Capturing New Customer Opportunities

STRATEGY IN THE 54TH YEAR OF MOORE'S LAW

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Technology has been the great disrupter. Its impact on business has been staggering.

What has happened will pale in comparison to what will happen next. As the lyrics go, "You ain't seen nothing yet." Disruption will increase dramatically.

The increase in disruption will be driven by multiple technologies – AI, AR, Apps, Cellular, Streaming, Voice, and many others. These technologies are already performing at superlative levels and their performance is set to increase dramatically. This in turn will accelerate disruption.

What should you do? If you use classical strategy frameworks and tools, you could end up in the wrong place. The retail industry illustrates this danger. Classical frameworks are less relevant in an era of rising disruption.

How should you use these technologies beyond their existing use cases? One path is to pursue major customer opportunities previously unavailable because the technology just wasn't there. We identify six types of opportunities for you to explore.

To capitalize on these customer opportunities, we suggest an execution path where you start with a portfolio of agile teams. Most tech-based unicorns started this way. You may need to play the role of a friendly VC, who places subsequent bets only on teams demonstrating success.

Exponential growth is explosive – not in the initial years, but in the latter years.

How We Got Here.

Let's go to the beginning, the invention of the computer chip, patented 60 years ago. Chip manufacturers started doubling the number of transistors on a chips. Each doubling increased performance and reduced costs.

Moore's law was the observation of this doubling. It was formulated in 1965 by Gordon Moore who co-founded Intel. The law predicted the doubling of transistor every two years and it has held true to-date – and we expect it to hold true for at least the near term.

When things double, they grow exponentially. Exponential growth is explosive – not in the initial years, but in the latter years. As humans, we

don't always understand exponential growth since most growth around us is linear. Humans grow a few inches a year. Companies grow a few percent a year. Economies too. Exponential growth is outside our normal, day-to-day experiences.

To understand the power of such growth, think of doubling a sheet of paper. If you doubled it 42 times, it would reach the moon. Since exponential growth accelerates in outer years, if you double the paper another nine times, it would go past the sun, which is 90 million miles away.

Similar to the paper stack rising to the moon, following Moore's law, the number of transistors on chips has doubled for decades and increased by a *billion* percent.[1] As a result, the number of calculations that can be executed by a computer has increased from a few thousand per second to over one billion billion per second. At the same time, the cost of executing a billion calculations per second has gone down from $20 billion to 3 cents.

Exponential increases in the performance of computer chips has in turn led to the creation of downstream technologies such as AI/Machine Learning, block chain, and iOT, and subsequent increases, often exponential, in their performances.

Very, very impressive stuff. But, and this is the critical point, none of this is as significant as what should happen next.

What Happens Next.

Circa 2008, the chip and multiple derived technologies had advanced to a point that fundamentally new products emerged – 3D cameras, Amazon cloud, Bitcoin, iPhone, Kickstarter, Kindle, and Netflix, to name some.
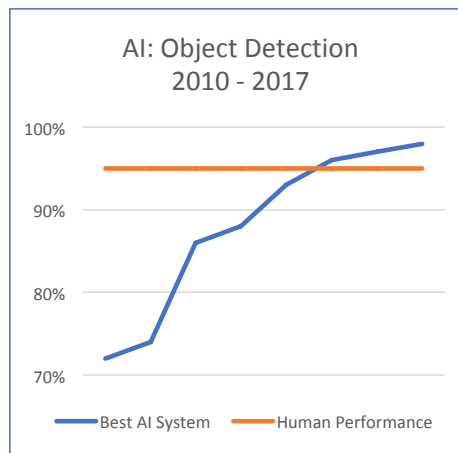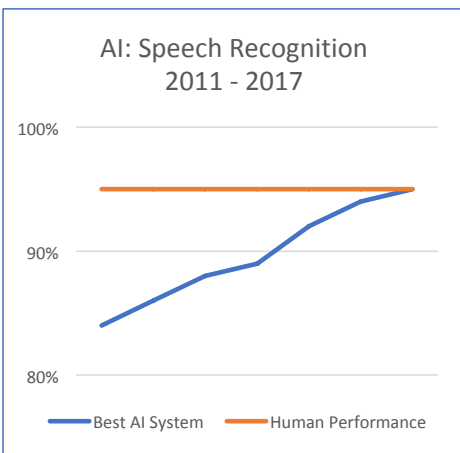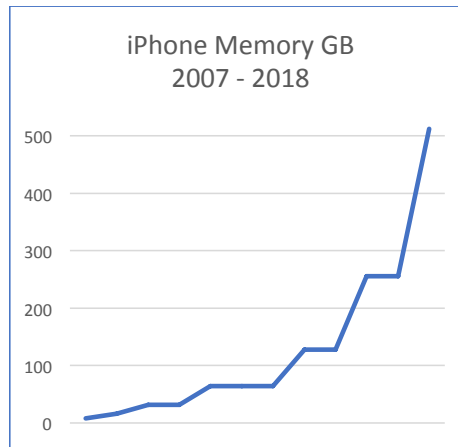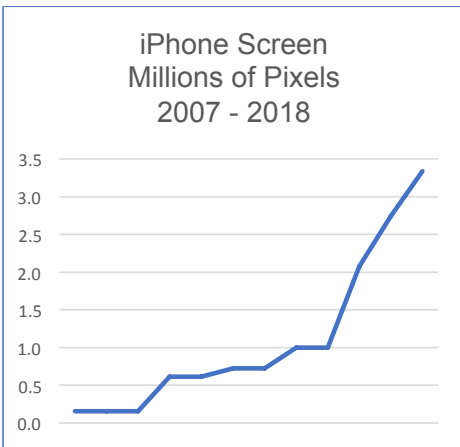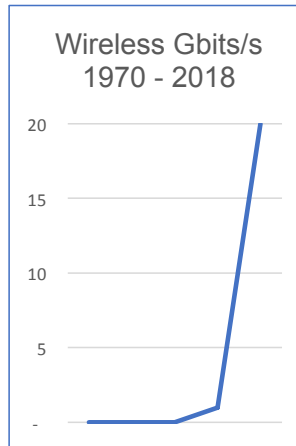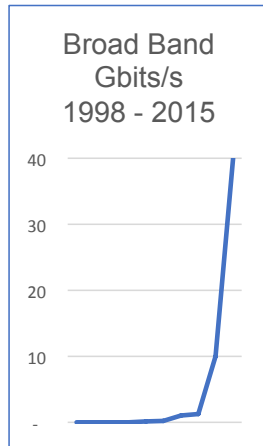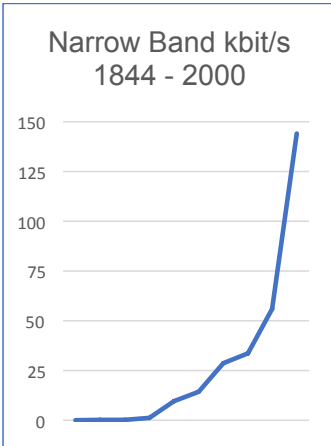
More recently, with computing performance continuing to increase with the ongoing doubling of transistor density, Tesla has launched the self-driving car, and Amazon the cashier-less Go store, both great disrupters in their respective industries. These products could not have been launched until very recently because the technology wasn't there.

Technology, following Moore's law, continues to double from its now superlative level. If we were at the moon, we are getting to the sun. When super-computing doubles from 1.8 billion billion calculations per second, or iPhone real-time machine learning doubles from 5 trillion operations per second, what happens? What products are possible? And when it doubles again in another two to three years, what might then be possible?

Moore's law cadence may slow. But that shouldn't matter. We are in a multi-factor world, where many technologies will improve at exceptional rates.

1 From just 2,300 to 30 billion since 1971.

Increases in Performance Across Select Technologies.

Narrow Band kbit/s 1844 - 2000

Broad Band Gbits/s 1998 - 2015

Wireless Gbits/s 1970 - 2018

iPhone Screen Millions of Pixels 2007 - 2018

iPhone Memory GB 2007 - 2018

AI: Speech Recognition 2011 - 2017

Best AI System —— Human Performance

AI: Object Detection 2010 - 2017

Best AI System —— Human Performance

For 54 years, technologies have been improving. They now improve explosively. You need a strategy to use this explosive growth. We call it Strategy 54.

The Advanced State of Technologies: The iPhone Tool Set.

Many platforms that are based on chips are now delivering very high levels of performance. Take the case of the iPhone. Apple has long promised customers "There's an app for that." To make this possible, Apple has created a massive tool set for developers to produce 'killer apps.' Here is just a **fraction** of the tools that are available for development.

Sensors. Ambient light. Proximity. Flood illuminator. Infrared camera. Microphone. Dot projector. Barometer. Pedometer. Three-axis gyroscope. Accelerometer. Magnetometer. GPS. Bluetooth. **MultipeerConnectivity.** Peer-to-peer connectivity and discovery of nearby devices. **Contacts.** Access the user's contacts. **BusinessChat.** Let customers chat with your business using Messages. **ExternalAccessory.** Communicate with accessories. **Core Bluetooth.** Communicate with Bluetooth 4.0 low-energy devices. **Neural Engine**: built for machine learning. **Create ML** for learning models. **Core ML** integrate into apps. **Location Services**. GPS, Digital compass, wifi, iBeacon microlocation. **MultipeerConnectivity**. Peer-to-peer connectivity and discovery of nearby devices. **Contacts**. Access the user's contacts. **BusinessChat**. Let customers chat with your business using Messages. **MapKit**. Display map or satellite imagery directly from your app's interface, call out points of interest. **HomeKit**. Communicate with, configure, and control home automation accessories, including complex camera-type accessories. **CloudKit.** Store structured app and user data in iCloud containers that can be shared by all users of your app. GPU optimization and Metal 2 graphics software for **Augmented Reality** experiences. **HealthKit**. Access health and fitness data while maintaining the user's privacy. **Payment** and Wallet Pass. **Speech**. Recognition and transcription of speech. **3D audio. 4K Video.** Variety of **Notifications. CloudKit.** Store/share structured app and user data.

Moore's law was an observation of a trend. The observation drove the semi-conductor industry to act. The doubling of transistor density did not just happen – companies had to work hard to achieve this doubling.

Companies can underline exceed the performance levels of Moore's law. Apple increased the performance of its machine learning technology not by 50% in one year – as you would expect if it followed Moore's law, but by 700%, or 14 times that of Moore's law. Others can achieve higher-than-Moore's law levels by deploying approaches such as increasing the number of cores in a chip, by using specialized chips that are super-efficient at executing specific tasks, by increasing the number of chips, and so on.

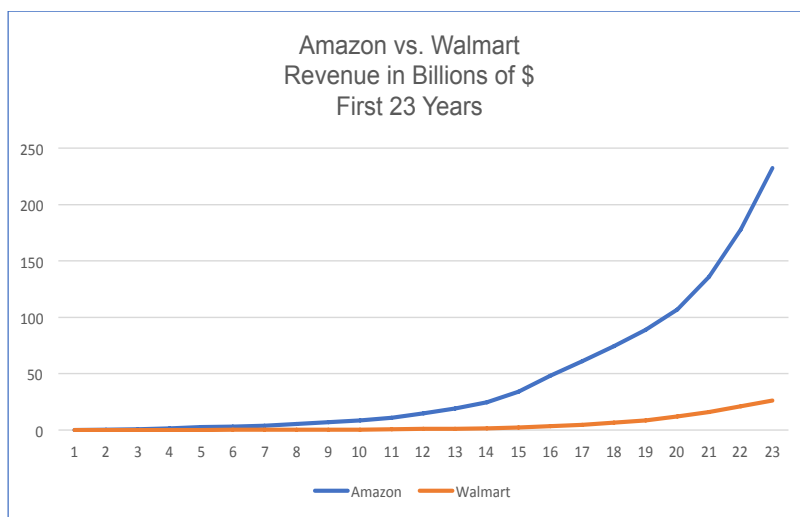What happens next? The ability to disrupt at an unimaginable level.

'There's an app for that' is made possible by a massive tool set that developers use. It provides ultra-cheap access to a cluster of technologies. You need to deeply understand these tools to create killer apps. Companies like Amazon understand these, and can become competitors to many businesses.

Rapid Business Growth Through Technology.

Even though chips improve exponentially, business technologies do not deliver business results that are exponential. Even Intel, which Moore founded, has not had exponential business results. How come?

Moore's law bumps into other laws – the laws of economics, competition and customer behaviors. From a managerial perspective, can something be done to flex the growth rate? Yes, with the right strategy.

Take Amazon and its strategy of delivering hyper-experiences, discussed earlier. Growth has been stunning. Contrast Amazon's first 23 years in existence with those of Walmart's. Walmart grew inexorably, but its growth pales when compared to Amazon's.

Amazon vs. Walmart
Revenue in Billions of $
First 23 Years

What to do? Re-think Strategy Frameworks.

Strategy in the 54th year of law has to be different because of the power of technology.

Using classic strategy tools can get you in trouble. Look at retail. As eCommerce grew, many retailers found the costs of online retail and physical similar. As such, they concluded that companies like Amazon did not have a cost advantage. They further looked at their own assets and capabilities, and concluded they against pure online plays like Amazon, they had certain competitive advantages – primarily physical stores located near customers.

Many retailers then choose to either (i) not pursue online at all or (ii) leverage their competitive advantages by combining online with offline to become omni-channel.

Was the strategy work faulty? It was done with excellence – indeed some of the best retailers and minds were involved. One of the finest consultancies even published its findings in the prestigious Harvard Business Review.

Amazon has used clusters of technologies to grow faster than Walmart, which was the fastest growing retailer in history.

Most digital marketing strategies will not change your competitive position. Your competitors have similar strategies.

The real problem was that the strategy tools that they used were built for an earlier era – when the world was relatively stable. Technology was now in the outer years of exponential change, and the world was changing rapidly. Static strategy frameworks could now mislead. In retail,

- Online costs from ordering to delivery would come down. These reductions would occur in areas that had the largest costs, namely inventory and warehouse/logistics. Robotics and software would be used to lower costs.

- Costs would matter less than they had at traditional companies. Amazon, for example, would 'subsidize' costs from its AWS business, Prime subscriptions, the capital markets and the tax code.

- The online experience would become exceptional for Amazon. Mobile apps – both for customers and for logistics would drive this experience. Amazon's digital experience would become vastly superior to the omni-channel experience of just about every other retailer.

Additionally, the focus on costs and static competitive advantages meant that the opportunity for fundamental new innovation was not possible. Retailers did not introduce digital innovations like Amazon's AWS and Prime because they did not have the technology to do so.

Additionally, the focus on costs and static competitive advantages meant that the opportunity for fundamental new innovation was not possible. Retailers did not introduce digital innovations like Amazon's AWS and Prime because they steered away from technology.

The end result was a disaster for many retailers. Just in the last few years, Omni-driven Toys-R-Us and others have shuttered, and many others like Macy's have had their market caps decimated – all while Amazon's market cap has increased several-fold.

Many strategy tools and concepts such as experience and learning curves, economies of scale, value chains, industry analysis, scenario analysis, and total/augmented products, must now be used with caution.

Re-thinking Strategy: Where to Play? How to Win?

Where to compete is a key strategy question. Generally, most companies chose to focus in segments within a defined industry vertical.

When there is a massive shift in the environment, staying within an industry can diminish opportunities. Think of railroads that stayed in the railroad industry and did not move to the broader transportation industry, as cars and highways emerged.

The rising power of technology is now creating a rift in the environment. Take restaurants. Should they still be in the restaurant business – or define their business differently? Already, companies like Grubhub, Yelp, and UberEats

have captured over $30 billion from restaurants, while many restaurants hemorrhage value.

In thinking of where to compete, look at Amazon. Where does it compete? Is it a retailer? If it is, it is a strange one: it doesn't make its real money there. What then is it? It is not a media company like Netflix even though it offers more than Netflix – besides video, it streams music and games/Twitch. It is not a search engine like Google, even though it is the #1 place for product search. And how does AWS fit in – the biggest source of its profits? How about Alexa, Kindle, and acquisitions like Ring?

Amazon is not just a company that competes by merely broadening the definition of its industry. We think of Amazon as a technology engine that creates hyper experiences for its customers – hyper-convenience, hyper-entertainment, hyper-impulse, hyper-emotions, and hyper-cool, crossing industry boundaries at will.

Can you win against the Amazon hyper-engine if you operate within your industry?

The Rising Tide of Customer Expectations.

Technology by itself is insufficient for disrupting competitors. The customer has to be willing to adopt. Apparently, they are:

"One thing I love about customers is that they are divinely discontent. Their expectations are never static – they go up. It's human nature. We didn't ascend from our hunter-gatherer days by being satisfied. People have a voracious appetite for a better way, and yesterday's 'wow' quickly becomes today's 'ordinary'. I see that cycle of improvement happening at a faster rate than ever before." - Jeff Bezos, Amazon Annual Report, April 2018

Going Forward: Start with Customers.

We start with customers as they maybe your biggest asset, likely greater than your 'hard' assets. Starting with customers allows you to satisfy rising customer expectations while leveraging rising technologies.

New opportunities have opened up, due to technology. To identify the opportunities, we suggest 'observational' research, often referred to as ethnographic research. Put simply, observe customers for opportunities – observe them as they experience your product – before, during, and after purchase and usage.

This observational approach to insights is superior to many classical research methods. Henry Ford is reputed to have said, "If I had asked customers what they wanted, they would have said a faster horse." Steve Jobs and Jeff Bezos have used observational as a fundamental way to gain insight.

Observational research can you help you identify opportunities like those identified here.

Amazon is not just a retailer. It is a customer obsessed, hyper-engine that uses technology to deliver hyper experiences – hyper-convenience, hyper-entertainment, hyper-impulse, hyper-emotions, and hyper-cool.

Amazon sees the cycle of delivering 'customers wows' accelerating.

1. Address Forgotten Problems. Forgotten problems are problems that could not be solved earlier because it was impossible to solve them given the state of technology. Over time, these problems have become 'forgotten' problems – we can't solve them, and we learn to live with them. Many of these problems are now solvable.

In the auto industry, Tesla has addressed such as problem – the problem of driving. Driving can be a pleasure at times. However it is often a 'problem'. It consumes two weeks of our time per year and leads to 40,000 deaths in the US alone. It is such a forgotten problem that we think of it as an activity. Tesla has used technology to solve this problem. Its self-driving tech stack includes a network of cameras, ultra-sonic sensors, radar that is able to see through heavy rain, fog, dust and even the car ahead, and machine learning.

In the hospital industry, Gauss Surgical has solved a forgotten problem in the operating theatre, where surgeons had no option but to visually estimate blood loss during surgery. Estimations were erroneous and led to serious complications. Gauss has produced an iPad app that uses a cluster of technologies including vision, infra-red, and pixel analysis, to provide reliable estimates.

Solving forgotten problems can be worth a fortune. Gauss has raised $50 million. Tesla is worth a fortune in part due to its self-driving function, which is cited by some analysts as the basis of its valuation, which is higher than many competitors.

Are their forgotten problems in your industry? You should use observational research to explore this area.

2. Eliminate Major Pain Points. Companies have always tried to remove pain points. What is different now is that technology allows you to wipe out major pain points. These are pain points severe enough that if you were to solve them, customers could switch to you.

In retail, Amazon is eliminating the checkout step, thereby wiping out the pain of waiting in line. It has launched cashier-less Amazon Go stores, where pain the customer essentially walks in, picks up products, and walks out of the store, with payments collected through their smart phones. Amazon's solution uses a cluster of technologies. The 'Just Walk Out' technology bundle includes geo-fencing, cameras with computer vision, deep learning algorithms, hardware such as on-shelf weight sensors, virtual carts, and iOS and Android mobile apps.

Resolving major pain points creates huge value. Amazon Go stores are estimated to become a $4 billion c-store business in the U.S., and the technology can be deployed to other areas.

Does your industry have such pain points? As before, you should use observational research to scope opportunities.

> **Take the forgotten problem of driving, which the driverless car solves. Driving is not seen as a problem. In fact, we think of it as an activity!**

> **Gauss has converted the iPad, a consumer device, into a FDA approved, medical-grade device used in surgery.**

3. Simplify Through Recommendation Engines. Customers crave simplification. Unfortunately, companies, offer painful complexity. Just go look at the menu at Taco Bell or Starbucks. Or the number of wines at your local retailer. The choices are overwhelming. Corporate innovation engines continue to churn out products which create complexity and stress for their customers.

Technology already allows companies to reduce complexity. Amazon uses AI to predict what customers want and offer these predictions as recommendations. These recommendations reduce the need to wade through Amazon's massive catalog – they simplify customers' lives. For Amazon, they create value as well – generating 1/3 of Amazon's eCommerce revenue.

Amazon is not alone. In the fashion industry, where designers and runways have traditionally ruled, Stitch Fix is a recommendation engine disguised as a fashion company. It collects 80 points of preference data from customers when they sign-up for its products; to keep the data current, customers can play Style Shuffle, an image and trivia based game that generates new data. 100 data scientists using AI/machine learning and human curators use the data to make recommendations. This data-driven, recommendation-based one-year old public company is currently valued at $1.7 billion.

Many companies make no recommendations. They just throw their product catalog at customers. Airlines email deals that are unusable – flights originating from cities where customers don't live. Rental car companies rent based on car size. Instead, they could recommend based on weather data – rent convertibles to customers in hot, sunny cities and 4X4s in snow-drenched ones. Such rentals would make customers lives better while delivering price premiums of over 80% to basic rentals.

The ability to recommend more accurately will improve with technology. This creates significant opportunities. Take Amazon. It can predict complementary or substitute products when a customer is looking for a specific product. What happens when it can reliably predict what a customer will want before the customer even goes to the website?

Already Amazon is predicting when certain products will need to be replenished and asking customers if they would like them to be fulfilled. Its ability to predict accurately will soon rise to a point where it could simply ship the product to its customers. Some customers will accept this model – it will make their lives even better. Were this to happen, the 'Amazon disruption' will reach an entirely new level: it would preempt customers from shopping at competitors, taking them out of the market entirely. It could evolve Amazon's business model.

Can technology such as AI simplify and better your customers' lives? Can simplification transform your business model - as it may change Amazon's?

4. Launch New-to-Industry Benefits. You can offer brand new benefits to your customers by infusing technology into your products, essentially making 'dumb' products smarter.

Doorbells, locks, showers, thermostats and vacuums are some of the products that are becoming smarter. They offer new benefits such as convenience, personalization, security, and sustainability. At CES this year, there were beds and pillows that detect and stop snoring and improve overall sleep health.

Salesforce.com has added technology to a classic product – The 'to-do' list. Ride-along observational research identified a problem: After a sales meeting, reps would drive off to their next meeting while trying to write the 'to-do' list from their meeting. Salesforce.com created an app. Using voice, reps can record the details of the sales call as they drive away from the meeting. Using AI, the app is able to identify the actions that the rep and their company need to take, and automatically integrates and initiates these actions in the company's workflow. Salesforce.com's application is similar to other apps that have helped the company grow by 25% a year, which is remarkable given its large sales base of $10 billion per year.

5. Integrate Across Industries. Customer needs cross industry boundaries. They hop from industry to industry to satisfy their needs. While at work, employees use tools provided by vendors from multiple industries – email, analytics, research, storage and many others.

Technology allows you to connect with companies in other industries through computing interfaces known as application programing interfaces or APIs.

Slack, a startup, uses an API to offer products from over a hundred companies including Dropbox, Google, Mailchimp, and SurveyMonkey. Slack allows users to collaborate in a way that makes email-based communications seem pre-historic. It is a five-year-old company last valued at $5 billion.

Can you create value for your customers by offering them the goods and services from other industries?

6. Market Differently, Using Technology. Technology has changed the media landscape – new media has emerged including social, streaming, image-based, and short form video; media consumption behaviors have changed; new customer data is available; and the economics of marketing have changed dramatically.

Companies are competing in this new landscape by running campaigns in new media. The problem is that most competitors are doing the same. The opportunity is greater than executing the next Snap campaign.

Instead of touching the customer through a three second Facebook exposure or a 30-second TV ad that few customers actually watch, you can engage for long periods with high frequency. New media economics allow companies to build direct, long term relationships with customers. Several companies have already done this:

- Amazon offers Prime Video, Prime Music, and Twitch using cloud/ streaming technologies. They help Amazon acquire and retain 100 million Prime members.

- Red Bull offers virtual versions of its extreme sports events such as its "Air Race" through mobile games and TV apps. Its apps have ~50 million downloads

- Nike and Under Armour offer fitness apps, with a combined ~100 million downloads.

- McDonald's has a game app, as does Oreo, with a combined ~30 million downloads.

- Domino's Pizza has introduced 'Hotspots' in its mobile app to expand distribution. These are locations like beaches, parks and stadium lots that are enabled through GPS/Location services. Customers can now have pizza delivered to 200,000 such Hotspots.

Our work in building high-engagement, gamified branded apps indicates that the economics of this new marketing, under certain scenarios, are vastly superior to traditional marketing.

Actioning Your Strategy 54: Starting Small While Thinking Big.

While one needs to think big in addresing customer opportunities, one also needs to be pragmatic. You should start small.

1. **Evaluate Your Digital Transformation Activities.** While companies like Amazon, Domino's Pizza, and Salesforce.com are fundamentally transforming their businesses, many are merely tweaking their digital models. Tweaking is insufficient.

   Take Sears, which is in bankruptcy. It has just conducted research to improve its app. This research will not change its competitive position. Among other things, Sears seeks to understand the 'spacing between items' in its app. Sears is not alone – Macy's conducted similar research. And J.C. Penny, which may head for bankruptcy, just did the same.

   You should assess your activities to see if you are just tweaking or going for the big opportunities that technology can now tackle.

2. **Identify Big Customer Opportunities.** Start with the customer. Use observational research to explore the six areas of customer opportunities we discussed earlier. Not all areas will be right for you. Create multiple concepts.

3. **Use Small Agile Teams to Develop Your Offerings.** Use Silicon Valley style product management. Keep the teams small. Amazon uses this approach, with 15,000 project/program/product managers helping lead 50,000 engineers, and representing the voice of the customer. If you don't have a product management capability – and few companies

Domino's Pizza has added unique, customer-driven functionality to its mobile app, which accounts for 40% of its revenue.

Address big customer opportunities, but start small. Just like many start-up unicorns have done.

do – add a skilled consultant to your team. The consultant would guide the team leader towards getting the technology pieces built fast, cheap and correctly. Without this know-how, teams are at the mercy of developers, especially if development capability is outsourced to third parties. The incentives of the outsourced team are often at odds with those of the project team.

4. **Start with a Mobile App.** If you already have an app, add to your proposition, much the way Domino's Pizza added Hotspots to its fully functional app. Why start with an app? Apps reduce your costs of innovation as they plug into platforms that are loaded with free technologies. These include AI/Machine Learning, Augmented Reality, Location Services and many others. You can add-on additional technologies by renting them – for example, connectivity and storage. You could even rent the design and development teams.

5. **Innovate the Business Model.** Digital opens numerous ways to capture value from customers. You can use freemium, micro-payments, subscriptions, and marketplace models, to name a few. You should assess each offering for its optimal model.

6. **Act like a VC.** Having multiple options gives you the ability to focus on the winners and discard losers as soon as possible. Think like a VC with a portfolio, where big bets are placed only on big winners.

7. **Innovate on a Non-Stop Basis.** Technologies improve exponentially. You need to match their cadence and innovate continually.

8. **Start Now!** Delaying a new business approach like Strategy 54 makes it difficult to win. For starters, the high quality talent you need to execute will become very difficult to secure. Second, the earlier you start, the more you will be able to innovate. Each step you take opens up new opportunities, much as books opened up general merchandise for Amazon, and online commerce opened up the AWS business. Finally, competitors like Amazon continue to build barriers. Just take technology patents – Amazon already has over 8,000; competitors like Kroger's are near zero.

Business strategy in the 54th year of Moore's law should be different: it should be based on the advanced state of technology <u>and</u> the forthcoming explosion in technology performance.

Many classic approaches to strategy cannot deliver digital transformation and disruption. These strategy frameworks assume a relatively stable environment. The environment now is highly dynamic, powered by exponentially rising technologies.

We advocate a customer-based approach that maximally uses the rising level of technology performance.

Absent a '54' approach, you are likely to be left copying competitors like Amazon, which destines you to be forever one step behind. With a Strategy 54 approach, you greatly increase your odds to achieve strategic differentiation and achieve high growth.

Anedom helps clients invent digital-led businesses. It helps unearth customer opportunities, imagine new possibilities, design and code digital products, and launch and scale new business models.

The Anedom team has launched 60 apps/businesses, executed multiple business models, delivered 190 million downloads, and holds digital patents.

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