Article 1

How the Digital Revolution changed the world

In the last 20 years the world has changed beyond recognition and much of that change has happened in the latter half of the last two decades. The internet and the uptake in mobile technology has changed our lives to such an extent that the way we exist as a civilization has almost completely altered with very little point in history for comparison.

Industrial Revolution v Digital Revolution

While the industrial revolution is held in high esteem as one of the pivotal moments of civilization change, it was mostly concentrated to its birth place of Great Britain and the spread to Western Europe and the United States.

The internet and mobile revolution can be seen as bigger than the industrial revolution and while the latter could not exist without the former, the internet revolution has arguably had a faster and wider spread than any other revolution previously.

Nowhere is this more evident than Africa and other remote regions around the world. While living standards in certain areas of Africa have changed very little in hundreds of years, the introduction of technology and internet enabled devices are penetrating every sector of society. Products such as M-PESA that allow easy mobile money transfer and M-Farm allowing remote farmers to gain current market prices for their crops have changed the way African business is conducted.

The Internet Has Arrived

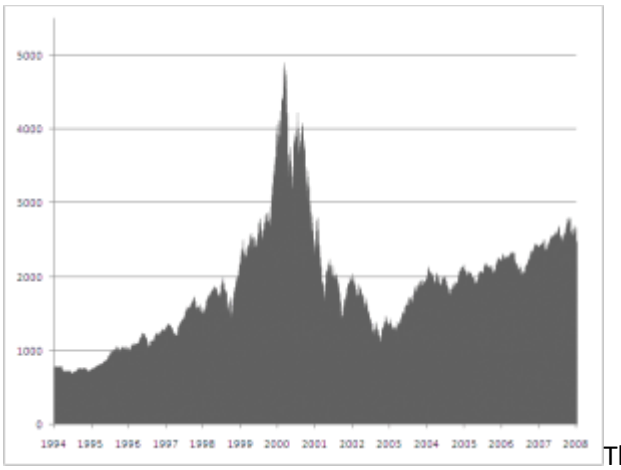
Over the last 15 years the internet has surreptitiously encroached on our lives at an unprecedented pace. Yesterday's revolutions played out over generations. Today's revolutions require years. Tomorrow's revolutions may happen over a weekend and it's all thanks to the internet.

Every facet of life has been influenced by the digital revolution, from our social lives to our entertainment and from our working world to our health. There are very few services and aspects of our life that cannot be controlled online from the comfort of our own homes on a desktop computer, tablet or even mobile phone.

Before the digital revolution there were companies and institutes that have been around for many years, small businesses have always existed such as local shops or local book stores however for major industry there have always been big players, big names that the little guy would never be able to take on. The banking industry for example, many of the banks in operation have been around since Victorian times and some even before. This was a time when any idea was a new idea and in a world where money dictated your social standing, certain companies and organisations flourished and continued to flourish until the digital revolution arrived.

The digital revolution opened the doors to the common man, removing the shackles of bureaucracy somewhat and allowing a direct route to success to be carved. This ability came, but not without some old world money issues beforehand.

The Establishment



The late 90's and early 2000's saw the now infamous *dot com bubble* which in a fury of investment lead to many companies getting big, to going out of business and losing millions if not billions of dollars.
At a time when everything was fresh and the internet was starting to take off, many of the old world corporations began heavily investing in everything and anything, it was said at the time that just by adding ".com" or "e-" to your company name would invite share prices to rise and cause investors to take note.
Sadly this culminated with the bursting of the bubble and the end of the gold rush. With this burst it brought about a shift in the way that internet companies start up.

The American Way

After the dot com bubble burst the way in which internet companies started, changed. No longer were huge wads of money thrown at any and every project and less was wasted on advertising and gimmicks previously riding high on the internet craze.
From this point on the world changed and the common man finally had the opportunity to embrace that change. If the internet has done one positive thing it is to open up an online world of opportunity, opportunity for each and every individual with a connection and an idea. Gone are the days of social standing based on money alone and a system that represses individuals if they don't hark from the right social circles, the internet revolutionised freedom to succeed and partly in thanks to the American dream.
In the old world of the United Kingdom and Europe, centuries of stature, standing and blood lines have dictated the standing of every citizen with very little social mobility. There was never any possibility to rise above your station. The United States has a slightly different ethos to this older world and it is one that the internet revolution can ultimately thank.
The American dream enables individuals to strive to succeed, failure is not seen as a stopping point, but a chance to dust yourself down, get up and try again. When an internet startup failed in the US, within months the "failure" would be working again on something new, bigger and better than before and such failure would be seen as a learning experience, a notch of on the post of ideas that didn't work reaching skyward towards one that will.
It is this ethos that has slowly spread across the globe with the digital revolution and changed perceptions about failure. No longer in my home nation (the United Kingdom) is a failure time to pack up and go home, but a chance to follow that American way and start again, create something better and continue on the path to success.

Who Did What, Where And When

Many of the biggest websites today started from individuals or small groups of individuals working from home, in a bedroom, a college dorm or on the move while commuting to work. No longer is a smart office needed or mass investment from venture capitalists.

Facebook is the biggest and likely most well known social networking website on the internet today. Started in a simple dorm room at Harvard University by Mark Zuckerberg it has grown in a short space of time to be the second most visited website in the world.

Google, the search engine of choice that now boasts their own browser, mobile operating system, laptop and more started off as a small project in a garage in California, United States. It has grown to become a household name that even has an entry in the Oxford English dictionary as a way to "*Search for information about (someone or something)*"

Bebo, at one point the third largest social networking site in the world, started by a husband and wife team in their home. The site was launched in 2005 and just 3 years later sold for a massive US$850 million. The story turned sour for AOL who purchased the site and the founders ended up buying the site back 5 years later for a paltry US$1 million.

While the US has undoubtedly provided many of the websites that we take for granted these days there are also a huge host of other countries who have developed globally successful sites from bedrooms, homes and small offices.

The digital revolution is often criticised for killing small brick and mortar businesses. The case of Amazon which within a short time frame went from practically nothing to the biggest online book selling business the world has ever seen. It has since progressed to a massive online site where nearly any product is possible to purchase. The downside of this is small independent book stores placed the blame of their failure on sites such as Amazon.

So while the digital revolution has created many jobs, it has also taken some in the process. In my current and previous work related ventures I have contacts from all over the world from the US to Europe and from India to Russia, each and every individual in this network of associates works in some way with the internet and without it, where would each of these individuals, businesses or even myself be? Without the internet, what would we be doing? The internet has enabled users worldwide to take an idea and make it a business with little more than a basic computer and internet access.

The Negatives

For all the growth, entrepreneurial development and opportunity the internet has offered individuals, there is a negative side, not necessarily from the internet itself, although there are plenty of negatives such as crime, scams and paedophilia.

These negatives come from the old world and big corporations, businesses who at one point have started off small somewhere down the line themselves, either in the early days of the developing world or when the internet and tech companies first arrived. Such companies who for no other reason but to protect their own profit share are prepared to stifle innovation and restrict the ability for individuals to *muscle in* on their well oiled money making machine.

Large corporations have held a monopoly on many industries for years, a position with which they exude great influence and power and ultimately are rewarded with great profit. This is a position that many corporations work hard to hold on to and for this very reason is why they have a vested interest to kill innovation before it has a chance to develop in to competition.

The most recent example of this is the Net Neutrality debacle facing the United States that would have a knock on effect worldwide. A group of greedy corporations who wish to extract extra funds from a system that was never intended to be split in to "those that can pay" and "those that can't". The implications of net neutrality being damaged, at the very least would mean less innovation. The majority of tech companies who are huge today would never have been able to grow had net neutrality not existed, this is in essence the biggest threat to online innovation that the digital revolution has ever experienced.

There are countless other stories of innovation being censored such as MegaUpload which although was a basic storage system found itself closed by the US government after added pressure no doubt from the entertainment industry.

When new technologies emerge it goes without saying that there will always be a criminal element who make use of them. In the case of MegaUpload it was a totally legitimate service that was somewhat used for storing illegitimate files. Could this of been prevented by better communications between the interested industries and MegaUpload themselves, or was it a case of stifle any innovation which threatened the traditional models as quickly as possible?

It goes without saying that the recent P2P movie app phenomenon that is Popcorn Time is one of the biggest game changers in terms of quality movie distribution. While wholly illegal in most countries the opportunity to turn such a service in to a monetized system could potentially change how online entertainment is streamed around the world. The chances of this happening however are zero and the old model distribution which is out of touch with the modern consumer will continue to prevail as the status quo is maintained.

The Past And The Future

 The printing press was a revolution in book and scripture production which allowed the mass spread and production of printed books, before it the availability of books to the public was extremely limited.

Centuries later public libraries became widespread throughout the 1800's in the United States and United Kingdom as well as elsewhere in the world, these before the internet would be the reference point for any individual from any background to gain information and further themselves.

Up until the advent of the internet, the cheap availability of books, such as their tax free status in the United Kingdom plus the ability to borrow books freely from public libraries broadened the intellect of anyone who chose to reference books for learning.

The internet is the library of the modern age with a wealth of information available on all topics. While there are some sinister sides to the internet, the ability to learn about any topic for newer generations has greatly improved the ability for overall knowledge to increase. No longer are children pigeon holed in to set areas but with a free and open internet they have the ability at their fingertips and within the click of a mouse to research anything that holds their interest. This isn't just restricted to the western or first world, this is available on a global scale.

It is for this reason alone that the purity of the internet must be upheld and why there are so many organisations, protests and pressure groups regularly keeping the flow of information free and the internet safe in its purest form. The digital revolution has moulded the internet into a service that would be considered beyond the wildest dreams of the inventors of the systems and protocols that make up its core. The magic of that system should be kept alive not just for our own generation but the generations to come who can benefit from such a magnificent invention.

Countries such as China and Iran heavily restrict internet access. Certain Arab countries scour the usage of their users to detect homosexual use and punish those it detects. Even our own countries are spying on our own citizens, or each other's and exchanging that information. The internet is under attack even for those of us who live in the free world and even more so for those that live under repressive regimes, this is a darker side to the internet, a use by government that was never intended to exist.

A restricted internet is the equivalent of a library only for the rich or schools only for those with a certain social standing. It is imperative that we continue to strive to keep innovation flowing and entrepreneurism alive.

Without a free internet and those who campaign tirelessly to ensure it stays free, we will be turned back in time to a Victorian era and become second class citizens in a world controlled by the rich, a world in which we will be locked in place, never having the ability to move forward or having the chance of social mobility.

Article 02

The Digital Revolution and its Impact on Industry, Consumers, and Government
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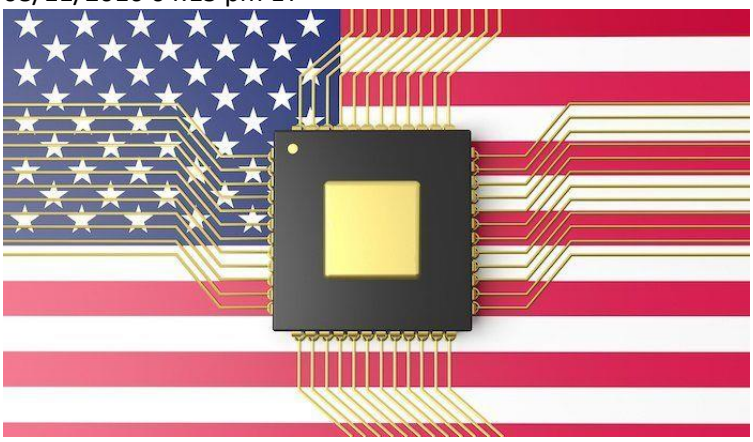

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The United States is undergoing one of the most significant and radical societal, cultural, and economic revolutions of its short history—quite possibly of all human history. The state of society, culture and economics of just two decades ago compared with what they are today is both disparate and staggering.

Consider that just 20 years ago communication was had predominantly via landlines, fax machines, photocopied memos, and physical mail. How many of those means of communication remain today? This change alone has had phenomenal effects on just about every aspect of humanity.

Add to the mix the vastly expanding array of digital technology that has penetrated every aspect of our lives, the increasing need for connectivity and transparency, and the exigencies of consumer satisfaction in business relations. In this manner, individuals, the marketplace, and governments alike have been shaped by a wave of digitalization that shows no signs of abating.

In this hefty article, I attempt to cover the beginnings of the digital revolution—1975 to the present—with a particular focus on its consequences for industry, consumers, and the government.

This is by no means an exhaustive article, but it is, nevertheless, a comprehensive one.

Technology Is the Engine of Digitalization

Without technology there can be no digitalization. The *prima mobile* of digitalization, if you will, is technology. And yes, it bears repeating.

The rate at which technological innovation arises and is absorbed into human life has compelled an adoption of digital in every facet of human activity. Even before new digital technology is pumped into the marketplace there are people who have mastered it. Then, almost as quickly as it is distributed, still newer digital technology enters the market yet again. The sheer rate of production is astounding.

The advantages of this are manifold and undeniable.

Just as electricity fueled the industrial revolution, catalyzing innovation, productivity, and economics, so too has the Information and Communications Technology sector catalyzed expansive developments in contemporary society. Thanks to technological innovation, we can now do previously unimaginable things. We can measure human activity on a daily basis; we can keep track of, plan, and consult on our finances using advice from experts; we can forecast with surprising degrees of accuracy; we have technology at our disposal that multiplies our productivity and efficiency exceedingly, and in a number of roles—as teachers, as learners, as leaders, as consumers, as entrepreneurs.

And yet, the technology as such is merely a tool. It would be useless without people to master it, and master it they do. People have grown surprisingly adept at apprehending the internal logic of technology. Conversely, designers and innovators have gotten much better at anticipating the needs and expectations of consumers. This reciprocal relation has made technology indispensable to contemporary human life.

Yes, people do without it; but the ostensive disbenefits of living a technologically impoverished life are unavoidable.

Digitalization is a descriptive and prescriptive term. Digital technology is part of our everyday, people demand that it infuse more and more parts of their lives, and business success now depends on it.

Digital Evolution – A History

Digitalization came in a series of distinct waves, each feeding into the other more rapidly than the last.

The **first wave** began in the 1960s, and was localized in the business sector. Large corporations would rent and buy entire floors devoted to housing large computational systems capable of performing basic analytics. This was revolutionary at the time.

The **second wave** began about two decades later—around the 1980s. The desktop and personal computer permitted faster processing, lower overhead costs, and slowly made their way into the homes of expectant Americans. Almost concurrent with the penetration of personal computers was the development and spread of enterprise software. This invigorated an enormous increase in at-home and at-work productivity.

Thanks to inroads from the first wave, the third wave, characterized by automation technology, swelled swiftly.

The **third wave** began in the late to mid-1990s when connectivity and commerce skyrocketed. The Internet completely changed the way people communicated, consumed, and shared information.

By the 2000s the Internet had gone wireless.

That set the stage for 24/7 connectivity, social media, public sharing in general and a shift in the meaning of privacy.

Now, we find ourselves in what could arguably be described as the **fourth wave**.

Big data reigns over all things digital, advanced analytics are a common denominator, and the Internet of Things is a burgeoning reality. These three distinguishing aspects of the fourth wave have fundamentally altered the way people live, do business, think, and perceive the world around them. The digital sea (to work the metaphor down to the last drop) we now live in is an aggregate of the waves before it. It is an inescapable cultural and social revolution.

What's more, from an objective vantage, change keeps rolling in faster and faster. The gap between the first two waves was roughly 15 years. Now? 5-10 years suffice to change the way we live. I really can't overstate how unique this is in human history.

Due to the meteoric emergence of digitalization, experts have developed an Industry Digitization Index (IDI), which is a tool that measures how each sector incorporates digital assets, increases digital usage, and digitally enables its workforce. This digital barometer is applicable to governments also. I'll explore that later on the article.

The US Industry Digitization Index

The US IDI indicates that some sectors have digitalization more quickly than others. On average, the overall economy is about 14 percent as digitalized as the most advanced sectors. Counterintuitively, on the whole, some of the sectors that contribute most are lagging substantially.

When we evaluate the US economy, it has reached approximately 18 percent of its total digital potential, which is assessed in reference to the upper bounds of digitalization taken from the leading sectors. This gap is scalable to individual companies, workers, and consumers. In other words, it isn't solely the result of averages.

The gaping chasm between those who have digitalized is constantly growing. Due to the amount of data at our disposal, it is clear that being digitally unequipped presents quantifiable disadvantages at every economic level. This is exacerbated by changes in consumer psychology and widespread acceptance of digital technology as part of everyday life. Those who lack access very quickly fall behind.

A Digital Consumer

Digitalization is undeniably changing the nature of the job market, of corporate competition, and of corporate infrastructure. These trends are observable irrespective of industry. Now, digital adroitness and integration are prerequisites for success at the individual and industry levels.

Consider that as of 2015, roughly 84 percent of US adults have smartphones. It is no wonder, then, that millions of North Americans are so accepting of technology as part of their daily lives. Their smartphones have become control centers for organization, entertainment, engagement, and news. The exposure to smartphones has helped people, as a society, gain technological fluency and accept digital technology as commonplace. This trend has been increasing exponentially since the late 1990's.

The linchpin of technology allows for faster advancement and the proliferation software and hardware in the market at an unprecedented rate. In addition to changing how people use and incorporate technology, it has also changed the way people acquire goods.

For example, as of 2014, US e-commerce sales topped $300 billion dollars. It has challenged brick-and-mortar sales, and completely changed the way retail companies and supply chains work. It is disruption and it's more common with each passing year.

The new consumer psychology, new business practices, and the presence of digital technology have changed the game. Disruption is now the best way to get ahead of the competition. If you can't dominate a market, you change it's dynamics.

The 21st Century: A Digital Age.

Businesses are realizing more and more that disruption is the ideal. Right now, conventional wisdom dictates that the most effective disruption is customer-oriented. Because consumers have so much digital technology at their disposal and are constantly connected, innovating on those axes is the fastest way to disrupt an industry. Just think, the consumers are there, surfing the Internet, accepting emails and notifications, in the middle of a stream of information, constantly. You need to make sure you are a prominent part of that influx.

Here are a few salient examples of disruption that highlight the its speed and its consumer-facing nature.

Facebook. It skyrocketed in a matter of 10 years. Just a decade after its inception it had attracted 58 percent of the US adult population. It now threatens to subsume the Internet itself, especially with the consolidation of publishers under Instant Articles.

Google. Google started as a search engine company. Now, merely 18 years later, it has extended its reach beyond search engines to machine learning, robotics, advertising, telephonics, biotechnology, messaging, and a number of other verticals. In this way, it has literally set the rules of engagement for every industry that it dominates. Google is a standard.

Apple. Apple is Google's closest competitor and has been synonymous with innovation for many years now. Although it has recently come under some scrutiny, it commands a massive cult following, and million os faithful users. Exactly what it's next big move will be is unclear, but since the late 90s it has been an unstoppable force. Now, it's a worldwide technological titan.

Uber. Uber was founded in 2011, and since then it's valuation has increased by the 10s-of-billions every year. Uber is now a transport giant and recently launches UberEATS, an app/service the may presage a revolution in the restaurant industry.

Uber is the best example of the point I am trying to make here. In 4 years time it has recreated the taxi industry to the dismay of many around the world. And yet, it continues its ascent and shows now signs of slowing down.

These companies are part of a small yet influential cadre of companies that constitute the cutting-edge of digital advancement. In a sense they have spearheaded digitalization.

The benefits that they reap from technology are set in relief against the losses that non-digitalized business experiences. Yes, the businesses may stay afloat but the possible benefits they could gain from digitalizing their internal operations and their offerings are manifold.

Be that as it may, staying at the cutting-edge is not as easy as it once was. The competition is intense, and the democratization of technology makes it difficult to keep advancements a secret for long. This make innovation easier, and hence, disruption much more likely.

Let us not forget the humans that add substance to these companies. They too face tremendous disruption in the workforce. Competition for specialized skills is tight, and in the same way, those who fail to stay abreast may fall behind—and fast.

Digitalization for the Little Guy

The disparities in opportunity for those who adopt and master digital technology and those who do not are astronomical.

At the consumer level, the average smartphone-user is not taking full advantage of the raft of applications available to create substantial efficiencies and value. Conversely, those who do save immensely on time and money: gas, flights, discounts, hotels, books, car repairs, etc. It all accrues over time.

In the workforce, the ability to exploit digital technology is even more imperative. It has become an expectation. According to a 2014 analysis of user profiles conducted by LinkedIn, they determined that the top five skills of high earners on LinkedIn are related to cloud computing, data mining, and computer programming. They also found that digital occupations, on average, pay more than double the median annual wage.

In dismal contrast, those who have seen nominal wage increases are concentrated in job sectors with more limited job growth. (There is, of course, the issue of automation that plagues a number of job sectors. That's an important topic for another time.) It has been noted that industries with high digital penetration experience much higher wage growth and higher overall revenues.

The point is that the digital worker will experience greater wage growth, a wider range of job opportunities, and a greater degree of freedom compared with their traditional, less digitalized counterparts. And, consumers who learn how to exploit digital technology set themselves up to save big.

The Digital Worker Persona

This workforce and consumer climate has affected culture and societal norms. It is difficult to track why exactly, but the changes are conspicuous.

I'll paint a picture.

The digital worker blazes through the labor market with confidence because her skills are her currency. She uses eBooks and Coursera to fine-tune her learning. She cultivates social networks, bolstering them with endorsements from co-workers, friends, and the like. She uses those networks to connect with thinkers, innovators, and potential opportunities to grow. When an opportunity presents itself, she goes online to research before making any decision. She reads reviews, looks at statistics, read articles. When you negotiate with her, she knows her stuff. This confidence in technology makes her highly efficient and productive. She adeptly uses videoconferencing and communication technology like Slack and Yammer. She collaborates using cloud-based technology. She navigates digital marketplaces with ease. That's why she'll always have a side hustle. She can be a web developer one day and a tutor the next. Her job market is international. Platforms like UpWork and Freelancer.com help her make the best of her time and experience. When she steps online, she steps into a second home: she's comfortable, at peace, and knows every nook and cranny.

The digital worker can be any number of things, focus on any number of tasks, and acquire expertise independently, both inside and outside of the workplace. Her motivation stems from an entrepreneurial craving to succeed. Success, however, does not necessarily mean more money. Success means the acquisition of knowledge, more freedom and more connections; it means traveling and building collaborative and fulfilling relationships. It means things that once seemed fanciful but no more because all of it is made attainable through digital technology.

If this sounds hyperbolic to you, then you haven't fully internalized the power of digital technology. What's more, digitalization is less about gadgets and software. It's a mindset, an ideology towards business and toward life.

Digitalization Is a Mindset

Digitalization has compelled people to change the way they do things. The four principal areas where these changes are taking place are: internal operations; customer acquisition and retention; innovation and collaboration enhancement; and, workforce organization.

Internal Operations.

A growing number of companies have used digital technology to revamp their operations in order to manage complexity and improve efficiency. Retail companies in particular are at the frontier of operational makeovers.

Database management systems, client-server platforms, and enterprise planning software constitute the first order of digital innovation in the retail sector. This has given way to computerized management tools for inventory and delivery technology. The height of this technology is real-time monitoring sensors, data-retrieval from sensors, and customer-employee feedback.

E-commerce typifies these advancements and puts them in the hands of customers and sellers alike. Amazon, for example, was conceived as a fully digital retailer. To date it is at the cutting edge of e-commerce. Amazon has pioneered predictive algorithmic technology, digitized logistics, and automated delivery robotics that suffuse the entire retail industry.

Banking institutions have also adopted a number of retail technologies in an attempt to increase efficiency and customer satisfaction. Process apps have transformed low specialty, behind the scenes work functions, into paperless and people-less workflows. Most bank services are available on our phones. It's impressive and ostensibly precludes the need for brick-and-mortar locales.

Digitalization at the operations level is mainly about optimization through automation. And all of that automation is ultimately aimed at improving customer experience and at raising profit margins.

Customer Acquisition & Retention.

Digitalization grants access to larger customer-bases and more specific customer-bases. Netflix has staked its claim to fame on this truism.

Netflix started with a subscription-based DVD mailing service and grew into a streaming titan. By 2014, almost a third of their streaming customers were located abroad. Netflix has used programmatics to retain customers by learning more about their preferences and make targeted suggestions. Initially it was a paltry service but has grown in accuracy. Now, customers come to expect programmatic suggestions and increasingly cannot stand channel-surfing and other vestiges of cable TV.

When a company finds an innovative way to acquire and retain customers, it can rapidly change an entire industry. Amazon and other purveyors are using this technology to satisfy customer expectations, save time, save money, and increase profits.

Intelligent and automated systems compile information about user's behavior, preferences, and feedback every second of every day. All of the data gleaned helps determine discounts, pricing, store layouts, and merchandizing assortments. *In this way companies can manage customer satisfaction and virtually control expectations by analytically catering their goods and services.*

Innovation & Collaboration.

Digitalization has created new vehicles for collaboration and thereby redefined what collaboration is.

In the manufacturing industry, design software that includes real-world, physical constraints has significantly reduced product development. Designers can test products in sophisticated modeling software well before they hit the development phase, saving large sums of money.

In addition, cloud-computing tools let professional collaborate around the world simultaneously. When working on a single product, developers, suppliers, and distributors can communicate seamlessly to determine every aspect of a product rapidly, accurately, and cost-effectively.

The pharmaceutical industry has benefitted immensely from digitalizations of this kind. The increasingly large data sets available from electronic medical records, remote monitoring devices, and clinical settings have accelerated drug development, and enhanced the efficacy of clinical trials through statistical analyses based on real-world data.

When once private information is shared publicly and through the industry, it creates opportunities for innovation, improvement, and collaboration on a scale that not only saves money but can even save lives.

Workforce Organization.

Companies have used digital technology to automate complex and simple workflows, to create new, highly-specialized and high-return employment, and to free up employees to perform higher-value work. Much of this has been made possible through data insights, analytics, and forecasting.

Companies have used those insights to improve their bottom line in a number of ways. Some have redistributed their division of labor, outsourcing jobs for higher returns and lower overhead costs.

These reconstructions of traditional workplace work distributions have created entirely virtual work arrangements.

Human resource allocation in general has improved.

For instance, nurses can now be matched to departments and cases based on training, specialized knowledge, and aptitudes by an intelligent computer system. This relieves the pressure and cost of scheduling, and advances medical care. Along this vein there are sophisticated digital tools used to vet applicants, test them for on-boarding, create comprehensive teams, and both collect and analyze performance information.

These changes have altered traditional distributions of labor, department infrastructure, and the very definition of what it means to be an employee.

Digital Isn't Just Virtual

Digital assets. That term refers to both digital goods and services. The introduction of digital assets has effected large-scale change at both the macro- and micro-economic levels. I think it is important to understand the nature of digital assets and how, for some, they have turned into fountains of wealth.

Multiple sectors have shifted their business models toward digital assets. They now sell digital products and house large repositories of data paired with detailed analytics that allow them to create revenue streams for themselves and others. IBM purchased the digital assets of a weather company to bolster the artificial intelligence capabilities of their business programs. For suppliers, distributors, and vendors, the weather is a crucial consideration that often affects pricing and efficiency. This technology let IBM mitigate those factors and monetize them.

Some well-known digital assets are Facebook, iTunes, eBay, Amazon, LinkedIn, and Airbnb. These are platforms that provide copious amounts of useful data about users, which can help companies disrupt business models quickly and profitably. Although some have faced scrutiny about selling data or making it public, they still use it internally to inform business decisions. Facebook famously tests on its population in segmented and isolated ways as a means of reaching conclusions about effects on the broader population.

EBooks and e-literature are digital assets. The media industry has derived savings and increased revenue streams from the emergence of digital literature. This change is exhibited by news outlets, magazines, publishers, and music labels. Unfortunately, as more business switch to digital assets, it displaces traditional businesses who depends on the physical versions. Barnes & Nobles, for one, was forced to shut down many, many brick-and-mortar locations. The have now

invested largely in the Nook as a means of staying the tide. *The New York Times* has attenuated decline in physical circulation by increasing online subscriptions and advertising.

These changes are made possible because digital assets are low cost products. They require little to no initial capital and can generate disproportionately large returns. And that's because, in a very simple sense, digital assets are little more than information.

Digital Is Information in the Purest Sense

As an industry ecosystem is digitalized, previous customer-company interactions are upended. The access to once hidden or obscure information creates pricing pressures, in addition to undermining once profitable business models, as we explored above.

Consider the impact of open access to highly specialized information. Harvard undertook an effort a few years back to digitalize their entire case law library. The goal was to put this vital information in the hands of more people, thereby promoting justice for all. They scanned some 40 million pages. For businesses predicated on retrieving and interpreting such information for a fee, this represented a critical disruption.

The reality is that digitalization is a force of creative destruction. Access to information has created entirely new industries which disrupt traditional ones. Consider the impact of Airbnb, Uber, Flipkey, and HomeAway.

From 2000 to 2014, online hotel booking income rose from $14 billion to over $150 billion. The number of travel agents, on the other hand, fell about 48 percent from 124,000 to 65,000. The hospitality industry as a whole has not suffered greatly; however, it is reasonable to assume that it may in the near future.

The US hospitality industry owns approximately $340 billion in fixed commercial assets. Platforms such as Airbnb can generate digital trade in more than $17 trillion on residential assets without needing to own a single physical location. The hospitality industry can't undo this rising trend but it has responded by developing apps and platforms to ease transactions with customers.

This falls squarely into the category of share economy business models. It denotes business that leverage existing assets through connectivity and create self-sustaining environments with services and goods that everyone can access, for a fee. It's powerful and decentralizing, and ostensibly infinite.