provides a common framework for measuring and comparing the value of different goods, services, and assets.</p> <p>Bitcoin: Bitcoin has limited use as a unit of account. While some businesses and individuals may denominate prices in Bitcoin, it is not as widespread or standardized as the U.S. dollar. The price of Bitcoin itself is often denominated in U.S. dollars or other fiat currencies, which highlights its reliance on traditional currencies for</p>

	<p>valuation.</p> <p>Store of Value: U.S. Dollar: The U.S. dollar is generally considered a stable store of value, particularly in the short to medium term. It is backed by the confidence and trust of governments and central banks, and its value is maintained through monetary policies and regulation. The U.S. dollar's stability and widespread acceptance make it a preferred choice for preserving wealth and conducting financial transactions.</p> <p>Bitcoin: Bitcoin's store of value characteristics is more volatile and subject to significant price fluctuations. While some individuals and investors see Bitcoin as a store of value or digital gold, its price volatility and speculative nature make it a riskier asset. Bitcoin lacks the backing of a central authority or government, which contributes to its price volatility and limits its stability as a long-term store of value. In summary, the U.S. dollar has a well-established position as a medium of exchange, unit of account, and store of value, with widespread acceptance and stability. Bitcoin, on the other hand, has made strides as a medium of exchange and store of value in some contexts but is not as widely accepted or stable. Its use as a unit of account is limited, with valuation often dependent on traditional fiat currencies.</p>
<p>GPT 4 Response</p>	<p>The U.S. dollar and Bitcoin are both used as forms of money, but they differ significantly in how they serve the three classic functions of money: medium of exchange, unit of account, and store of value.</p> <p>1. Medium of Exchange U.S. Dollar: Widely Accepted: The U.S. dollar is universally accepted in the United States and widely accepted worldwide for international transactions. Stable and Recognized: Most businesses are accustomed to dealing in dollars, and it's considered stable and reliable.</p> <p>Instant Settlements: In domestic settings, the U.S. dollar can provide instant settlements with no additional fees, especially in cash transactions. Regulatory Backing: Backed by legal systems and universally recognized, it's subject to U.S. monetary policy and regulations.</p> <p>Bitcoin: Limited Acceptance: While growing in popularity, Bitcoin is not yet widely accepted for everyday transactions.</p> <p>Irreversible Transactions: Once confirmed, transactions cannot be reversed, reducing the risk of fraud for merchants.</p> <p>Cross-Border: Designed for digital transfer, it can be sent or received anywhere in the world, often with lower fees than traditional money transfer services.</p> <p>Legal and Regulatory Risks: Subject to regulatory scrutiny, and its legal status as a medium of exchange varies by jurisdiction.</p> <p>2. Unit of Account U.S. Dollar:</p>

Stable Value: Generally stable, making it useful for quoting prices or taking measurements of economic value.

Universally Recognized: Prices of goods and services are commonly quoted in dollars, especially in international trade.

Divisible and Fungible: Easily broken down into smaller units like cents, and each unit is interchangeable.

Bitcoin:

Price Volatility: Highly volatile, which makes it less suitable as a stable unit of account for pricing goods and services.

Not Widely Used for Pricing: Few goods and services are priced directly in Bitcoin.

Divisible and Fungible: Highly divisible (up to eight decimal places), but not yet as universally recognized or used for pricing as the dollar.

3. Store of Value

U.S. Dollar:

Inflation Risk: Subject to inflation, which erodes its buying power over time, although generally less volatile than cryptocurrencies.

Backed by Government: Implicitly backed by the U.S. government's ability to tax and regulate.

Physical and Digital: Can be held in both physical (cash) and digital forms (bank accounts).

Bitcoin:

Volatility: Highly volatile, which makes it a risky store of value in the short term.

Not Backed: Not backed by any physical commodity or government but derives value from its scarcity (limited supply) and network effect.

Ownership Control: Can provide more direct control over your own assets without relying on intermediaries like banks.

In summary, while the U.S. dollar offers stability, widespread acceptance, and a reliable unit of account, Bitcoin offers advantages in terms of lower transaction fees for international transfers, irreversible transactions, and control over one's assets. However, Bitcoin's volatility, regulatory uncertainty, and limited acceptance currently inhibit its ability to fully serve as a medium of exchange, unit of account, and store of value to the same extent as the U.S. dollar.

Question 2 - Most central banks are charged with maintaining price stability and maintaining full employment. How does the adoption of bitcoin as legal tender further these goals? What are the consequences for inflation expectations?			
Rating	<p>Poor - Response does not address the points made in the acceptable and outstanding answers.</p>	<p>Acceptable - Students should recognize that monetary policy can be used to impact economic activity (and inflation) by influencing interest rates (through changing the money supply). However, El Salvador had adopted the U.S. dollar as their official currency, which means that they did not have any control over monetary policy but were subject to the actions the U.S. were taking. Adopting Bitcoin did not change El Salvador’s lack of control over the money supply; however, no other country has control over it either.</p>	<p>Outstanding - Students should discuss the monetary policy tools that El Salvador had at its disposal (which were almost none). While there is no ‘direct’ action El Salvador’s central bank can take to influence economic activity, if the valuation of bitcoin increases, tourism and foreign investment improve, El Salvador could experience economic growth, including better employment opportunities. Students should also acknowledge that inflation expectations should be very different under bitcoin.</p>
Answer Key	<ul style="list-style-type: none"> • Bitcoin, as a highly volatile currency / speculative commodity is a terrible option for maintaining price stability. If it appreciates, and if its adoption succeeds in drawing in more remittances and tourism and investment by cryptocurrency backers, it may possibly assist in the employment goals, but similarly a wipeout in BTC would likely drive down consumption and investment and lead to an increase in unemployment, similar to other episodes of debt-deflation. • Regardless, the variability of prices under Bitcoin would be expected to be quite large compared to a traditional currency. We would need investors to demand a large interest-rate risk premium in response. 		

<p>GPT 3.5 Response</p>	<p>The adoption of Bitcoin as legal tender does not directly further the goals of maintaining price stability and full employment typically associated with central banks. Bitcoin operates on a decentralized network and is not governed by a central authority or monetary policy. Therefore, the government's adoption of Bitcoin as legal tender does not give them direct control over monetary policy or the ability to influence economic variables such as inflation or employment.</p> <p>Consequences for inflation expectations: Bitcoin's Volatility: Bitcoin is known for its price volatility, experiencing significant fluctuations in value over short periods. This volatility makes it challenging to predict or stabilize its purchasing power. As a result, using Bitcoin as legal tender could introduce additional uncertainty and risk into the economy, potentially affecting inflation expectations.</p> <p>Limited Monetary Policy Influence: With the adoption of Bitcoin, the government's ability to conduct traditional monetary policy measures, such as adjusting interest rates or controlling money supply, may be constrained. This limitation could make it more difficult to manage inflation expectations and stabilize the economy.</p> <p>Confidence and Expectations: The adoption of Bitcoin as legal tender could impact confidence in the national currency and the government's ability to maintain price stability. If people lose confidence in the local currency due to the adoption of Bitcoin, it may lead to inflationary pressures as individuals seek to convert their local currency holdings into more stable assets like Bitcoin. In such a scenario, inflation expectations could rise as people anticipate further depreciation of the local currency.</p> <p>It's important to note that the consequences for inflation expectations and overall economic stability in the context of Bitcoin adoption are subject to various factors, including the level of acceptance, the degree of integration with the existing financial system, and the government's ability to manage potential risks and uncertainties associated with Bitcoin's volatility.</p>
<p>GPT 4 Response</p>	<p>The adoption of Bitcoin as legal tender in a country like El Salvador has both opportunities and challenges when it comes to the goals traditionally assigned to central banks, such as maintaining price stability and full employment.</p> <p>Potential Benefits Financial Inclusion: One of the reasons cited for Bitcoin adoption in El Salvador is to increase financial inclusion, which can indirectly lead to higher employment. A significant portion of the population in developing countries lacks access to traditional banking. Crypto wallets can serve as a gateway to financial services.</p> <p>Lower Transaction Costs: Remittances make up a significant part of the GDP in some countries. The use of Bitcoin can significantly reduce transaction fees, leaving more money in the hands of the recipients. This could increase disposable income, possibly</p>

leading to a boost in local employment and consumption.

Attracting Investment: The adoption of a forward-looking technology like Bitcoin could attract foreign direct investment and create new job opportunities in tech sectors, contributing to full employment.

Market Dynamics: In a deflationary currency environment, people are less likely to spend frivolously, which could lead to more responsible consumption patterns over time. However, this is a double-edged sword when it comes to employment and economic growth.

Potential Risks and Challenges

Price Volatility: Bitcoin is known for its extreme price volatility, which can be risky for a country's economy and can lead to uncertainty in price stability. This could feed into inflation expectations if people start converting their Bitcoin to U.S. dollars or other more stable assets, driving up demand for those and reducing demand for the local currency or Bitcoin.

Lack of Monetary Policy Tools: Traditional central banks have a range of tools to control inflation and stimulate employment, such as adjusting interest rates or initiating quantitative easing. Adopting Bitcoin as a legal tender takes away some of these levers, as the central bank cannot control its supply.

Asset Bubbles and Financial Stability: Widespread adoption and trading of cryptocurrencies could lead to asset bubbles, the bursting of which can create financial instability and make the tasks of central banks more difficult.

Rapid Capital Flows: Bitcoin's ability to facilitate rapid cross-border money transfers could potentially lead to sudden capital inflows or outflows, affecting the local economy's stability.

Potential for Illicit Use: Lack of regulation can make Bitcoin a tool for money laundering, fraud, and other financial crimes, posing risks to financial stability.

Inflation Expectations

Short-term: The immediate introduction of Bitcoin could create some deflationary pressures due to its limited supply, but this effect might be small and offset by its price volatility.

Long-term: If Bitcoin becomes widely adopted, people might expect future stability in its value, potentially affecting inflation expectations. However, given the highly speculative nature of cryptocurrencies, it's just as likely that people might expect higher inflation in the traditional currency if they view Bitcoin as a safer store of value.

In summary, while Bitcoin offers some opportunities for increasing financial inclusion and reducing transaction costs—factors that can affect employment and price stability—the risks and challenges currently seem to outweigh the benefits when it comes to the traditional goals of central banking.

Question 3 - Considering El Salvador’s starting point of dollarization, evaluate the effect of President Bukele’s actions on central bank credibility and ability to respond to recessions? Summarize the IMF’s reaction.			
Rating	<p>Poor - Response does not address the points made in the acceptable and outstanding answers.</p>	<p>Acceptable - Students should state that the credibility would be hurt and provide two consequences, and that the IMF was disapproving, providing at least two reasons. Students should recognize that El Salvador had given up its use of monetary policy tools when the country adopted the U.S. dollar in 2001.</p>	<p>Outstanding - An outstanding answer should show an awareness that, because of dollarization, El Salvador was extremely limited in its monetary policy tools anyway. Many students will reflexively say it takes away their ability to increase the money supply in a recession, not realizing that was off the table anyway. Further discussion of the impacts of Bitcoin’s volatility and a complete summary of all four IMF concerns are also hallmarks of a full-marks answer.</p>
Answer Key	<ul style="list-style-type: none"> • The effect on El Salvador’s central bank is almost certainly not positive. As El Salvador already uses the U.S. dollar, it is already operating in the refuge of banks with low credibility, but the use of Bitcoin will increase volatility and reduce the effectiveness of the U.S. dollar in maintaining price stability. As the reaction of the IMF suggests, it will cause a loss of confidence from external investors, driving up the risk premium charged for El Salvador to borrow. As far as the direct stabilization tools, most of those were forfeited when El Salvador originally dollarized. • The IMF stated that access to funding would be highly unlikely while bitcoin remained legal tender. The risks it cited include: (1) financial instability from banks and other financial institutions being exposed to massive fluctuations in crypto-asset prices, (2) lack of financial integrity from making it easier to engage in criminal activity, (3) lack of consumer protection from both large swings and value and increased risk of cybercrime and theft, as transactions cannot be reversed, and (4) adverse fiscal consequences from a decline in the price of bitcoin depleting the associated government trust fund. 		
GPT 3.5 Response	<p>President Bukele's actions in adopting Bitcoin as legal tender in El Salvador have raised concerns about the central bank's credibility and its ability to respond to recessions. Here is an evaluation of the effects and a summary of the IMF's reaction:</p> <p>Central Bank Credibility: Dollarization in El Salvador meant that the central bank already had limited control over monetary policy. However, the adoption of Bitcoin as a legal tender further erodes the central bank's credibility in terms of its ability to manage the economy and ensure stability. This move raises questions about the government's commitment to sound economic policies and its respect for central bank independence.</p>		

	<p>Ability to Respond to Recessions: The adoption of Bitcoin does not provide the central bank with an additional tool to respond to recessions or economic downturns. With limited control over monetary policy due to dollarization, the central bank's ability to implement conventional measures like interest rate adjustments or liquidity injections is already restricted. Bitcoin's decentralized nature and the lack of direct control over its value make it an unreliable instrument for countercyclical monetary policy.</p> <p>IMF's Reaction: The International Monetary Fund (IMF) expressed concerns about the adoption of Bitcoin as legal tender in El Salvador. In their statement, the IMF noted that the move raises macroeconomic, financial, and legal issues that require careful analysis. They emphasized the importance of policies that preserve macroeconomic stability and financial integrity, highlighting the need for transparent regulatory frameworks and adherence to international standards. The IMF encouraged El Salvador to work closely with them to assess the implications of the adoption of Bitcoin and develop appropriate policy responses.</p> <p>Overall, the IMF's reaction suggests a cautious approach, emphasizing the importance of maintaining macroeconomic stability, financial integrity, and adherence to international standards. The adoption of Bitcoin as legal tender raises significant challenges for the central bank's credibility and its ability to respond effectively to recessions, given the limited control over monetary policy already imposed by dollarization.</p>
<p>GPT 4 Response</p>	<p>Central Bank Credibility and Ability to Respond to Recessions The choice to adopt Bitcoin as a legal tender alongside the U.S. dollar presents a unique set of challenges for El Salvador, especially in the context of a dollarized economy. Here's how it impacts central bank credibility and responsiveness:</p> <p>Credibility: Adopting a volatile asset like Bitcoin raises questions about the financial acumen of El Salvador's Central Bank. This could undermine the bank's credibility, both domestically and internationally. Lack of credibility can have cascading impacts on investment and financial stability, factors crucial for managing recessions.</p> <p>Monetary Policy: In a dollarized economy, El Salvador already surrendered its ability to issue currency and set interest rates, and therefore its capacity to use monetary policy as a tool to combat recessions was limited. Introducing Bitcoin into the equation did not improve this situation. If anything, it added an extra layer of complexity and risk, making the bank's job even more difficult.</p> <p>Fiscal Policy: While monetary policy options are limited in a dollarized economy, fiscal policy remains a tool to fight economic downturns. However, the adoption of Bitcoin could potentially tie the government's hands fiscally as well. The volatility in Bitcoin prices and its impact on the economy could create an unstable environment for fiscal planning.</p> <p>Loss of Policy Tools: Central Banks usually have a range of tools to counter economic downturns, including interest rate adjustments and quantitative easing. In a dollarized economy, these tools are limited. Bitcoin's adoption may further constrain the available policy options.</p>

IMF's Reaction

As of my last update in September 2021, the International Monetary Fund (IMF) has generally been skeptical about the widespread adoption of cryptocurrencies like Bitcoin for use as legal tender. The IMF worries that such a move could pose risks to macroeconomic stability, financial integrity, and consumer protection. It's reasonable to assume that their reaction to El Salvador's adoption of Bitcoin has not been entirely positive, especially given the complex financial situation the country faces. The IMF is likely concerned that Bitcoin's adoption will compromise El Salvador's economic stability, make it harder to manage its balance of payments, and possibly lead to financial isolation if global financial institutions decide that doing business in El Salvador has become too risky.

In summary, President Bukele's actions to adopt Bitcoin as legal tender in a dollarized economy like El Salvador's add a new layer of complexity and risk that could hamper the Central Bank's credibility and its ability to manage economic downturns effectively. The IMF's likely skeptical stance would reflect these significant concerns.

Question 4 - What assumptions are required for El Salvador's adoption of bitcoin to be wise? What assumptions for it to be unwise? Which do you think is the case?			
Rating	Poor - Response does not address the points made in the acceptable and outstanding answers.	Acceptable - Students should make the connection between the loss of value (decrease in the price of bitcoin) and its resulting negative impact. Students should also note that if the price of Bitcoin had increased, there could have been a positive impact.	Outstanding - Students should contrast the impact of Bitcoin when the price increases and decreases. Students should conclude that adopting Bitcoin as legal tender is a bad idea, based on the functions of money.
Answer Key	<ul style="list-style-type: none"> • As a currency with a fixed supply, Bitcoin stands to increase in value in the long run as it becomes more widely accepted and thus more in demand. If the transaction costs of converting local currencies into Bitcoin also continue to fall, encouraging remittances in Bitcoin both improves efficiency – as less is lost to fees and more reaches El Salvador – and it puts into the hands of Salvadorans an appreciating asset. • Bitcoin could lose its value. Perhaps it is outcompeted by other cryptocurrencies or outlawed in enough of the world to depress demand. It could also encourage enough criminal activity to scare off legal commerce, or criminal activity that steals Bitcoin directly. It could sustain its value but have so much volatility that it creates a series of booms and panics. 		
GPT 3.5 Response	<p>To evaluate whether El Salvador's adoption of Bitcoin as legal tender is wise or unwise, certain assumptions need to be considered. Here are the key assumptions for each scenario:</p> <p>Assumptions for it to be wise:</p> <p>Stable and Reliable Bitcoin Infrastructure: The assumption that Bitcoin's infrastructure is secure, efficient, and reliable is crucial for its adoption to be wise. It requires a robust technological framework, including network stability, transaction speed, scalability, and security measures.</p> <p>Positive Economic Impacts: The assumption that adopting Bitcoin will lead to significant economic benefits is necessary. This includes increased foreign investment, economic growth, financial inclusion, and reduced transaction costs for remittances.</p> <p>Effective Regulation and Legal Framework: Assumptions regarding the government's ability to implement effective regulation and establish a clear legal framework for Bitcoin are important. This includes addressing concerns related to money laundering, fraud, consumer protection, and ensuring compliance with international standards.</p> <p>Assumptions for it to be unwise:</p> <p>Volatility and Risk: The assumption that Bitcoin's extreme price volatility and associated risks will persist can make the adoption unwise. If Bitcoin's value</p>		

	<p>experiences large fluctuations, it can lead to economic instability, uncertainty, and financial losses for individuals and businesses.</p> <p>Limited Adoption and Acceptance: If the adoption of Bitcoin does not gain widespread acceptance within the country or globally, it can limit its usefulness as a legal tender. Limited acceptance may hinder its viability as a medium of exchange and undermine its benefits.</p> <p>Disruption to Monetary Policy: The assumption that adopting Bitcoin will disrupt El Salvador's monetary policy and the country's ability to respond to economic shocks can make it unwise. The loss of control over the currency and monetary policy tools can hamper the central bank's ability to manage inflation, interest rates, and economic stability.</p> <p>Considering the current circumstances, there are valid concerns and uncertainties surrounding El Salvador's adoption of Bitcoin. The extreme volatility of Bitcoin's price and the potential disruption to monetary policy raise doubts about its wisdom. While some benefits such as remittance efficiency and financial inclusion have been touted, the risks and challenges associated with adopting a highly volatile and unregulated cryptocurrency pose significant concerns. The long-term implications of this decision remain uncertain, and further evaluation is necessary to determine its overall wisdom.</p>
<p>GPT 4 Response</p>	<p>El Salvador's decision to adopt Bitcoin as legal tender is a complex and risky undertaking. Whether it turns out to be wise or unwise depends on a multitude of factors, and several assumptions would need to hold true in each scenario.</p> <p>Assumptions for Wisdom</p> <p>Stability in Bitcoin Prices: For the experiment to work smoothly, Bitcoin's infamous price volatility would need to decline significantly, making it a reliable store of value.</p> <p>Increased Investment and Tourism: The adoption of Bitcoin would have to lead to a substantial increase in foreign investment and tourism, as predicted by some proponents.</p> <p>Financial Inclusion: One of the touted benefits is the financial inclusion of rural and unbanked populations. The assumption here is that this segment would be able to access and use Bitcoin easily and safely.</p> <p>Low Transaction Costs: The transaction costs for converting between Bitcoin and other currencies, including the U.S. dollar, would need to remain low.</p> <p>Regulatory Compliance: Global financial entities would have to be comfortable enough with El Salvador's regulatory framework to continue doing business there, despite the introduction of a cryptocurrency.</p> <p>Fiscal and Monetary Responsibility: The government would need to manage its Bitcoin reserves and its financial commitments in a responsible way to avoid credit downgrades and issues with international bodies like the IMF.</p>

	<p>Public Acceptance: There needs to be a wide public acceptance and understanding of how to use Bitcoin.</p> <p>Assumptions for Unwisdom</p> <p>Volatility Remains: If Bitcoin's price continues to be highly volatile, it could wreak havoc on the economy and the country's finances.</p> <p>Regulatory Pushback: If global entities choose to limit their interactions with El Salvador due to perceived risk or non-compliance with international financial regulations, this could isolate the country.</p> <p>Financial Mismanagement: If the government doesn't manage its Bitcoin assets well, it could lead to significant financial loss.</p> <p>Limited Financial Inclusion: If Bitcoin technology remains inaccessible for a large part of the population, then one of the main purported benefits would not materialize.</p> <p>Erosion of Trust: Failing to manage the Bitcoin adoption could erode public and international trust in El Salvador's economic management.</p> <p>Exacerbation of Economic Inequalities: If Bitcoin benefits only a small, tech-savvy portion of the population, it could worsen social inequality.</p> <p>Rise in Illegal Activities: The pseudonymous nature of Bitcoin could facilitate money laundering, tax evasion, and other illegal activities.</p> <p>Which is the Case? It's too early to definitively say whether the adoption of Bitcoin will turn out to be wise or unwise for El Salvador. Given the current data and the inherently volatile nature of cryptocurrencies, the move seems fraught with significant risk, potentially making it an unwise choice. However, the long-term effects, either positive or negative, will take time to fully manifest. Therefore, while it seems like a risky gamble at the moment, the ultimate verdict will depend on how many of the assumptions in either category turn out to be accurate.</p>
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Question 5 - Discuss what the world would look like if bitcoin was legal tender everywhere.			
Rating	<p>Poor - Response does not address the points made in the acceptable and outstanding answers.</p>	<p>Acceptable - Identify the impact on monetary policy and macroeconomic instability</p>	<p>Outstanding - Identify the impact on monetary policy, macroeconomic instability, but also point out at least one of the components from the positive outlook.</p>
Answer Key	<p>As with many hypothetical questions, there is no single correct answer, but there are several elements' students should include in a successful attempt. These are some of the points:</p> <p>Postive Outlook</p>		

	<p>Exchange risk would be eliminated, potentially making it easier for countries with high or volatile exchange rates to conduct international trade. No country or centralized agent would own or control the supply of it, which means that no country could use monetary policy in order to influence economic activity, especially during times of economic slowdown.</p> <p>Some countries could benefit from adopting bitcoin, mainly the ones who experience high inflation, lack of credible financial institutions/system, countries highly dependent on remittances, or countries that try to achieve a less expensive and faster payments system and improve financial inclusion (less developed countries lack financial inclusion for reasons such as literacy and access to financial services).</p> <p>Negative Inequality across the world would increase. People owning bitcoin now, which is a tiny fraction of the population, would become ultra wealthy. While it might seem that the wealth of the world is concentrated in the hands of a few currently, it's not nearly as dire as it would be.</p> <p>Many wealthy individuals (Elon Musk, etc.) have become wealthy by starting successful businesses, which has contributed to economic activity and better standards of living. Most bitcoin owners simply adopted bitcoin early, without creating anything useful. Hence, economic activity would most likely slow down.</p> <p>Most countries would be worse off suffering from macroeconomic instability.</p>
GPT 3.5 Response	<p>Imagining a scenario where Bitcoin is adopted everywhere globally involves speculation and conjecture, as it is highly uncertain and depends on various factors. However, we can explore some potential implications and considerations:</p> <p>Financial Inclusion: Bitcoin's adoption worldwide could potentially promote financial inclusion, especially in areas with limited access to traditional banking services. Bitcoin's decentralized nature allows individuals to participate in the global economy without relying on traditional financial intermediaries.</p> <p>Increased Efficiency: Bitcoin's underlying technology, blockchain, has the potential to streamline financial transactions and reduce inefficiencies associated with traditional payment systems. The adoption of Bitcoin could lead to faster, cheaper, and more secure cross-border transactions, benefiting businesses and individuals alike.</p> <p>Disruption of Existing Financial Systems: Bitcoin's widespread adoption could disrupt traditional financial systems, including banks and intermediaries. This could challenge the current centralized control of monetary systems and potentially shift power to decentralized networks and individuals.</p> <p>Volatility and Price Stability: Bitcoin's current volatility makes it less suitable as a stable medium of exchange. However, if it were to be adopted everywhere, increased liquidity and wider acceptance could potentially lead to greater price stability over time. Price stability is crucial for a currency to be widely accepted and used in day-to-day transactions.</p>

	<p>Regulatory Challenges: The widespread adoption of Bitcoin would likely pose significant regulatory challenges for governments and international bodies. The need to establish consistent regulations, address issues such as money laundering, tax compliance, and consumer protection would become paramount.</p> <p>Economic and Monetary Implications: Bitcoin's adoption everywhere would impact traditional monetary policies and central banks' ability to influence the economy through interest rates, money supply, and other tools. It would require significant adjustments and considerations to maintain macroeconomic stability.</p> <p>Privacy and Security Concerns: Bitcoin's pseudonymous nature raises concerns about privacy and potential misuse for illicit activities. Striking a balance between privacy and regulatory compliance would be a complex challenge in a world fully adopting Bitcoin.</p> <p>Technological Advancements: Widespread adoption of Bitcoin would likely drive further advancements in blockchain technology and its integration into various industries beyond finance. This could revolutionize areas such as supply chain management, voting systems, and more.</p> <p>It's important to note that the above points are speculative and based on assumptions. The adoption of Bitcoin everywhere would require overcoming numerous challenges, including technological, regulatory, economic, and societal hurdles. Additionally, it's worth considering that a world solely dependent on Bitcoin may limit diversity in financial systems and exclude those who are not familiar or comfortable with digital currencies.</p>
<p>GPT 4 Response</p>	<p>If Bitcoin were to become legal tender worldwide, the implications would be far-reaching, affecting various sectors and aspects of life from economics to governance. Here are some areas that would likely see significant change:</p> <p>Economic Impacts</p> <p>Monetary Policy: Central banks would lose some degree of control over monetary policy, as they can't control the supply of Bitcoin. This would limit their ability to manage inflation and employment through monetary means, such as changing interest rates or executing quantitative easing.</p> <p>Financial Markets: With a universal, decentralized currency, we could see greater fluidity in global financial markets. However, the volatility of Bitcoin could introduce new kinds of systemic risk.</p> <p>Banking System: Traditional banking systems could undergo severe disruptions, as Bitcoin's decentralized nature makes many services banks offer, like secure and verified transactions, redundant.</p> <p>Taxation and Regulation: Governments would struggle with taxation and the enforcement of financial laws due to the pseudonymous nature of Bitcoin transactions.</p>

Inequality: Access to digital infrastructure would determine financial inclusion. Those without reliable internet access might find themselves further marginalized.

Capital Flight: Governments would find it harder to enforce capital controls, as Bitcoin can easily be moved across borders without detection.

Social Impacts

Privacy: Bitcoin could increase financial privacy but could also be a boon for illegal transactions and money laundering.

Consumer Behavior: The deflationary nature of Bitcoin might encourage saving overspending, potentially impacting consumer culture and economic activity.

Technological Impacts

Innovation: A worldwide adoption of Bitcoin might spur innovation in blockchain technology and drive the development of decentralized systems.

Energy Usage: The proof-of-work mechanism in Bitcoin consumes significant amounts of energy. Global adoption could exacerbate environmental concerns unless there is a move to more sustainable validation mechanisms.

Political Impacts

Sovereignty: The global adoption of Bitcoin as legal tender would challenge the notion of monetary sovereignty. Countries with weak currencies would be most affected.

Geopolitics: U.S. influence could diminish if the dollar loses its status as the world's primary reserve currency. This could make room for a new kind of "crypto diplomacy."

Governance: The decentralized governance model of Bitcoin might influence political systems and could give rise to decentralized autonomous organizations that exist entirely on blockchain.

Regulation: International bodies may need to step in to provide a framework for how Bitcoin could be regulated on a global scale, leading to a new kind of global financial governance.

In summary, if Bitcoin were to become legal tender everywhere, we'd likely see a seismic shift in how economies operate and governments function. It would raise unprecedented challenges in policymaking, social equity, and governance at all levels.

Question 6 - Debate the Bitcoin positions 1) Ban bitcoin in El Salvador, 2) Allow Bitcoin transactions but do not make it legal tender, 3) Preserve the current status quo in which both the US Dollar and Bitcoin are legal tender, and 4) Make Bitcoin the sole legal tender of El Salvador.			
Rating	Poor - Response does not address the points made in the acceptable and outstanding answers.	Acceptable - At least one of the points in each position are included in the answer	Outstanding - Two or more points in each position are included in the answer.
Answer Key	<p>(1) Ban Bitcoin in El Salvador Students assigned to this position should make arguments focusing on the downsides of Bitcoin: loss of control of monetary policy, high price volatility resulting in unpredictable periods of inflation and deflation, and difficulties in meeting the standard definitions of money (store of value, unit of account). They should go further and argue that other negative aspects of Bitcoin outweigh its benefits enough to fully ban its use. These may include its ability to facilitate crime, the threat it may pose to the stability of traditional financial systems and its potential to form an asset bubble, the lack of consumer protection (transactions are irreversible), and even environmental concerns about the energy-intensive process of mining and verifying transactions. They should similarly make these arguments when rebutting other groups.</p> <p>(2) Allow Bitcoin transactions but do not make it legal tender A lot of this argument is similar to (1), but more nuanced. Students in this group should focus on the threats to financial stability, loss of monetary control, and difficulty of merchants being able to access the technological infrastructure and price goods in Bitcoin, but also argue that Salvadorans should be free to voluntarily participate in the Bitcoin economy. While students in (1) may take a paternalistic view that Salvadorans should be protected from fraud and the risks of speculation, students in this group should not. Students in this group may argue that the ability to detect financial crimes conducted in Bitcoin has improved over time, reducing those costs.</p> <p>(3) Preserve the status quo where both US Dollar and Bitcoin are legal tender. This group, as well as group (4), will likely make the use of many of the arguments President Bukele made that are outlined in the case. Instructors should give extra rewards to students that are able to think outside of those arguments. A good argument for this group is that using both the dollar and Bitcoin in parallel offers “the best of both worlds.” There is the relatively stable U.S. dollar that meets all of the common definitions of money and the currency used by the vast majority of Salvadorans who send remittances. At the same time, the use of Bitcoin provides access to the unbanked, and additional security and privacy. The belief that Bitcoin will rise in value over time means that Salvadorans are being driven into acquiring an appreciating asset.</p> <p>(4) Make Bitcoin the sole legal tender of El Salvador. This group should have a largely mirror image argument to (1). Good arguments for this position would include that bitcoin operates on a decentralized network and is independent from government interference, which reduces the risk of corruption. Bitcoin, in the long run, is presumed to avoid inflation risks because of its fixed supply. There are privacy and security arguments in favor of Bitcoin – the same features that might lead to greater tax evasion and financial crimes can also protect individuals from fraud, identity theft, and unauthorized transactions. Even though</p>		

	<p>transactions are irreversible fraudulent transactions may be less likely to occur in the first place. Because Bitcoin can be used by anyone with an internet connection, it provides access to the unbanked and allows for easy transfer of remittances. Meanwhile, use of the U.S. dollar imposes US monetary policy on El Salvador with all the attendant downsides.</p>
<p>GPT 3.5</p>	<p>Ban Bitcoin in El Salvador: Supporters of this position might argue that banning Bitcoin is necessary to mitigate potential risks associated with its use. Concerns such as price volatility, money laundering, tax evasion, and consumer protection could be cited as reasons for a ban. They might also argue that a ban would allow the government to maintain control over the monetary system and ensure stability.</p> <p>Opponents, on the other hand, might argue that a ban stifles innovation and economic growth. They may believe that instead of outright banning Bitcoin, the government should focus on implementing effective regulations to address the risks associated with its use. They might also highlight the potential benefits of Bitcoin, such as financial inclusion and efficiency, and argue that a ban would hinder progress in these areas.</p> <p>Allow Bitcoin transactions but do not make it legal tender: Supporters of this position may argue that allowing Bitcoin transactions without making it legal tender provides flexibility and choice to individuals while minimizing potential risks. They may advocate for a regulatory framework that ensures transparency, consumer protection, and tax compliance. By allowing transactions, they argue, the government can tap into the potential benefits of Bitcoin without relinquishing control over the monetary system.</p> <p>Opponents might argue that this approach creates uncertainty and confusion regarding the legal status of Bitcoin. They may claim that without official recognition, businesses and individuals may be reluctant to accept Bitcoin, hindering its adoption and potential benefits. They might also raise concerns about the potential challenges in regulating Bitcoin transactions effectively and ensuring compliance.</p> <p>Preserve the current status quo of dual legal tender (U.S. dollar and Bitcoin): Supporters of maintaining the current status quo may argue that it provides a balance between the stability of the U.S. dollar and the potential benefits of Bitcoin. They might highlight the advantages of having options for transactions and emphasize that individuals and businesses can decide which currency to use based on their preferences and circumstances.</p> <p>Opponents might argue that the dual legal tender system creates complexity and challenges in day-to-day transactions, accounting, and financial management. They may claim that it dilutes the effectiveness of monetary policy and complicates macroeconomic management. They might also express concerns about the potential volatility and risks associated with Bitcoin's price fluctuations.</p> <p>Make Bitcoin the sole legal tender of El Salvador: Supporters of making Bitcoin the sole legal tender might argue that it promotes financial innovation, attracts investment, and positions El Salvador as a global leader in the adoption of digital currencies. They might claim that Bitcoin's decentralized</p>

	<p>nature reduces dependency on traditional financial systems and provides individuals with more control over their finances. They may also argue that it fosters economic growth and encourages technological advancements.</p> <p>Opponents might contend that making Bitcoin the sole legal tender is risky due to its volatility and uncertain long-term stability. They might express concerns about the potential impact on the country's monetary policy, central bank credibility, and the ability to respond to economic crises. They may also raise concerns about the exclusion of individuals who are not familiar or comfortable with digital currencies.</p> <p>It's important to note that the positions outlined above represent general arguments and do not encompass all possible perspectives. The actual debate surrounding Bitcoin's adoption in El Salvador involves complex considerations and requires a thorough examination of its potential benefits, risks, and long-term implications.</p>
GPT 4	<p>Position 1: Ban Bitcoin in El Salvador</p> <p>Arguments For:</p> <p>Financial Stability: One of the most important reasons for banning Bitcoin is to maintain financial stability. Cryptocurrencies are volatile and can introduce significant risk to an economy.</p> <p>International Relations: The adoption of Bitcoin as legal tender has raised concerns among international financial institutions like the IMF. Banning it could help maintain good relations and secure vital funding.</p> <p>Regulatory Compliance: Cryptocurrencies often pose challenges to law enforcement agencies because of their anonymous nature. Banning Bitcoin could aid in the fight against money laundering and other illegal activities.</p> <p>Arguments Against:</p> <p>Lost Opportunity: By banning Bitcoin, El Salvador could miss out on the potential benefits such as financial inclusion for the unbanked and attracting investment and tourism.</p> <p>Public Sentiment: There could be backlash from the public and businesses that have adopted or invested in Bitcoin, causing social unrest.</p> <p>Position 2: Allow Bitcoin transactions but do not make it legal tender</p> <p>Arguments For:</p> <p>Reduced Risk: This would allow people to engage in Bitcoin transactions without the government having to take on the associated financial risks.</p> <p>Financial Inclusion: Could still offer more financial tools to people who are unbanked.</p> <p>Attract Investment: Could attract tech-savvy investors and companies to El Salvador without making the country reliant on a volatile asset.</p> <p>Arguments Against:</p> <p>Confusion: Differentiating between currencies that are legal tender and those that are merely allowed could cause confusion.</p> <p>Limited Adoption: If Bitcoin is not legal tender, businesses and people may be less inclined to use it.</p>

Position 3: Preserve the current status quo in which both the U.S. dollar and Bitcoin are legal tender**Arguments For:**

Financial Inclusion: One of the biggest potential benefits is providing financial services to the unbanked population of the country.

Dual Benefits: Could potentially harness both the stability of the U.S. dollar and the potential upside of Bitcoin.

Arguments Against:

Volatility: The volatile nature of Bitcoin poses a considerable risk to the country's financial stability.

Confusion: Having two vastly different forms of legal tender could create confusion among residents and investors.

Position 4: Make Bitcoin the sole legal tender of El Salvador**Arguments For:**

Full Financial Independence: It could allow El Salvador complete monetary freedom and independence from U.S. monetary policy.

Global Spotlight: Would draw global attention and potentially attract Bitcoin entrepreneurs and investors to the country.

Arguments Against:

Extreme Risk: Making a highly volatile asset the sole legal tender would be an unprecedented economic gamble.

International Relations: This could severely harm relations with international financial institutions and other countries.

Practicality: Given the current technological limitations of Bitcoin such as transaction speed and cost, it might not serve as a practical sole legal tender.

Each of these positions has its pros and cons, and the choice is not straightforward. It would depend on a variety of factors including risk tolerance, economic conditions, and the potential for implementing safeguards against the associated risks.

Question 7 - Beyond asking students about the bond issue features and fund usage, the question for students to explore is: Has El Salvador correctly priced the bonds to entice investors to purchase them?			
Rating	Poor - The response does not address country risk and default risk in the response.	Acceptable - The response addresses country risk and default risk.	Outstanding - Mention of the actual estimate of default and country risk premiums for El Salvador from databases available at NYU.
Answer Key	<p>Kohler (2023) makes this statement: “While a 6.5% interest payment in dollars seemed very attractive trade a year ago when the U.S. was near 0%. This year has been a different story, with central banks scared of rampant inflation, and as a result of the fight against inflation, the Federal Reserve continued to hike interest rates to over 4%. Now that you know that the so-called “risk-free rate” is only 2.5% off El Salvador’s offering, it makes the bitcoin bond far less attractive when you compare the risk versus the reward. The current central bank policies could seriously drown out investor demand for additional yield offshore when they can park their money in U.S. bonds and move in and out of it, as the U.S. bond market is far more liquid.”</p> <p>The question would lead students to explore the default risk and country risk premium for El Salvador. Damondaran (2023) has developed a database that calculates these risk premiums that are updated at least once a year. As of the last data update in January 2023, the default risk premium for El Salvador was 12.24%, with a country risk premium of 17.26%. The implications of the data and the theory, suggest that under the current U.S. interest rate environment there is not a sufficient spread to provide compensation to entice foreign investors to purchase the bonds.</p> <p>The response to this question may vary overtime with changes in the interest rate environment in the United States and as credit agencies revise El Salvador’s credit rating.</p> <p>The details of the bond issue can be found in Kohler (2023) article.</p>		
GPT 3.5 Response	<p>As an AI language model, I don't have real-time data or access to the specifics of El Salvador's volcano bonds. However, I can provide some general insights on pricing bonds to entice investors.</p> <p>Pricing bonds involves determining an appropriate interest rate or yield that aligns with market conditions and investor expectations. Several factors influence bond pricing, such as creditworthiness, market interest rates, maturity, and the bond's specific features.</p> <p>To entice investors, El Salvador would need to consider the following:</p> <p>Risk Assessment: Investors assess the creditworthiness of a bond issuer, including factors like economic stability, political environment, and the ability to honor debt obligations. El Salvador's risk profile, including its fiscal position and stability, would impact the pricing of volcano bonds.</p>		

	<p>Market Conditions: Bond pricing is influenced by prevailing interest rates in the market. Higher market interest rates generally lead to higher bond yields. El Salvador would need to assess market conditions and price the volcano bonds competitively to attract investors.</p> <p>Bond Features: The specific features of the volcano bonds, such as the maturity period, coupon rate, and redemption terms, will affect pricing. Balancing the terms to offer an attractive yield relative to the perceived risk is crucial to enticing investors.</p> <p>Investor Demand: The demand for the volcano bonds plays a role in pricing. El Salvador would need to gauge investor interest and appetite for the bonds to determine the pricing strategy. If there is strong demand, the pricing can be set at a more favorable level.</p> <p>Without specific information on El Salvador's volcano bonds, it is difficult to assess whether they have been correctly priced to entice investors. The pricing strategy should consider market conditions, investor sentiment, and the risk-reward balance. Professional financial institutions and experts typically work on bond issuances to determine appropriate pricing based on these factors.</p>
<p>GPT 4 Response</p>	<p>I don't have up-to-date information beyond September 2021, so I can't provide specific numbers on the pricing of El Salvador's Bitcoin bonds. However, there are several considerations that can be made to assess whether the country has correctly priced the bonds to attract investors.</p> <p>Risk Premium: Given El Salvador's low credit rating and the volatile nature of Bitcoin, the bonds would likely need to offer a substantial risk premium over safer assets to attract investors.</p> <p>Market Conditions: Timing can be crucial. Are investors currently risk-averse, or are they looking for high-return investments? Are interest rates generally rising or falling in global markets?</p> <p>Bond Structure: The terms of the bond—such as the interest rate, the period until maturity, and any additional features like convertibility into Bitcoin—will also influence how attractive it is to investors.</p> <p>Political Risk: Any political instability or policy flip-flops would need to be factored into the bond pricing.</p> <p>Global Sentiment Towards Crypto: The global regulatory environment for cryptocurrencies is a significant factor. Supportive or restrictive measures could dramatically affect investor willingness to purchase such a bond.</p> <p>Currency Risks: Investors will need to consider the currency risks involved in holding a bond related to Bitcoin, especially if they ordinarily deal in another currency.</p> <p>Track Record: Finally, El Salvador's track record of meeting its debt obligations will be crucial. Any history of defaults will necessitate higher returns for investors to consider the bonds a viable investment.</p>

Given these factors, if the bond is priced with a high enough yield to compensate for these risks and uncertainties, it could attract a niche group of investors looking for high returns and willing to bear the associated risks. If not, the offering may struggle to find enough buyers.

For the most current and specific evaluation, one would need to consult financial analysts who have looked closely at the terms of the bond offering and the current market conditions.



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