

RETAIL TECHNOLOGY RESEARCH
October 30, 2017

Amazon

The Stiffening Environment for Platform Services: Initiating with \$980 PT

KEY TAKEAWAYS

Wal-mart's aphorism that "we are in the distribution, not retail, business" applies also to Amazon. Since August 2000, when Toys "R" Us agreed to sell through Amazon.com, Amazon has oriented around platform services more than merchandising: "It dawned on us how brutal it was to pick Barbies and Digimons, and on them how expensive to build a world-class e-commerce infrastructure." Third-party (3P) sellers now account for over half of units sold.

As the internet cracks into the real-world, Amazon's platform services for 3P e-Com sellers – distribution (Prime), fulfillment (FBA/robotics), and artificial-intelligence (P13N/Alexa) – will enable "App & Mortar" for 3P physical sellers. Starting at Whole Foods, Prime Now will evolve from home-delivery to in-store shopping and Amazon from "a search engine with a warehouse" to one with stores. The e-Com flywheel - rising customer-acquisition costs drive 3P sellers to Amazon gates on the path-to-purchase - will extend to o(mni channel)-Com even though sellers then face elevated risk of private-label substitution (e.g. [pillow pets](#)).

Extending Amazon Marketplace from e-Com to o-Com will be expensive, and competitors won't repeat Borders' mistake of seeing it as "[just another catalog](#)." Wal-Mart is investing to protect its retail franchise and Google its search franchise. The first-mover advantage of "Day 1," with incumbents asleep at the (data-center) switch, is also weakening at AWS as Google and Microsoft erode pricing to catch up in scale. And Amazon does not have the cash cows of Wal-Mart (super-centers), Microsoft (Windows), or Google (search).

Providing mail-order fulfillment and other services to PBMs will not match the early scaling of AWS, if only because of license constraints, and we expect Amazon's ROIC to fall to single-digits from 10%+ in 2016 (vs. <1% in 2012) as the firm generates below-consensus EPS of \$8.00 and \$12.00 in 2018 and 2019 respectively. Yes, an end-state oligopoly in platform services - whether for retail or compute - is a pot of gold, but extending duration as rates back-up is a tough ask for the stock. \$980 PT applies Google's 2019 multiple of OCF vs. current 12% premium. Equal-weight.

Ratings

Stock Rating:	Equalweight
Target Price:	\$980.00

Financial Data

Symbol:	AMZN (NYSE)
Rating/Target Price:	EW / \$980.00
Price (10/27/2017):	\$1,100.95
52-Week Price Range:	\$710.10 - \$1,105.58
Diluted Shares Outstanding (mm):	494
Market Cap (mm):	\$528,874
Average Daily Vol (mm):	3.5
Book Value/Share:	\$51.16
Dividend/Yield:	0.0%
Net Debt (mm):	\$18,876

Price Performance

Price Performance



— AMZN
 Source: FactSet

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Executive Summary: More Competition in Retail & Compute

Amazon Retail: From e-Com to o-Com

Amazon has been long re-orienting around platform services vs merchandizing. In August 2000, Toys “R” Us agreed to sell its most popular toys on Amazon.com and keep inventory in Amazon’s distribution centers, beginning Amazon’s journey from Retailer to Retail Services Platform. Harrison Miller, Amazon’s category manager for toys, negotiated the deal and became the firm’s first head of Platform Services. He commented, “It was dawning on us how brutal it was to pick Barbies and Digimons, and it was dawning on them how expensive it would be to build a world-class e-commerce infrastructure.” In 2003, Wal-Mart [echoed](#) this distinction between merchandizing & platform services, “The misconception is that we are in the retail business, [but really] we are in the distribution business.”

Platform Services has potential to be more attractive than merchandizing. Merchandizing is a fickle business. Running the supporting infrastructure at web-scale – including digital distribution (Prime), fulfillment (FBA/robotics), and artificial intelligence (P13N/Alexa) – is not. The resulting “Marketplace” takes a high and moated 6-15% commission on each sale, with no inventory or store-front expense. It also provides merchandizing insight that advantages Amazon in entering new verticals and building a private label business. Randy Miller, who launched Amazon’s jewelry business in 2003, [observed](#), “If you don’t know anything about the business, launch it through Marketplace, bring retailers in, watch what they do and what they sell, understand it, and then get into it.”

Amazon’s Retail Platform Began with Toys “R” Us, But It’s Now More than Half the Units Sold on the Platform



Reach hundreds of millions of customers

Access a massive audience of confident customers—in the U.S. alone, Amazon has over 93 million monthly unique visitors.* Benefits from a brand that ranks #1 in reputation as determined by a 2014 Nielsen Company survey.†

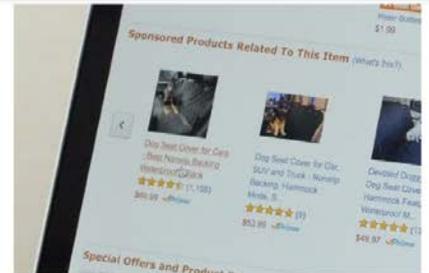
[Selling on Amazon](#)



Let us do the heavy lifting

Scale swiftly and reach even more customers with Fulfillment by Amazon, our world-class fulfillment service. We pick, pack, and ship your products and take care of customer service and returns—all so you can focus on growing your business.

[Fulfillment by Amazon](#)



Get your products seen by more shoppers

Increase your reach and drive sales by advertising your products on Amazon. Keyword-targeted ads appear in high-visibility placements, right where customers will see them, and you only pay when your ad is clicked.

[Advertise on Amazon](#)

Source: amazon.com

Amazon’s e-Com distribution drives sellers onto its “Marketplace” platform. Today, more than half of paid units on Amazon.com are sold by third-party (3P) sellers. Some are beginning to recognize the strategic risks and [anti-trust](#) issues

raised by Amazon competing as both marketplace and retailer. In the latter role, it injects own-brand substitutes into the most promising commerce streams of its marketplace participants: [pillow pets](#) is a well-documented example. Still, more than half of consumer shopping journeys begin at Amazon.com, making it a necessary digital channel for all but the strongest retail brands. Rising customer acquisition costs (e.g. [Honest Company](#)) and the need to control unauthorized resellers (e.g. [Nike](#)) continue to drive retailers onto Amazon's platform.

Increasingly, "App & Mortar" will be the only viable approach. As consumers respond to the advantages of omni-channel shopping, retailers lacking the ability to combine the digital convenience of a shopping app with immediacy of store experience will lose them. As a result, the retail value-chain will bifurcate into merchandizers who select & own inventory (often in vertically-specialized categories) versus horizontally-integrated platform services providers. The latter will offer marketplace support to third-party (3P) retailers, so their customers can shop the mobile internet via a shared app. This is just like Amazon's current Marketplace, which supports 3P retailers, so their customers can shop on fixed internet via the shared Amazon.com website. Since mobile devices can be brought into the store environment (unlike desktops or even laptops), this will extend the reach of Amazon's platform services from online to offline.

Prime Now is Amazon's nascent mobile marketplace. Prime Now already provides home-delivery support for 3P retailers in a fast-increasing number of major cities. We believe Amazon will extend this, providing in-store shopping support with Whole Foods as a captive customer. Prime Now will evolve into a fully-fledged mobile marketplace that supports 3P grocers and merchants in other categories. It will provide customer acquisition, merchandizing intelligence, in-store digital services, and fulfillment either to store or home. High and rising investment by Amazon in platform services will drive o(mni channel)-Com retailers onto its mobile marketplace the same way it drove e-Com retailers onto its fixed-internet marketplace.

We believe 3P sellers will participate, despite the risks. As more o-Com retailers join Amazon's mobile marketplace, the offline consumer path to purchase will be increasingly gated by Amazon. This mirrors what we saw online, where e-Com retailers joined Amazon.com as 3P sellers. As more bricks & mortar retailers join Amazon's platform, non-participating retailers' customer acquisition costs (CAC) increase, incentivizing them to participate in the platform. This improves Amazon's visibility into consumer spending, guiding its own-label offerings. Amazon thereby appropriates the value of 3P sellers' merchandizing research and compresses the lifetime value (LTV) of their customers.

Flywheel effects are virtuous for Amazon, vicious for hold-out retailers. As Amazon gains share of e-Com and extends its franchise to o-Com, increasing scale supports increasing platform investment. This adds further costs for hold-out retailers. Vijay Ravindran, head of Amazon ordering systems and part of the 2003 team that developed Prime, [remarked](#) on this lock-out effect of Prime: “[Prime] was never about the seventy-nine dollars [membership fee]...it was really about changing people’s mentality so they wouldn’t shop anywhere else.” 1-day shipping will reinforce the flywheel effect, as will predictive fulfillment (sending algorithm-selected goods and allowing free returns for any unwanted ones) and Alexa/Echo Show (improving predictive algorithms by engaging a fast and low-cost user-feedback cycle).

Whole Foods is a Test-Bed to Expand Platform Business to Stores

Whole Foods is central to Amazon’s plans for a mobile marketplace. Grocery accounts for ~20% of consumer spending. However, the value of the Whole Foods acquisition goes beyond Amazon’s entry into Grocery as a merchandizer. More importantly, Whole Foods is a captive customer and test-bed for the Amazon Grocery Services (AGS) platform. We believe Amazon will offer this to 3P Grocers and Restaurants. AGS (likely through Prime Now) will support 3P participants with digital distribution and a fulfillment platform. Its supply-chain will be optimized for the short-lived & variable sell-by dates of perishables, particularly fresh meat, fish, fruit, and vegetables. These capabilities will enable Amazon to build platform scale in one of the two segments Bezos has long [believed](#) “we’ve got to learn how to sell” and which are not suited to an e-Com only channel: food and clothes.

AGS will be a core component of Amazon’s broader mobile marketplace. Consumers will increasingly migrate to mobile devices for shopping both in-store and on-line. Retailers will respond with App & Mortar. The largest, such as Wal-Mart, may be able to go it alone. However, for many Amazon’s web-scale will make it a table-stakes partner. This will extend Amazon’s platform services business from e-Com to physical stores where ~90% of commerce occurs.

- **Amazon will increasingly become path-to-purchase for store-fulfilled items.** With App & Mortar, traditionally store-bought goods will increasingly be ordered (or at least researched) online and fulfilled in store. This helps Amazon evolve from “a search engine with a warehouse attached” (as one [commenter](#) put it) into a search engine with stores attached. Google will likely provide Amazon hold-outs with digital distribution (as it has with Wal-Mart and Target) as it seeks to mitigate Amazon’s threat to its search business. Still, access to highly-loyal Prime consumers gives Amazon a meaningful edge in

attracting 3P sellers to its mobile marketplace, just as it has in attracting them to the Amazon.com fixed-internet marketplace.

- **More home-delivery orders will be generated in-store.** With App & Mortar and advantaged fulfillment, an order can be generated in-store or in-app and home-delivered. By reducing the negative impact of out-of-stocks, this enables tighter inventory management, providing a working-capital and curation edge to 3P physical sellers who have access to Amazon’s fulfillment platform. We believe Amazon has an important fulfillment edge. This is particularly true for last-mile delivery. This advantage will increase as Amazon builds out 1-day delivery capability for e-Com and same-day delivery capability for Prime Now-supported 3P physical sellers.

Ingredients for a 460 Store Chain of App & Mortar Smart Stores Already Exists



Source: marketwatch.com



Source: onedoor.com

Incorporating Artificial Intelligence into Retail Platform Services

Longer-term, Amazon will incorporate AI into Platform Services, helping 3P partners understand their customers in a “truly individualized way.” Amazon’s cognitive technology skills – Artificial Intelligence (AI) and Machine-Learning (ML) – can help 3P retailers: (1) enhance consumers’ in-store visits by customizing app-enabled digital engagement in real-time; (2) improve merchandizing (assortment-selection, goods-pricing, and dynamic, customized promos) based on local demand characteristics and real-time customer information; and (3) drive operational efficiency by tracking customer paths through store, improving layout and optimizing shelf-space. Longer-term, Amazon Go’s smart surveillance will inform customer engagement and operational intelligence with exact store-location and observed behavior. Even before this is perfected, Amazon can bring Amazon.com capabilities to 3P-partner apps—generating customized, real-time ads, supporting brand-engagement, and avoiding notification-fatigue.

Shorter term, integrating mobile payment into checkout is a meaningful win. In October, Amazon forged a partnership with Stripe. As a result, we expect it to integrate mobile payment for in-store use at Whole Foods and 3P partners. Stand-alone mobile payments, as illustrated by Apple Pay, haven't gained the expected traction with consumers. However, integration of mobile payments into checkout has been effective at Starbucks and Walmart (for example). The difference is that a mobile payment app simply involves a change of form factor (tap a phone rather than swipe a card), while a mobile checkout app integrates other services. For example, you can split a bill between your credit card and loyalty rewards and/or coupons. It also enables digital receipts. The gating factor is that consumers won't download an app for every retailer they patronize. This allows Prime Now to be a cross-retailer solution given its large customer following.

Expect Intensifying Competition in Retail Platform Services

Amazon is positioning for an eventual oligopoly in retail platform services. Amazon's end-game for its mobile marketplace is building front- and back-end capabilities to participate in what's likely to be an oligopoly of platform providers. These front- and back-end capabilities benefit Amazon as a retailer, but these benefits are secondary to those it will derive by creating a platform for 3P retailers. Omni-channel retailing is blurring e-Com & physical stores, enabling Amazon to extend its platform business to physical stores. The broader vision for the "everything store" is not to merchandize everything. Rather, Amazon wants to touch and tithe every commerce transaction. It wants to own the consumer, the merchandizing intelligence, the digital services for on- and offline shopping, and the fulfillment infrastructure, but not necessarily inventory or physical outlets. Its forward integration into retailing (in a value-chain rather than chronological sense) enables Amazon to understand and shape decisions faced by 3P resellers. As a result, it becomes a better distribution agent for its platform services. It's a means, not an end.

While end-state oligopoly returns are enticing, evolving Amazon's marketplace from online to offline will be expensive. Wal-Mart and Google have deep pockets and open eyes, making them more difficult to outflank than Borders, which (in a move that seems extraordinary in hindsight) allowed Amazon to run its online business so it could focus on physical stores. Unlike Borders, today everybody knows Amazon is more than "[just another catalog](#) – a version of Land's End." Wal-Mart, for example, is investing in its own e-Retail capabilities, (1) expanding online inventory from 10 million to 50 million products over the last year; (2) opening its platform to 3P resellers; (3) exploring synergies between online and offline (such

as Click & Collect); and (4) [investing](#) in e-Retail fulfillment centers, including free shipping on \$35+ orders.

Expect Intensifying Competition in Compute Platform Services As Well

Amazon’s first mover advantage in cloud services is losing potency. Amazon Web Services (AWS) grew out of the 2006 “Merchant.com” [initiative](#) to help 3P merchants, such as Target, build shopping web-sites on top of Amazon’s e-commerce engine. Amazon was able to separate the various services so third-parties could share centralized computer resources (storage, processing, and networking) and a centralized development platform. The solution was to abstract and deliver these services through software solutions known as application programming interfaces (APIs).

Global Spending in Public Cloud Market

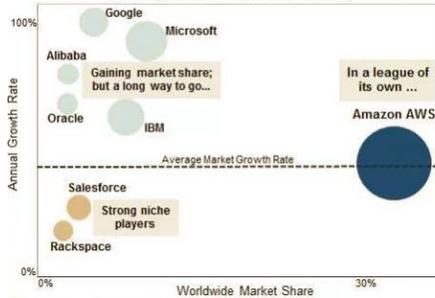
\$bn	2015	2016	2017	2018	2019	2020	CAGR 16-20
Total	175	209	247	288	333	383	16%
Core	91	112	134	159	187	218	18%
Infrastructure Services - IaaS	16	25	35	46	58	72	30%
Application Services - SaaS	31	39	46	55	65	76	18%
PaaS	43	48	53	58	64	71	10%
Application Infrastructure Services	4	7	9	11	13	15	20%
Business Process Services	39	41	44	48	52	56	8%
Other	84	97	113	129	146	165	14%
Management and Security Services	5	7	9	10	12	14	18%
Advertising	79	90	105	119	134	151	14%

Source: Gartner

AWS has grown as APIs created the cloud-hosted compute and storage markets. System administrators can integrate workloads into the cloud, using them in what is referred to as an “infrastructure-as-a-service” or IaaS model. The advantage of IaaS is cost. Shared infrastructure allows more optimal load-balancing, particularly for users with variable workloads and need for overflow capacity. It can raise server utilization rates to above 70% from the below 40% of typical on-premise solutions. Furthermore, IaaS providers tend to use commoditized components purchased at scale, rather than value-added configurations of OEM providers. They can also locate data-centers in areas where rents, power, and fiber-connectivity are cheap. IaaS has also supported cloud-hosted software-as-a-service, or SaaS (where APIs connect the application-layer with underlying cloud-based infrastructure) and platform-as-a-service or PaaS (where APIs connect middleware services, such as databases and messaging systems, to underlying cloud-based infrastructure). Indeed, IaaS has catalyzed innovation in SaaS and PaaS businesses by lowering entry-barriers. Participants can rent infrastructure in the cloud rather than facing up-front capex costs of on-premise solutions. AWS has ridden the resulting enterprise IT transformation. It grew 40%+ in 3Q17 with

25% operating margin. It accounts for 10%+ of firm-wide revenue and \$1.2bn of 3Q17 operating income versus just under \$350m for Amazon overall.

AWS Dominates but that Will Change



Source: Synergy Resource Group
(Growth & Share for Major CSPs, including private hosted cloud, 2017Q1)

After a slow start, competitors are responding in the “infrastructure-as-a-service” or IaaS market. AWS CEO Andy Jassy [commented](#) last November “the biggest surprise for me is just how long it took for other providers to have an offering. I don’t think any of us in our wildest dreams imagined that we would have a 6-year head start.” The resulting first-mover advantage has allowed AWS to gain a 40%+ share of IaaS and ~one-third share of the broader cloud services market. However, as in retail, Amazon’s success in AWS has triggered an intense response from competitors, from enterprise IT incumbents such as Microsoft and Oracle and new entrants, such as Google, both now investing aggressively.

Some competitors are structurally advantaged as the market moves towards hybrid solutions. Although competitors lack Amazon’s scale, they’re structurally advantaged in some ways. Enterprises are eager to move workloads from on-premise servers to the public cloud (where infrastructure is shared with other users at the discretion of the host). This captures cost-savings. However, they also want to retain the access-control of a private cloud (where infrastructure is shared, if at all, at the discretion of user/s or “tenant/s”). As a result, they prefer a hybrid cloud solution that joins a public and private cloud (or even legacy on-premise solution) and uses an encrypted connection. This allows clients to leverage scalability of the former and data integrity, regulatory compliance, likely lower latency, and software development-and-testing environment of the latter. Hybrid solutions advantage Microsoft and Oracle given the installed base of .NET and Java applications, respectively. Oracle makes the linkage explicit by offering hybrid cloud credits for on-premise payments.

Other competitors, in looking for scale catch-up, are undercutting AWS on price. In March, Google announced “committed use discounts” which [reportedly](#) reduced IaaS costs by over 50% in exchange for a one-to-three year commitment by customers. This put Google at a lower price-point than Amazon. Furthermore, beginning in 2H16, the cloud price wars extended from computing power (or “virtual machines”) to object storage. One [analysis](#) indicated standard-use prices fell 5% for the former and 14% for the latter over the 12-months to mid-2017.

Cloud Pricing (December 2, 2016): Amazon is Not the Price Leader

Resource Type (us-east, Linux)	AWS Instance	Azure Instance	Google Instance	AWS OD Hourly	Azure OD Hourly	Google OD Hourly	AWS /GB RAM	Azure /GB RAM	Google /GB RAM
Standard 2 vCPU w SSD	m3.large	D2 v2	n1-standard-2	\$0.133	\$0.114	\$0.212	\$0.017	\$0.016	\$0.028
Highmem 2 vCPU w SSD	r3.large	D11 v2	n1-highmem-2	\$0.166	\$0.149	\$0.238	\$0.011	\$0.011	\$0.018
Highcpu 2 vCPU w SSD	c3.large	F2	n1-highcpu-2	\$0.105	\$0.099	\$0.188	\$0.028	\$0.025	\$0.104
Standard 2 vCPU no SSD	m4.large	D2 v2	n1-standard-2	\$0.108	\$0.114	\$0.100	\$0.014	\$0.016	\$0.013
Highmem 2 vCPU no SSD	r4.large	D11 v2	n1-highmem-2	\$0.133	\$0.149	\$0.126	\$0.009	\$0.011	\$0.010
Highcpu 2 vCPU no SSD	c4.large	F2	n1-highcpu-2	\$0.105	\$0.099	\$0.076	\$0.027	\$0.025	\$0.042

As of Dec 2, 2016

Source: Company Reports, RenMac Estimates

Declining Short-Run Returns Likely Constrain the Stock Multiple

Amazon lacks the cash cows of its lead competitors in both retail and compute.

To convert first-mover advantage to leadership in the likely end-state oligopoly for platform services (both retail and compute), Amazon will face aggressive investment from, and direct confrontation with, powerful and well-resourced competitors. The question is whether Amazon can beat Wal-Mart on the ground and Google/Microsoft in the cloud simultaneously, as it lacks the cash-cows of its competitors: Wal-Mart (supercenters), Google (search), & Microsoft (Windows).

Shareholder buy-in to the Amazon narrative has worked to date. Amazon has a visionary founder-CEO and a shareholder-base trained not to expect earnings. It's the creed of the first shareholder letter, still repeated every year (reprinted below). Beyond the use of lease accounting to report investment and expense, and the consequent tax-saving, Amazon's "jam tomorrow, but no jam today" narrative is as dear to the culture as the iconic image of Jeff Bezos driving from Fort Worth to Seattle in a 1988 Chevy Blazer circa 1996.

It's All About the Long Term

We believe that a fundamental measure of our success will be the shareholder value we create over the *long term*. This value will be a direct result of our ability to extend and solidify our current market leadership position. The stronger our market leadership, the more powerful our economic model. Market leadership can translate directly to higher revenue, higher profitability, greater capital velocity, and correspondingly stronger returns on invested capital.

Our decisions have consistently reflected this focus. We first measure ourselves in terms of the metrics most indicative of our market leadership: customer and revenue growth, the degree to which our customers continue to purchase from us on a repeat basis, and the strength of our brand. We have invested and will continue to invest aggressively to expand and leverage our customer base, brand, and infrastructure as we move to establish an enduring franchise.

Because of our emphasis on the long term, we may make decisions and weigh tradeoffs differently than some companies. Accordingly, we want to share with you our fundamental management and decision-making approach so that you, our shareholders, may confirm that it is consistent with your investment philosophy:

- We will continue to focus relentlessly on our customers.
- We will continue to make investment decisions in light of long-term market leadership considerations rather than short-term profitability considerations or short-term Wall Street reactions.

Return-on-Invested-Capital (ROIC) for Amazon

\$mm	2011	2012	2013	2014	2015	2016
ROIC	9.4%	0.7%	4.2%	1.7%	7.1%	11.3%
NOPAT	840	86	694	421	2,344	4,530
Net Income	631	(39)	274	(241)	596	2,371
Increase in Equity Equivalents	189	44	280	462	1,372	1,757
Deferred Tax - Impact	136	(265)	(156)	(316)	81	(246)
Deferred Revenue	43	275	399	741	1,292	1,955
Reserve for Doubtful Accts	10	34	37	37	(1)	48
Net Interest, Tax-Effectuated	20	81	140	200	376	402
Invested Capital	9,252	15,238	17,996	30,412	35,206	45,156
Debt and Leases	4,322	9,563	11,489	21,340	23,324	28,787
LT Debt	147	3,663	3,944	9,785	8,465	8,750
Capital & Finance Leases	1,555	1,302	2,973	6,304	9,074	11,660
PV Operating Lease Payments	2,620	4,598	4,572	5,251	5,785	8,377
Adjusted Stockholders Equity	9,343	9,253	11,016	12,994	17,332	24,821
Stockholders Equity	7,757	8,192	9,746	10,741	13,384	19,285
AOCI	316	239	185	511	723	985
Equity Equivalents	1,270	822	1,085	1,742	3,225	4,551
Marketable Securities	(4,307)	(3,364)	(3,789)	(2,859)	(3,918)	(6,647)
Construction in Progress	(106)	(214)	(720)	(1,063)	(1,532)	(1,805)

Source: Company Reports, RenMac Estimates

However, the competitive and rate environments are changing. Low rates, favoring long-duration investments, and supra-competitive returns from AWS have blunted the impact of an increasingly expensive confrontation with Wal-Mart in retail platform services. As competition also intensifies in the compute platform services business, we expect Amazon's return-on-invested capital (ROIC) to decline from an estimated 10%+ in 2016, versus <1% in 2012, back into single-digits. The implicit assumption that AWS drove the ROIC lift is supported by the business' 40% revenue growth, 30% margins and its contribution of >15% of Amazon revenue & >100% of Amazon operating income.

Initiate with a \$980 Price Target and Equalweight Rating: Even allowing for the promise of high terminal value as an end-state player in the eventual oligopoly for platform services in both retail and compute, a shorter-run decline in ROIC effectively extends the duration of an investment in Amazon at just the time that ambient interest rates are backing up. This creates a tough ask for expansion in the stock-multiple, and we base our \$980 price-target on Google's multiple of 2019 operating cash flow rather than the current 12% multiple premium. We initiate with an equalweight.

Competitive Threat to Amazon’s E-Retail Biz Is Increasing

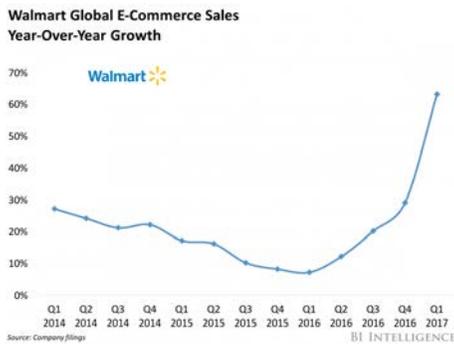
Bricks & Mortar retailers were slow to counter the Amazon/e-commerce threat.

As explored in Clayton Christensen’s [Innovator’s Dilemma](#), Amazon gained a bridgehead into retail by catering to an under-served segment, building capabilities in it, and leveraging these to “march up-market,” challenging incumbents in their profitable segments. Canonical examples are Toyota, Honda, and Nissan. Each entered the US market with smaller cars. Even though these were less comfortable and safe, they filled a consumer need for cars that were cheaper to buy, run, and maintain. The Detroit incumbents were [“killed from below.”](#) Amazon has done that to retailers, but these are waking up and fighting back.

Wal-Mart (and others) are now aggressively gunning for Amazon’s business. CEO Doug McMillon’s [first](#) priority is going Walmart-size on e-commerce to “compete with Amazon on its own turf.” Wal-Mart is using its physical distribution strength (a store within 10 miles of 90% of US consumers, the most [frequent](#) GPS destination) to ride the consumer shift from fixed to mobile internet. This lets Wal-Mart combine convenience of digital with immediacy of in-store experience. Leveraging fixed costs of its physical distribution across both online & offline shopping, across proprietary & third-party products, should drive success. This explains why Wal-Mart (like Amazon) opened its digital channel to third-party sellers through [Walmart Marketplace](#).

Consumer acquisition is tougher now that competitors are no longer sleeping. In e-Retail, Amazon’s competitive advantage period is waning. In August 2016, Wal-Mart [acquired](#) Jet.com, triggering organizational [changes](#) and a digital focus. Amazon’s already-large installed (Prime) base and more aggressive competition suggest future growth could be more challenging. Now that Wal-Mart and others are building digital distribution, through fixed and mobile internet, and driving personalization with data capabilities, Amazon’s digital distribution is no longer disruptive innovation. It’s now classical competition between two players for leadership in a market where decisive victory, and hence long-run supra-competitive returns for Amazon’s on-line business, are unlikely. Still, we believe this competitive backdrop is more benign than what we’re seeing in AWS (see discussion on page 32). Amazon should be able to easily out-spend retail competitors given their thin margins and investment in e-Retail. The competitive set is likely to be more difficult in AWS.

Peers (Incl WMT) Growing Fast Online



Source: [businessinsider](#)

Don't Underestimate AMZN's Long-Term Bricks & Mortar Play

Bricks & Mortar Real Estate is Cheap & Share Opportunity Meaningful

Omni-channel is key to future success & explains AMZN's Bricks & Mortar play.

To win with the consumer long-term, we believe retailers need capabilities across both online and offline shopping, offering omni-channel experiences to mobile-device consumers. Amazon has an advantage in machine-learning, particularly as it scales this capability beyond retail, bundling it into AWS. As a result, we applaud Amazon's entry into physical stores where 90% of retail shopping still occurs. We think Amazon will look to replicate its on-line strengths in-store. As a result, Whole Foods and Amazon [bookstores](#) are likely to exploit a technology edge to beat competitors, who will struggle to match Amazon's spend. This technology edge could include smart surveillance & leveraging consumer data to customize inventory by location. We'd note the last meaningful Grocery [innovation](#) was 100+ years ago when Piggly Wiggly's introduced self-service as an alternative to having store clerks select, weigh, & pack groceries.

Amazon has effectively devalued the physical real estate it is now acquiring.

Starting with a blank slate provides advantages for Amazon. Wal-Mart already has a dedicated distribution infrastructure consisting of super-centers, data-centers, and distribution-centers networked together through product barcodes and a fleet of proprietary trucks. This infrastructure (as with that of other Bricks & Mortar retailers) has become less valuable in recent years as Amazon pulled traffic from physical stores and reduced the value of the real estate. Although traditional retailers are attempting to offset this by dual-purposing real-estate as picking-centers for e-retail, we believe Amazon is advantaged long-term given: (1) its initial investments in physical stores began when retail traffic was down meaningfully (buyers' market); (2) it has already beta-tested Smart Store technology that could disrupt Bricks & Mortar shopping; (3) its proprietary delivery fleet can be better leveraged with incremental real estate and 3rd-party retail relationships, improving economics of Fresh delivery by virtue of the Bricks & Mortar investment.

Amazon Understands Grocery & the Category is Ripe for Disruption

Amazon already understands the Grocery category. Although the business is still quite small, "Fresh" began building more than a decade ago, so it understands the Grocery category. Amazon has learned enough through its Go beta test to have a vision for disrupting Grocery, even in physical locations. We discuss later how we believe Amazon can improve consumer-facing technology and back-end logistics

to improve consumer experience, supplier sell-through, and its own economics. As a result, we believe Whole Foods will offer more than just lower prices. It will also offer a meaningfully better value equation which is likely to be rewarded with share.

We think Whole Foods can gain meaningful share near-term, pressuring peers.

While the amount of market cap lost amongst Grocery retailers since the Amazon-Whole Foods announcement may be overdone, traditional players *will* likely be pressured by Amazon's predatory pricing, reinvestment behind stores, and likely store expansion longer-term. Back in the day, Walmart was cited in the bankruptcy proceedings of at least 26 retailers, mostly smaller, regional chains as well as several high-profile merger cases. Similarly, Amazon has been cited in recent bankruptcy proceedings. [Central Grocers](#) (Chicago) & [Marsh](#) (Indianapolis) each filed bankruptcy in May. We mention this throughout the report, but we think it's important -- traditional Grocers have thin margins and are already investing heavily online. This leaves fewer dollars to spend combatting Amazon's now physical store presence.

Industry Was Disrupted Before & Competitors Have Limited Defenses

Industry participants have underestimated new entrants in the past. Wal-Mart has dominated the scene so long, it's easy to forget they had no Grocery presence prior to 1998. When Wal-Mart entered Grocery, many doubted their ability to compete with established players. Similarly, many have suggested Amazon will have difficulty competing with Walmart in its core mass-market segment given Wal-Mart's edge in physical distribution. We would argue Amazon largely targets a different (and more attractive), higher-end demographic. In addition, history proves an already dominant position in an adjacent business & state-of-the-art capabilities can disrupt the Grocery business. Wal-Mart did it with a dominant position in discount retailing and state-of-the-art distribution. We think Amazon will do it with its dominance in e-retail and state-of-the-art AI/machine learning/data. Like Wal-Mart, we think Amazon/Whole Foods can quickly gain share (we've already seen a marked traffic increase).

Bricks & Mortar retailers' limited defenses pave the way for another disruption.

In the past, Bricks & Mortar retailers have demonstrated limited ability to pivot. Investment ability is limited by already-thin margins & investor pressure. Grocery retailers have also already pledged to spend billions on-line, limiting what they can spend to improve the in-store experience where they are less worried about Amazon. Amazon can and will out-spend them, progressing more quickly toward the store of the future (App & Mortar) and taking the consumer with them.

Near-Term, Amazon’s Retail Business is in an Investment Cycle

Amazon is Likely to Spend Meaningfully with Low Visibility

Near-term, investment will likely increase, and the payoff won’t be immediate. Near-term, we think Amazon is entering an investment cycle in its retail business—both to combat stepped up competition in its e-commerce business and to attack Bricks & Mortar competitors where they live, now that it has a meaningful physical store presence. We believe the investment helps ensure Amazon’s long-term growth path. However, we worry that shorter-term, spend could pressure margin.

- **WFM gives Amazon 460 physical stores, but disruption takes time/money.** Amazon is experimenting with proprietary physical distribution, including plans reported in Feb 2016 to open 300-400 US bookstores and more recently to operate 460 Whole Foods grocery stores. Amazon currently lacks the scale to replicate Wal-Mart’s proprietary distribution infrastructure. Wal-Mart opened 198 US stores in 2016 alone (one every two days). We think Amazon will invest to expand its physical footprint as well, particularly the 365 format.
- **End-game likely a Retail Platform, but Smart Stores must be perfected first.** We think Amazon must evolve into a Retail Platform where its physical infrastructure supports offline resellers just as its digital infrastructure supports online resellers (now accounting for nearly one-half of Amazon’s total US Retail sales). In this context, Whole Foods is the kernel around which Amazon will grow distribution capabilities for perishables. We believe it will then scale the business by offering it as an App & Mortar platform to third-party grocers. The rationale is the same offered by Jeff Bezos for opening its AWS: “because we need it as well”.

E-commerce FMCG Value Share

Market	2016
South Korea	19.7%
UK	7.3%
Mainland China	5.7%
Taiwan	5.7%
France	5.5%
Spain	1.7%
US	1.4%
Portugal	1.0%
Argentina	0.8%
Malaysia	0.7%
Thailand	0.6%
Vietnam	0.4%
Brazil	0.1%

Source: Kantar World Panel, Feb 2017

Investment Likely to Go Beyond Physical Stores, Creating a Platform

AMZN is following consumers where they shop—98%+ of Groceries sold in store. Grocery is a big market. It’s 8x the size of Books, Sporting Goods, Hobby, Book & Music; almost 3x the size of Clothing, and even 2% larger than General Merchandise. Despite the size of the opportunity, traditional Grocery retailers haven’t gotten it right. No sane person enjoys shopping in a Grocery store (studies suggest 85% of Americans think grocery shopping should be better). This argues for higher e-commerce share. Currently, however, <2% of US Groceries are bought online. We think Amazon can speed the transition online by following consumers to physical retail and creating App & Mortar Smart Stores. Near-term, this generates a share opportunity (superior in-store experience) & it brings in new

Prime members who are likely to cross-shop the Amazon eco-system. Longer-term, it eases consumers into behaviors that are more akin to online shopping.

Consumer Dissatisfaction with Grocery Can Help Amazon Capture Consumers



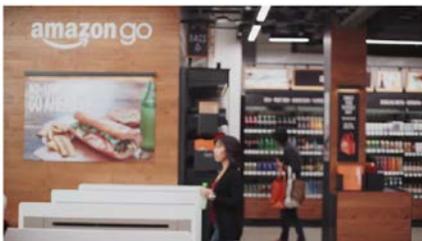
Source: Lifehacker.com

Retail is ripe to disrupt; WFM is likely just AMZN’s first step into Smart Stores.

Bezos’ 2016 shareholders letter said, “customers are always beautifully, wonderfully dissatisfied,” providing an opportunity to delight them by investing on their behalf. Consumer dissatisfaction with Grocery creates potential for disruption. The business is largely unchanged since Wal-Mart entry in 1998 (now 22% share). In our view, traditional Bricks & Mortar competitors’ thin margins have prevented them from modernizing. They are currently investing heavily in online, but can’t do so and still invest as much as Amazon likely will to modernize stores & improve consumer experience. The same is true beyond grocery as well.

Amazon Go Store of the Future Will Likely Revolutionize Whole Foods, Eventually

Enter Store Thru a QR-Enabled Turnstile



App Automatically Adds Stuff to Basket



Source: Business Insider

Swipe QR Code to Activate your Basket



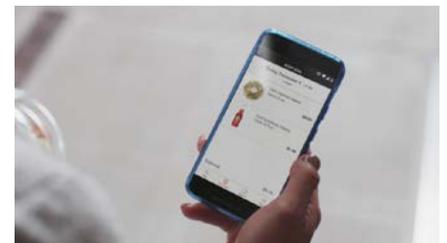
Walk Out of the Store Thru Scanners



Shop as Normal



App Will Charge You for Items Purchased



Whole Foods is likely a large-scale test bed for an App & Mortar platform.

Amazon promised in its most recent Shareholder Letter that it would continue to embrace external trends, the biggest of which it identified as AI/machine learning. Amazon already uses AI/machine learning to its advantage online, allowing it to make meaningfully more efficient merchandising decisions and helping it best the competition. Many of its e-retail technologies have corollaries in Bricks & Mortar and could help morph Whole Foods into an App & Mortar Smart Store and gain share. Amazon Go is currently a one-store beta test in Seattle open only to employees (technical issues remain). However, the technology promises to replicate the ease of online shopping in physical stores and demonstrates Amazon’s ambition. The consumer benefit is obvious (no lines!) but tech

imbedded in the store/app also offers meaningful advantages to retailers (more productive stores) and suppliers (fewer out-of-stocks). Importantly, the tech needed to modernize Grocery can modernize other retail formats as well.

WFM re-investment could pressure near-term profit for long-term gain. So far, we have seen lower prices on the most visible SKUs, Amazon signage, a few devices in store, and the promise of melding Prime with Whole Foods. We think store expansion (particularly the 365 concept) and modernization is coming. We're also confident Amazon will aggressively ramp investment in AI/Machine learning as it applies to traditional retail so it can deliver App & Mortar Smart Stores sooner rather than later. This should gain incremental consumers (superior experience), increase basket size (more customized selection), improve costs (logistics, leveraging infrastructure), and capture a share of revenues for products sold outside the system (offering a Retail Platform for third parties). Near-term, however, investment behind developing, rolling-out and perfecting these technologies could pressure profit.

Likely Consumer-Facing Improvements

- **Better prices:** Amazon has already permanently reduced prices on eggs, milk, bananas & other high-volume SKUs. We expect broader price drops as logistics & tech drive cost out and Amazon reinvests savings behind lower prices.
- **Modernized checkout:** Checkout is the most infuriating part of the Grocery shop. Amazon's [Go](#) system (video has ~10m views) detects which items consumers pick up, syncing data to a device & obviating need for check-out. This improves consumer experience while cutting labor costs meaningfully.
- **Shopping list GPS:** Stores are traditionally assorted to make you linger longer, unpleasant for most shoppers (fun article [here](#)). Retailers assume if you pass more shelf, you buy more, but consumers also have finite time. Quicker navigation would delight consumers, potentially facilitate larger baskets (app could provide most efficient route for completing your entire shopping list).
- **Real-time targeting:** using personalization while consumers are in the buying phase helps increase basket size. Amazon uses this online ("frequently bought together," "customers who bought this item also bought"). With App & Mortar (Smart Store), Whole Foods can too (hotdogs & buns in cart could trigger an in-app alert about condiments, incentivizing sale with a coupon).
- **Unlimited (virtual) aisle:** For non-stocked products, the in-store app could direct consumers online or to a third-party. This defies traditional retail logic, but the secret sauce is consumer satisfaction (and the fee on third party sales). This also allows more tailored store selections, improving consumer experience and margins.

Eliminating the Worst Part of Shopping



Source: omgfacts.com

Some competitors already have Smart Store capabilities. Kroger, for example, has deployed cameras & infrared sensors to monitor traffic, uses data algorithms to schedule cashiers & its mobile app produces relevant digital coupons.

It's also testing sensor-laden interactive shelves. These can detect shoppers via smartphones to give personal pricing & product suggestions.

- **Personal shopper:** If you're planning a party (or a week of dinners), answering questions about preferences & budget in the app could generate sample menus to collect or have delivered. For a fee, a delivery person could help set up and/or put groceries away.

Back-End Improvements

- **Unmanned stores:** Labor can be reduced meaningfully with technology. We've already seen proof of concept in China with [Bingobox](#) but Amazon Go promises to take it a step further with no need to scan items. We'd estimate Grocer labor costs are 14-15% of sales.
- **Big data:** Firms can run skinnier on inventory with big data. Amazon's data is superior to traditional Grocery loyalty programs, as quantity of data & depth (numerous categories provide full picture of consumer lifestyle) allows for more nuanced predictions.
- **Predictive merchandising:** Traditional grocers only reset shelves 1-2 times per year, much less frequently than consumer preferences change. Realtime planogram adjustments could improve sales and avoid costly out-of-stocks, helping leverage fixed costs.
 - **Location-based marketing & analytics:** More tailored assortments create better store experience, higher sales & better profitability (less wastage). Amazon does this in its physical bookstores using zip-code data from its website and we expect the same in Whole Foods.
 - **Internet of Things (IOT) tech:** sensors, digital input, wifi, apps, weather, events, traffic, & facial recognition combined with big data can help predict what & how much shoppers will buy each day.
 - **In-store visual monitoring:** Companies like [Trax](#) help track how products look, compete & perform on shelf with real-time channel checks & purchase rate assessments. Amazon already does this online, alerting 3P retailers when out-of-stocks approach or prices need to be sharpened, meaningfully benefiting their businesses.
- **Real-time pricing:** Amazon Bookstores have no shelf prices & this will likely be true in Whole Foods too. Instead, the app can display price when items are taken from shelf or real-time prices could be placed on digital shelf displays (higher up-front cost but available from [pricer](#), [troniTAG](#), [sesimagotag](#), [displaydata](#)). Either allows more frequent price & merchandising changes.
- **Real-time promotional assessment:** Companies like [Eversight](#) find, test, & deploy promotions that work using real-time feedback. CPG promotions often take months to plan and are rarely modified real-time to improve efficacy. Doing so improves sales and reduces cost.

- **Robot labor:** Kiva’s robots (bought in 2012) helped cut operating expenses 20% in fulfillment centers & can benefit stores too. Lowe’s, for example, has 3D scanners that detect & interact with shoppers to help locate items, answer questions, display location-based specials and monitor inventory.
- **Drone transportation:** Flying fixed routes from warehouses to stores can help quickly amplify or optimize shelf selection based on real-time info. This still requires safety testing & FAA approvals, but Bezos (on [60 Minutes](#) in 2013) thought delivery-by-drone ("Prime Air") could be available in 2018-2019.
- **Group orders:** [Kip](#), for example, pools office lunch and office supplies orders. This type of technology could increase efficiency of Fresh delivery in Amazon’s urban markets. Alerting Prime consumers when a truck is coming and offering a discount and/or free delivery would improve route efficiency, lowering costs. Amazon could even remind consumers if they’re likely to run out of something based on historic order patterns.
- *See Appendix I for stand-alone businesses that focus on these types of technologies. Amazon could build these capabilities in-house or through acquisition.*

Competitor Grocery Margins

Company Name	EBIT %	GM %	EBITDA %	Company Name	EBIT %	GM %	EBITDA %
Target	7.2%	29.7%	10.5%	Kroger	3.0%	22.4%	5.0%
Walgreens	5.9%	25.5%	7.4%	Casino	2.9%	24.1%	4.9%
CVS	5.8%	16.3%	7.2%	J Sainsbury	2.7%	6.2%	5.1%
Wal-Mart	4.7%	25.6%	6.8%	WM Morrison	2.6%	3.7%	5.1%
Ahold	4.1%	26.9%	6.8%	Tesco	2.4%	5.4%	4.7%
Jeronimo Martins	3.9%	21.3%	5.9%	Ocado	1.8%	34.2%	6.6%
Costco	3.1%	13.3%	4.2%	Supervalu	1.6%	14.3%	3.2%
Carrefour	3.0%	22.8%	5.0%				

Source: Thomson Reuters, most recent fiscal year results.

Many criticize the Whole Foods deal, asserting that Grocery is a tough business and that Whole Foods margins must go down. Near-term, yes, but a modernized store & greater Private Label penetration are meaningfully margin accretive.

We see margin opportunity in Bricks & Mortar as tech improves fundamentals. Higher traffic levels leverage fixed costs. Better inventory management improves sell-through and eliminates costly out-of-stocks. More tailored selections improve negotiating power with suppliers. Smart Store technology meaningfully reduces labor costs. In addition, production selection is likely to skew more heavily to Private Label, which is meaningfully higher margin (see page 20 for more detail on the Private Label effort and our view on margin implications). While Amazon is initially attacking the Bricks & Mortar Grocery opportunity, we think the same competencies enable it to attack most Retail categories. It also allows them to perfect a retail platform we believe they’ll open to competitors.

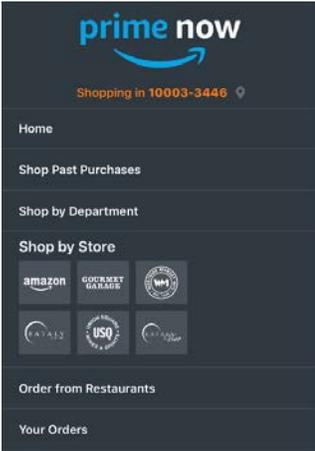
We Think App & Mortar Creates Another Attractive Platform Business

We believe Whole Foods is a testing ground for a Smart Store Platform. Whole Foods is a strategic acquisition that will serve as a kernel for Amazon to grow a distribution infrastructure for perishable goods. We believe the end-game is to open this platform to third-party resellers. Initially, however, we expect Amazon to adopt a lighter touch, as it did with Zappos. With that acquisition, Amazon merely, as some employees have [reported](#), streamlined operations, reduced prices, and introduced some Prime membership benefits. Opening App & Mortar Smart Stores as a platform would support Amazon/Whole Foods own offerings and supplement the direct-to-consumer approach of [Amazon Fresh](#).

Smart Store likely to be a licensable white-label solution (margin accretive).

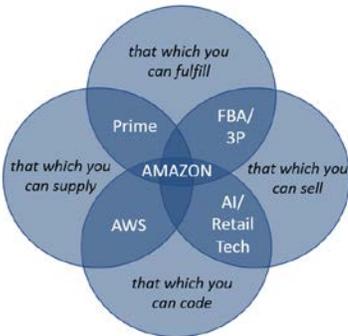
Amazon opened its e-commerce platform for 3rd parties to sell on. It opened its computing infrastructure and it's now doing the same for machine learning, drone delivery and voice computing. Once perfected, Amazon's App & Mortar Smart Store technology could be packaged and sold as a platform for physical retailers. Many small and/or regional players already partner with Amazon for delivery logistics via Prime Now/Fresh/Pantry. As Amazon adds App & Mortar Smart Store capabilities and Data to its suite of products for retail partners, we think the Retail platform (like Prime) becomes such good value; retailers would be irresponsible not to use it. Benefits to Amazon are numerous, everything from the incremental fee to the incremental data collected. Amplifying its existing 3P platform could meaningfully increase Amazon's penetration of retail transactions both inside & outside its eco-system, both online & on-premise. Like the existing FBA/3P business and AWS, such a platform would generate high margin fees and better leverage Amazon's infrastructure, a very attractive business. This incremental data would also help Amazon better refine its strategy on Private Label.

Amazon Delivers for Small Grocers
Built-in Propsect Base for Retail Tech & Data, In Addition to Other Services



Source: Amazon Now Screenshot

Pillars Are Self-Reinforcing; AI/Retail Tech Likely to Be Next Pillar



Source: RenMac

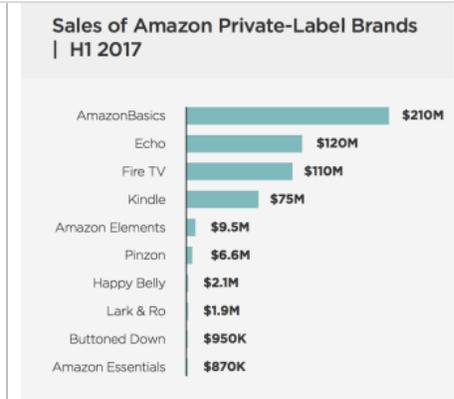
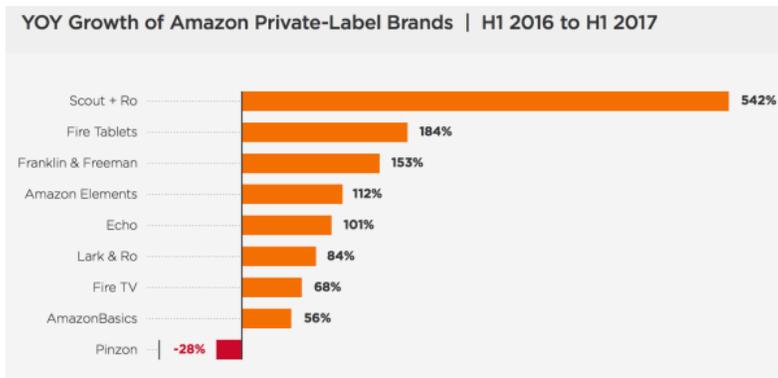
An App & Mortar Platform would fuel Amazon's three pillars and vice-versa.

Amazon promised in its most recent Shareholder Letter to embrace external trends—the biggest of which it identified as AI/machine learning. In our view, Amazon has created intersecting, complementary virtuous circles in its business and AI/machine learning/retail tech could provide a fourth. We think it can reinforce the other three pillars (and vice-versa). For example, doing well in Bricks & Mortar Retail will add Prime consumers (which in turn generates more FBA/3P business) and improve Amazon's AI/Machine learnings competencies, which in turn would improve its e-Retail and Bricks & Mortar businesses. It also brings Amazon closer to CPG suppliers, who are strong prospects for the AWS business and Amazon's data competencies.

Private Label Already Seemed To Be a Strategic Priority at Amazon Pre-Whole Foods

Amazon Echo (Devices)	Goodthreads (Casual men’s wear)	Presto! (Household Products)
Amazon Elements (Vitamins & Health)	Happy Belly (Fresh Food)	Scout + Ro (Kid’s Clothing)
Amazon Essentials (Clothing)	James & Erin (Women’s Clothing)	Single Cow Burger (Frozen Food)
Amazon Tap (Speakers)	Lark & Ro (Women’s Clothing)	Society New York (Women’s Work Wear)
Arabella (Lingerie)	Mae (Underwear)	Small Parts (Spare Parts)
Beauty Bar (Cosmetics)	Myhabit (Consumer Goods)	Smart is Beautiful (Clothing)
Buttoned Down (Men’s button-downs)	North Eleven (Women’s Clothing)	Strathwood (Outdoor Furniture)
Denali (Tools)	NuPro (Tech Accessories)	The Fix (On-Trend Shoes & Handbags)
Ella Moon (Bohemian women’s wear)	Paris Sunday (Dress and Casual Tops)	Wickedly Prime (Snack Foods)
Franklin & Freeman (Men’s Shoes)	Pike Street (Linen)	
Franklin Tailored (Men’s suits/biz wear)	Pinzon (Linen)	

Source: *RenMac*



Source: *TechCrunch*

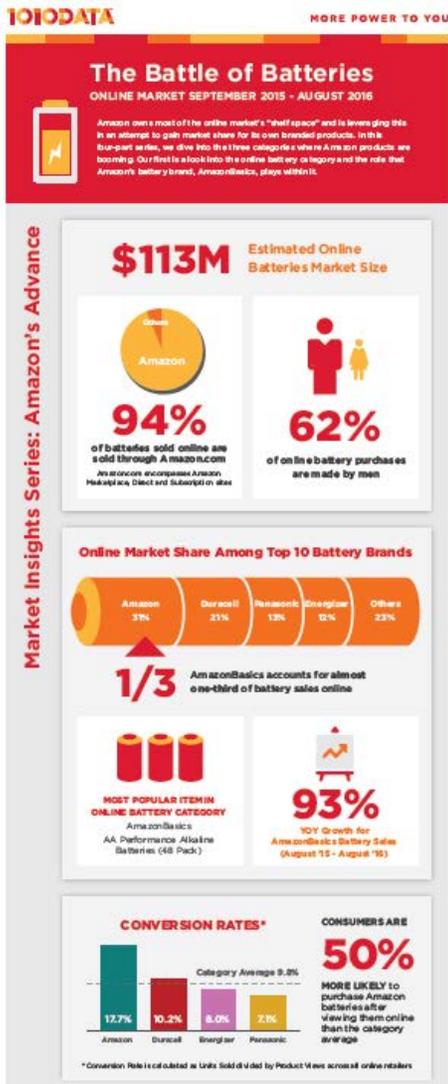
Private Label Likely a Strategic Priority & A Boost to Long-Term Margins

Even pre-Whole Foods, Amazon was competing with its suppliers & succeeding. (We discuss this as a potential regulatory risk on page 35). About a year ago, Amazon began selling dozens of Private Label goods, including basics, apparel, and CPG categories. Its e-commerce data tells it exactly what consumers are buying and when, enabling them to cut out the middle-man and manufacture products themselves (sample categories & brands listed above). In our experience, Private Label products can be ~10-15pts margin accretive to retailers. Given its ownership of the platform, Amazon can also put its products higher in the search rankings to help drive the sale (making sure it appears on the first page with the big brands). Giving preference to its own brands could upset Amazon’s suppliers (National Brands). However, Amazon’s path to consumer is too important for suppliers to balk, in our view.

Amazon has been investing heavily in Private Label & investment will likely accelerate. Long-term margin benefit is big (if not reinvested) but investment in manufacturing could pressure margin near-term.

Amazon Private Label

In Some Categories, AMZN Dominates



Source: 1010Data

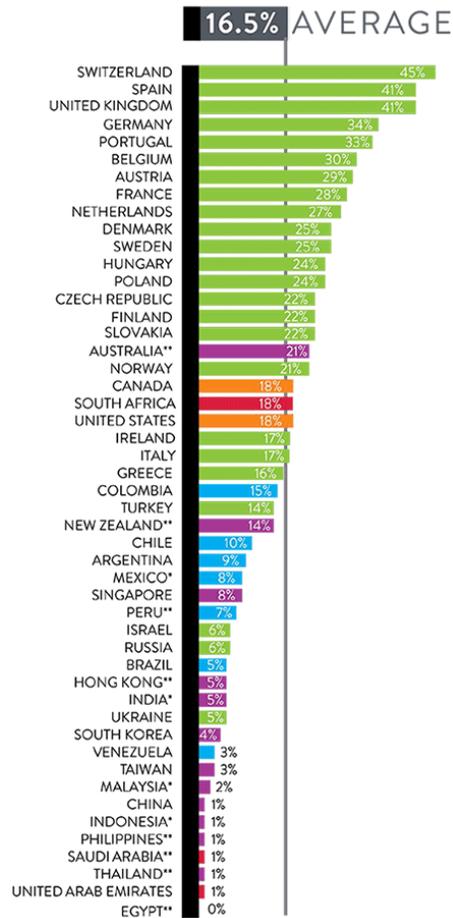
Effort has been successful and Alexa could intensify the advantage. [1010data Market Insights'](http://1010data.com) 2016 study of three Amazon's Private Label businesses (batteries, speakers & baby wipes) suggests its Private Label effort is more advanced than many realize. AmazonBasics Batteries, for instance, are the online category leader. They grew 93% in '16 and are now ~33% of online battery sales. Amazon Elements Baby Wipes were introduced in 2015 and have a 16% share on Amazon. Amazon Echo has a 45% share of online speaker sales on the site. NYU Professor Scott Galloway believes Amazon's [Voice Ordering Strategy](#) could help elevate Private Label further, a death-knell for brands. Amazon is meaningfully discounting products ordered via Alexa to generate adoption. Voice ordering eliminates the visual cues of branding. This makes it easier for Amazon to direct consumers products that provide Amazon the greatest profit. This suggests that Amazon could generate higher Private Label penetration than its Bricks & Mortar peers.

The opportunity in Grocery (& other categories) is very large. Private label is only 23% of grocery units sold in the US vs 45%+ in Europe according to a 2015 IRI study. 59% of respondents agree they would buy more Private Label if a larger variety of product were available ([Nielsen, November 2014](#)). Millennials can't remember a time when Private Label quality was poor, so they have never viewed Store Brands as low-cost, low-quality alternatives. Instead, they think of them as high-quality products with only slight differences versus leading brands. Most Millennials believe Private Label offers good value for money and buying Private Label makes them feel like a smart shopper. This suggests that there is a very large opportunity in the US to close the Private Label penetration gap versus Europe.

National brands have become less relevant to today's consumer. Brand names exist (in the words of HBR's Feb 1996 issue) because "consumers still require an assurance of quality when they do not have the time, opportunity, or ability to inspect alternatives at the point of sale. Brand names simplify the selection process in cluttered product categories." The world has changed a lot in the last 20 years, to the detriment of brands. Amazon is itself a trusted consumer brand. It's able to provide premier "shelf" space to its Private Label brands. Its online product reviews allow consumers to virtually inspect its Private Label offerings and compare the value equation to National Brands. This makes consumers more likely to try Private Label. In Europe, where Private Label penetration is much higher, studies suggest that once consumers try Private Label, they are unlikely to return to National Brands.

Private Label Penetration in Grocery
US Penetration Well Below Europe

DOLLAR SHARE BY COUNTRY



Source: [Nielsen 2014](#)

Private Label may have been part of the Whole Foods appeal. Private Label penetration is strongest in frequently purchased, commoditized products like milk, bread and eggs. Whole Foods’ 365 Private Label brand already had a meaningfully share in these categories. In 1997, Whole Foods launched its 365 Everyday Value product line. In 2002, it expanded this to include 365 *Organic* Everyday Value. In 2016, it opened the first 365 by Whole Foods Market store. In total, Private Label is 15%+ of Whole Foods revenue (pre-deal). We think it’s set to increase under Amazon’s ownership. By the end of September, Amazon sold about [\\$1.6bn in Whole Foods Private Label product](#) (\$500,000 the first week, closer to \$300,000 per week thereafter). Private Label’s appeal extends beyond margin. Having a strong Store Brand improves selection & helps retailers negotiate with the National Brands.

We think WFM can get to 40% Private Label over time, a big margin boost. If we assume Private Label has 10-15pts higher margin at Whole Foods than National Brands and that penetration increases from 15% of sales to 40% over time (still less than the UK & several other European markets), margins would benefit 250-400bp. If history holds, Amazon will reinvest any gains behind price to delight consumers. This would likely generate share gains, which we (and Amazon) value more than margin gains. Opportunity is large on the base e-retail business as well.

Deal Should Improve the Overall Business through New Prime Consumers

Grocery is a tough biz, but WFM is a very profitable Prime acquisition vehicle. Prime adds subscription revenue (smooths revenue & improves visibility). Members buy more (~\$1,500 per year), more often, and are more consistent & loyal. Once consumers are Prime members, they also buy well beyond the category or service that lured them in. The Whole Foods demographic overlays well with Prime, as the consumer tends to be professional & affluent. We think it’s unlikely Whole Foods has more than 50-60% overlap with Prime, however, suggesting it’s a powerful consumer acquisition vehicle. Like Amazon’s bookstores, Whole Foods will likely use discounts to entice Prime signup. Say what you will about Grocery economics, Whole Foods is a very profitable consumer acquisition vehicle. Consumers will *pay* for groceries, in contrast to other Prime acquisitions vehicles like Video (\$1m+ annual investment) offered *free* to Prime Members to entice sign-on/reduce churn. Grocery is also a frequent shop (StatisticBrain.com estimates the average consumer makes 2 Grocery trips per week). This is likely to enhance the stickiness of the Prime consumer (a near-constant reminder of the value Prime offers). As with other Prime consumers, we expect Prime members brought in through Whole Foods to cross-shop the Amazon Platform.

Bricks & Mortar + Retail Tech Aids Amazon’s Fresh Initiative

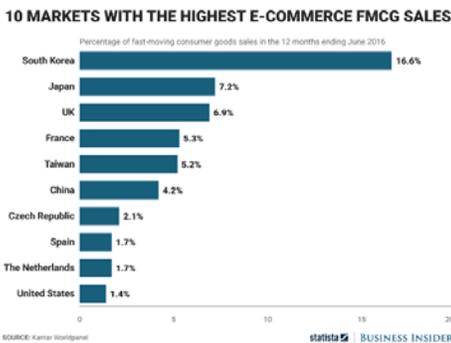
Fresh Initiative is Important and Set to Accelerate

Fresh Delivery (and Fresh investment) set to accelerate with Whole Foods Deal. Fresh began life in 2008 as a Seattle beta test. It didn’t expand to its next market for 5 years. It was popular with consumers but economically challenged. Amazon continued investing, however, because consumers bought general merchandise as well. Prior to the Whole Foods deal, Fresh delivery was available in 32 US metro areas. In each, Amazon had partnered with local specialty stores for delivery of local items. Whole Foods adds 460 distribution centers (stores) plus own product for Fresh delivery. This has the potential to improve service levels, reach, growth and margins very quickly.

AMZN increasingly investing in Fresh; WFM accelerates potential & investment. In our view, Amazon’s “core” retail business will always be online and in the US; Grocery is strongly underpenetrated online. Amazon’s foray into Bricks & Mortar Grocery improves logistics for Amazon’s online Fresh business and the App & Mortar Smart Store setup we envision would ease consumers into behaviors more akin to online shopping. As a result, we see meaningful opportunity for improved online penetration of US Grocery. Although Bricks & Mortar peers are also investing heavily now, we expect Amazon to be the greatest beneficiary of the shift online given disproportionate investment.

We Believe Fresh Delivery is a Big Opportunity

US online Grocery penetration (1.4%) is quite low relative to potential. Online penetration of US Grocery (less than 2%) is low relative to retail overall (10% ex-Autos/fuel) and low relative to other countries (South Korea, for example, is nearly 17%). A January 2017 study by FMI and Nielsen predicts US online grocery sales should be 20% of the market by 2025 vs less than 2% today. Around 25% of American households currently buy some groceries online (up from 19% in 2014) and 70%+ will engage with online food shopping within 10 years, according to this report. The study also found that of those who will buy digitally, 60% expect to spend about a quarter of their food dollars online in 10 years.

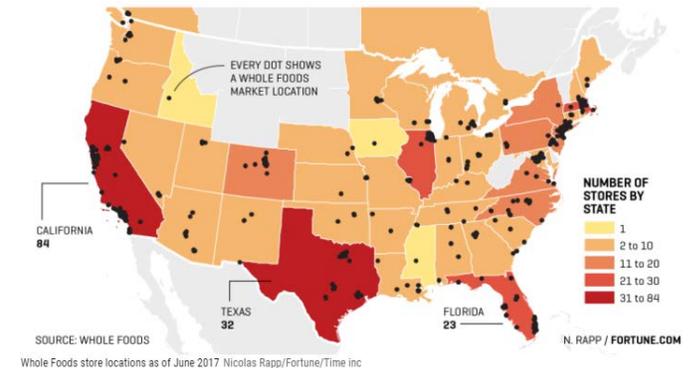


North American Cities Eligible for Prime Now (June 2017)

- | | | |
|-----------------------|-------------------------------|------------------------|
| Atlanta | Indianapolis | Raleigh |
| Austin | Las Vegas | Richmond |
| Baltimore | Los Angeles and Orange County | Sacramento |
| Boston | Manhattan and Brooklyn | San Antonio |
| Charlotte | Miami | San Diego |
| Chicago | Milwaukee | San Francisco Bay Area |
| Cincinnati | Minneapolis and St. Paul | Seattle and Eastside |
| Columbus | Nashville | Tampa |
| Dallas and Fort Worth | Orlando | Virginia Beach |
| Denver | Phoenix | Washington, DC Metro |
| Houston | Portland | |

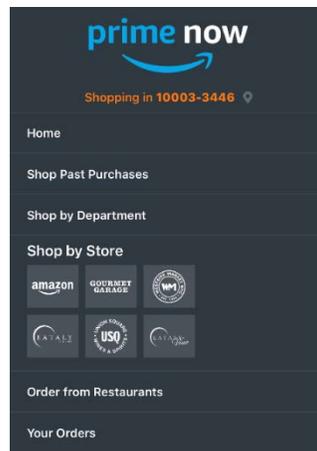
Source: [Business Insider](#)

Whole Foods Market Locations in North America (June 2017)



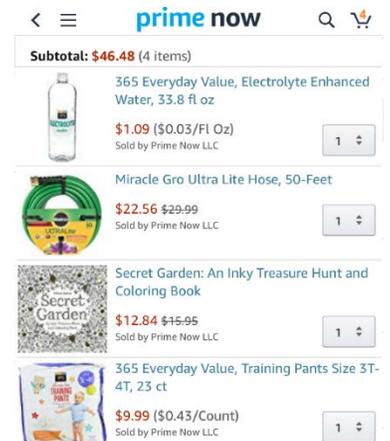
We believe once infrastructure exists, the consumer will come. Consumer surveys suggest the largest impediment to buying Groceries online is inability to see & feel produce. We disagree. We blame insufficient investment (to date) by US Grocers. To illustrate, in 2009, only 2.6% of the UK Grocery business was online. In July 2010, Ocado, a pure-play Internet Grocer launched its IPO and began aggressively investing, as did Tesco, Sainsbury's, & Asda. By 2016, UK online Grocery penetration nearly tripled to 6.9%. We're currently seeing a similar investment cycle in the U.S. and believe trust (and online penetration) can be built more quickly. Consumers don't need to see/feel produce if they trust a retailer will deliver high quality produce every time. Trust can be built through strong execution and excellent consumer service—two things at which Amazon excels.

Store Skew Can Move More to Amazon



Source: Prime Now App

...Which Has the Widest Array of Product



Grocery delivery should skew more toward owned-store than prior. In RenMac's delivery area, Amazon Now has historically delivered from Gourmet Garage, Westside Market, Eataly, Eataly Wine, & Union Square Wines & Spirits. Having

these partners enables Amazon to increase order density, leveraging distribution infrastructure & improving profitability of the Fresh model. It now presumably delivers from Whole Foods too, although these products are (at least currently) bundled into the Amazon shop. As a result, we think Prime members will skew increasingly to Amazon versus specialty partners, given ability to now do a full Grocery shop....and then some. Where else could one have a hose, adult coloring book, water, and diapers delivered in under an hour? As Amazon supplies more of its own (Whole Food) product through Prime Now, revenue & profit dollars should be higher.

Alexa Highlighted in Whole Foods



Source: qz.com

Physical stores showcase Alexa & Echo, building the Voice & online business.

Whole Foods physical stores provide a great opportunity for consumers to touch and feel devices, especially the new Echo devices. This gives Amazon the ability to demonstrate how the devices work and allow the consumer to interact with them. Bezos has stressed this: “We think the bookstores...are a really great way for customers to engage with our devices... and become fans.... we see a lot of value in that.” With its Dec-Q of 2015, management indicated that Alexa and Echo were “pumping life into the Prime ecosystem.” Voice ordering allows Amazon to steer the consumer where it wishes—to its high margin Private Label offering. Other “smart” devices should eventually join. A Smart fridge (for example) could sense spoilage & prompt reorder over Echo. We know Amazon has invested in [Ecobee](#) (home automation), [Thalamic Labs](#) (gestural computer controls), [Owlet Baby Care](#) (baby monitors), [Rachio](#) (connected sprinklers), [TrackR](#) (small items finder), [Nucleus](#) (connected intercoms), [Petnet](#) (smart pet feeder), [Musaiic](#) (connected speakers), and [Scout Security](#) (connected security camera). All have potential to link in with Alexa to determine what products consumers need & prompt sales.

App & Mortar Smart Store should help accelerate E-Commerce shift.

Smart Store technology should help ease consumer into behaviors that are more akin to online shopping. As we mentioned, the biggest reason consumers give for not shopping Grocery online is a desire to see and touch produce. This will likely not be possible in App & Mortar Smart Stores, as weight-priced items generate potential for “scamming” the system. Pictures of Go suggest produce will be beautifully pre-packaged. We believe if this in-store product is consistently of high-quality, consumers will become accustomed to having produce picked for them. This would ease the on-line transition and benefits Whole Foods disproportionately.

CPG = Big Data Opportunity
(8%+ of S&P)



Source: Thomson Reuters

The Data Opportunity

Whole Foods Increases Amazon’s Exposure to CPG Suppliers

Amazon has meaningfully increased its relationship with CPG overnight. Consumer packaged goods have long been underpenetrated in e-commerce but have been growing 30%+ online for the last few years. Amazon would like to accelerate the shift further. Amazon’s acquisition of Whole Foods and its continued expansion into features like Fresh and Pantry (CPG categories) open billions of new revenues. It also brings Amazon closer to companies who have large and growing trade promotion budgets—budgets which are rapidly shifting from offline to digital. The market may underestimate CPG trade spend, as slotting fees, on-site promotions etc. are netted out of sales and don’t show up as a hit to supplier margins and CPG players don’t like to discuss this spend.

We believe Amazon wants CPG manufacturers to go direct (FBA). According to a [Bloomberg](#) report, Amazon invited large CPG companies to a three-day meeting in Seattle in May focused on the changing nature of consumer brands. The invitation read: “Times are changing. Amazon strongly believes that supply chains designed to serve the direct-to-consumer business have the power to bring improved consumer experiences and global efficiency. To achieve this requires a major shift in thinking.” We think Amazon wants to turn CPG manufacturers into marketplace vendors on the Fulfillment by Amazon platform. Amazon’s message to CPG companies was that to stand out, they need to spend less time thinking about how to make brands stand out on retail shelves and more on designing product that can reach consumer doorsteps quickly.

CPG Trade Spend is Shifting to On-Line, But Needs to be Better Allocated—Data Can Help

Category	Total Trade Spend (% of Sales)		
	2014	2015	2016
Total CPG	14.2%	14.8%	14.8%
Cereals	19.2%	20.0%	19.1%
Dry Grocery	15.1%	15.4%	15.1%
Frozen Products	12.9%	13.4%	13.4%
Health Care	18.2%	18.6%	18.1%
Household Products	12.7%	13.3%	13.5%
Personal Care	13.2%	13.4%	13.1%
Refrigerated Foods	11.3%	12.9%	13.8%
Shelf Stable Beverages	15.6%	16.2%	115.9%

Source: [2017 National Promotional Reports LLC](#)

Data is One Way to Lure in CPG Companies

Amazon can argue they'd be giving CPG a direct consumer/brand relationship.

This should be more valuable to a supplier than leaving the consumer relationship to the retailer. This is particularly true if the supplier can continue focusing on core competencies by outsourcing fulfillment. However, fulfillment alone is unlikely to win the CPG direct business. We believe Amazon's data capabilities can help. First, this data spans multiple categories, giving a clear picture of the consumer's lifestyle, not just CPG preferences. This, together with strong AI/machine learning, could theoretically help CPG promo dollars work harder. Many of the earliest uses of big data were pioneered with supermarket scanner data. This helps CPG and the retailer optimize shelf-set, which in turn drives brand & category growth.

Adding Bricks & Mortar retail just makes Amazon's data better.

70% of CPG decisions are made at shelf—traditional strategies don't work online. Impulse purchase is what the Internet (and Amazon) can't yet do effectively. Physical shopping, particularly in grocery and drug stores, elicits a high degree of impulse purchase. Amazon's vast inventory offers far more choice than Bricks & Mortar competitors. However, with less immediacy, it's less likely to generate impulse purchase. It *is* trying. It replicates immediacy with one-hour deliveries in ~20 cities & same-day delivery in others. Despite this, it hasn't yet cracked the code on getting consumers to buy things they weren't already inclined to buy. In this way, physical stores act as a bit of a retail lab to fuel the machine learnings/AI machine on impulse purchases to transition this capability on-line.

All Retailers Want to Create a Flywheel Effect with Data

Loyalty & other programs exist partially so Grocers can know their consumer.

For example, Walmart could have implemented Savings Catcher without requiring scanned receipts. However, that would lose data-capture. When a consumer registers a receipt into Savings Catcher, Walmart can identify the transaction with the consumer's personally-identifying information (PII). This supports future personalization of shopping through customized look-and-feel and individualized messages. Further, giving CPG partners access to this data can help them determine whether a given promotion generated a sale to a new consumer or merely subsidized a routine purchase by an existing consumer. Improving efficacy of manufacturer couponing means Amazon can argue for a greater share of trade spend.

Other retailers lack sufficient online data. Cord-cutting has fragmented the mass-media market so that brands cannot simply buy blanket reach. In-store data is not yet properly captured. Further, in-store data is not synchronized with online data.

As a result, other retailers lack the data to deliver the relevant messages online. Walmart is improving its data-leverage through the Polaris in-house search engine and data-capture by: (i) encouraging consumers to use its app (with 27m users as of June 2016 [versus](#) 67m for the Amazon app) for in-store shopping with features like in-store navigation, scan-and-go, and savings catcher; and (ii) driving traffic to Walmart.com by opening the channel to third-party sellers, who in turn are looking to reduce dependence on Amazon.com. The Walmart MarketPlace is much smaller than Amazon MarketPlace (with 2016 [sales](#) of \$17bn versus \$63bn for Amazon.com).

Online data is the data CPG suppliers want most these days. With online sales growing 30%+ in most CPG categories, suppliers are anxious to deliver the right message to the right consumer at the right time. This is a data problem. For now and for the foreseeable future, Amazon is therefore an important partner.

[Amazon is a Machine Learning Biz with Better Data than Other Retailers](#)

Amazon is a machine-learning business that leverages its consumer data. Amazon's 2016 Shareholder Letter says, "We are in the middle of an obvious one [big trend that is not hard to spot but hard for large organizations to embrace]: machine learning and artificial intelligence." Amazon harnesses these, using consumer activity data from its site to (1) personalize shopping & (2) determine which third-party products on Amazon Marketplace are worth pursuing on an own-brand basis (its Private Label initiative).

Amazon's personalization capabilities are superior to other retailers. Most are now aggressively investing in e-commerce capabilities. Wal-Mart, for example, has a sophisticated data operation but it's historically focused on modeling aggregate. The consumer migration to the Walmart app and Walmart.com is changing Walmart's data approach and increasing personalization. Brian Monahan, who ran digital marketing until early 2017, [comments](#) of Walmart.com: "We grew sales by a couple of billion dollars powered by personalized marketing ... you've got a very specific moment in time for a very specific path-to-purchase for the individual person and you have got to get it right if you want to influence that opportunity with your marketing messages." Amazon's commanding lead online & breadth of products provides a full picture of the Prime consumer's lifestyle. We think this data makes Amazon exceptionally valuable to manufacturers & retailers of consumer-facing products.

Retail Business Advantages Platform with CPG Companies



Source: RenMac

CPG companies need to cut costs—IT spend is a meaningful bucket. The competitive landscape is currently a threat to big brands. E-Retail and digital advertising have removed barriers to entry in CPG categories and Millennial consumers prefer the niche brands that have emerged. With pressure on top-line growth, sector participants have become more focused on margins to deliver their growth algorithm. Shifting IT spend to Cloud platforms such as AWS is a viable cost savings opportunity. Amazon’s robust consumer data could sweeten the offering (this is a meaningful spend for big CPG players). In this way, Amazon’s aggressive move into Grocery reinforces its Cloud and Data businesses and vice-versa.

Global Spending in Public Cloud Market

\$bn	2015	2016	2017	2018	2019	2020	CAGR 16-20
Total	175	209	247	288	333	383	16%
Core	91	112	134	159	187	218	18%
Infrastructure Services - IaaS	16	25	35	46	58	72	30%
Application Services - SaaS	31	39	46	55	65	76	18%
PaaS	43	48	53	58	64	71	10%
Application Infrastructure Services	4	7	9	11	13	15	20%
Business Process Services	39	41	44	48	52	56	8%
Other	84	97	113	129	146	165	14%
Management and Security Services	5	7	9	10	12	14	18%
Advertising	79	90	105	119	134	151	14%

Source: Gartner

Amazon Benefited from First Mover Advantage in the Cloud

Enterprise IT and the Cloud is Growing Rapidly

Enterprise Computing is being transformed by the Cloud. The enterprise IT market is being transformed by Cloud Services in each of its three forms:

- **Software-as-a-Service (SaaS):** customer doesn’t have to install or administer the application codebase as in (for example) Office 365 or Google Docs;
- **Platform-as-a-Service (PaaS):** customer doesn’t have to install or administer the operating system and other “middleware” components;
- **Infrastructure-as-a-Service (IaaS):** customer doesn’t have to install or administer hardware resources to support storage, processing, & networking.

Spending in the Public Cloud market is growing ~20% annually. In the Public Cloud, a third-party maintains or “hosts” a data-center of servers, including responsibility for sourcing power and ensuring connectivity, and the supported storage, processing and network services are shared between clients at the discretion of the host. This is distinct from a hosted Private Cloud where a third-party hosts the data-center but sharing is subject to the consent of users or, in a single-tenant solution, not supported at all; and, of course, from an in-house Private Cloud solution where an enterprise virtualizes its own assets. The market

for public cloud services is growing ~20% and is [expected](#) to expand from \$135bn in 2017 to ~\$220bn in 2020 (excluding cloud management, security, and advertising services).

Infrastructure as a service (IaaS) is the fastest growing segment at ~30%. Cloud-hosted computing and storage provides a cheaper infrastructure solution than private data-centers using on-premise hardware supplied by OEMs and, through sharing, can increase capacity utilization from below 40% for in-house data centers to above 60% (or more for users with variable demand who benefit most from overflow capacity). IaaS providers use commoditized components rather than configured systems (moving value-added customization into the software rather than hardware) purchased at scale, and housed in facilities in low-rent areas with advantaged access to power and fiber-optic connectivity where the environment can be optimized to reduce power consumption and promote redundancy. The segment is driven by (1) cost-savings; (2) ability to easily rent additional capacity at times of peak demand; (3) bundling of analytics and artificial intelligence; (4) need to IP-connect a broader range of sensor-enabled consumer and industrial machines in the Internet-of-Things (IoT).

IaaS availability and pricing has supported growth and innovation in the PaaS and SaaS markets. The availability and downward pricing of IaaS services lowered entry barriers in the cloud-based platform and software markets since start-ups, unlike first-movers such as CRM and SAP, can layer middleware and applications onto rented cloud-based infrastructure rather than face the up-front capex costs of establishing on-site compute capabilities. The extent of the transformation is evident from Gartner which estimates that 50% of new large-enterprise application adoptions in North America will be cloud-based with mid-market and small enterprises even further along the adoption curve.

However, SaaS growth is slowing as segments of the enterprise applications markets mature. Core offerings around human resources and customer relationship management are mature with slowing growth only partially offset by a pick-up in financial applications (such as Auto-Navigator from Capital One which runs on AWS). Another offset is from use cases on the “industrial”, rather than enterprise, internet: GE, for example, is using Microsoft’s Azure infrastructure platform for its cloud-based Predix platform to improve asset performance management (APM) for industrial machines; and Verifone is using Amazon’s AWS infrastructure for its cloud-based “payments-as-a-service” platform to improve APM for payment terminals.

Amazon Has Benefited from First Mover Advantage and Scale

Amazon Web Services (AWS) created the IaaS market with its 2006 launch. AWS grew out of the “Merchant.com” [initiative](#) begun in 2000 to support third-party merchants, such as Target in running shopping web-sites on top of Amazon’s e-commerce engine. Amazon’s ability to separate the numerous services enabled third-parties to share centralized compute resources (storage, processing, and networking) and a centralized development platform. Amazon abstracted and delivered these services via software solutions known as Application Programming Interfaces (APIs). As AWS CEO Andy Jassy tells it: “We expected all the teams internally from that point on to build in a decoupled, API-access fashion, and then all of the internal teams inside of Amazon expected to be able to consume their peer internal development team services in that way. So, very quietly around 2000, we became a services company with really no fanfare.”

Amazon has benefited from scale and first-mover advantage in IaaS. The legacy scale and capabilities from having Amazon.com as an anchor client allowed AWS to deliver the benefits of cloud-based infrastructure more effectively than competitors: the cost-savings from scale, the speed-to-market of a modern development environment, and the application-scalability from capacity-on-demand more effectively than competitors. Furthermore, competitors were slow to respond with AWS CEO Andy Jassy [commenting](#) last November “the biggest surprise for me is just how long it took for other providers to have an offering. I don’t think any of us in our wildest dreams imagined that we would have a 6-year head start.”

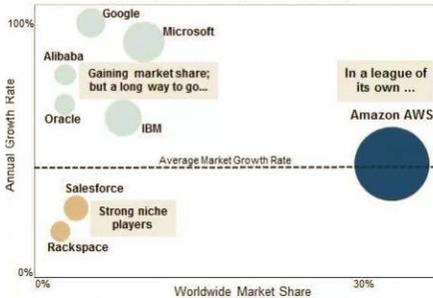
Amazon is the clear leader in the public cloud: As a result, Amazon Web Services (AWS) today has 40%+ share of the IaaS market which is more than its three largest competitors (MSFT, GOOG, and IBM) combined. Amazon’s share of the broader public cloud service market – so including PaaS, SaaS, and private hosted cloud – is lower at ~one-third, but the firm still dominates. However, this leadership has now triggered a competitive response.

As Competition Increases, Expect Growth and Returns to Slow

AWS Growth is Likely to Slow in the Face of Ever-Increasing Competition

We expect AWS to grow slower than industry from here. While Amazon leveraged its first-mover advantage in IaaS to dominate the market for public cloud services, we expect it to lose share going forward. We expect AWS growth will slow from 40%+ in 2016 to below the expected industry growth rate for IaaS of 30% over the next three years for a couple of reasons:

AWS Dominates but that Will Change



Source: Synergy Resource Group
(Growth & Share for Major CSPs, including private hosted cloud, 2017Q1)

- **Hybrid solutions are growing in appeal which does not favor AWS.** Enterprise IT teams are increasingly splitting cloud budgets between public and private deployments. This generates demand for hybrid solutions, either as an intermediary step to full public adoption or as an architectural end-state (particularly where sensitive data, such as consumer health or financial records, are involved). A hybrid cloud solution joins together a public and private cloud with an encrypted connection and allows clients to leverage scalability of the former and data integrity, regulatory compliance, likely lower latency, and software development-and-testing environment of the latter. Hybrid solutions favor providers such as Microsoft and Oracle with legacy enterprise relationships and solutions over providers like Amazon and Google, whose cloud services business has grown from their consumer franchises. Indeed, Oracle runs a program where customers can apply on-premise spending to earn credits against cloud spending.
- **Public IaaS users increasingly want differentiation, disadvantaging AWS.** Services that include differentiation such as forward integration into Platform as a Service (PaaS) or lateral integration into private clouds can be more attractive to some clients over the commoditized delivery of computing, storage, databases, and networking that AWS offers. For example, Azure leverages Microsoft’s knowledge of developer tools, providing a broader range of app-hosting options than AWS. And Google is leveraging its extraordinary data resources to gain an [edge](#) with enterprises looking to join their own data with external data. Finally, Oracle is using AI in its just-announced Database 18c modules to automate security-patching which, on typical cloud servers, is handled manually with higher cost and downtime.

IaaS Public Cloud Market Services Share and Growth (8%+ of S&P)

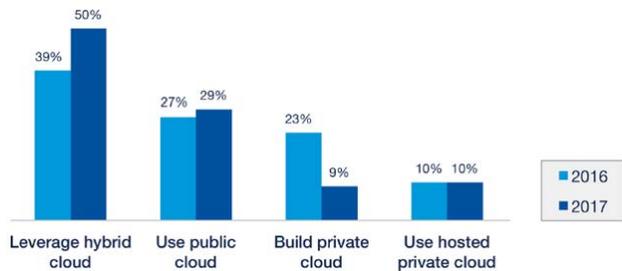
Smm	2016		2015		Growth 15/16
	Revenue	Share	Revenue	Share	
Amazon	9,775	44%	6,698	40%	46%
Microsoft	1,579	7%	980	6%	61%
Alibaba	675	3%	298	2%	127%
Google	500	2%	250	1%	100%
Rackspace	484	2%	461	3%	5%
Other	9,147	41%	8,174	48%	12%
Total	22,160	100%	16,861	100%	31%

Source: Company documents

We expect AWS to begin losing share of the Public Cloud. Amazon’s cloud business is maturing and sophisticated peers such as Google, Microsoft, IBM, and Oracle are aggressively pursuing the market. Google likely has a better cost-structure than Amazon because it too has a vast consumer franchises, and it has unique expertise in data-center technology. And players such as Oracle and IBM

can differentiate IaaS services through layering in AI-enabled resource-management tools to reduce overall cost-of-service and, like Microsoft, leverage long-standing relationships and distribution capabilities as enterprise IT vendors.

Top Priority for Enterprise Central IT

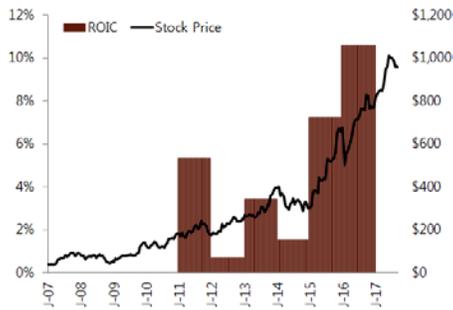


One [survey](#) shows customers' shifting priorities with regard to Cloud solutions: (1) a meaningful increase in prioritization of hybrid cloud solutions; (2) roughly flat prioritization of the public cloud; (3) meaningful decline for on-premise (as opposed to hosted) private solutions. This priority shift is occurring even though hybrid cloud is already the preferred enterprise strategy. with 67% of survey respondents using the private cloud versus 22% for public cloud only and 5% for private cloud only.

Source: RightScale 2017 State of the Cloud Report

Installed application bases advantage Microsoft and Oracle in the hybrid cloud market. Over 80% of enterprise applications are built around the .NET framework of Microsoft or the Java framework of Oracle, and these installed application bases along with the associated enterprise relationships are meaningful advantages in the hybrid cloud market. This is reflected in the share gains of Microsoft's Azure cloud solution. Adoption grew from 20% to 34% of respondents while Amazon's AWS solution stayed flat. Google increased from 10 to 15% likely as a result of Google's [hiring](#) of Diane Greene from VMware in November 2015 to lead Google Cloud Services (GCS) with an enterprise customer focus.

ROIC to Decline as AWS Gets Competitive



Source: Company documents. RenMac estimates.

Amazon is responding to the competition, but this will take time and resources. Amazon is responding to the competitive threat by embedding AI into its AWS service. This allows customers to access image recognition (Rekognition), text-to-speech deep-learning models (Polly), and the voice-recognition engine that powers Alexa (Lex). Still, it finds itself caught between two stools: the superior data-center and machine-learning capabilities of Google and the superior enterprise distribution capabilities of MSFT and ORCL. As a result, and as discussed more in the Valuation section, we expect the growth and returns from AWS to experience meaningful decline.

Whole Foods Deal is Large Enough Relative to Amazon's M&A History That It Is Not Allowed to Fail

Company	Company Description	Date	Price
Whole Foods Market(Pending)	Supermarket chain	6/1/2017	\$13.7B
Zappos	E-commerce footwear and apparel marketplace	7/1/2009	\$1.2B
Twitch Interactive	Video platform and community for gamers	9/1/2014	\$970M
Kiva Systems	Warehouse robotics maker	3/1/2012	\$775M
Souq.com	Middle East-based e-commerce marketplace	3/1/2017	\$580M
Quidsi	E-commerce platform, parent of Diapers.com, Soap.com, BeautyBar.com	6/1/2011	\$500M
Annapurna Labs	Software solutions for data centers	1/1/2015	\$370M
LOVEFILM International	DVD rentals and movie downloads and streaming	1/1/2011	\$312M
Audible	Audio programs and entertainment platform	3/1/2008	\$300M
AWS Elemental(formerly Elemental Technologies)	Video streaming technology	9/1/2015	\$296M

Source: *Company documents*

Risks

There's a lot riding on the Whole Foods deal & some executional risk. The Whole Foods deal cost Amazon more than 11x its next largest investment and deviated from historically conservative M&A. While we strongly believe in the long-term potential of the Whole Foods deal (and Fresh), shorter-term results could be challenging and setbacks very visible, particularly as we believe that Amazon will reinvest behind the business near-term. Delivery infrastructure, store modernization, and store expansion is likely to pressure margins near-term. Any perceived missteps or delays in monetizing Whole Foods could shake investor confidence, as shares (despite recent weakness) trade at near-historic highs.

Near-term, higher traffic is likely stressing logistics at Whole Foods. Lower prices have meaningfully boosted traffic & this seems to be stressing logistics (especially at checkout) in stores we've visited. We think this will be fixed -- Amazon is known for superior logistics and we see many potential improvements, including better store layouts, real-time pricing, more frequent shelf-resets, better local assortments & more expedient checkout. We also think big data, incorporation of smart devices into the Alexa ecosystem, use of robots and drones, and become a platform company help margin longer-term. Still, short-term logistics stress could impact consumer satisfaction/loyalty near-term and spend required to fix it could impact investor satisfaction/loyalty.

Whole Food margins likely to go down before they go up. We've been hearing for years that economics of Fresh are tough. Amazon's commitment to the business is driven by how much it delights customers. We believe investors have tolerated the investment and the likely loss-making business because it hasn't been particularly visible. Now that Amazon owns Whole Foods, we expect investment in Fresh to pick up meaningfully, exacerbating the negative mix impact of a larger Fresh business.

Traditional retailers are defending share online. Amazon was largely uncontested for years, as traditional Bricks & Mortar retailers doubted the long-term penetration potential of internet shopping in their categories. That has changed. Wal-Mart and others are investing billions of dollars each into building online businesses. We believe Amazon retains meaningful advantages, as Bricks & Mortar grocery retailer “warehouses” for online delivery are largely traditional store bases. As a result, they suffer from higher picking costs (physical stores are designed to keep consumers in the stores, creating a more laborious and time-consuming picking process). Still, such concerted effort from peers could slow Amazon’s growth in the core retail business.

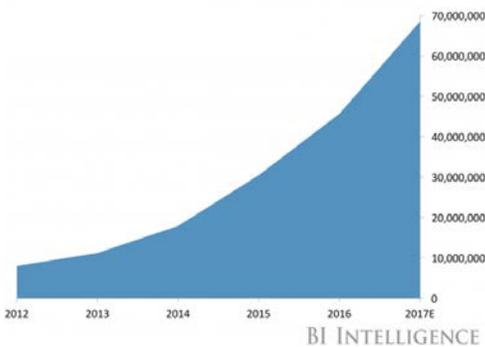
More acquisitions are likely as well. Even prior to the Whole Foods deal, the cadence of M&A had accelerated. Amazon promised in its most recent Shareholder Letter to embrace external trends, the biggest of which it identified as AI/machine learning. Recent investments suggest AI/Machine learning is a strong focus and we think Whole Foods is part of this. Grocery shopping will never morph 100% online. As such, we think Amazon is augmenting its online dominance by modernizing and old-economy Bricks & Mortar retail landscape. This requires further technology investment.

Investor tolerance with slow profit development could wane. Since inception, Amazon has concentrated on expanding infrastructure and increasing revenue at the expense of profit. In 1998, Bezos decreed, “We will continue to make investment decisions in light of the long-term market leadership considerations rather than short-term profitability considerations or short-term Wall Street reactions.” Investors have embraced this strategy, enabling its effectiveness. However, if/when investors grow impatient for growth, the stock could come under pressure.

Potential saturation of the Prime base. Prime growth remains strong, helping fuel revenue growth. Currently, 44% of Americans have Amazon Prime, according to [Prosper Insights & Analytics June 2017 survey](#) of more than 7,000 U.S. adults. Amazon doesn’t offer stats on Amazon’s Prime members often enough for us to properly monitor whether Prime acquisition costs are rising, churn increasing, or the value of the incremental Prime consumer trailing off. None is likely to happen near-term, as Whole Foods is effectively a Prime acquisition tool and Amazon is also now targeting lower-end consumers with discounted memberships. Still, any indication of slowing would cause concern.

Regulatory chatter could increase. Currently, the only sector where Amazon has commanding share is Books at 40%. We believe it’s closer to 20% in Electronics and Diapers and less than 10% of Clothing. Even with Whole Foods, it’s likely less

Amazon Prime Subscriber Growth
Worldwide



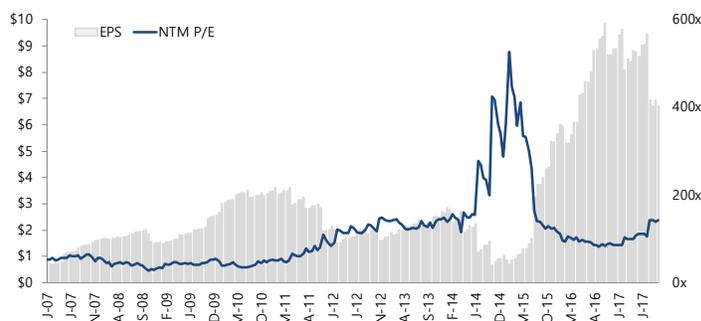
than 2% of Grocery. Anti-trust critics, however, complain about its breadth of influence. Through its online marketplace, competing retailers now account for half of all unit sales on the Amazon platform & a quarter of profits. Many pay additional fees to store inventory in Amazon warehouses and/or use Amazon for fulfillment and delivery of goods. Amazon uses the data it collects on these companies to undermine competitors in the hundreds of high-volume categories where it produces its own merchandise. Amazon's rising power may offend some (particularly competition), but antitrust regulation has nothing to say about big companies that use their power to weaken rivals and lower prices (pro-consumer). New regulations are not impossible, but unlikely.

ROIC Improved Meaningfully in Recent Years, But is Set to Decline

\$mm	2011	2012	2013	2014	2015	2016
ROIC	9.4%	0.7%	4.2%	1.7%	7.1%	11.3%
NOPAT	840	86	694	421	2,344	4,530
Net Income	631	(39)	274	(241)	596	2,371
Increase in Equity Equivalents	189	44	280	462	1,372	1,757
Deferred Tax - Impact	136	(265)	(156)	(316)	81	(246)
Deferred Revenue	43	275	399	741	1,292	1,955
Reserve for Doubtful Accts	10	34	37	37	(1)	48
Net Interest, Tax-Effectd	20	81	140	200	376	402
Invested Capital	9,252	15,238	17,996	30,412	35,206	45,156
Debt and Leases	4,322	9,563	11,489	21,340	23,324	28,787
LT Debt	147	3,663	3,944	9,785	8,465	8,750
Capital & Finance Leases	1,555	1,302	2,973	6,304	9,074	11,660
PV Operating Lease Payments	2,620	4,598	4,572	5,251	5,785	8,377
Adjusted Stockholders Equity	9,343	9,253	11,016	12,994	17,332	24,821
Stockholders Equity	7,757	8,192	9,746	10,741	13,384	19,285
AOCI	316	239	185	511	723	985
Equity Equivalents	1,270	822	1,085	1,742	3,225	4,551
Marketable Securities	(4,307)	(3,364)	(3,789)	(2,859)	(3,918)	(6,647)
Construction in Progress	(106)	(214)	(720)	(1,063)	(1,532)	(1,805)

Source: Company documents, RenMac estimates.

Estimates Coming Down but Multiple Still High



Source: ThomsonReuters

Valuation

We Expect Declining ROIC

Sector multiples correlate to ROIC, so further multiple expansion seems unlikely.

We believe investors are focused on Amazon's returns and that much of the multiple-expansion in recent years has been supporting by an increasing return-on-invested-capital (ROIC) that, in turn, was driven by an early competitive advantage period (CAP) for AWS. We expect returns in the cloud-hosted compute business to begin to fall meaningfully with a more aggressive competitive response and pricing strategies such as the move to time-charges by Microsoft and Google; and that this will limit further multiple expansion.

Initiate with Equalweight

We rate the stock equalweight. This reflects valuation concerns over increasing confrontation with deep-pocketed competitors in both the retail and compute

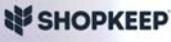
businesses, and the impact of an up-rate environment on long-duration returns. We have a price-target of \$980 which ascribes the same forward (2019) multiple of operating cash flow as Google versus the current 12% premium.

Summary P&L

PL - \$mm	2015	2016	2017	2018	2019
Revenue	107,006	135,987	175,362	226,485	273,320
WFM	15,389	15,724	16,038	16,359	16,850
Legacy AMZN			170,016	210,126	256,470
Consensus			171,131	213,359	256,723
Gross Profit	35,355	47,722	59,618	74,808	87,616
WFM	5,416	5,411	5,439	5,466	5,546
Legacy AMZN	35,355	47,722	57,805	69,342	82,071
Gross Margin	33%	35%	34%	33%	32%
Operating Profit	3,094	5,043	3,766	7,062	10,377
WFM	861	857	866	875	893
Legacy AMZN	2,233	4,186	3,477	6,186	9,484
Operating Margin	2.1%	3.1%	2.0%	2.7%	3.5%
Non-Operating Expense	665	294	200	440	250
Earnings b/tax	1,568	3,892	3,566	6,622	10,127
Consensus			3,079	6,005	11,323
Tax	972	1,521	1,391	2,582	3,950
Tax Rate	62%	39%	39%	39%	39%
Continuing Earnings	596	2,371	2,175	4,039	6,177
Net Income	596	2,371	2,175	4,039	6,177
Common Earnings	596	2,371	2,175	4,039	6,177
Diluted EPS - Continuing	1.26	4.91	4.39	8.00	12.00
Consensus			4.21	8.82	15.43
Avg Dil Shs	477	484	495	505	515

Source: Company documents, RenMac estimates.

Appendix I: Summary of Some Existing Retail Technology (Click on Logos for More Information)

Transactional Data Harvesting	
	Provides cloud-based PoS software for small businesses (see here). It's a do-it-all smart cash register system that helps streamline/sync online experience and manages things like clocking in/out & placing orders.
	iPad-based PoS system for small shops, restaurants, bars etc. Marketed as "the modern register," it promises the lowest processing fee. You can also use it to monitor payments, staff, & inventory.
Real-Time Product Targeting	
	Tech designed to target customers "in the buying phase." They help e-Retailers, media companies and brands offer personalized experiences.
	Responds in real time to consumer shopping preferences. Customization tools include store maps, customer-specific search narrowing, and ability to search via photo. include Sur La Table, Toms, and Disney. Investors include Intel and Nike.
Visual Search	
	Staqu specializes in image-based searches. Visual search module helps users instantly sift through a large database of images to return similar results. It's a fashion engine that helps users enhance their looks with supplemented visuals of celebrities and trends.
	Visenze is a search engine that allows users to take photos of merchandise IRL & search for it online. It will offer the exact product or similar. For brands, this helps deliver interactive & personalized experiences by turning visual content into dynamic storefronts. See here .
	Cortexica works to improve efficiency, reduce op costs, and maximize ROI. Their capabilities are supposed to help computers do human-like tasks like visual perception, speech recognition and decision-making. Their clients include Macys, Ebay, and Tesco. See more here .
	Smart search engine that categorizes objects in an image in order to compare them to a larger database. Known as the sort of "Shazam for fashion" approach, users can click on items in a photo and be directly linked to a purchasing platform. See more here .
Conversational Commerce	
	Instant messaging system that engages with customers in what feels like a natural way. They also engage via SMS and Twitter. They don't make bots, but help companies communicate using channels their customers already use. Read more here .
	Kip is a cute penguin assistant that takes care of household personal shopping. It specializes in group orders by using chat apps to pool customers' orders in order to save money. It seems mostly to be used in offices with lunch orders, communal office needs etc.

Source: Company websites.

Sizing and Styling	
	Scales outfitting across fashion retailers' enterprises. Their technology can complete looks with a combination of styling and automation. In essence, they help shoppers purchase more by visualizing pieces within the scale of an entire outfit.
	Uses Bold Metrics body data to help shoppers find the right sizes online (the avg. return rate is 30 without sizing apps). Currently they work with Nike, Guess, Hanes, and more.
	Personal shopper app developed by Amazon employees. Mona goes on "missions" in which it scours online stores for products that meet a specific set of criteria based on product type, style, price etc. They analyze customer feedback to help provide real-time recommendations
Integrated Online & In-Store Analytics	
	Yunnex provides internet-based PoS device that encompasses barcodes, messaging, e-commerce, and sales mgmt., in addition the regular transaction function. It is handheld and run by Android.
	Works to personalize transactions. They analyze and predict consumer behavior through IoT tech such as sensors, digital input, Wi-Fi, apps, weather, events, traffic etc. Also use facial recognition and other personal attributes to connect users with brands. They are an offshoot of Microsoft.
	Manthan has a host of different services, but basically they provide BI and analytics solutions for retail and CPG companies. They have a suite of software products that are big data-driven. Read more about it at Forbes .
Real-Time Pricing and Incentives	
	A modern take on the punch card rewards system. Companies can send custom rewards to members digitally after an easy sign up process. System follows algorithm of one-off offers, timed promotions & exposure on app to ensure customer loyalty. Customers can use universal program at multiple stores, while earning custom benefits .
	Ibotta basically functions as a cash-back rewards system. Users complete "fun tasks" to earn rebates to certain stores, use those rebates, and then submit their receipts, after which their cash rebate is deposited into their Ibotta account. Users can then withdraw the cash. According to USAToday , people have earned over \$240m in cash back since it launched in 2012.
	Japan-based coupon service. Based on machine learning and data mining, it presents appropriate coupons at ideal time, providing encouragement at final "moment" of purchase. See more here .
	Based in Alberta and backed by some of the strongest venture capital firms in US and Canada. They help e-tailers maximize revenue by using big data & machine learning (including minutiae such as scroll speed, mouse movements etc.). They target users who would otherwise leave the site and convince them to buy by issuing them a direct solution to their supposed objection.
	Personali detects shoppers' purchase probability and the max amount they're willing to pay. They then capture shoppers' emotional responses and use them to present personalized incentives (like discounts).

Source: Company websites.

Location-Based Marketing & Analytics	
 PlaceIQ	First company to create “location intelligence.” Create maps that show how people interact with surroundings. Their data scientists work with marketers for ready-to-use insights. They help customers figure out where consumers are going and how best to reroute them into stores. See more about how they gather location data and then apply it to marketing.
 Grey Jean Technologies	They use info like transaction history, location, and demographics combined with their own data points (weather, price, geolocation) and create a digital footprint. They even tap into political leanings and lifestyle, leading to hyper-personal interaction with the customers.
 TAMECCO	Tamecco primarily provides location services. Businesses can track personnel, outdoor forklifts and carts, indoor machinery, and customers in-store. They also have an app that provides targeted coupons, discounts etc. for users’ favorite b&m stores using permitted location services.
 databerries	Mobile ad platform for b&m retailers. They allow retailers to use mobile ads to target customers based on previously visited locations and probability of ads resulting in visits. They currently work with Toys ‘R’ Us and McDonalds.
Natural Language Search	
 Twiggle	Twiggle helps e-commerce search engines “think like humans do.” They use human-like linguistic structure to differentiate between “red dress” and “red dress shirt” etc. See Forbes article here . Customers include Alibaba and Yahoo! Japan.
 AddStructure	A voice shopping platform powered by machine learning. They’ve been working with Target to launch a product that lets shoppers search using natural language, i.e.: “I’m looking for a black sweater, maybe a little formal.”
In-Store Visual Monitoring	
 iTraff technology	Provide image recognition technology to help businesses build the capability into their own mobile and web platforms. This can help locate store items on shelves among other functions.
 eversight	They provide software that enables CPG retailers to find, test, and deploy promotions that work. They currently work with the likes of Nestle, Coca Cola, and KMB.
 COSY	They mostly focus on location services for environments with no GPS—like indoors. Their back-end technology can be used for augmented reality, audio navigation for the blind, mobile robots, and monitoring of inventory.
 Trax image rec	Computer vision platform that lets companies understand how their products look, compete, and perform on the shelf. Image recognition technology allows for real-time channel checks and purchase rates.
Predictive Merchandising	
 Euclid	A data analytics company. Ingests data from transactions & loyalty programs, pairs it with their algorithms to map offline behavior, and identifies retainable customers. (sample on brand loyalty).
 blueyonder	They have numerous projects that are supposed to aid optimal decision-making. It appears that one of their major capabilities centers around is predicting how much shoppers will buy each day, leading to more carefully monitored inventory levels and thereby increasing efficiency up to 30%.
 celect	Celect analyzes customer choices for an accurate picture of demand, which can then help place the right products in the right place at the right time, reducing inventory stock-outs and markdowns. See more here .

Source: Company websites.

Multichannel Marketing	
	They promote a unified shopping experience that integrates all aspect of digital (coupons, loyalty programs, list-building, catering etc.) They recently announced that they'll soon be launching voice ordering capabilities for grocers.
	Customer loyalty platform that combines loyalty, analytics, and marketing. They use transactional data to identify best customers and customer segments. It's designed for small, independent retailers.
	Collects info from multiple sources and analyzes historical behavior to create personal interactions with consumers. L'Oréal recently agreed to partner with them as a part of their bid to attract millennials online.
	Program that helps companies use AI to design marketing campaigns and predict consumer behavior. For example, one cosmetics company uses it to aggregate total data from its website, apps, etc.
	Jetlore maps consumer behavior into structured predictive attributes like color, size, fit, style etc. The structure allows large companies to optimize content and communication. They work with Ebay, Nordstrom Rack, Uniqlo and more.
	Tinyclues uses companies' data, purchase history, tracking logs, social, etc. to discover the logic behind purchases. Through this, they develop a stylized audience for the company's next ad campaign.
Retention Marketing	
	Retention Marketing company that provides a variety of resources, including data that aids decision-making, predictive re-Retailmendations to increased conversions, and campaign management & customer support. Clients include Target, The Honest Company, and Dollar Shave Club.
	A behavioral marketing platform that lets companies personalize interactions in real time. They unify behavioral and transactional data to build automated segments. They also publish reports on buying habits, like ways to remediate the short attention span of millennials.
	"Persuasion as a service" –they combine psychology with machine learning to figure out the buyer subconscious and influence it by using notifications, micro-copy, and product tags. They have a library with more than 200+ different psychological triggers.

Source: Company websites.

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Primary Stock:

Amazon (AMZN, 10/27/2017, US \$1,100.95). Equalweight

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