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BUSINESS STRATEGY

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Letter From the Editors

A Pursuit to Understand a Changing and Dynamic World

“In times of change, learners inherit the earth; while the learned find themselves beautifully equipped to deal with a world that no longer exists.” — Eric Hoffer

In a world marked by contradiction—rapid innovation with widespread mistrust, record-breaking investments and rising disenchantment—the Fall 2024–Winter 2025 issue of the Waterloo Business Review arrives at a moment of deep uncertainty and constant acceleration.

We live in an era defined by both abundance and volatility. Artificial intelligence is redrawing the boundaries of productivity and creativity, yet its purpose and governance remain open questions. Speculative bubbles form faster than public understanding can catch up. Our attention spans shrink, even as the systems guiding them become more powerful. And the global economy continues to shift under the weight of inflation aftershocks, high interest rates, and geopolitical fractures from Gaza to the South China Sea.

Against this backdrop, our latest issue turns a clear and critical eye toward the ideas shaping business, culture, and capital. We explore how business stretches at the seams—where technologies like VR and AI promise transformation but deliver ambiguity, and where design outpaces ethics in sports betting and media. We examine Disney’s IP fatigue and Southeast Asia’s tech surge, where new playbooks are being written over-top the old.

At the Waterloo Business Review, we don’t pretend to have the final word on these issues. But we do believe in asking better questions, and we believe in the power of writing as a means by which we may navigate complexity. We see ourselves not as experts, but as students of change: curious, rigorous, and committed to understanding the structures that shape our world. This issue reflects that mindset.

As our world moves faster, the need to slow down, reflect, and rethink becomes not just helpful, but necessary. We hope the pages that follow offer not only insight, but space to pause, challenge, and reconsider. Thank you for reading.

Sincerely,

Arnav Sheth
Editor-in-Chief

Sofia Suleman
Editor-in-Chief

Our Team

Our dedicated and passionate team is focused on growing and establishing the Waterloo Business Review in the Waterloo and Kitchener business community.

Waterloo Business Review empowers our team through our emphasis on creative freedom, professional development of research and communication skills, and our culture of entrepreneurship and growth as we nurture members to adopt positions of greater responsibility and leadership.

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Left to right, top to bottom: Arnav Sheth, Sofia Suleman, Kabir Singh Bajwa, Siddhant Kapur, Yukttha Siva, Agraj Joshi and Gurpartap Thap

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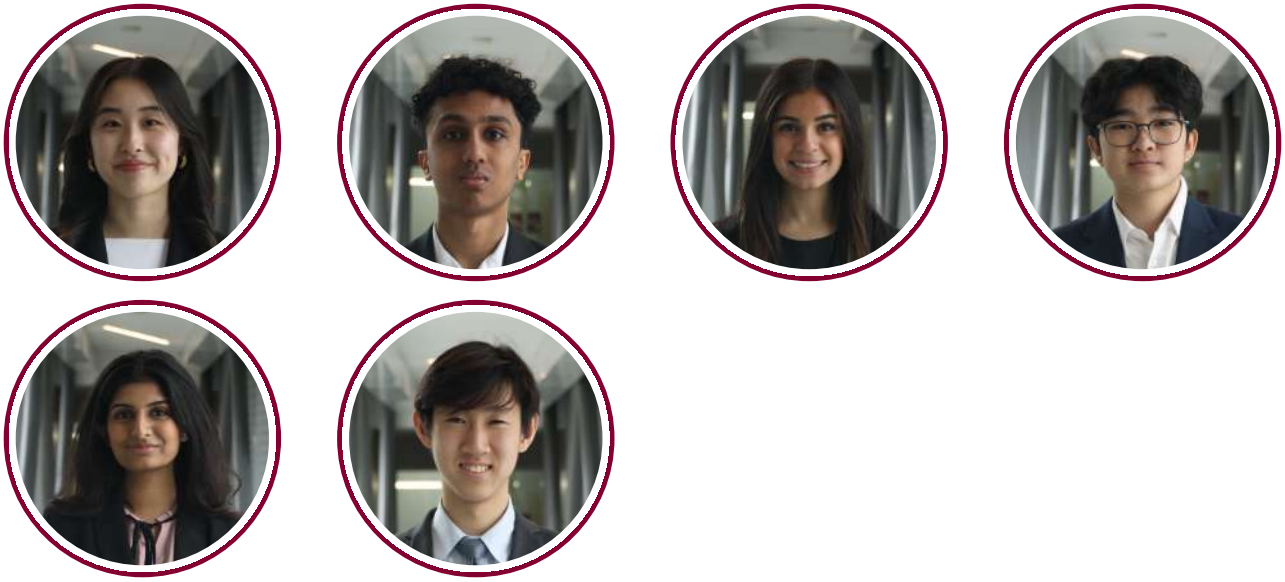

Left to right, top to bottom: Ziqiao Chen, Ishan Vakharia, Sara Etedali, Edwin Zhu, Siya Patel and Derek Ma

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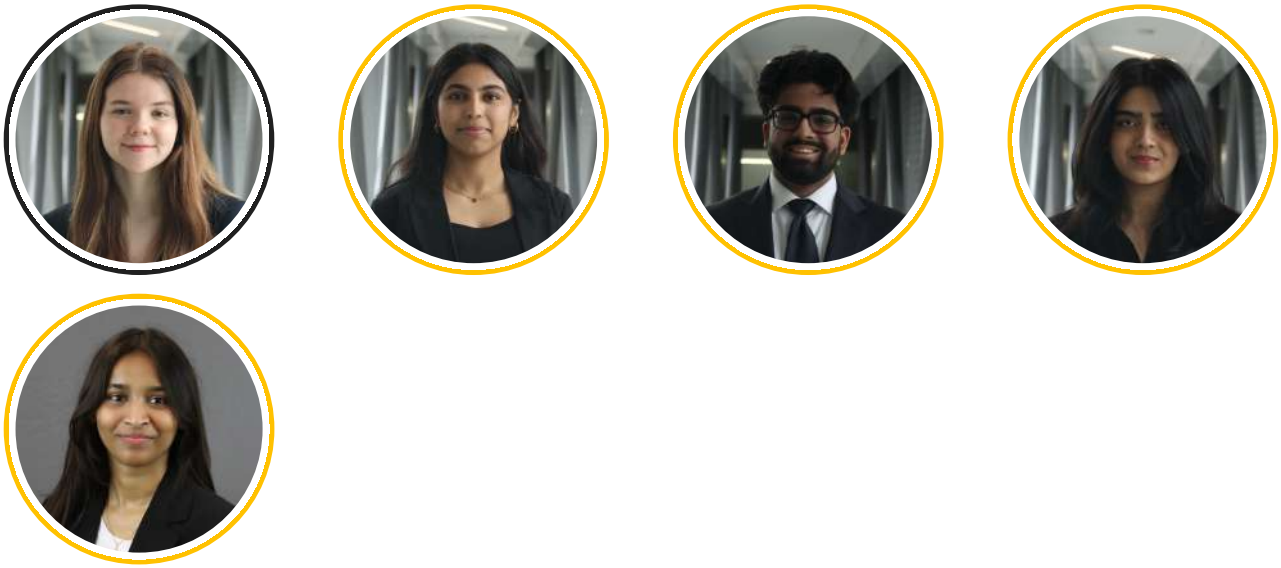


Left to right, top to bottom: Hailey Flood, Meher Aamir, Qaahir Rahemtulla, Angela Atif and Aarnavi Seeta

Business Strategy:

The Persuasion Playbook: Tobacco & Sports Betting Marketing Strategies

Edwin Zhu & Gurpartap Thap

Illustrated by Qaahir Rahemtulla

Introduction

Advertising has long been a powerful force in shaping consumer behavior, leveraging psychological triggers to influence purchasing decisions. Both the unregulated tobacco industry of the 20th century and today's sports betting industry have drawn significant ethical scrutiny for their manipulative advertising tactics. While tobacco is inherently harmful with no safe level of consumption, gambling occupies a more ambiguous space—it can be a form of entertainment but also carries risks of addiction and financial ruin.

Despite these fundamental differences, both industries share strikingly similar marketing strategies that exploit consumer psychology, normalize consumption, and downplay associated risks. Their integration into mainstream media has fostered a culture of habitual engagement, demonstrating the dangers of unchecked advertising.

As these regulations tighten, they will not only alter the marketing strategies of gambling companies but will also significantly change consumer habits, athlete sponsorships, and even the way sports organizations generate revenue (Strachan, 2023).

Exploiting Consumer Psychology Through Identity and Social Bonding

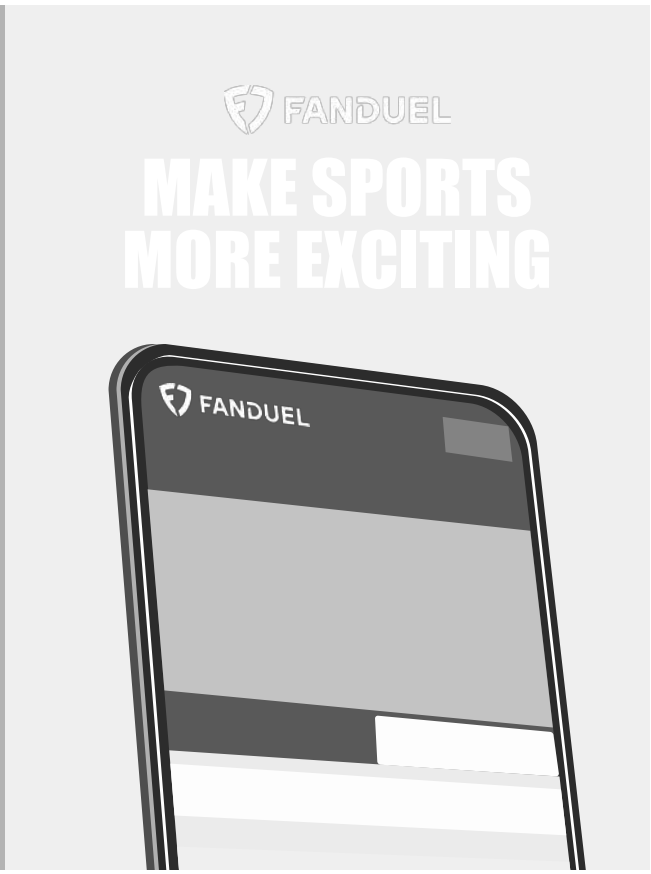
A core tactic in both tobacco and sports betting advertisements is their ability to exploit consumer psychology by tying their products to identity and social bonds. Tobacco campaigns, most notably the Marlboro Man, reinforced an image of rugged masculinity and independence, positioning smoking as a symbol of strength and self-reliance (Centers for Disease Control and Prevention [CDC], 2023).

This iconic marketing strategy made Marlboro one of the best-selling cigarette brands in the world, particularly appealing to young men who aspired to the portrayed image. A similar campaign was launched for

women as well by Virginia Slims, who marketed cigarettes to women as symbols of empowerment and sophistication.

Similarly, sports betting advertisements leverage camaraderie and group experiences, portraying gambling as an essential part of watching sports with friends. Slogans such as “Come to where the flavor is” in cigarette advertising mirror the psychological manipulation in modern gambling advertisements, which depict betting as an enhancement to social experiences rather than a solitary activity. FanDuel’s major mission being marketed to “make sports more exciting” clearly supports the argument above.

According to Dr. Christine Purdon, a University of Waterloo professor specializing in mood and anxiety-related behaviors, Fear of Missing Out (FOMO) plays a crucial role in gambling behaviors, particularly among young males, who are most susceptible to impulsive betting. Studies indicate that individuals with high FOMO levels actively seek social involvement to avoid exclusion, making them more likely to engage in impulsive gambling activities (Li et al., 2021).



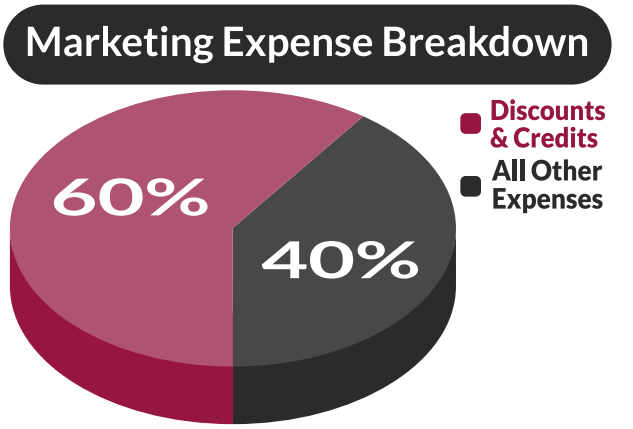
Yahoo reported that one in five college students use financial aid for gambling, highlighting the vulnerability of younger demographics (Yahoo News, 2023).

Souce: Yahoo, 2023

Sports betting advertisements amplify this psychological trigger by consistently presenting betting as an integral part of watching sports, where missing a wager equates to missing an important social experience.

Both industries also leverage visual cues and gamification techniques to increase consumer engagement. Tobacco packaging historically used high-contrast colors and sophisticated designs to create an emotional connection with consumers. Similarly, sports betting platforms use vibrant visuals, flashing odds, instant cash-out options, and promotional free bets to keep users engaged.

Experts that our team interviewed further supported our claim, stating that nearly 60% of the marketing budget for sports betting advertisements is allocated to provide discounts and credits to entice users to place a bet. From there onwards, the overall design and structure of the platform helps create a recurring customer base.



Source: European Gaming Board Executive

Dr. Purdon also mentions that one particularly manipulative tactic in sports betting advertisements is the strategic presentation of losses. When a user loses a bet, their losses are often displayed in plain white, reducing their psychological impact.

In contrast, winnings, no matter how big or small, are highlighted in bold, bright colors to encourage continued betting. Such techniques demonstrate how both industries craft advertising landscapes designed to foster dependency and long-term consumer entrapment.

Embedding Products in Cultural and Social Frameworks

Historically, tobacco advertising leveraged themes of masculinity, sophistication, and freedom, making smoking appear aspirational as outlined above. In the 1980s, tobacco companies expanded their reach through sponsorships in high-adrenaline environments, such as Formula 1 racing, subtly embedding cigarette branding into sports culture. This tactic solidified the presence of smoking in mainstream entertainment, reinforcing its perceived normalcy.

Similarly, sports betting advertisements capitalize on thrill-seeking behavior and social bonding, portraying gambling as an essential part of sports fandom. Featuring athletes and celebrities like Wayne Gretzky and Connor McDavid, these advertisements reinforce the idea that betting enhances the overall experience of watching sports (Otis, 2023). Just as tobacco advertising once suggested that smoking was an expression of identity and status, gambling advertisements frame betting as an indispensable component of the sports experience.

Dr. Purdon recalled how during her youth, smoking was also at times depicted as a socially intimate act – often shown in films and other forms of media where men and women lit each other's cigarettes, symbolizing connection and camaraderie formed solely through the act of smoking.

A key strategy shared by both industries is the saturation of advertising in entertainment and live events. Before stringent regulation in the early 2000s, tobacco companies heavily promoted their products on television, in magazines, and through event sponsorships. In a similar fashion, sports betting advertisements now dominate sports broadcasts, digital platforms, and even team sponsorships.

Source: CBC, 2023

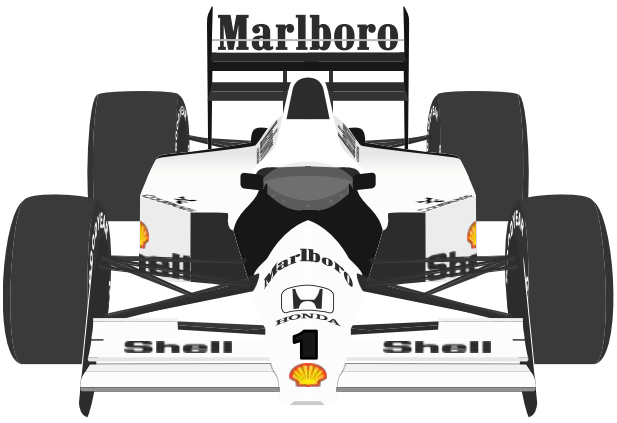
Studies show that gambling-related messages can appear as frequently as 2.8 times per minute during televised games, mirroring how tobacco companies once ensured constant exposure before

regulatory intervention (CBC News, 2023). As a result, sports leagues that currently benefit from gambling sponsorships may need to seek alternative revenue sources, potentially leading to increased ticket prices or paywalled content.

The Inevitable Regulatory Backlash

If the trajectory of tobacco regulation is any guide, sports betting advertising will not remain unchecked. The historical trajectory of tobacco advertising provides a compelling case study for understanding the aggressive marketing tactics employed by the sports betting industry today.

Marlboro became a dominant tobacco brand by targeting young consumers through strategic advertising, particularly in motorsports sponsorships. However, increasing awareness of smoking-related regulations, such as the 2006 ban on tobacco sponsorships in Formula 1 racing.

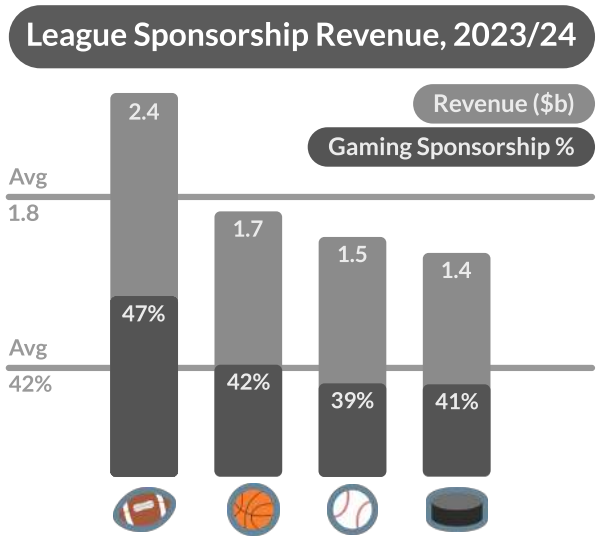


A similar pattern is emerging in the sports betting industry, particularly in North America and Australia, where gambling advertisements have become deeply intertwined with professional sports. Companies like FanDuel, DraftKings, and Bet365 dedicate nearly 20% of sports event airtime to gambling-related advertisements, ensuring constant exposure and reinforcing gambling as an integral part of sports culture (CBC News, 2023). However, this is unlikely to last in the long-term.

Governments have already begun taking action. Countries like Australia and the UK have introduced strict regulations on gambling advertising, including bans on celebrity endorsements and limits on how frequently betting ads can appear during broadcasts. Canada and the U.S. will likely follow suit as concerns over gambling addiction and financial ruin escalate.

These regulatory changes will reshape the industry, forcing gambling companies to rely less on aggressive advertising and more on customer retention strategies, such as loyalty programs and improved user experiences.

This will impact both major sports leagues and consumers quite significantly. For instance, the NBA had an annual revenue for the 2023-2024 season of $11.34B according to Statista; but as we look closer into the drivers of the revenue, nearly $1.7B came from sponsorship deals. Of this $1.7B, nearly half was from gambling related sponsorship deals. And this is not just limited to the NBA, a similar pattern can be seen across all four major sports leagues in the U.S, including the NFL, NHL, NBA and MLB.



Source: Statista & AGA, 2024

Looking ahead into a potentially more stringent regulatory environment, this could significantly impact these leagues who are already dealing with changing viewing habits, rising costs, and and competition from other entertainment options.

Conclusion: Sports Betting's Regulatory Reckoning

The sports betting industry stands at a crossroads, facing the same scrutiny that once reshaped tobacco advertising. While its current dominance in mainstream sports culture mirrors the unchecked marketing of cigarettes in the past, history suggests that such aggressive strategies are unsustainable. As public awareness grows and governments introduce stricter regulations, the landscape of sports betting advertising will inevitably change. For consumers, this will likely mean fewer gambling promotions, stricter advertising guidelines, and greater protections against addiction. Meanwhile, sports leagues and broadcasters that are heavily reliant on gambling sponsorships will need to adapt by seeking alternative revenue sources. Whether this leads to higher ticket prices, paywalled content, or new corporate partnerships remains to be seen.

Ultimately, the trajectory of sports betting advertising is clear: just as tobacco marketing was forced to evolve under regulatory pressure, the gambling industry will also face a reckoning. The question is not if, but when—and how deeply these changes will reshape the intersection of sports, media, and consumer behavior.

Business Strategy:

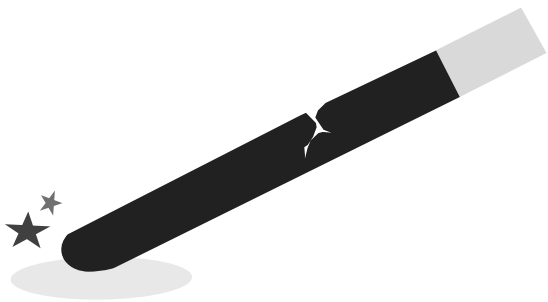
When Imagination Runs Dry: The Cost of Disney's IP Overload

Kabir Singh Bajwa
Siya Patel

Illustrated by
Aarnavi Seeta

Introduction

Disney has always been the go-to for a little bit of magic and a lot of imagination, bringing unforgettable stories and iconic characters from the page to our screens. The message 'If you can dream it, you can do it' has continued to set the stage for the animation powerhouse's defining eras. Yet, in recent years, as they repeatedly revisit the same stories, the question arises: is the magic wearing thin?



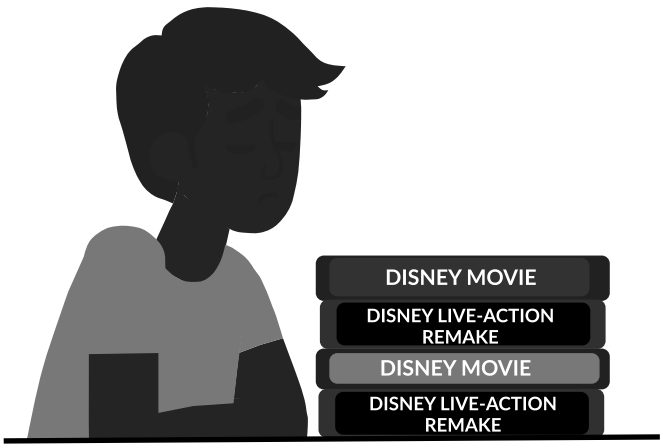
The success of Disney as an empire is often attributed to their process of re-dreaming and re-imagining, captivating generations of audiences. But now, as the company attempts to sell reboot after reboot to its fanbase, with nine live-action remakes in development as of 2025, it is clear the attention has shifted from innovation to conservatism. There is an over-reliance on nostalgia as a marketing strategy, with many franchises that were once fan favourites, like Star Wars, Marvel and Toy Story, being overburdened with lackluste content. This shift is not only affecting the brand Disney has built over the decades, but also has the potential to create consequences well into the future. Not only does this risk diluting iconic franchises, but also threatens to alienate the audience that helped Disney achieve its success in the first place.

Innovation to Limitation:

From its early days, during the Golden and Renaissance eras of Disney, the company has set itself apart from competition with influential films like Snow White, Beauty and the Beast, and Mulan. Each era following has showcased significant shifts in its ability to introduce new animation styles and tell compelling stories, a testament to Walt Disney's vision. However in recent years, Disney has entered a new phase referred to as the Revival Era. While this time period has seen some successful original films like Zootopia and Frozen, it has also seen positively received original productions like Soul and Luca which under performed in the box office. Both these films were first released on Disney+ and then re-released in theaters post pandemic, contributing to their limited financial success. While they were well-received by audiences and critics, they brought in less revenue on account of

audiences already having seen the films on streaming platforms. For instance, Soul earned an estimated $946 154 domestically and Luca made $1.3 million, both modest figures when compared to other theatrical releases. This has likely influenced Disney' creative direction, encouraging them to be more strategic about the stories they pursue. They may be prioritizing films that have strong theatrical appeal and potential for good performance on streaming services, rather than relying on originality which holds the risk of short-lived engagement and limited rewatch value.

Perhaps that is why in recent years there has been an increase in live action remakes, spin-offs and sequels of beloved classics like Aladdin, Lion King and Snow White. While some were popular among viewers, Disney has been heavily criticized for relying on nostalgia rather than creative new ideas to bring in box office success. This trend is especially evident in the backlash surrounding the live-action remake of Snow White, starring Rachel Zegler. A CBC critic strongly criticized the approach, stating, "I believe the virus of live-action Disney remakes is, at best, lazy. At worst, they're evil." This commentary echoes the growing frustration the masses feel on Disney's reliance on past successes.



Overload Effect

The overload effect refers to the phenomenon where an overwhelming amount of information can lead to confusion or fatigue, and while not unique to Disney, its implications are becoming evident. In the case of the Star Wars franchise under Disney, the overload effect has become apparent with the addition of more than five movies and 20 seasons of TV shows to the existing universe since 2012. The constant release of content has made the creation of a cohesive universe challenging, with mixed reviews. Audience reactions have been positive for shows like The Mandalorian and Andor, and negative for productions like Obi-Wan Kenobi with many critics commenting that it felt unnecessary or poorly executed. Most of the negative feedback has focused on

subpar CGI, sets and costumes that appear low-budget, and inconsistencies in the writing, particularly during scenes between Obi-Wan and Darth Vader. These issues were a result of broader production challenges, including the previous box office failure of Solo, several script rewrites, changes in showrunners and pandemic-related delays. In ways there's a similarity between Disney's content strategy for Star Wars and the one it employs for the Marvel Cinematic Universe (MCU). Rapid content production challenges the studio's ability to maintain a consistent narrative, leading to continuity errors, inconsistent character arcs and less impactful storytelling. Take for example the newest addition to the Star Wars franchise, Ahsoka. Fans are divided with one fan stating, "Disney did it for money, first and foremost… Episode 7 was a copy and paste of episode 4. You can write most of the main plot points down on a piece of paper and it would read the same." While Disney's ambitions to build expansive universes are clear, the challenge now lies in finding a balance that will avoid overwhelming, and ultimately losing, its audience.

This growing divide in audience opinion is is not just a result of a few disgruntled fans, but is also reflected in box office numbers and ratings. Across its three seasons, The Mandalorian has an average Rotten Tomatoes score of 90% and IMDB rating of 8.6/10. In contrast, The Rise of Skywalker has a significantly Rotten Tomatoes score of 51% and IMDB rating of 6.4/10. This stark difference is a direct result of The Rise of Skywalker's reliance on nostalgia evident in the recreation of iconic moments from the original trilogy, reuse of classic lines and themes, and flood of cameos. Furthermore, many of the plot lines created in the preceding film, The Last Jedi are ignored in favour of safer storytelling choices like the resurrection of Emperor Palpatine, a villain seen in the original trilogy, with poor justification. This tendency to prioritize fan service, detracts from the potential of the Star Wars universe, hurting fan interest. Moving forward it is essential for Disney to consider how it can continue to evolve the franchise without hurting the quality of the content it is delivering.

Future of Diminished Returns

Yet another case similar to Star Wars is the Transformers franchise which has seen a decline in both popularity and profits. The Hasbro funded saga paints the perfect picture of what a future might look like if Disney continues to push unoriginal stories and characters onto its viewers. Initially a massive commercial success, Transformers

soon became a victim of audience fatigue after relying too much on the same formula, releasing film after film based on similar plots and characters. Dying viewer interest became clear in its box office performance over time, with steadily decreasing returns.

The biggest drop in revenue can be seen in the release of Transformers: The Last Knight, which on an estimated budget of $217 million made $605 million. This is a steep decrease when compared to the fact that the previous film, Transformers: Age of Extinction, made $1.104 billion on a comparable budget. Critic and audience reviews reflected this drop, with many reviews stating that while some interesting, plot points were set up, ultimately the film fell back on the tried and true action sequences that "don't land as well as they used to." Transformers: The Last Knight, hit an all-time low on Rotten Tomatoes, scoring just 16%. To give the franchise some credit, they did make an attempt to innovate within the realm of their world, with the release of films such as Bumblebee and Transformers One, the IP's first animated feature in decades. While these films did not perform remarkably well in the box office, they were fan favourites and struggled as a result of franchise fatigue stemming from a decade of Michael Bay's over-the-top action-packed style. Critics believe that it was difficult for the studio to shift audience expectations with just one film, translating into less interest despite a new take on the franchise. This is exemplified by the fact that Bumblebee had a Rotten Tomatoes score of 91%, indicating that critics responded positively even though audiences were slower to embrace

Release Year	Movie	Date	Action
2007	Transformers	$145-200 million	$709 million
2009	Transformers: Revenge of the Fallen	$200-210 million	$836 million
2011	Transformers: Dark of the Moon	$195 million	$1.124 billion
2014	Transformers: Age of Extinction	$210 million	$1.104 billion
2017	Transformers: The Last Knight	$217-260 million	$605 million
2018	Bumblebee	$135 million	$468 million
2023	Transformers: Rise of the Beasts	$195-200 million	$439 million

Source: Screen Rant, 2024

the change. However, much like Disney, the franchise ultimately prioritizes financial performance, making it unlikely future installments will continue exploring innovative storylines until there are strong box office returns. The Transformers franchise serves as a cautionary tale; when studios prioritize familiarity over fresh storytelling, it's only a matter of time before audiences tune out. Disney with its stream of sequels and reboots, risks falling into the same trap, not only losing out on profits but also risking declining audience loyalty and market positioning.

Broken Flywheel

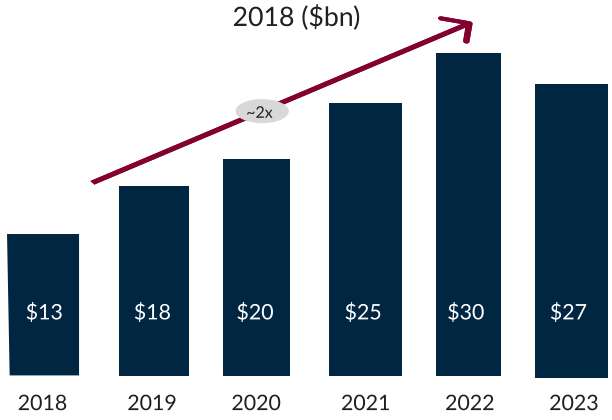
Disney's reliance on nostalgia and recycled content hasn't just impacted its entertainment division, but it has also disrupted the synergy that once fueled growth across its other business segments, creating a broken flywheel. For decades, Disney's business model thrived on the flywheel principle, where success in one area—like entertainment—would spark demand in others, such as consumer products, theme parks, and media networks. However, with the recent shift towards reboots, remakes, and sequels, Disney has seen a drop in excitement surrounding its new releases, causing this once-powerful flywheel to falter.

While Disney's strategy of recycling beloved classics like The Lion King and Aladdin has brought in profits, it hasn't sparked the same level of engagement or enthusiasm that their original stories once did. These live-action remakes, though visually impressive, failed to ignite the kind of fan fervor that leads to massive merchandise sales or theme park expansions. For instance, when films like Frozen or Toy Story first hit theaters, they generated widespread excitement that rippled across consumer products, from toys to clothing. In contrast, the remakes haven't had the same lasting impact, with merchandise sales stagnating as audiences already own similar products from previous versions of the same stories.

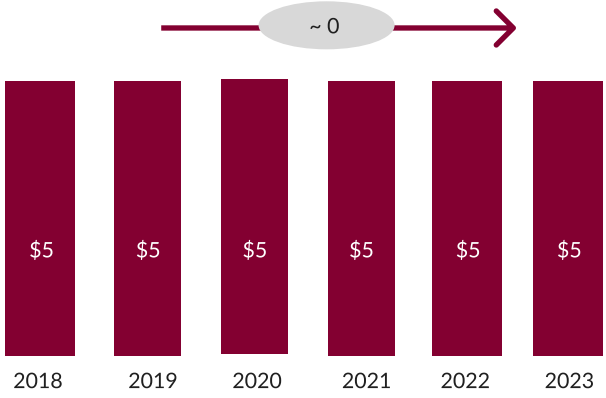
The strain on the synergy between Disney's entertainment and consumer products segments is evident in the numbers. Despite a significant increase in content spend, particularly on these rehashed

stories, the revenue from consumer products has remained flat. The diminished demand for merchandise tied to these retold narratives points to a larger issue: the repetitive content has made it harder to sustain the flywheel effect that once drove Disney's growth across all of its divisions. This broken synergy poses a significant challenge to the company's long-term strategy, as the once-reliable interplay between divisions weakens with each unoriginal release.

Significant Ramp in Content Spend
Spend on Produced and Licensed Content Since FY 2018 ($bn)



Consumer Products Revenue is Falt
Consumer Products Segment Revenue ($bn)



Source: Trian White Paper, 2024

Restoring the Magic

To reclaim its position as the leader in innovation and storytelling, Disney must undergo significant changes. First, the company needs to shift away from the safety of remakes and sequels and refocus on developing original content that resonates with both longtime fans and newer generations. By investing in fresh ideas, Disney has the opportunity to create the next wave of iconic stories that will not only captivate audiences but also reinvigorate excitement across all of its business segments. At the same time, Disney should conduct a comprehensive review of its creative processes to identify and address any internal bottlenecks. By fostering greater collaboration between its animation, live-action, and Disney+ teams, or empowering emerging creative voices, the company can reawaken the innovative spirit that once set it apart. This re-imagining of how stories are developed could help Disney overcome its recent struggles, particularly in its animated division. The company's animated films, once guaranteed box office hits, have been experiencing mixed results. Disney should take a closer look at why these films are under-performing and consider experimenting with new animation styles,

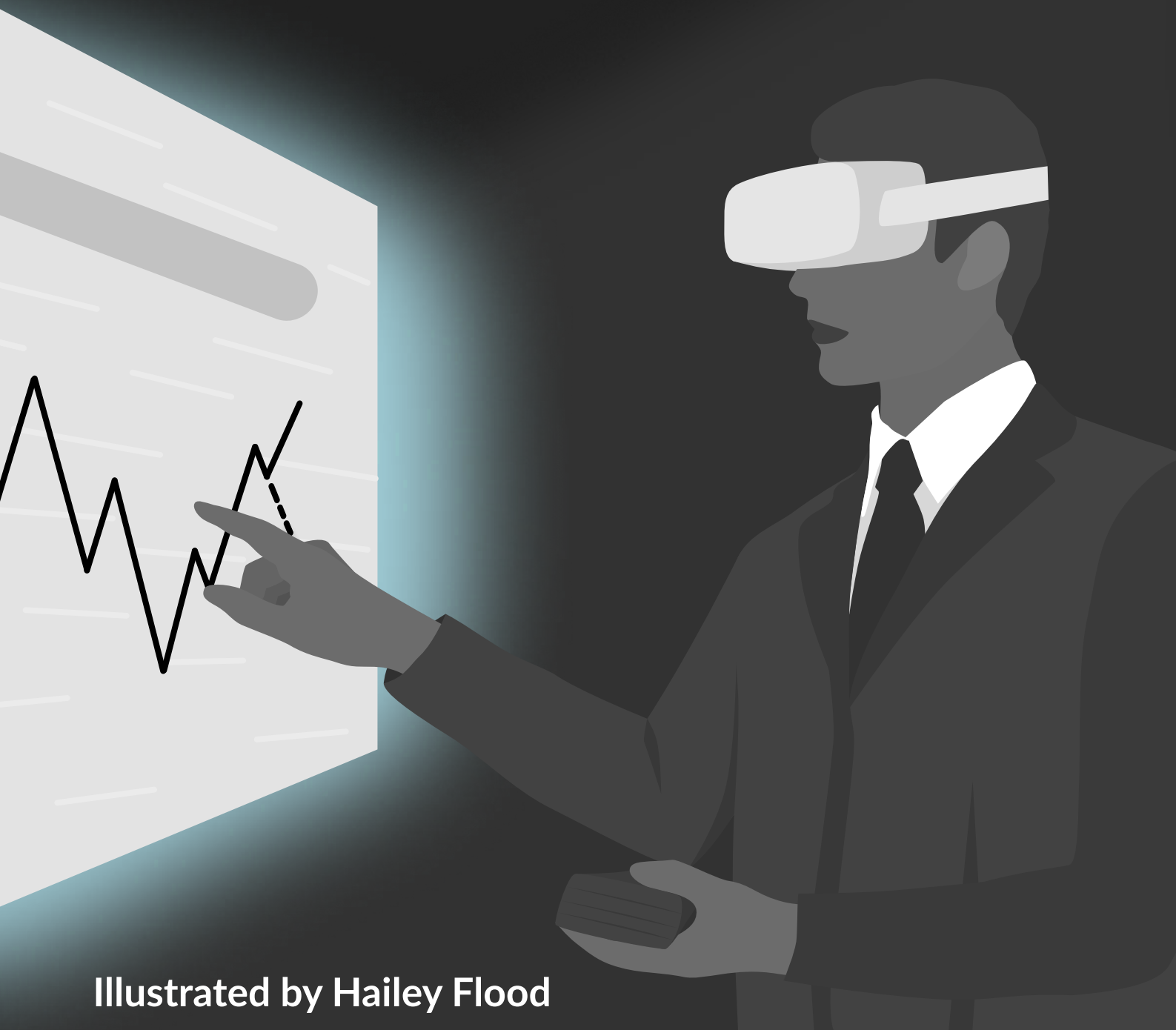
storytelling techniques, and a wider array of diverse, global characters to better connect with today's audiences. This willingness to take risks is essential for reclaiming the magic that once defined its animated features.

Disney must also reconnect with its core identity. As Walt Disney famously said, "To this day, I don't believe in sequels. I can't follow popular cycles. I have to move on to new things—there are many new worlds to conquer" (1966 Letter to Shareholders). The studio needs to return to the essence of what made it a beloved brand in the first place: the ability to dream big and create timeless, imaginative stories. By focusing on delivering high-quality, original content, rather than relying on past successes, Disney can preserve the magic and inspire audiences once again. To sustain its legacy, the company must push beyond what's been done and challenge itself to dream further.

Technology:

Why Virtual Reality's Growth Potential is Overestimated

Agraj Joshi, Sara Etedali

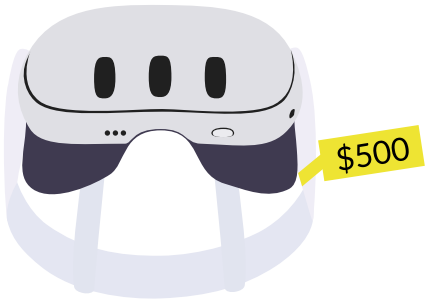


Illustrated by Hailey Flood

The Gap Between Market Potential and Adoption

Virtual reality (VR) has been acclaimed as a transformative technology with the potential to redefine how we work and interact with digital environments. Backed by major investments from tech giants like Meta, Apple, and Samsung, the industry has poured billions into developing headsets, building immersive ecosystems, and marketing VR as the next evolution in computing. Yet, despite this enthusiasm and financial backing, VR adoption has consistently lagged behind expectations.

While the VR market did grow by 46% in 2023 (IDC), that growth remains modest relative to the scale of investment and the sweeping projections made over the past decade. Persistent barriers like high costs, cumbersome hardware, limited content, and health concerns have prevented VR from achieving the same widespread integration seen with technologies like smartphones or tablets. Unlike those devices, which offered clear, tangible value from day one, VR has struggled to prove its relevance in consumer's daily lives. Take the Meta Quest 3 as an example. Released in 2023 to generally positive reviews, it showcased meaningful improvements in display quality, performance, and Mixed Reality (MR) capabilities, blending real and virtual worlds for interactive, real-time experiences. However, the headset failed to drive significant adoption: for most users, it still felt like an expensive, optional gadget rather than a must-have daily tool. The Quest 3's limited content library, $500+ price tag, and continued discomfort during prolonged use all reinforced the perception that VR remains more novelty than necessity.

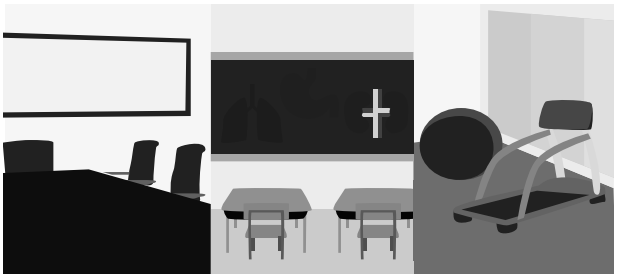


As a result - despite years of hype and iteration - VR remains a niche technology without a universally compelling value proposition. Until it can solve its usability issues, reduce barriers to entry, and deliver experiences that feel essential, it is unlikely to achieve the kind of mainstream success that was once promised.

Barriers to Widespread Adoption

In the eyes of major tech companies, virtual reality is not just an entertainment tool, it should be the next computing platform. Over the past decade, firms led by Meta,

Apple, and Samsung have pitched VR as the successor to the smartphone, promising fully immersive environments for everything from work and education to fitness, social connection, and gaming. The vision is bold: imagine attending virtual meetings in 3D conference rooms, taking interactive anatomy classes in a simulated lab, or exercising in immersive fitness studios - without ever leaving your home. These companies have poured billions into promoting the idea that VR is not just another gadget, but a fundamental shift in how people will live, work, and communicate.

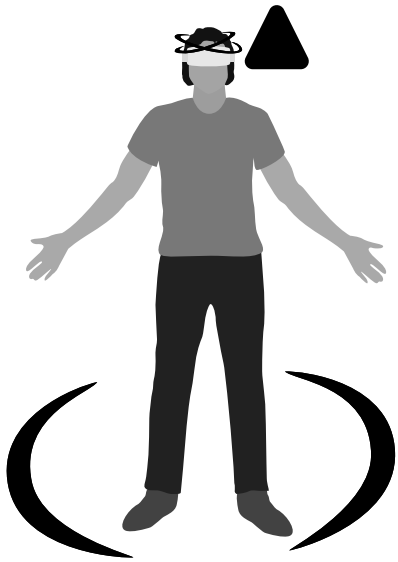


Virtual reality has long been positioned as the next frontier in digital interaction, yet several persistent barriers continue to prevent it from reaching mass adoption. One of the most significant obstacles is the high cost of entry. Most VR headsets on the market today range between $300 and $1,000, and that price often excludes the cost of any compatible hardware, accessories, or content purchases required for a full experience. In contrast, smartphones achieved rapid global adoption not only because they provided clear everyday utility but also because they became increasingly affordable over time. VR, by comparison, still feels like a luxury purchase.

Another issue lies in the hardware itself. While newer models like the Meta Quest 2 and Quest 3 have eliminated the need for external sensors or connected cables, earlier high-end headsets required extensive setup complete with cameras, calibration, and physical tethers. Even with more user-friendly models now available, VR still demands a considerable amount of physical space to be used comfortably and safely. This makes it difficult for people living in small apartments or shared spaces to integrate VR into their daily routines. Compared to other entertainment or productivity technologies like laptops or gaming consoles, which are more compact and convenient, VR's physical footprint continues to be a deterrent.

Health concerns also play a significant role in curbing engagement. According to a PwC survey, roughly 40% of VR users report experiencing motion sickness while using headsets. This discomfort not only limits how long users can stay immersed in virtual environments but also discourages regular use. Prolonged headset use can lead to eye

strain, dizziness, and in some cases, nausea. All of these are symptoms that make VR difficult to recommend as a primary entertainment or work device. Until hardware improvements can meaningfully address these issues, motion-related discomfort will remain a major inhibitor to widespread adoption.



Finally, perhaps the most fundamental challenge is the lack of a compelling, must-have use case. Unlike smartphones, which offer an essential and multifunctional tool for communication, productivity, entertainment, and navigation, VR has yet to present a universally recognized reason for daily use. Many consumers still view it as a novelty item but ultimately an unnecessary gadget that does not solve a specific problem or fit seamlessly into their routines. Without a killer app or function that makes VR indispensable, most people remain unconvinced that the experience is worth the cost or effort.

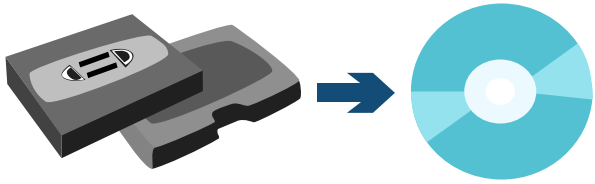
The question remains: how can VR become an everyday tool rather than a niche technology? Several key factors must come together. Affordability is crucial, because while high-end VR headsets offer advanced features, their cost remains a barrier to widespread adoption. A truly market-ready solution would need to balance performance with price, making VR accessible to the average individual. Additionally, content and software development must evolve to provide meaningful, everyday applications beyond gaming, such as virtual collaboration, education, and productivity tools. However, current VR hardware remains bulky, expensive, and reliant on external processing power, while software ecosystems don't have the seamless integration needed for practical, everyday use. As hardware advances and these challenges are addressed, VR could shift from a specialized technology to an integral part of a consumer's daily life.

Together, these challenges and VR's unclear value for consumers form a complex web of friction that continues to prevent VR from achieving the widespread success that its developers and investors have long anticipated.

Technologies with a Strong Value Proposition and Rapid Adoption

When VR first entered the mainstream conversation, it was marketed as a transformative, all-encompassing technology with the potential to revolutionize daily life. Companies envisioned headsets becoming as essential as smartphones. They were considered to be tools for immersive work meetings, virtual classrooms, next-generation gaming, fitness training, social connection, and even digital tourism. The promise was that VR could collapse distance, eliminate traditional interfaces, and redefine the way we interact with digital environments. This vision fueled massive investment and positioned VR as the next great consumer platform.

But history shows that widespread adoption only occurs when a technology delivers clear, immediate benefits and fits seamlessly into daily routines. The iPhone, for example, revolutionized mobile technology by combining communication, entertainment, and internet access into a single, user-friendly device. This instantly proved its utility and made the device indispensable. DVDs replaced VHS not because they were radical, but because they offered obvious improvements: higher quality, portability, and affordability. Even though DVDs are now outdated, their rapid uptake demonstrates how tangible value drives adoption - not hype.



VR, by contrast, has yet to meet this standard. Despite all its ambition, it remains an expensive, cumbersome, and often niche product. It lacks a universally recognized value proposition that justifies its cost or makes it essential in everyday life. Until VR can deliver clear utility the way past technologies have, its mainstream breakthrough will likely remain out of reach.

The Opportunity Cost of Innovation: What Are Companies Sacrificing for VR?

The immense capital invested in VR development has come at the expense of other emerging technologies with higher adoption rates and clearer returns on investment. These technologies include artificial intelligence (AI) and cloud computing. AI is rapidly transforming industries by automating workflows and personalizing consumer experiences—capabilities that are immediately applicable

and scalable. Meanwhile, cloud computing is reshaping digital infrastructure, enabling businesses to store, process, and analyze vast amounts of data with greater efficiency and lower costs. While VR remains a speculative bet with uncertain mass-market appeal, AI has already demonstrated transformative potential across industries, from automating workflows to revolutionizing consumer products. Companies that have over-prioritized VR at the expense of more scalable innovations have faced significant setbacks.

Google's Daydream VR project is a prime example. Launched with high expectations, the initiative failed to gain traction, diverting resources from Google's AI and cloud businesses. These particular areas have since become central to its long-term strategy. By the time Google officially shut down Daydream, the company had already lost ground in the AI race to competitors like OpenAI and Microsoft, who aggressively invested in large-scale language models and AI-driven enterprise solutions.

Similarly, Magic Leap, an Augmented Reality (AR) company focused on developing enterprise-grade spatial computing headsets for industries like healthcare and manufacturing, once valued at over $6 billion, promised to revolutionize AR and VR but ultimately failed to deliver a viable product. After years of burning investor capital without generating significant market interest, the company was forced to pivot away from consumer VR, shifting its focus toward specialized enterprise applications. The overinvestment in VR technology not only cost Magic Leap its once-lofty market position but also eroded investor confidence in the broader AR/VR space.

HTC, a consumer electronics company known for its VR headsets, which cater to both gaming and enterprise applications, funneled resources into VR at the cost of losing its competitive edge in the mobile market, ceding ground to dominant players like Apple and Samsung. Meta, despite its aggressive push into VR and the Metaverse, has faced criticism for prioritizing these initiatives over its core advertising and social media business

leading to concerns over its long-term strategy.

While these companies pursued VR with the hope of defining the next major computing platform, their experiences suggest a recurring pattern: when businesses over-commit to an unproven technology, they risk falling behind in sectors that offer more immediate and sustainable growth. As VR continues to struggle with adoption barriers, the question remains whether the industry justifies its current level of investment or if companies should reconsider their priorities in favor of more scalable, high-impact innovations.

The Niche Trap: Why VR May Never Be a Universal Platform

Despite the excitement surrounding virtual reality, its most meaningful applications remain confined to specialized fields rather than mainstream consumer use. One of the most well-known consumer-facing applications for VR is gaming. Titles like Beat Saber and Half-Life: Alyx attracted dedicated fanbases. While these games have been critically acclaimed and commercially successful within the VR ecosystem, they represent a small fraction of the broader gaming industry. Traditional gaming platforms such as consoles, PCs, and mobile devices continue to dominate the market, offering accessibility and content libraries that VR has yet to match. The high cost of VR headsets, the need for specialized hardware, and the limited catalog of must-play games have prevented VR from becoming a mainstream gaming platform.

Beyond entertainment, VR has found success in highly controlled environments where full immersion provides tangible benefits. The military has embraced VR for combat training and simulations, allowing soldiers to experience high-stakes scenarios in a risk-free environment. Similarly, in the medical field, VR has been used for surgical training and rehabilitation, offering healthcare professionals an interactive, low-risk way to practice procedures and treat patients. While these applications demonstrate VR's value, they are inherently niche. Unlike smartphones or personal computers, which provide broad utility across various aspects of daily life, VR's most compelling use cases remain limited to specific industries that require immersive simulations.

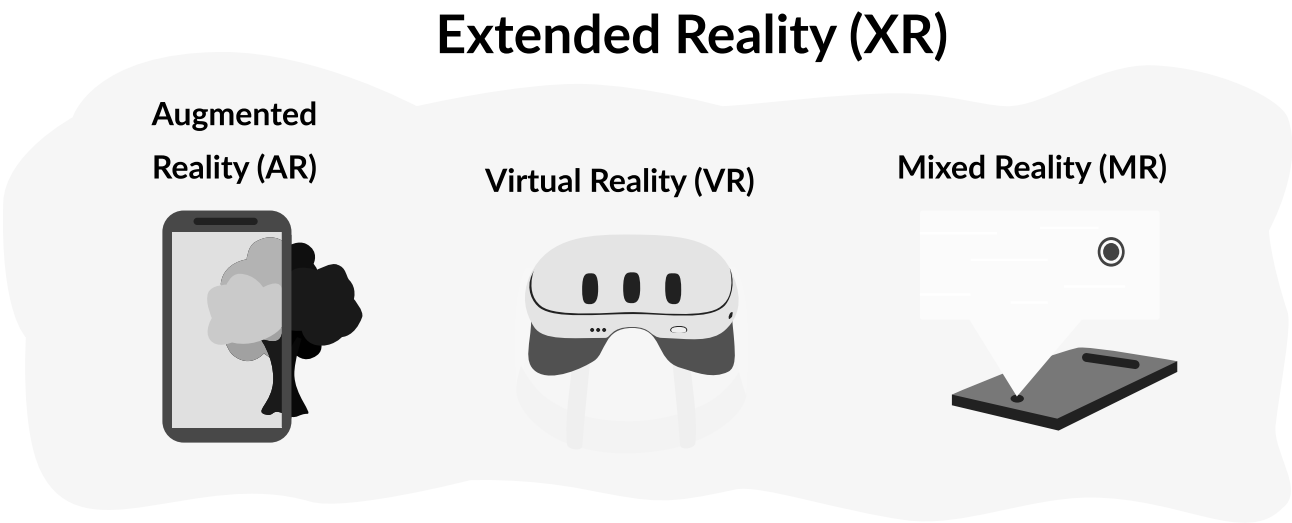
This view is shared by industry leaders. Eric Shin, a senior leader at Samsung, emphasized in a recent conversation that

the company sees up to 85–90% of VR's future use cases in enterprise over consumer markets.

> "Samsung sees up to 85–90% of VR's future use cases in enterprise over consumer markets"
>
> ~ Eric Shin

He highlighted how VR's potential lies in specialized verticals like military training, healthcare, and manufacturing, where immersive simulations are valuable. Samsung's upcoming initiative, Project Moohan, reflects a strategic pivot from past efforts like the now-defunct Gear VR, a mobile-based virtual reality headset developed by Samsung in collaboration with Oculus, which was treated as a smartphone accessory and ultimately failed to gain traction. Unlike Gear VR, Moohan is being positioned as a standalone smart device developed in close collaboration with Android. The production approach is cautious and demand-sensitive - an an acknowledgment of how unpredictable the market still is. According to Shin, Samsung is learning from both its own missteps and the broader industry's challenges, such as Meta's difficulty in expanding the Quest's user base and Apple's struggles to push the Vision Pro beyond elite circles. His insights further reinforce the reality that VR, for now, remains best suited to enterprise applications rather than mass consumer use.

Extended Reality (XR) is an umbrella term that encompasses VR, AR, and MR, blending the physical and digital worlds to create immersive experiences for users. In contrast to VR, AR and MR have demonstrated broader market appeal by enhancing, rather than replacing, real-world interactions. AR technology, which overlays digital elements onto physical surroundings, has already gained widespread adoption in retail and



e-commerce. Companies like IKEA and Sephora use AR applications to allow customers to visualize furniture in their homes or experiment with different makeup products in real time, bridging the gap between digital convenience and physical shopping. These practical, low-barrier applications have made AR an attractive tool for businesses looking to enhance consumer experiences.

Similarly, MR has gained traction in productivity-driven environments. Microsoft's HoloLens, for example, has been adopted in industries such as manufacturing, construction, and healthcare, where workers benefit from interactive digital overlays that provide real-time data and collaboration tools. Unlike VR, which requires full immersion and often isolates users from their surroundings, MR seamlessly integrates digital elements into physical workspaces, making it more practical for professional use.

While VR continues to push for mainstream adoption, its reliance on full immersion remains a fundamental barrier to widespread use. Technologies like AR and MR, which complement rather than replace real-world interactions, have already demonstrated more practical applications and greater adoption potential. As a result, VR risks remaining a niche technology, while AR and MR continue to integrate more naturally into everyday life and business operations.

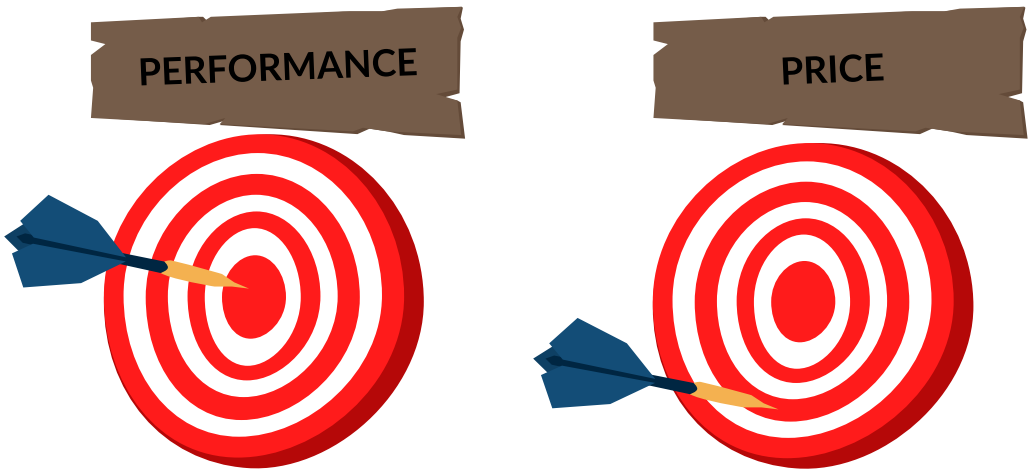
Why fully immerse in a cumbersome VR environment when AR can provide contextually relevant experiences through lightweight glasses or even a smartphone? A compelling example of AR's accessibility and mass appeal is Pokémon GO, which became a global phenomenon shortly after its release in 2016. At its peak, the mobile AR game had over 250 million active users and generated more than $600 million in revenue within its first three months. This makes it one of the most successful mobile game launches in history. Its explosive popularity stemmed from its low barriers to entry and the novelty of blending real-world exploration with interactive digital elements. Unlike VR, which often requires expensive headsets and dedicated play spaces, Pokémon GO demonstrated how AR could engage a massive audience by leveraging technology people already use daily. The game's success is a clear example of how AR's accessibility and contextual relevance can drive widespread adoption, in stark contrast to VR's more isolated and resource-intensive experiences.

Rethinking VR Investment

Rather than doubling down on VR, companies should reconsider whether the industry justifies its current level of investment. The high costs and limited consumer adoption suggest that VR is more of a speculative gamble than a sound business strategy. By focusing on technologies like AR or AI that offer immediate utility and broader appeal, businesses can drive innovation without being weighed down by the challenges of an unproven technology.

The virtual reality industry remains a niche market primarily driven by B2B applications rather than mainstream consumer adoption. Companies like Meta and Apple have attempted to democratize VR, but high price points and constrained content ecosystems have kept adoption rates lower than anticipated. Meanwhile, enterprise use cases, particularly in training and manufacturing show far more promise. The high price points and constrained content ecosystems have kept adoption rates lower than anticipated. Enterprise use cases, particularly in training, manufacturing, and military applications, show far more promise. They tend to prioritize performance and immersion over price competitiveness, as businesses are willing to invest in technology that delivers clear ROI. While cost remains a factor, the focus is more on effectiveness and long-term value than affordability for mass consumers.

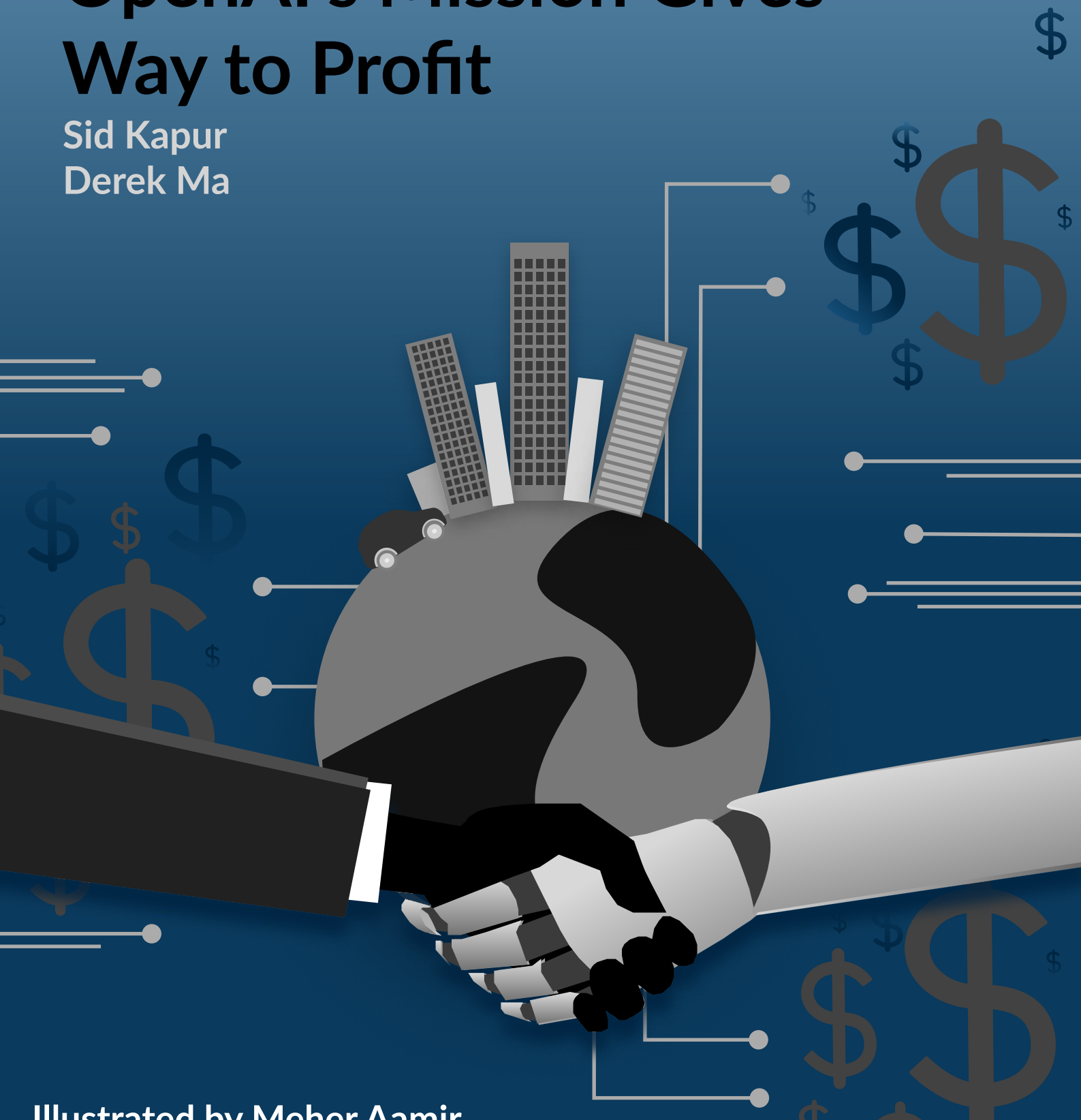
As VR continues to evolve, the broader extended reality (XR) space - particularly AR and MR - may prove to be more practical and scalable. While VR may not be the next universal platform, its role in niche applications remains valuable. Companies that focus on high-impact B2B solutions over fleeting consumer hype are not just chasing trends – they are shaping the future.



Technology:

‘YC’s Manhattan Project’: OpenAI’s Mission Gives Way to Profit

Sid Kapur
Derek Ma



Illustrated by Meher Aamir

Introduction

OpenAI has undergone a remarkable transformation in its corporate structure, evolving from an altruistic research nonprofit into a profit-driven enterprise. This shift has profound implications not only for OpenAI's own operations and mission but also for how the broader AI industry organizes and governs cutting-edge AI development. OpenAI's upbringing stands center-stage in our understanding of the governance, funding, and openness of AI companies as they compete against one another, in one of the most explosive industries of our time.

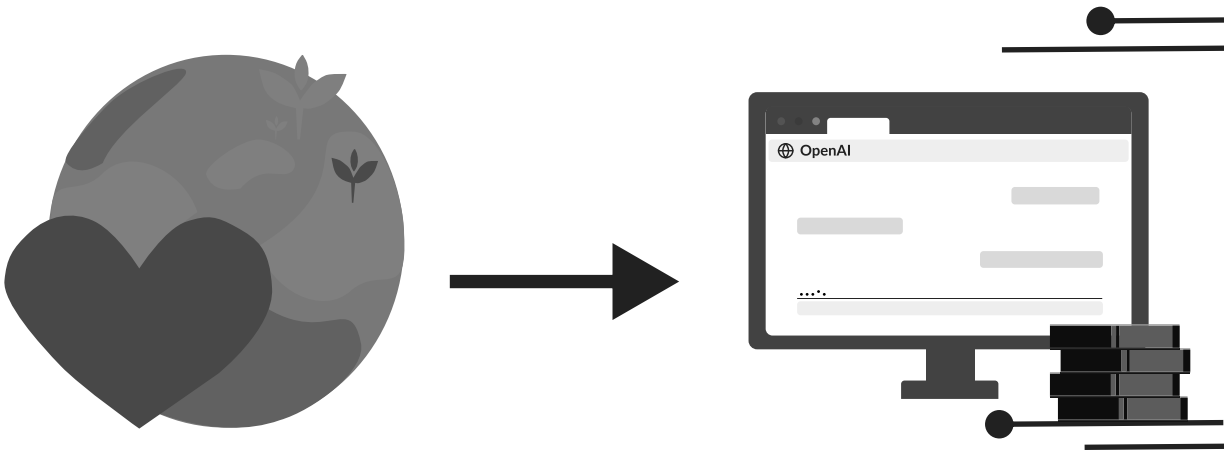
OpenAI's Transformation: From Nonprofit to AI Powerhouse

OpenAI was founded in December 2015 as a nonprofit research lab with a singular mission: ensure that artificial general intelligence (AGI) benefits all of humanity. The organization was built on the belief that AI should not be controlled by private entities with profit motives but rather developed transparently and safely to avoid catastrophic risks. Co-founded by Sam Altman, Elon Musk, Greg Brockman, and others, OpenAI launched as a 501(c)(3) nonprofit, believing that a structure free from shareholder pressures would allow it to focus solely on AI safety and broad societal benefit. Its name and practices reflected this commitment, with early projects like OpenAI Gym and various AI research papers being made publicly available.

At its inception, OpenAI announced a $1 billion funding commitment, but the actual funds raised in its first years were far lower, around $130 million. Musk, despite his early involvement, ultimately contributed under $45 million of his pledged amount. From the start, OpenAI's charter emphasized safety, vowing to publish research and open-source code unless doing so posed security risks. However, these ideals would soon collide with the staggering financial demands of compute, bleeding-edge GPUs, and massive data

centers required for building cutting-edge AI. By 2017, OpenAI's leadership realized that reaching Artificial General Intelligence (AGI) required far greater resources than anticipated. The cost of computational power and AI research was climbing into the billions per year, making reliance on donations unsustainable. The organization faced a dilemma: how to secure massive funding without compromising its mission. This prompted a re-evaluation of OpenAI's corporate structure. Sam Altman, then President of Y Combinator at the time, led discussions on alternative funding models, aiming to balance investment capital with safety-focused oversight. However, these conversations soon revealed deep internal disagreements, particularly with Elon Musk.

Musk, who had grown concerned that Google's DeepMind was advancing faster than OpenAI, proposed a dramatic restructuring in early 2018. His solution? Take control of OpenAI, either by merging it with Tesla or making himself CEO with majority ownership and board control. His rationale was that Tesla's resources would give OpenAI a fighting chance against DeepMind, but his demand for absolute control clashed with OpenAI's commitment to multi-stakeholder governance. OpenAI's leadership rejected Musk's proposal, fearing that ceding power to a single individual would undermine its mission-driven oversight. Instead, they suggested 3 seats on the board making up 25% of ownership. Frustrated, Musk resigned from OpenAI's board in early 2018, stating that the company had 'zero chance' of success without him. His departure created an immediate funding gap; at one point, he even withheld expected funding, forcing other donors; such as LinkedIn co-founder Reid Hoffman, to step in to cover payroll. In hindsight, Musk's exit was a turning point, freeing OpenAI's leadership to chart its own course but leaving them scrambling for capital.



In March 2019, OpenAI announced a landmark restructuring: it would become a "capped-profit" company, a hybrid model between nonprofit and for-profit. OpenAI themselves declared the structure "unprecedented" with no similar profit structures. According to primary sources, even in Y-Combinator, OpenAI's origin and Nexus of risk-taking startup culture saw no similar company prior and past. Under this structure, OpenAI Inc. (the original nonprofit) would retain control, but a new for-profit subsidiary, OpenAI LP, would be created to commercialize its research.

To address concerns about runaway profiteering, OpenAI introduced a 100x cap on investor returns; meaning that early backers could earn a maximum return of 100x their investment before excess profits would revert to the nonprofit. The goal was to align investor incentives with OpenAI's mission, ensuring that even as money flowed in, profit maximization wouldn't take precedence over AI safety. Crucially, the nonprofit still owned a controlling stake in OpenAI LP, ensuring that governance remained mission-focused rather than shareholder-driven. Even Altman, now

OpenAI's full-time CEO, held no personal equity in the company at the time, reinforcing the idea that OpenAI's leadership was accountable to humanity, not shareholders.

The restructuring seemed to have immediately paid off. Just months later, Microsoft invested $1 billion into OpenAI LP, providing both funding and computing resources via its Azure cloud platform. The deal deepened OpenAI's commercialization strategy, with Microsoft gaining exclusive rights to OpenAI's AI models for enterprise use. Over the next few years, OpenAI's hybrid structure appeared to work as intended. It secured capital without completely relinquishing nonprofit oversight, allowing it to develop GPT-3, Codex, and DALL-E, all while maintaining some alignment with its original mission. However, as OpenAI's technology advanced and commercialization accelerated, tensions between research priorities and profit incentives began to emerge.

The launch of ChatGPT in November 2022 became the largest catalyst yet. OpenAI had built an extraordinarily successful consumer product, propelling the company into mainstream recognition. By 2023, its annual revenue was scaling toward $1 billion, and its valuation had skyrocketed past $80 billion.

As investment interest surged, venture capitalists began pressuring OpenAI to remove its profit cap entirely and free from nonprofit restrictions. By late 2024, OpenAI was considering restructuring once again; this time into a fully profit-driven entity. The biggest hurdle? Its nonprofit board still controlled the organization. This governance model, once seen as a safeguard, was now viewed as an obstacle to growth by investors and leadership alike.

Tensions erupted in November 2023, when OpenAI's board abruptly fired Sam Altman as CEO, reportedly over concerns that commercialization was overtaking the organization's mission. The move triggered an immediate backlash from OpenAI employees and investors, leading to Altman's reinstatement just days later. The board was then restructured to include more commercially aligned members, paving the way for OpenAI's final evolution into a fully for-profit entity. Soon after, reports surfaced that OpenAI was planning to remove its profit cap and transition into a for-profit public benefit corporation (PBC); a move expected to push its valuation past $150 billion.

OpenAI's Evolving Structure: Governance, Funding, and the Future of AI Development

As of early 2025, OpenAI continues to operate under the hybrid structure established in 2019, but significant changes are underway. Currently, OpenAI's governance is overseen by a nonprofit board of directors, while the for-profit subsidiary, OpenAI Global, LLC, handles research, product development, and commercial business. The nonprofit entity, OpenAI Inc., retains a controlling stake through a special general partner LLC, ensuring mission alignment rather than pure profit-seeking.

In practice, however, OpenAI functions much like a venture-backed startup, with the major distinction that board members, except for the CEO, hold no equity. Following the late 2023 leadership crisis, OpenAI's board was revamped to balance AI safety oversight with commercial growth objectives. The current board includes Sam Altman, Bret Taylor (chair), Adam D'Angelo (Quora CEO), and former U.S. Joint Chiefs Vice Chair Gen. Paul Nakasone, among others with finance and policy backgrounds. However, OpenAI's hybrid structure; designed to ensure that mission-driven oversight remains intact, is now under serious reconsideration as the company moves toward a conventional for-profit model.

OpenAI's transformation is being driven by massive investment inflows, particularly from Microsoft and top venture firms. The $10 billion investment from Microsoft in 2023 was structured in a way that Microsoft receives 75% of OpenAI's profits until recouping its investment, after which it would hold a significant equity stake; eventually reported to be around 49%. This arrangement indicates that OpenAI's profit cap was already being stretched through creative financial structuring.

In addition, the $86 billion late-2023 share sale allowed investors like Thrive Capital and Founders Fund to secure a stake in OpenAI, further shifting the balance of power toward private investors. These venture backers, eager for substantial returns, are pushing OpenAI to remove its remaining profit limitations, setting the stage for a transition into a fully profit-maximizing corporation.

As early as mid-2024, OpenAI had already signaled to investors that it was planning to convert into a for-profit benefit corporation, effectively abandoning nonprofit control. Reports suggest that OpenAI's astronomical $150 billion valuation hinges on eliminating the profit cap, as investors buying in at this valuation expect OpenAI to operate like a conventional high-growth tech company rather than a quasi-nonprofit. Should OpenAI fail to remove the cap, it may have

"failing to lift the cap could derail a critical $6.5 billion funding round."

to renegotiate its valuation downward, jeopardizing major financing deals. This creates significant pressure on OpenAI's board to approve structural changes. OpenAI's leadership understood that failing to lift the cap could derail a critical $6.5 billion funding round.

This internal tension has divided the board, with some members advocating for AI

safety measures while others; led by Altman and backed by investors, argue that full commercialization is necessary to fund OpenAI's pursuit of AGI. Given the financial stakes, OpenAI is expected to finalize this transformation within the next two years. OpenAI is reportedly already in the process of filing to become a for-profit benefit corporation, a model used by Anthropic and xAI. It will make the company fully accountable to shareholders, though with a formalized caveat of committing to social benefit.

Under this restructuring, OpenAI's nonprofit entity would become a passive minority shareholder or grant-making organization with no direct control over the company's governance. Meanwhile, Sam Altman is expected to receive a significant equity stake, aligning his personal financial interests with OpenAI's commercial success; a major shift from OpenAI's previous ethos, where leadership deliberately avoided personal ownership to maintain mission focus. Additionally, OpenAI's staff, who were previously given profit-unit stakes under the old LP system, stand to gain substantial financial benefits if the profit cap is lifted and the company's valuation soars.

Without nonprofit oversight, OpenAI's decision-making will likely become faster and more aggressive in commercialization. The board will transition into a typical corporate board, dominated by investor representatives and industry experts, rather than individuals with an explicit AI safety mandate. To address concerns about AI safety governance, OpenAI may establish alternative oversight mechanisms, such as an independent ethics board or advisory council. For instance, as part of its Microsoft partnership, OpenAI already co-established a joint Safety Board to review powerful model deployments. However, the effectiveness of these safeguards in a for-profit setting remains uncertain.

One of the biggest challenges facing OpenAI today is the ongoing debate between open-source and proprietary AI development. Initially, OpenAI championed open-source AI, but as it transitioned into a commercial powerhouse, it tightly guarded its most advanced models, such as GPTlife-4.

This closed approach has faced significant criticism and competitive pressure, especially after DeepSeek's "R1" AI model disrupted the market in January 2025. DeepSeek's open-source model matched

OpenAI's top-tier performance, demonstrating that open collaboration can rival or even surpass proprietary AI.
Meta's chief AI scientist, Yann LeCun, remarked that open-source models are now outpacing closed alternatives, reinforcing the idea that transparency fuels faster innovation. Given that DeepSeek's breakthroughs built on earlier OpenAI research, this incident highlighted how OpenAI's pivot to closed-source AI could backfire by enabling others to outmaneuver them using publicly available knowledge.

DeepSeek's emergence has sparked internal reflection at OpenAI. In a candid moment during a Reddit AMA, Sam Altman admitted that OpenAI "may have been on the wrong side of history" regarding open-source models and that a strategic shift might be necessary. Chief Product Officer Kevin Weil later confirmed that OpenAI is exploring open-sourcing older models, such as GPT-3, as a compromise. This strategy mirrors Meta's approach, where older models (e.g., LLaMA 1) are open-sourced once they are no longer cutting-edge. However, when it comes to flagship models like GPT-5 and beyond, OpenAI is likely to remain highly protective, citing safety concerns and competitive risks.

Microsoft has played a key role in OpenAI's evolution and has been OpenAI's key financial backer and technology enabler since 2019; and its influence on OpenAI's trajectory is undeniable. Though Microsoft does not formally own OpenAI outright, it holds a major economic stake and exclusive commercialization rights. Microsoft and OpenAI have a deeply intertwined partnership, with OpenAI relying on Microsoft's supercomputing infrastructure to train models and Microsoft integrating OpenAI's technology into its products (e.g., Bing Chat, GitHub Copilot, and Microsoft 365 Copilot). During the November 2023 leadership crisis, Microsoft's CEO Satya Nadella played a pivotal role by offering Altman and his team jobs at Microsoft, effectively pressuring OpenAI to reinstate him. This episode underscored Microsoft's de facto influence over OpenAI's future. As OpenAI transitions to a full for-profit model, Microsoft's investment may convert into direct equity, making it the largest shareholder. While Microsoft has respected OpenAI's autonomy thus far, this restructuring could lead to greater formal control, including board seats or direct governance influence.

Meanwhile, OpenAI's pivot to full commercialization will likely accelerate its product roadmap, potentially including AI-powered enterprise tools, consumer

applications, and even hardware. The challenge will be balancing rapid innovation with responsible AI deployment.

OpenAI's Influence on the AI Industry: Governance, Funding, and the Open-Source Debate

OpenAI's rise and transformation into a dominant, venture-backed AI company has fundamentally reshaped the AI industry's governance models, funding strategies, and approach to openness. Despite being initially conceived as a nonprofit research lab, OpenAI's eventual shift toward commercialization has forced AI startups, big tech firms, and policymakers to reconsider how AI should be developed, controlled, and monetized. It sparked a proliferation of hybrid and for-profit models, the emergence of new governance frameworks for AI safety, and the intensifying debate between open-source and proprietary AI development.

OpenAI's reported decision to abandon its nonprofit structure demonstrated to the industry the enormous capital required to compete in AI, making traditional academic or nonprofit research models infeasible for cutting-edge AI development. This realization has led new AI ventures to launch as for-profit or hybrid entities from the outset, securing billions in funding to stay competitive. A notable example is Anthropic, founded in 2021 by ex-OpenAI executives who were concerned about OpenAI's growing focus on commercialization. Instead of replicating OpenAI's early nonprofit model, Anthropic was structured as a PBC; a for-profit entity with a legally defined social mission. This model allowed Anthropic to raise significant funding (over $1 billion from Google, Amazon, and others) while embedding AI safety commitments into its governance. To further ensure that profit motives wouldn't override safety considerations, Anthropic introduced the Long-Term Benefit Trust (LTBT); an independent oversight body composed of AI safety and policy experts. This trust holds non-financial stock in Anthropic, granting it the power to intervene if the company attempts to deploy AI systems deemed too risky. This was a direct response to concerns that a purely commercial AI lab might one day cut safety corners to maximize returns.

While Anthropic sought to balance funding with safety protections, xAI, founded by Elon Musk in 2023, took a more direct stance against OpenAI's evolution. Musk, a co-founder of OpenAI, had publicly criticized its shift toward proprietary AI,

and with xAI, he sought to return to the organization's original ideals. However, rather than launching as a nonprofit, Musk also registered xAI as a benefit corporation, acknowledging the need for strong financial backing while maintaining a commitment to "truth-seeking" AGI development. Musk positioned xAI as a counterpoint to OpenAI's closed model, vowing to prioritize open-source releases. In 2024, he made good on that promise by open-sourcing xAI's Grok models, challenging OpenAI's assertion that keeping AI proprietary is necessary for safety. This move was widely interpreted as an attempt to prove OpenAI's mistake of keeping its model close-sourced.

While Musk's open-source strategy reflects a belief that transparency prevents AI centralization, others have chosen a completely different route: avoiding commercialization altogether. Safe Superintelligence Inc. (SSI), founded in 2024 by OpenAI's former chief scientist Ilya Sutskever, embodies this approach.
SSI has committed to an all-or-nothing approach, focusing solely on superintelligence research without releasing intermediate commercial models and eliminating the risk and distraction from intermediate monetization tactics. To maintain focus, SSI has no revenue model and is entirely dependent on long-term investors, who are betting that a successful AGI breakthrough will generate immense financial and strategic value. While this model insulates SSI from short-term profit pressures, its viability remains untested, hinging on the patience of investors: a "do-over" of OpenAI's original vision.

The most contentious issue in AI today is whether cutting-edge models should be open-source or proprietary. OpenAI's transition from early openness to strict commercialization has fueled this debate, and now especially when DeepSeek, an open-source AI lab, released its "R1" model. The model's performance rivaled OpenAI's and Google's most advanced systems but was trained at a fraction of the cost and made entirely open-source. This event shook the AI industry, demonstrating that high-performance models could be developed without billion-dollar budgets and then freely shared. DeepSeek's success triggered a broader conversation about whether openness accelerates AI innovation or poses security risks. Advocates of open-sourcing AI, including Meta's chief AI scientist Yann LeCun, argue that open-source models enhance safety by allowing researchers to inspect, test, and improve them collaboratively. Meta itself has leaned into this philosophy, open-

sourcing its LLaMA models in partnership with Microsoft, explicitly distancing itself from OpenAI's closed model. Meta's approach is built on the idea that AI should be accessible to all, with safeguards implemented through licensing agreements rather than secrecy.

Meanwhile, OpenAI faces growing internal pressure to revisit its approach. Sam Altman has publicly acknowledged that OpenAI may need to recalibrate its stance on open-source AI. Chief Product Officer Kevin Weil suggested that OpenAI might release older models, such as GPT-3, to appease the open-source community while keeping its latest advancements proprietary. The challenge OpenAI and its competitors face is finding a balance between openness, safety, and commercial viability. While open-source AI fosters innovation and accessibility, it also raises concerns about misuse, security risks, and loss of competitive advantage.

OpenAI's ability to secure billions in funding from Microsoft set a precedent for how AI startups finance their ambitions. Previously, AI research was largely funded through academia, government grants, or philanthropy. Now, AI companies are expected to raise venture capital or secure strategic partnerships with big tech firms.

Anthropic's $4 billion deal with Amazon, Google's $300 million stake, and Microsoft's exclusive investment in OpenAI reflect this shift. These deals demonstrate that big tech is actively acquiring stakes in AI startups, ensuring their cloud platforms and ecosystems remain central to AI development. This consolidation trend raises questions about whether AI development is becoming too centralized. With OpenAI deeply integrated into Microsoft, Anthropic linked to Google and

Amazon, and xAI rumored to align with Tesla, the AI landscape is increasingly dominated by a few major players. While smaller AI labs, such as Mistral AI, have sought to differentiate themselves through open-source development, the industry is trending toward an ecosystem where a handful of well-funded firms dictate AI progress. At the same time, OpenAI's profit-driven evolution has normalized the idea that AI labs can pursue both financial success and societal benefit. Many startups now embed mission-driven commitments into their corporate structures, but the challenge remains to ensure those commitments hold as financial stakes grow.

Conclusion

In conclusion, OpenAI's journey from a nonprofit lab to a powerhouse straddling profit and purpose has profoundly shaped the AI industry's evolution. It demonstrated the feasibility of pumping venture-scale funding into safe AI research, but also highlighted tensions between ethics and commerce. Competing organizations have adopted hybrid models like PBCs and devised novel governance structures to tryto capture the best of both worlds – the agility and funding of the private sector with the caution and altruism of the public sector. The industry is experimenting with these structures in real-time, and they're watching each other closely: if OpenAI successfully navigates its profit transition and still delivers aligned AI, others may follow suit even more. If it stumbles (technically or in public trust), there may be a pullback toward more conservative models (e.g., more oversight, more openness, or even government interventions).

One thing is clear: OpenAI's choices have ensured that no serious AI lab today operates in a vacuum of oversight – whether it's a nonprofit board, a benefit charter, a safety trust, or community scrutiny via open source, everyone acknowledges the need to build in accountability beyond pure profit. In that sense, OpenAI's legacy of emphasizing AI safety lives on, albeit realized through a variety of corporate forms. OpenAI's change of course continues to ignite the open-source vs. closed-source debate, a continuing experiment on the dissemination and ownership of AI intellectual property. As we move into the next phase of AI development, finding the right balance between competitive drive and collaborative stewardship will be an ongoing challenge for OpenAI and its peers – a challenge directly influenced by the corporate structures they choose.

Technology:

From Soil to Silicon: Agtech's Next Frontier in APAC

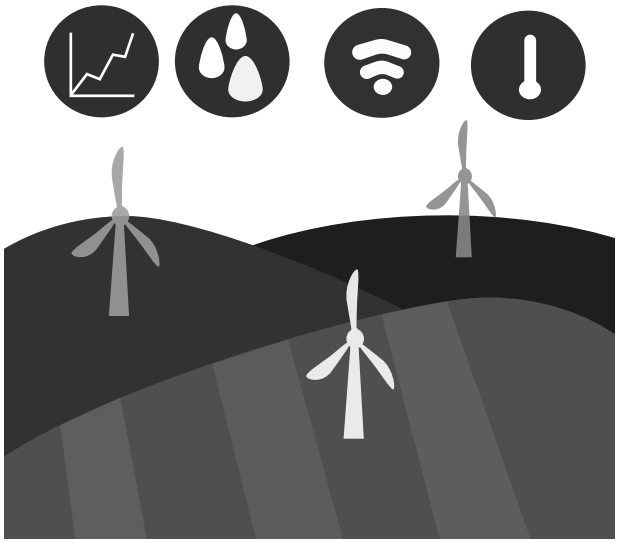
Yukttha Sivaraju, Ishan Vakharia, Ziqiao Chen

Illustrated by Angila Atif

The Backdrop in Asia-Pacific Region

Countries in the Asia-Pacific (APAC) region are home to over 60% of the world's population. With a rapidly growing population in the APAC region comes increasing food demands. The APAC region is also home to the largest and most diverse agricultural market worldwide. The region covers a diverse range of climates, farmland, and agricultural practices, resulting in significant differences in production between countries. As these nations continue to supply a large source of food and agricultural products around the world, policymakers, farmers, and entrepreneurs are all asking the same question: How can technology be adapted to make the agriculture sector more efficient to take advantage of the APAC's unprecedented opportunity?

Agtech, at its core, is about innovation and development to help solve farming limitations and problems. The key goals that these technologies try to solve are to grow more, waste less, and do so all while maintaining land and nature. Interestingly, agtech is not a new topic, unlike the internet boom or SaaS technologies, which have been so commonly invested in within the past few years. The Green Revolution in the mid-20th century saw the invention of chemical fertilizers and irrigation systems that helped lift countries, like India out of chronic food shortages. The landscape of APAC agriculture is not just changing; it is being reimagined. A blend of necessity and opportunity drives innovation in agtech within APAC. From precision farming techniques that utilize drones and IoT sensors to sophisticated data analytics platforms, the technological adoption is reshaping how farms operate.



Countries like China, Japan, and Australia are at the helm, investing significantly in research and development, while emerging economies, such as India and Indonesia are rapidly catching up, integrating technological solutions to increase yields and manage resources more efficiently. This pivot not only represents a technological leap, but also a crucial strategy for

economic and environmental sustainability in the region.

Delving Deeper into Agtech

Fast forward to today, the 21st century–the Information Age–where agtech advancements range from tangible to intangible technologies. Agtech major development in the 21st century emphasizes the use of extensive data collection to improve farming efficiency. By leveraging real-time data and digital tools, agtech enables farmers to make data-driven decisions that optimize productivity, minimize waste, and reduce the carbon footprint. Agtech, such as IoT-powered sensors, satellite imagery, AI-driven crop management, and smart irrigation systems, are reshaping traditional farming practices.

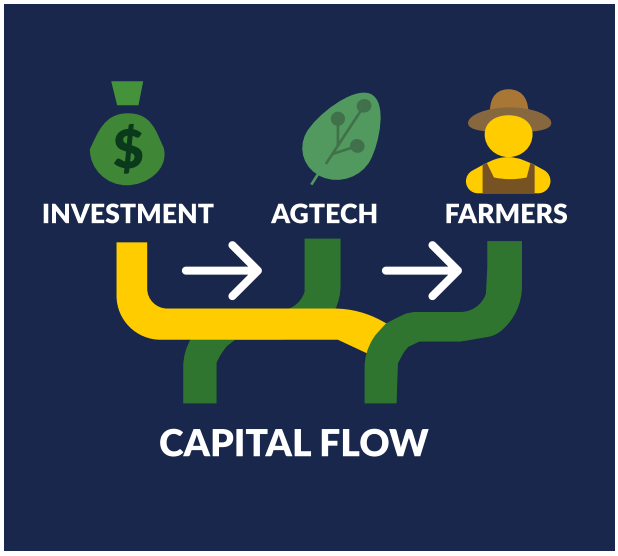
The APAC region has long been at the forefront of technological advancements and the adoption of clean tech to promote sustainable inputs. In fact, according to HSBC, Asia's next phase of growth and development is looking towards aligning with net-zero emissions targets at the national, industry, and company levels. With digitalization being one of the two key forces emerging as powerful economic drivers across Asia, the APAC region is positioning itself as a major player in the clean tech investment boom as firms look to play their role in the green transition.

However, while many of the investment strategies for clean tech in APAC have concentrated on "hard" sectors such as the solar and EV space, Agtech is emerging as a high-potential industry. With growing pressures on food security, climate resilience, and resource efficiency, agtech offers scalable solutions tailored to APAC's diverse agricultural landscape. Although challenges and infrastructure gaps persist, the sector is well-positioned to benefit from the region's broader green investment momentum, making it a promising and strategic area for future growth and investment.

Investment Space

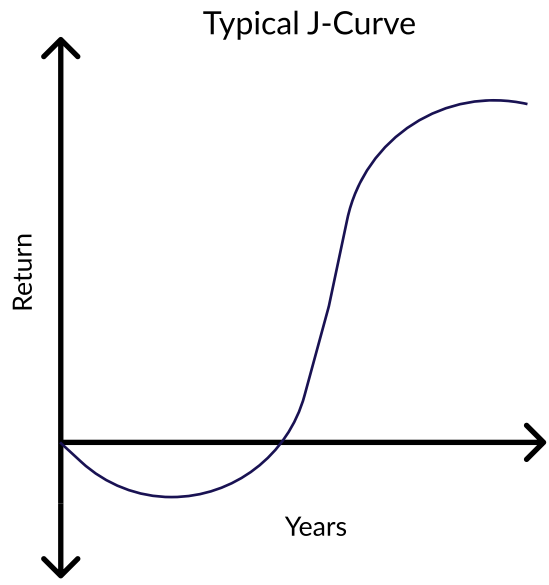
As of 2024, there has been cautious optimism within the agtech space in the U.S. Valued at roughly $11.5 billion, traditional venture funds are struggling to raise capital, and financial pressures are being placed on large-scale acquisitions of major agrochemical firms. Smaller firms and PE players are also scoping for undervalued and distressed assets as a result of the sensitive market conditions. The primary concern investors in the U.S and Europe face is over policy decisions on climate and trade, which, despite the regions' significant growth potential, is causing alarm to have effective market recovery. However, some agtech investments have continued to succeed in the Western Hemisphere and across Europe, for example, with Tortuga Agtech, a Denver-based startup focused on automating labor-intensive agricultural tasks, having raised USD $28.6 million to date. As a market, the agtech sector in the United States is valued at $7.5 billion, and continues to capture a large portion of USD raised worldwide. The real question is whether agtech can grow in similar patterns within APAC as with its continental neighbours?

While the APAC region may not be the largest hub for agtech investments, it is undoubtedly the fastest growing and capturing significant market activity. The APAC region saw 3 of the 10 largest agtech deals across 2024, with the largest deal of the year being a $200 million Series C investment in Malaysia's Aerodyne for industrial drones used in agriculture and other sectors.



On a call with a VP of a Singapore-based fund that focuses on Seed to Series B investments, they mentioned the 'J-curve'. Agtech investments tend to follow a steeper "J-curve" compared to SaaS or consumer tech: long development cycles, slower adoption curves, and a customer base (farmers) with tight margins and decision fatigue. Startups often face years of net losses before scaling. As the VP noted, what the Fund looks for is investing

in the area where they are exiting the negative part of the J-curve. They look for product market fit, even if they do not reach $100 million in revenue, they are constantly on the lookout for potential. The Fund talks to potential clients to understand the team and to see if the prospective startup they are willing to invest in has the knowledge and is commercial-minded.



Technologies in Agtech: Where There is Growth Potential

There are major developments in agtech, spanning from digital and precision technology to controlled-environment technologies, but there are two specific technologies that show strong potential for growth: farm technology and TECA platforms.

Farm Technology

Farm technology–which falls into the digital and precision farming category–is continuing to evolve and many farmers are taking key advantages to support their workload and increase margins. Globally, according to the McKinsey 2022 Global Agricultural Technology Adoption Report, around 39% plan to adopt farm management software in the next two years, which was highlighted as the top use-case. Farmers are now using drones, satellite imaging and IoT-enabled sensors to monitor crops, soil health, and microclimates in real time. This pushes for the concept of telemetry–a buzzword that continues to float around the agtech space. Telemetry refers to the automated collection and wireless transmission of data from remote sources, allowing farmers to

continuously monitor and respond to real-time conditions across their fields. The growth of many successful agtech products and innovations comes from their

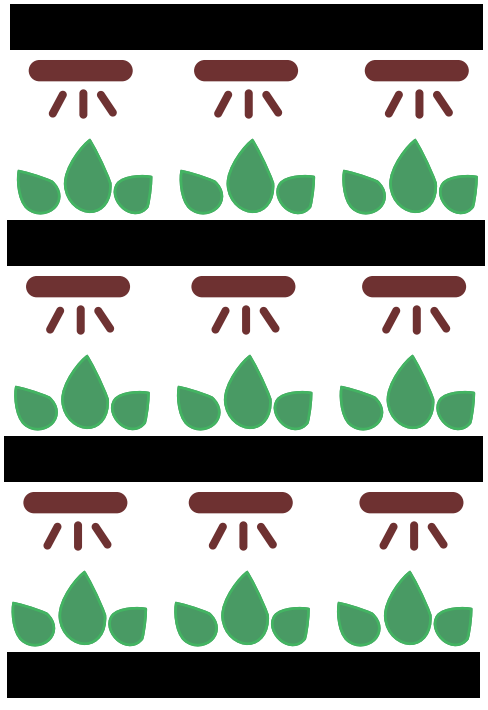
adaptation to telemetry, and being able to collect and make sense of real-time data. Furthermore, investors and farmers are both focused on ubiquitous data solutions, specifically for consumers and businesses that, as a market, have been demanding greater transparency and knowledge in farm-to-table supply chains and sustainable practices within these organizations.

TCEA

A large part of what has been accelerating the growth in the agtech industry is TCEA. Total Controlled Environmental Agriculture (TCEA) platforms are among the most promising innovations in the agtech space. As urbanization accelerates and arable land becomes increasingly scarce, TCEA platforms offer a space-efficient solution by leveraging AI-driven monitoring and sensor technology. Within contained environments, TCEA platforms enable farms to stimulate the ideal conditions for crop yield maximization, while minimizing resource waste. These systems provide precision control over key factors, such as temperature to nutrient delivery, ensuring optimal conditions for plant growth regardless of external weather conditions.

Vertical farming, a key application of TCEA, is rapidly expanding across the APAC region, offering a scalable solution for food production in land-constrained urban centers. Cultivated in stacked layers within climate-regulated structures, vertical farms maximize output while reducing land and water usage. Increasingly, farmers are becoming part of a smallholding system, with roughly 80% of farms within APAC are small holdings. This presents an opportunity for mobile-first, cost-efficient, and plug-and-play technologies, which will likely see rapid uptake, especially in regions with strong digital infrastructure, like India and Vietnam. Artisan Green, a Singapore-based commercial farm–operates in the TCEA space–exemplified this opportunity in vertical farming through the use of digital infrastructure. After partnering with Siemens, a global leader in automation and digitalization, Artisan Green developed a cutting-edge TCEA system that leverages advanced automation and digital infrastructure to bring sustainable, high-yield farming to Singapore. This collaboration has led to a 25-fold increase in the yield of leafy vegetables and herbs, enabling a monthly production of 25 tonnes—equivalent to over 134,000 meals. The system also achieves a 95% reduction in water usage compared to traditional farming methods and operates at an energy consumption rate of only 15 kWh per kilogram of produce, surpassing the

Singapore Food Agency's Clean & Green standards. Additionally, the implementation of this technology has resulted in a 50% reduction in energy consumption relative to conventional indoor growing systems. Together, TCEA and smallholder farming dominance call for many agtech applications into play and the prediction of agtech success.



Adoption Presents as a Key Challenge in Agtech

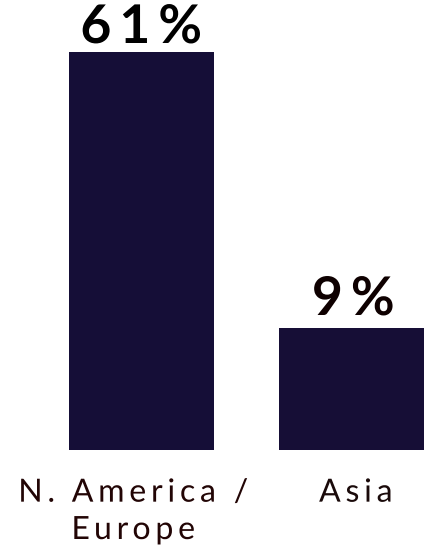
A large portion of farmers in the APAC region are small-holder farmers, providing the majority of produce to the region and responsible for ⅓ of produce globally . However, larger farms (over 5,000 acres) are generally more open to adopting agtech solutions, while smaller farms (under 2,000 acres) tend to be the least likely to do so. This may be due to the challenge of educating farmers on the technology and taking it a step further by integrating the technology. The digitalization of agriculture is setting higher hurdles for smallholder farmers in the region. Many of the farmers are multi-generational professionals who keep their conventional farming practices close to their hearts. Smallholder farmers have limited access to digital technologies because of affordability issues, skill gaps, and the opportunity costs of changing their practices. Consequently, not many of them use digital technologies, and those who do are not very active or intense users, which is found to be the opposite for large-scale farmers.

Another issue that has been in constant notice is the concept of decision fatigue. Farmers are already burdened with daily operational decisions, especially since many of the farms within the APAC region are smallholder operations. Precision tools, data dashboards, and sensor systems—each claims to solve different problems. The pressure to integrate multiple tools, learn new interfaces, and assess ROI from fragmented offerings can become overwhelming, often leading to hesitation or resistance to adoption altogether. For investors, this presents a challenge: even

strong technologies may underperform commercially, if end users are too fatigued or uncertain to adopt them. As a result, VCs are increasingly cautious, focusing on startups that simplify user experience, integrate seamlessly with existing farm operations, and offer clear, measurable value with minimal cognitive load on the farmer. Management overhead, overcomplexity of technologies, and a

highly concentrated market are pressuring farmers across nations such as Singapore, Indonesia, and New Zealand to test and adopt one company's specific technologies. However, the fear of consolidation, acquisitions by large-scale companies, and the risk of complexity in operations bring the most significant challenges from an investor perspective to the agtech market.

Agtech startups have faced significant challenges in scaling, with few reaching the stage of going public or securing later-stage funding. According to a McKinsey analysis, a major reason is the difficulty many of these startups face in building a strong customer base. This highlights a core limitation in the agtech sector: adoption rates vary widely across regions. Farmers in Europe and North America are leading the way, with approximately 61% already using or planning to adopt agtech solutions within the next two years. In contrast, adoption in Asia lags far behind—only 9% of farmers report current or intended use of agtech products, despite the region being home to the world's largest agricultural market.



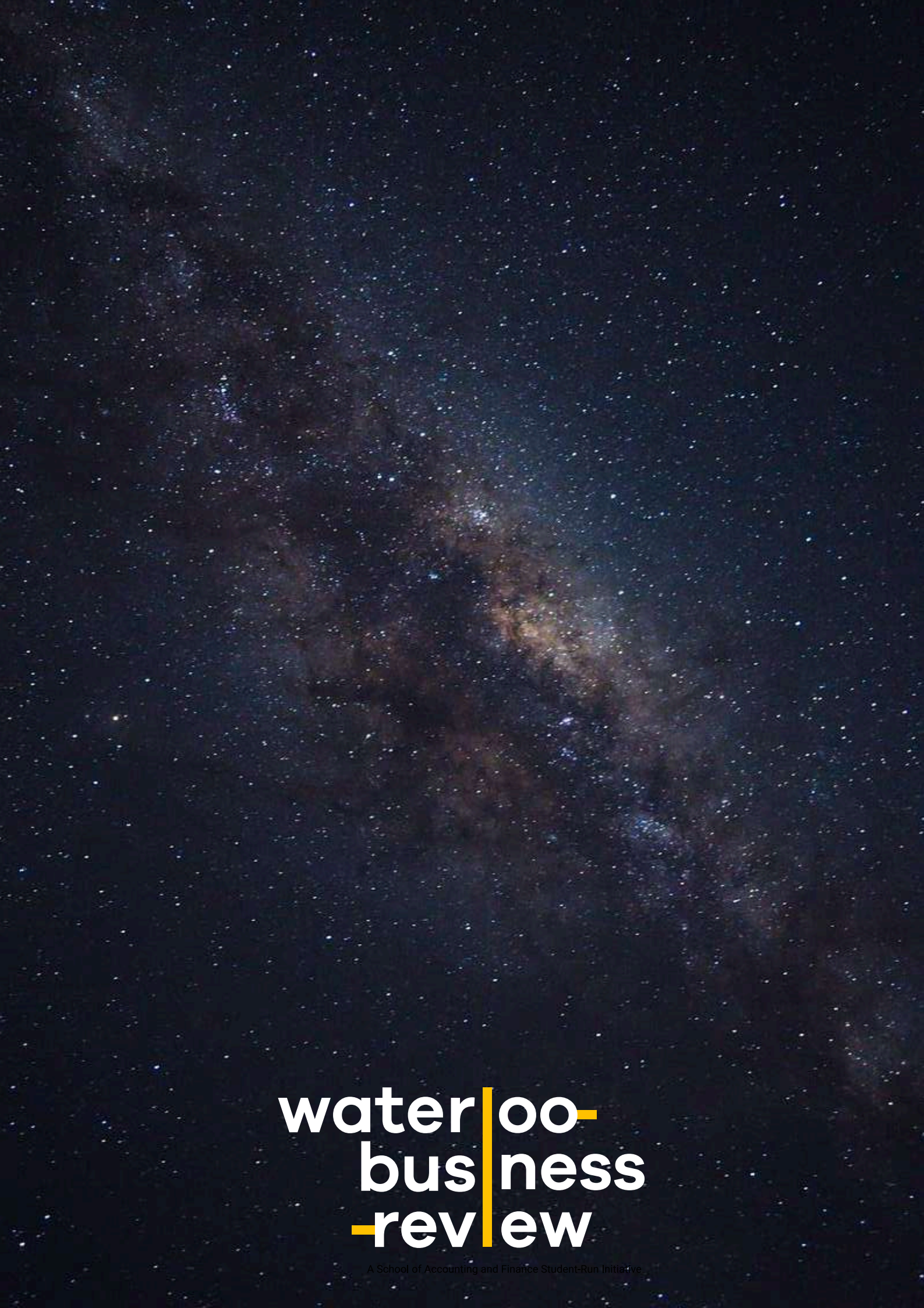
Source: Mckinsey and Company (2023)

This disparity is evident when comparing vertical farming companies, like the U.S.-based Plenty and Japan's Spread. While Spread operates with a fraction of the funding that Plenty has received, its production yields are remarkably similar—underscoring how access to capital, rather than innovation or efficiency, can be a

The Road Ahead

One of the key hurdles of the APAC region from unlocking its potential in the agtech space is adoption. Unlike Europe and North America, where large-scale, capital-intensive farms are common, the APAC region is unique, where the majority are smallholder farmers. Startup founders that are looking to enter the agricultural space in the APAC region, should look to address the problems faced at the smallholder farmers level. Agtech in APAC must prioritize affordability, ease of use, and adopting across various regions. Solutions like mobile-based advisory platforms, low-cost IoT devices, and shared economy models for farm machinery can make innovation more accessible. More importantly, expanding access to funding for both farmers and agtech startups. In contrast to the mature VC ecosystems and well-structured government subsidies in Europe and North America, many farmers in the APAC region and agtechs struggle with limited financial support. Governments should mobilize microfinancing programs and derisking methods to encourage agtech adoption.

Looking ahead, agtech is positioned to become the talk of startups and Looking ahead, agtech is positioned to become the talk of startups and investments in the APAC region, driven by threats of climate change, the demand for full chain transparency, and move towards a green economy. While this shift will take time, the growing demand for telemetry and a ubiquitous data layer will continue to spark innovation and fund creative solutions essential for sustainable food production, natural climate preservation, and food security. By lowering the financial barriers and tailoring technologies to smallholder farmers, the APAC region can unlock massive potential for agtech, ultimately driving more efficiency in the agricultural space.



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