



THE HARD EDGE OF COMPETITIVE ADVANTAGE

Understanding Amazon's connected digital ecosystem

CASE STUDY

Excerpt from the upcoming book: *The Digital-First Customer Experience - Seven Design Strategies from the World's Leading Brands*



THE HARD EDGE OF COMPETITIVE ADVANTAGE

Digital Ecosystems: The New Competitive Battleground

A framework by scholars at Boston College and Boston University provides a helpful way to think about digital ecosystems. They suggest the highest form of competitive advantage in the design of a digital ecosystem is demonstrated by the following conditions:

- Aggregate multiple sources of product-in-use information (often through data connection via real-time sensors).
- A propensity to control the hub of a digital ecosystem network.
- Relevance in many overlapping ecosystems.
- Domination of ecosystem through control over multiple sources of product-in-use information.

In 2023, developing a competitive advantage with a 'hard edge' is about how you position your company within a configuration of ecosystem participants. Amazon's Physical Retail strategy, starting with their grocery business is an ideal example of how leading brands are forging such a strategy - one with not just a compelling *Value Proposition* - but also a *Value Network* that would be hard to imitate given the digital assets they have connected.

Let's begin by addressing some of the criticism Amazon has received about their performance to date in the grocery sector. In a recent CNBC article entitled: *Amazon's sprawling grocery business has become an 'expensive hobby' with a cloudy future*, business reporter Annie Palmer wrote that:

Amazon has introduced a dizzying array of services – Prime Now, Fresh, Go and others – in its effort to become a giant in the \$750 billion U.S. grocery market... Still, it's just a niche player in the industry. As of mid-December, Amazon.com and Whole Foods accounted for a combined 2.4% of the grocery market over the past 12 months, while Walmart controlled 18%, according to research firm Numerator.¹

Fair criticism, and she is not alone in pointing out the remarkably slow traction Amazon has experienced to gain share, especially after paying over \$13 billion to acquire Whole Foods in 2017.

But like many things in life, your conclusions about something are naturally biased by the lens you view them through, and any industry analyst weighing the considerable investments and marginal returns by a company as formidable as Amazon, might come to the very same one.

However, for the next few pages, I invite you to look at this through a different lens. And perhaps you may see your own business differently by the time we finish.

Before we get started, let's level-set the core tenets Amazon considers when thinking about entering any market. This begins by asking three simple questions to decide if an opportunity is worth the investment:

1. Is the opportunity big enough? Is it something that has the potential to be a significant business to warrant the investment it may require to win?
2. Is there a tangible customer need driving whatever problem it could solve? Amazon has always focused on exceeding customer expectations on three attributes: Selection, Price, and Convenience. Not only because they are important to customers, but they are durable. People will always want a relevant selection of products to choose from, to pay a fair price for that product or service and crave experiences that are as convenient and as frictionless as possible. Selection, Price, and Convenience. Highlight those three words as we proceed forward.
3. Finally, does Amazon have a differentiated way of providing the service that addresses the need and do they have the skills inhouse to meet it? If not, can the skills needed be acquired to offer this differentiated service?

That is about it. If the opportunity gets past these three filters, the company will create a long-term vision of how to win, create the business case with clear milestones, and start the innovation process.

Let's now turn to the Amazon Physical Retail experience to see an example of linking digital assets to form a digital ecosystem, creating a powerful competitive advantage through what Prof. David Rogers's of Columbia Business School describes as delivering both a superior *Value Proposition* and *Value Network*.

Amazon Go - Solving a Chronic Problem

Over the years, our project teams have spent a lot of time with retail and grocery clients working on how to reduce checkout time and improve the experience. Everything from "Line-busting" that included providing sales staff with payment-enabled tablets to allow customers to pre-pay prior to check-out, to the implementation of self-checkout technology. In fact, a 2017 study of self-checkout solutions concluded that:

There is evidence that self-checkout attributes positively impact user perceptions of service quality. Speed of using the service and perceived ease-of-use emerged as important determinants of customers' evaluation of self-checkout quality. Interestingly, reliability was considered the most important determinant of self-service quality. According to Meuter et al. (2000), this could be explained by the novelty of the technology, which makes performing ('doing its job') accurately a source of satisfaction. Perceived control and fun/enjoyment were viewed as less important factors. ²

Fun? Enjoyment? Really? Hindsight being a perfect science, we must keep these findings in context of what self-checkout was trying to solve: Cashier-based checkout lines that could stretch all the way back to the dairy freezer. Neither fun nor enjoyable.

While every other grocery company in the world was reading studies like the one referenced above and asking: "How can we improve the checkout experience?" The Amazon Go team

was asking a different question: “Why do customers have to checkout?”. As the then Amazon Go Project Manager, Gianna Puerini, said at the time, “They probably have something they’d rather be doing,”

In terms of origins, Amazon Go first launched to the public in Seattle in 2018 and there are currently about 20 store locations in the United States. They vary in size from 450 square feet to 3,250 square feet and offer hot breakfast, ready-to-eat lunch options, cold beverages, coffee and espresso drinks, food items from local bakeries and kitchens, and everyday essentials.



Figure 1 - Source: Shutterstock

Amazon Fresh first launched in the UK in March of 2021 and as of September 2022, there are 19 store locations. Amazon Fresh stores offer everything you would want from your local convenience grocery store including fresh meat, poultry and fish, dairy, fruit and vegetables and bakery.

Store Arrival

When you arrive at the store all you need is an Amazon account, the free Amazon Shopping app (Amazon discontinued the original Amazon Go app in December 2021), and your smartphone. You open the app, tap “In-Store Code,” and scan in with the QR code presented. At select Amazon Go store locations, you can also enter the store by using a credit card linked to your Amazon account or by using Amazon One, a new contactless way for people to use their palm to enter and pay for items purchased at Amazon Go. Once you have entered, you just shop for something tasty or find some staples you need to add to your pantry or freezer and put them into your bag. Changed your mind about that bag of Brownie Bites? No worries, just put them back. Your Virtual Shopping Cart will be updated in real time. No other scanning required. Once you have everything, off you go. Leave, skedaddle, scam, exit, no lines, no waiting because there is no check out. Now, if you miss the friendly repartee, you may have had with a cashier, you may stop to ask an Amazon Go employee for a wine recommendation to pair that meal kit or ask them about some of the local food brands the store features, but that is it. Once you’re done shopping, you’re on your way. You just go.

Behind the Scenes

It really does seem like magic the first time you experience it. Dilip Kumar, Vice President AWS Applications, explained the technology behind the curtain: “When you come into the store, you should be immersed in shopping. We don't want technology to be a barrier. We want it to be part and parcel of something that just exists so you can be doing whatever it is that you came to the store to do.

“Our job is to make sure that the technology disappears.”

Our job is to make sure that the technology disappears.” Amazon’s Just Walk Out™ technology uses computer vision, sensor fusion, and deep learning algorithms to automatically detect when products are taken from, or returned to, the shelves and keeps track of them in a Virtual Shopping Cart.

Finishing Strong

And though there are no cashiers, all Amazon Go stores accept cash payments, to ensure customers without the means to carry a smartphone are not discriminated against. So, though there aren’t cashiers as you would see in a typical convenience store, there are (and have been since the first Amazon Go store opened) employees in each of these stores, stacking selves,

Eliminating Checkout - The Power of Linking Digital Assets

Solving the challenge of not having to wait in line required getting into some technical “heavy lifting.” These are the six problems to be solved to get Amazon Go from the lab to the market.

- **Sensor Fusion:** Aggregate signals across different sensors (or cameras because this was solved using nothing but computer vision).
- **Calibration:** Have each camera know its location in the store very accurately.
- **Person detection:** Continuously identify and track each person in the store.
- **Object Recognition:** To distinguish the different items being sold.
- **Pose estimation:** To detect what exactly each person near a shelf is doing with their arms.
- **Activity Analysis:** To determine whether a person has picked up vs. returned an item.

The question “Who took what?” could not be solved as a series of independent picks. Amazon had to track each person the whole time they were in the store, from the moment they walked in until they had left. Some of the problems to be solved by the Locator component were:

- The Occlusion, where a person is blocked from view by something in the store.
- The Tangled State, where people are very close to each other.

The next task was to ensure the labels were preserved across frames in the video, moving from locating to tracking the customers in the store. The problems experienced in this phase were: Disambiguating Tangled States. When people get very close together, this lowers the confidence of who’s who. The Go store technology handles this by marking these customers as low confidence, so they get scheduled to be re-identified over time. There is a follow-up phase for distinguishing Amazon Associates, who likely perform different behavior than customers (for example, they would likely put items on shelves rather than taking them off). The Amazon team took on the ambitious project to generate synthetic activity data using simulators. Within these simulators, they needed to create virtual customers (including variations in clothing, hair, build, height, etc.) cameras, lighting & shadows, and simulate the same camera hardware limitations.

Source: Sections reproduced from - Rohit Kumar, Salwa Shaikh, Automated Cashier Stores: Amazon Go Technology, International Research Journal of Modernization in Engineering Technology and Science, Volume: 04 - Issue: 06, June 2022

greeting customers and helping new customers understand how it all works. As one employee shared: “I probably say it 25 times a day... I love saying ‘just walk out’ it brings a smile to my face.” Right, just walk out. Your Virtual Shopping Cart is available to you on your Amazon App

along with all your other Amazon purchases. In some locations you can even return Amazon purchases made online to an Amazon Go store.

Leveraging Value Over Costs

Data analytics firm Brick Meets Click, estimated that the Amazon Go flagship store in Seattle generates \$2,700 in annual sales per square foot of selling space, with an average of 50 inventory turns per year. This sort of performance would be matched by only a handful of retailers while also reducing traditional operating expenses like the cost of checkout personnel and equipment. However, some retail analysts have questioned whether the cost of deploying the technology for a typically low-margin industry is worth it. Some cashier-less tech suppliers say costs to set up and maintain the systems can easily reach into the millions. But from its launch, Amazon went for years without turning a profit and has never been afraid to enter a new market and be willing to take the brunt of losses before finally turning a profit. As former CEO Jeff Bezos has said in the past:

If everything you do needs to work on a three-year time horizon, then you're competing against a lot of people. But if you're willing to invest on a seven-year time horizon, you're now competing against a fraction of those people, because very few companies are willing to do that.³

And very few companies see the opportunity through the lens of creating both a superior *Value Proposition* and a hard to imitate *Value Network*.

Expanding to Grocery

In February of 2020, Amazon opened Amazon Go Grocery (since rebranded to Amazon Fresh), a smaller-format grocery store, in Seattle's Capitol Hill neighborhood. The first full size Amazon Fresh store opened in Woodland Hills, California in September 2020 and brought the same technology from an 1,800 square foot Convenience Store to a full size, 35,000+ square foot grocery store, with two recent store openings in New York and Illinois measuring at 50,000 square feet each. Mr. Kumar explains: "There's no real upper bound. It could be five times as big. It could be ten times as big."⁴ The Amazon Fresh store provides "a wide assortment of national brands and high-quality produce, meat, and seafood; plus, our culinary team offers customers a range of delicious, prepared foods made fresh in store, every day." Mr. Kumar shared the development process in a recent interview, "We tried to go department by department to be able to say, 'What do people really look for in a neighborhood grocery store?' We felt like the just-walk-out shopping experience in a residential neighborhood, in a residential grocery store, would resonate very well."⁵ Besides Just Walk Out™ technology, the new Amazon Fresh Stores introduces some additional features:

Amazon Dash Cart enables the customer to skip the checkout line, but also provides a whole new shopping experience. The cart uses a combination of computer vision algorithms and sensor fusion to identify items put into the cart and knows where the customer is in the store

and hence, can make recommendations to nearby products and serve up promotions based on the items you are adding to your cart. It even weighs produce for you so if you asked Alexa to add bananas to your Virtual Shopping Cart while at home the day before, that item appears on the cart after you have scanned a QR code generated by the Amazon Shopping App when you start using the cart.



Figure 2 - Amazon Dash Cart

Frustrated with trying to find a store associate to help you find an item? No more, there are "Ask Alexa" devices placed through the store so you can just ask Alexa where to find those bananas you had added to your list. After passing through the Dash Cart Lane, you can take the cart to your car to unload your purchases and off you go. "Just drive off."

Amazon has introduced this newer version of the Dash Cart in a Whole Foods store in Westford, Massachusetts. U.S. Whole Foods Chief Technology Officer Leandro Balbinot commented: "As many of our customers return to their in-store grocery shopping routines, it's exciting to introduce new and unique ways for them to shop our stores."⁶

Just Walk Out™ Technology Licensing

In a recent Forbes article entitled *5 Reasons Why Amazon Go Is Already the Greatest Retail Innovation of The Next 30 Years*, Senior Contributor Chris Walton commented:

Amazon bets on universal truths, and the idea that no one wants to spend any time waiting in line to pay is about as universal as it gets... Don't agree? Try it. And, then ask yourself, if you had the same experience at your favorite grocery store, say at a Tesco, an Aldi, or even at a Circle K (the companies on the forefront of deploying Amazon-like tech themselves), and all else being equal, wouldn't you choose the ability to walk out without standing in line every time? You damn well know you would and are lying to yourself if you think otherwise.⁷

You know you are onto something when your competitors start copying you. Ahold Delhaize USA, launched a small pilot store called Lunchbox in Quincy, Mass. that offers "frictionless checkout." Paul Scorza, Ahold's CIO for Retail Business stated that "Our philosophy on innovation is to be what we call a 'fast follower'." They are experimenting their version of Just Walk Out™ technology and believe they can do it for a much lower cost.

On March 9, 2020, Reuters reported that Amazon would offer their Just Walk Out™ technology to other retailers and indeed, the company launched a website to describe the service and invite inquiries. Much like Amazon Go, the customer scans or taps a credit card to enter the store, selects or puts back the items they want and then (don't make me say it), they just go. Early customers include Hudson Travel Convenience Stores, the Climate Pledge Arena in Seattle, and the TD Garden in Boston whose President Amy Latimer was quoted as saying, "We are always looking to leverage technology to bring fast, easy and touch-free amenities to

our guests, and we are excited to collaborate with Amazon to use their Just Walk Out™ technology in these MRKT stores.” The fact that Amazon has begun to license this technology isn’t surprising. What is interesting to note however is that in November of 2021, Charged: Retail Tech News, reported that Amazon reduced the pricing to customers dramatically. Getting the operating cost of a 1,000 square-foot cashier-less location down to just \$159,000 per store annually. But even more interesting, this news outlet was quoted as saying:

The costs are spread out through the fees for using Amazon Web Services (AWS) cloud technology and hiring remote employees to manually verify the accuracy of the checkouts in stores, as well as other tasks.⁸

Now this is a salient point. First, Amazon linked three digital assets (computer vision, sensor fusion, and deep learning algorithms) to create Just Walk Out™ technology for their own Amazon Go stores. Now, as they begin to license it, they are linking their digital platforms to deliver a robust set of technologies and services which over time, will leverage greater value over costs for their customer and position themselves at the center of the emerging digital ecosystem. A tipping point of customer adoption begins. Dilip Kumar explained this to us in my interview with him:

Our core tenet for creating these suites of services is not just our first party stores, but also for third party stores. The world is full of very interesting retailers selling all kinds diverse and interesting shopping experiences... so how can we take the best of what they do and marry that with what we're good at. That's where I see our retail technologies going over the next five years.

Linking Digital Assets to Establish a Value Network

Recall that Amazon started in the grocery industry in the delivery business, so it shouldn't be a surprise that Amazon Logistics would emerge as an obvious partner to start linking digital assets to establish a formidable Value Network.

Amazon Logistics

Say 'hello' to Scout. Amazon Scout is a 6-wheeled autonomous robot that debuted on January 23, 2019, used to deliver packages, in Snohomish County, Washington. Amazon Scouts are about the size of a large cooler and move on sidewalks at a walking pace. In July 2020, the service expanded into Atlanta, Georgia, and Franklin, Tennessee. In 2021, Amazon announced plans to open a Scout Development Center in Finland to work on developing 3D technology to improve the robot's safety.

Amazon has registered a host of new patents recently, including one, for “mobile fulfillment centers with intermodal carriers and unmanned aerial vehicles” which describes a system for combining drone delivery and automated fulfillment. Amazon is spending significant amounts of money to expand its existing logistics infrastructure. In fact, the volume of patents coming out of Amazon designed to expand their ability to link digital technologies is impressive. For example, a patent granted on September 3, 2019, was for “Aerial Vehicle Delivery on Items Available through an E-Commerce Shopping Site.” It describes “an unmanned aerial vehicle (UAV) configured to autonomously deliver items of inventory to various destinations.” The patent description includes the following details:

In addition to selecting a delivery method, the user may choose a delivery location. With the implementations described herein, a user now has the ability to choose “Bring It to Me.” With this option, the actual location of the user is determined, and the UAV delivers the items to the current location of the user. The current location of the user may be based on, for example, a determined location of a portable device (e.g., mobile phone) associated with the user.⁹

Add to this that on August 31, 2020, Amazon received federal approval to operate its fleet of Prime Air delivery drones, a milestone that allows the company to expand unmanned package delivery, Amazon said it will use the approval to conduct rigorous testing. It is perhaps relevant to note, despite their struggle to advance this technology introduced on 60 Minutes episode back in 2013 by Jeff Bezos, Google’s parent company Alphabet has had success in Australia, conducting suburban drone deliveries with their subsidiary Wing. These drones have delivered over 10,000 cups of coffee, 1,000 loaves of bread and 1,200 roasted chickens without facing a single issue.

Alexa Smart Home

Alexa Smart Home’s vision is centered on just that concept. It is there when you need it and fades into the background when you don’t. Alexa AI Senior Vice President and Head Scientist Rohit Prasad said in a recent interview:

Ambient intelligence is the science that makes it possible for the disparate devices, sensors, and technologies in your environment to seamlessly work together to assist and delight you at every moment. This intelligence is there when you need it—it even anticipates your needs—but it disappears into the background when it is not needed. With functionalities like Routines and Hunches that help Alexa anticipate your needs and automate your day, Alexa is, at the core, what Amazon is doing with ambient intelligence.¹⁰

But if you thought Scout was impressive, wait until you meet Astro, Amazon’s new home robot. Astro is a “new and different kind of robot, one that’s designed to help customers with a range of tasks like home monitoring and keeping in touch with family. It brings together new advancements in artificial intelligence, computer vision, sensor technology, and voice and edge computing in a package that’s designed to be helpful and convenient.” Astro can be used to check that your home is safe and secure and integrates with Ring Pro Protect. It can help with elder care and bring Alexa to every part of your house. So, if you are in the sunroom reading a book, you can ask Astro to add those bananas to your Virtual Shopping List. And Astro is available this year (2022) for \$1,449.99, but as part of the Day 1 Editions program, it will be available for an introductory price of \$999.99 with a six-month trial of the Ring Protect Pro subscription included.

A clear picture emerges. As one legendary innovator once said, “The best way to predict the future is to invent it.” Consider the digital assets and platforms Amazon is connecting:

- Just Walk Out™ technology, now being licensed at a significantly discounted operating cost you might conclude to achieve a disproportionate share of the market, first-mover advantage and to create demand for cashier-less checkout.

- AWS to host the Just Walk Out™ technology customer's deployment across all their locations, with the opportunity to provide additional security and application services – from Analytics to Robotics and even Call Center solutions as needed.
- Dash Cart, expanding beyond Amazon Fresh out at least to handful of Whole Foods locations today, but you might expect many more in the future delivering both cashier-less check out, and a better, more efficient, convenient, and faster in-store experience.
- Alexa, quickly evolving with ambient capabilities, located before you arrive in your home, in the Astro home robot, and located throughout the Amazon Fresh (and eventually) Whole Foods stores.
- Free home delivery – eventually Amazon Logistics services to drive down costs even further.
- AWS-hosted Big Data analytics understanding all this behavior to drive new levels of personalization, customer insight and supply chain management.



Figure 3 - Linking digital assets.

It is not like Amazon doesn't have competitors. Start-ups like Grabango, AiFi, and Zippin are offering cashier-less solutions. But if you were the management team of a large grocery chain, who would you buy from when Amazon's solution begins in the consumer's home through Alexa – and continues when the consumer visits the store or, better yet, selects home delivery? You might argue that surely these other competitors are building APIs to the Google Assistant and Alexa themselves... perhaps they are, but at what cost? How much greater convenience? And once the customer has engrained their ordering habit as a habit, maybe even a ritual, how easy is it going to be to unseat Amazon from those

And once the customer has engrained their ordering habit as a habit, maybe even a ritual, how easy is it going to be to unseat Amazon from those customers?

customers? This is the literal definition of a *Value Network* that forms the hard edge of a competitive advantage.

Scale the Value Network: Whole Foods

Now the game gets serious, and we start to understand why Amazon paid what was widely acknowledged as a premium to acquire Whole Foods. With 500+ stores located in neighborhoods with households quite likely to have an Alexa device, in urban areas with sidewalks and garages for autonomous robots like Scout to arrive at or a friendly drone to land – Amazon’s customer segmentation strategy appears to align with the Value Network they are investing in. Now if these 500+ Whole Foods Stores could also be used as online ordering fulfillment centers, Amazon takes leveraging value over costs all the way to the margin. A CB Insights report sheds some light on this:

Some analysts claimed Amazon’s purchase of the retailer was short-sighted, and that Whole Foods’ reputation as a premium retailer – with prices to match – was at odds with Amazon’s low-price, high-volume model. However, this analysis overlooked a key source of value for Amazon’s acquisition: namely, the potential to use Whole Foods stores as ready-made distribution centers. With Whole Foods’ 500+ locations across the US, Amazon gained quick access into the highly competitive grocery retail market. Even without its inventory, equipment, and storage facilities, Whole Foods’ physical locations were valuable. Moreover, many Whole Foods stores are located in affluent urban areas and typically attract higher-income consumers with a preference for high-end grocery products – a similar demographic to that most likely to shop for groceries online, according to a Gallup survey.¹¹

Now the opportunity for scaling is clear. It would not be surprising to see Amazon expand in the UK market as well as Spain, Italy, and Germany in the coming years.

As Amazon has done with other services, they often improve margin by decreasing costs through these scaled efficiencies. Whole Foods now delivers a much more competitive price level compared to before the acquisition in line with Amazon’s strategy and given that last-mile delivery accounts for 53% of total shipping costs, if things like closer fulfillment centers (Whole Foods), Amazon Scout and drone-based delivery can shrink those costs even further, Amazon can find even more savings to share with customers and shareholders. With each digital asset linked to form a highly differentiated *Value Network*, it’s time to talk about the icing on all this cake: Data.

Generate Data Insights: Retail Store Analytics Service

Consider the level of data Amazon will collect from all of this “product-in-use information”. Data from your general online purchase information through Prime, the path you take and the items you purchase (and put back) from Dash Cart through an Amazon Fresh store – the list is significant and all stored-on AWS Cloud infrastructure.

Not surprisingly, Amazon recently introduced a new physical retail analytics service called: Store Analytics that offers brands, “data-driven insights about the performance of their products, promotions, and ad campaigns.” The platform aggregates and anonymizes the data so no individual personal information is shared however, brands will have access to how

their products are “discovered, considered, and purchased in applicable stores to help them inform decisions related to selection, promotions, and ad campaigns.” Though any customer can opt out of having their individual data included, as cited early from previous research, only the most adamant among us on issues of personal privacy typically do. In terms of retailers, Mr. Kumar reinforced Amazon’s privacy policy when he said, “We prohibit the use of Just Walk Out™ technology data for anything other than supporting Just Walk Out™ retailers.”¹²

Exploit Nearby Adjacencies: Amazon Style

To make the case for how this can scale to close adjacencies, consider that Amazon recently opened their first 30,000 square foot, Amazon Style fashion store in Los Angeles. In this store, customers using the Amazon Shopping app, can send items to a fitting room, where they can use a touchscreen to browse more options, rate items, and request more sizes or styles that are delivered directly to their fitting room closet within minutes using on-site operations, with advanced technologies and processes used in Amazon fulfillment centers. This is quite different than a grocery store trip where the customer may know what they are there to purchase. The fashion shopper may be looking to be inspired, to have their fashion tastes expanded, and hence the Amazon Style store – in true Amazon ‘fashion’ – brings Selection, Price, and Convenience, to a retail fashion experience, enabling consumers to discover items which appeal to them.



Figure 4 - Source: Amazon

The Hard Edge of Competitive Advantage

This description of the experience covered a lot of details, but let’s drill a bit deeper into some of the AWS technology that could be linked to serve a variety of Amazon’s businesses. Remember these two conditions cited by those Boston researchers around creating a competitive advantage from digital ecosystems:

- A propensity to control the hub of a digital ecosystem network.
- Relevance in many overlapping ecosystems.

Amazon Rekognition is a good example. This product allows the user to integrate picture and video analysis to an application using deep learning technology. It helps in identifying various objects. For example, you can find your products on store aisles by recognizing the logos. In addition, to ensure their position to “control the hub”, AWS services like AWS Lambda (virtual

compute capability) easily integrates with Amazon S3 (for cloud storage.) Dilip Kumar explains the role of AWS in Amazon's Retail Strategy:

If you think about any of these technologies since day one, we have used AWS services behind the scenes. As a result, we can offer Just Walk Out™ technology as part of an entire application to retailers. Take Amazon One. We give them the device and they plug it in then they can start taking orders with very little effort. For Just Walk Out™ and Amazon One, we offer these services at an application level vs. an infrastructure services level as our customers are store operator vs. developers.

A visit to the AWS website describes a long series of technologies available to developers to build from and this suite of retail technologies is no different.

Results

Amazon ended fiscal year 2021 with revenues of \$469.8 Billion, a growth of 22% over the previous year. In 2021, Gross Profit reached \$197.5 Billion, delivering \$38.2 billion in pretax income after spending \$56 billion on Technology and Content. On May 12, 2021, the New York Times reported that during the COVID-19 pandemic, Amazon's profit soared 220%, Y/Y growth in Q1 2021, as consumers turned to online ordering. It went on to report that 200 million people pay for Prime memberships, and households with Prime memberships typically spend twice that of non-members. We didn't talk about the important role that Prime plays in their business model but perhaps the sheer numbers speak for themselves. But as with our other Best Practice Case Studies we like to give customers the final word¹³:

- Love the concept just grab and go!!: I have seen the Amazon Go video and really want to visit. How they detect what I pick is amazing. Very convenient I love this place in terms of no queue, don't have wait for the long lines when you want just only a bag of Doritos or sandwich or one can of coke :) All you have to do before you enter is download the Amazon Go apps and register. - Naphat S - Bangkok
- 6 stars out of 5: After having experienced Amazon Go, I only want to shop at Amazon Go. The selection is nicely curated, all products are high quality, and it's super-fast and smooth. No checkout needed, just walk out the door with your stuff!!! - Matin - Evanston

Summary

Iterate.ai co-founder Jon Nordmark suggests that "Amazon's strategists ignore traditional boundaries and borders. The focus: add services, digitize, link everything together, and speed up. The Amazon flywheel fuels a circular, data-driven ecosystem that's bolstered by Open Innovation."¹⁴

Isn't that what we just said?



Order your copy of *The Digital-First Customer Experience: Seven Design Strategies from the World's Leading Brands* today.

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