

THE PRACTITIONER'S GUIDE

**DIGITAL TRANSFORMATION
IN THE HI-TECH INDUSTRY**

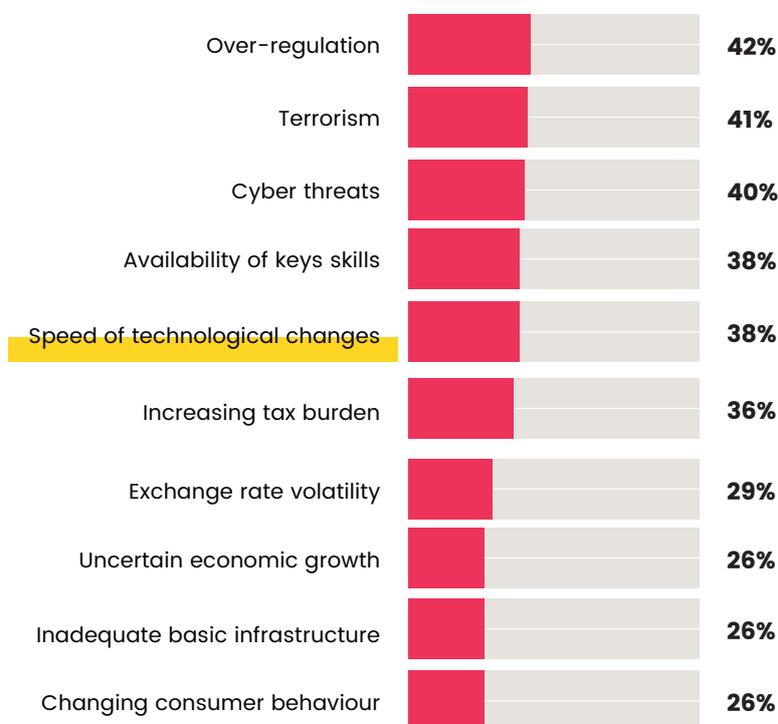
Introduction

Technology has disrupted and accelerated change in nearly every industry around the globe. According to a recent Gartner Survey 47 percent of CEOs are being 'challenged' by the board to make progress in digital business, while 20 percent of CEOs report they are now taking a "digital-first" approach to business change. A sizeable 56 percent report that their digital improvements have already increased profits.

The hi-tech industry has been impacted the most as a result of digital and technology innovation. Some would argue that the industry has been disrupted a little too much. A recent survey by PricewaterhouseCoopers (PwC) found that amongst business-related issues, '*speed of technological change*' ranked second as a threat to an organization's growth prospects that CEOs were 'extremely concerned' about (Figure 1).

Figure-1

Considering the following threats to your organization's growth prospects, how concerned are you about the following?
(Chart shows percentage of respondents answering 'extremely concerned')



Source: PwC 21st CEO Survey 2018

In this report, we look at the impact of digital on the hi-tech industry, and the trends and technologies that are driving this change.

Impact of digital on Hi-Tech

Today, digital pervades every aspect of our lives: we are digitally connected, socially networked, and better informed than ever before. The power of immediacy has changed how we view, interact, and communicate with the world around us. From easy and quick access to information, to sharing our likes and dislikes with like-minded individuals across the globe, the rules of engagement have irrevocably changed. With expectations higher, attention spans shorter and competition more intense now, consumers are clearly in the driving seat, while businesses try and catch up.

It is in this environment that companies in the hi-tech industry compete for a seat at the table, while operating under slim margins, high capital expenditure, shortening product lifecycles and managing a global supply chain (Capgemini Report). Digital is helping hi-tech companies change the narrative, which starts with customer experience.

Customer experience is—and will continue to be—the driving force behind technology advancements. It is the companies that engage deeply with their customers and provide them with great experience that will stand tall in the future. Defining the customer journey helps teams develop clarity of vision and focus on their customer engagement strategies and implementation plans.

We already see companies doing this. Many hi-tech companies have moved from selling widgets to selling end-to-end solutions—and, in some cases, delivering these on a subscription-based model or through the cloud. These business transformations have gained significance and momentum as a result of maturing customer requirements.

According to an Infosys study (*Manufacturing and High tech: Human amplification in the enterprise*), the top three digital transformation goals of organizations are to become more agile and customer-centric (52%), build a mobile enterprise (51%), and deliver great employee experiences (42%).

According to the report, only 16% of enterprises have achieved their digital transformation goals, 54% have made significant progress, and 9% have only made limited progress.

Key Emerging Trends

From selling products to offering solutions

Apple, with its systematic approach to building an ecosystem that supports its products, ushered in an era of companies controlling the entire customer experience, end-to-end. Customers are no longer satisfied— or willing to—put different products and software together. They want integrated solutions that address specific problems. Hi-tech companies have responded by developing integrated platforms that combine hardware, software, and services.

Picture this:

Royal Philips, a diversified technology company, based in the Netherlands, produces complex products for healthcare, consumer lifestyle, and lighting. In recent years, the company has grown increasingly concerned over stiff competition from lower-cost providers. The company has devised several tactics to ward off the threat to their market share. In the healthcare sector, Philips plans to offer medical CT scanners as part of a solution that includes consulting services and integration with several of its other products. “Integrated solutions should appeal to hospitals,” says Martin Mocker, a research scientist at the MIT Sloan Center for Information Systems Research. “They really do work together to address their business problems.”

In another part of the world, Lexmark International—well-known as a manufacturer of computer printers—is now transforming itself into a provider of integrated digital solutions. Their solution is a piece of hardware that is bundled with larger printing devices that help customers manage invoices, sales orders, images, and video.



Strong artificial intelligence - R&D into artificial intelligence that has human-like abilities such as creativity, emotional intelligence, awareness, etc.

A new economic model

Hi-tech firms have had to transform their thinking and have moved from a 'product mindset' to a 'solution mindset.' These changes—from products to more iterative solutions, connected experiences, and service-based business models—have shattered the hi-tech industry's traditional methods of operations and economic models.

For example, traditionally, hi-tech firms would deploy a small dedicated team to set up an enterprise solution for a limited period of time. Customers would make sizeable investments at the beginning and smaller ones in consecutive years, in the form of service costs. Contrast that with today's scenario, where customers want to 'own' the creation process by partnering with hi-tech suppliers in an on-going manner. They also want a subscription-based or a pay-as-you-go pricing model with little or no payment upfront. Hi-tech suppliers have to adapt to these changes quickly and responsibly. They are adopting new ways of operating that increase their ability to be agile and more responsive to meet the demands of today's customer.

Consumerization of technology

In the early 1950's, computers were the size of whole rooms with processor speeds that were much slower than what they are today. In the last decade or so, technology has made significant advancements, while the cost of technology has decreased substantially. This has resulted in the wide-scale adoption of technology devices. This 'mass' adoption has placed powerful computing and communication devices in the hands of consumers, which in turn has led to an army of developers who design and code applications, widgets and software that fit the requirements of consumers, be it shopping platforms, games, social networks and others. Today's end users are also employees of enterprises, and they bring their expectations of how digital technologies should work, to the corridors of their workstations. Customers now expect the same level of flexibility, intuitive design, and speed that they experience in their personal applications, to exist even in their enterprise applications.

This has forced hi-tech enterprise suppliers to focus on delivering highly customizable, feature-rich, intuitive experiences, that work across desktop and mobile devices, and that also include social engagements where possible. This is relatively simple to do for consumers, but in an enterprise environment where there is a high degree of integration, things are often more difficult than it is easy.

Personalization

Personalization is the darling of the technology world right now. It is the driving force behind much of the digital transformation that is taking place today. It marks the difference between businesses that succeed and those that do not. Personalization is important because it gives companies the opportunity to speak the language of their target audience—be it demographic, industry, role or problem specific—which is a powerful tool when it comes to customer conversions.

Today, only 22 percent of global customers acknowledge that the companies with which they do business, tailor their experiences based on a deep understanding and appreciation of their needs, preferences and past interactions. (Accenture Strategy, Global Consumer Pulse Research, 2017).

Many elements make it possible for companies today to create more personalized customer experiences. A proliferation of data, social technologies, predictive analytics, artificial intelligence and machine learning, and newer technologies, such as Natural Language Robotics and biometrics, manifested in devices such as digital assistants, are helping businesses create path-breaking customer experiences.

Google, Netflix, Amazon, and other hi-tech players are adjusting web experiences in real time to user behavior on their site. Using predictive analytics has enabled these companies to discover individual customer preferences and to identify the next best activity for their marketing efforts. They can initiate more direct conversations, resulting in a better understanding of their clients and generating revenue growth.



Affective computing - Artificial intelligence that aims to understand as well as use emotion. It's the machine equivalent of human emotional intelligence.

Picture this:

Companies like Netflix and Amazon have capitalized on the strength of AI to personalize their communication to customers. Every customer interaction is based on historical behavior and purchase patterns. Consumers often cite Amazon's legendary recommendation engine as being incredibly accurate, so much so that it unnerves them. Netflix helps customers discover previously unheard of shows and movies based on viewing preferences, serving as a personal curator.

In another industry, Apple is now making facial recognition an accepted standard for security and convenience, after its extremely popular fingerprint scanner. Consumers can now use facial recognition to open their phones or authorize action on their mobile, such as paying a merchant, without having to remember complex passwords.

We believe personalization will increasingly become the norm for all customer interactions. Businesses who do personalization well will win the hearts and minds of its customers.

Winning the customer's trust

One of the prerequisites of personalization is acquiring enough customer data to be able to create a working customer profile. With growing concerns over privacy issues, customer trust is at a premium today.

Two-thirds of consumers surveyed in a study by Accenture were willing to share personal information with companies but said they would only do so in exchange for some perceived value (Accenture, Digital Trust in the IoT Era, 2015). Businesses would do well to remember this.

Intelligent personalization assumes trust. Trust is earned over a series of good interactions, but it can be eroded with just one bad interaction. Companies must counter that risk by continually presenting themselves as trustworthy, keeping to their promises and upholding their end of the value exchange agreement.

Picture this:

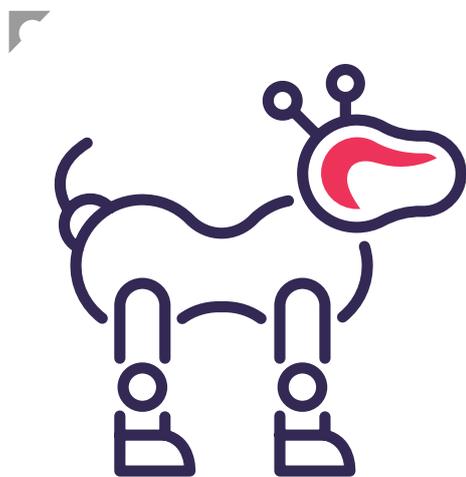
In September 2017, in the wake of Hurricane Irma, one Tesla owner who was in the evacuation zone contacted the company with a concern that the 200-mile range of his 60 kWh Tesla Model S battery might be inadequate for him to reach safety. Tesla responded by providing the owner temporary access to the battery's full 75 kWh of energy, which translated into an additional 30 to 40 miles of driving range. The company also proactively unlocked additional range for other Tesla owners in the area who might also need the extra boost to get out of harm's way.

Mobility

Mobile has become ubiquitous among today's digital consumer. Mobile technology offers hi-tech suppliers anywhere-anytime access to customers. This has been made possible not just through the use of smart devices, but also through software that connects them securely with enterprise systems.

More and more hi-tech firms are using mobile technology to connect with customers in some way, such as mobile advertising. They are also actively using mobile technology to interact with customers, receive feedback, and problem solve, enabling them to capture data for analysis from those interactions.

Given this trend, going forward, it is imperative that businesses have a clearly defined mobile strategy built into their overall digital plan.



Artificial life - Artificial intelligence that mimics living processes or systems, or both.

Social engagement

Social media is transforming the way hi-tech companies interact with customers in many ways. Here are some:

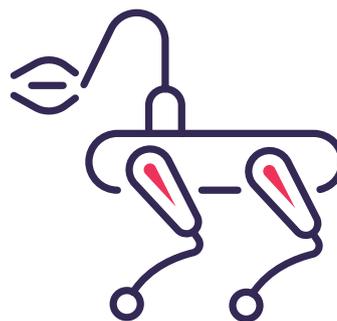
- It illuminates what the market wants and how customers view current products and features. E.g., comments and suggestions on social media posts.
- It helps hi-tech firms listen to, and engage with, customers. E.g., actively following positive and negative posts about the company or brand.
- It helps develop personalized communication that is in keeping with the customer's profile. E.g., remarketed content and ads displayed.
- It helps create an on-going and connected customer experience. E.g., customer support on social channels.
- It helps fuel advocacy. E.g., customers as brand ambassadors on social networks.

A recent report by Forrester (*'Use Social to Bridge the Gap between Marketing and Customer Service'*), explores how social can be the glue that binds marketing and customer support thereby creating a seamless digital channel for customers to interact with business. Businesses can also use social to elucidate the brand story to build customer engagement.

For B2B businesses, there are many professional communities and networking sites where a company's presence can be leveraged to establish thought leadership.

Social apps within the enterprise provide employers with a feedback loop to help meet and manage employee expectations while inspiring and helping employees remain engaged and content in the company. Social apps within an enterprise also help in breaking hierarchy and promoting sharing of ideas more freely, leading to greater innovation within the company.

Artificial stupidity - Artificial intelligence dumbed down to seem more pleasing, useful or accessible to users.



Picture this:

Adobe has changed the way it interacts with customers. In the past, the company had only periodic customer interactions, mainly through its resellers and partners. Today, Adobe interacts with customers continually across multiple channels, including social media, display ads, email, call center, direct sales, and the company's website.

Innovation

Technology innovation is the weapon of choice for startups and new entrants. Hi-tech companies across the globe are continually challenged as new competitors emerge and customers' expectations rise. Rapid changes in technology and market dynamics make it difficult for these companies to stay ahead of the curve and grow. The need of the hour is to innovate quickly and address opportunities in the market faster than ever before.

From chip designers to software companies, there's enormous pressure on hi-tech companies to innovate, to differentiate themselves from competition and meet changing customer demands. This added complexity means that they need to be more connected than ever before to their customers to make sure they deliver the right solutions at the right time. To be able to do this, they need to have full visibility and control over all their business functions in real-time. In short, they need to transform into lean and efficient innovation machines.

Today, every company is a tech company. Tesla and Uber are tech companies first and then automobile companies. However, disruptive technology doesn't just let in new competitors from other sectors; it also breaks down barriers within the tech industry. Often this is a result of innovation by firms looking for new solutions in the market.



Blockhead - Computer programs that look things up in a database to simulate artificial intelligence.

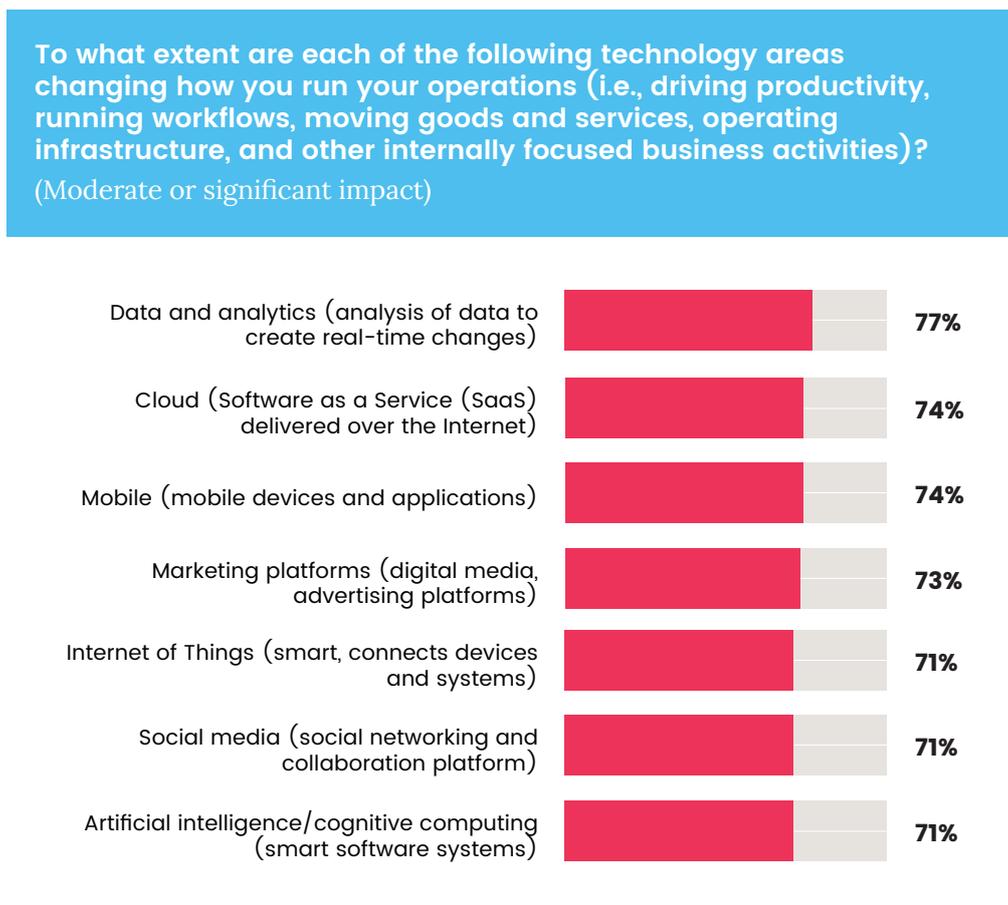
Key technologies to watch

In this accelerated digital world, which technologies are essential?

The industry has coined an acronym, SMAC, short for Social Media, Mobile, Analytics, and Cloud. As the acronym implies, these technologies are interrelated, though when combined, the whole is greater than the sum of its parts. Some call this combination the SMAC stack. Add to SMAC, the Internet of Things (IoT), big data, and fast IT platforms such as in-memory computing, and you have the essential building blocks for digital transformation.

In a commissioned study conducted by Forrester on behalf of KPMG, data analytics, mobile and cloud were identified as the most disruptive of technologies that are changing the way companies operate (Figure 2).

Figure-2



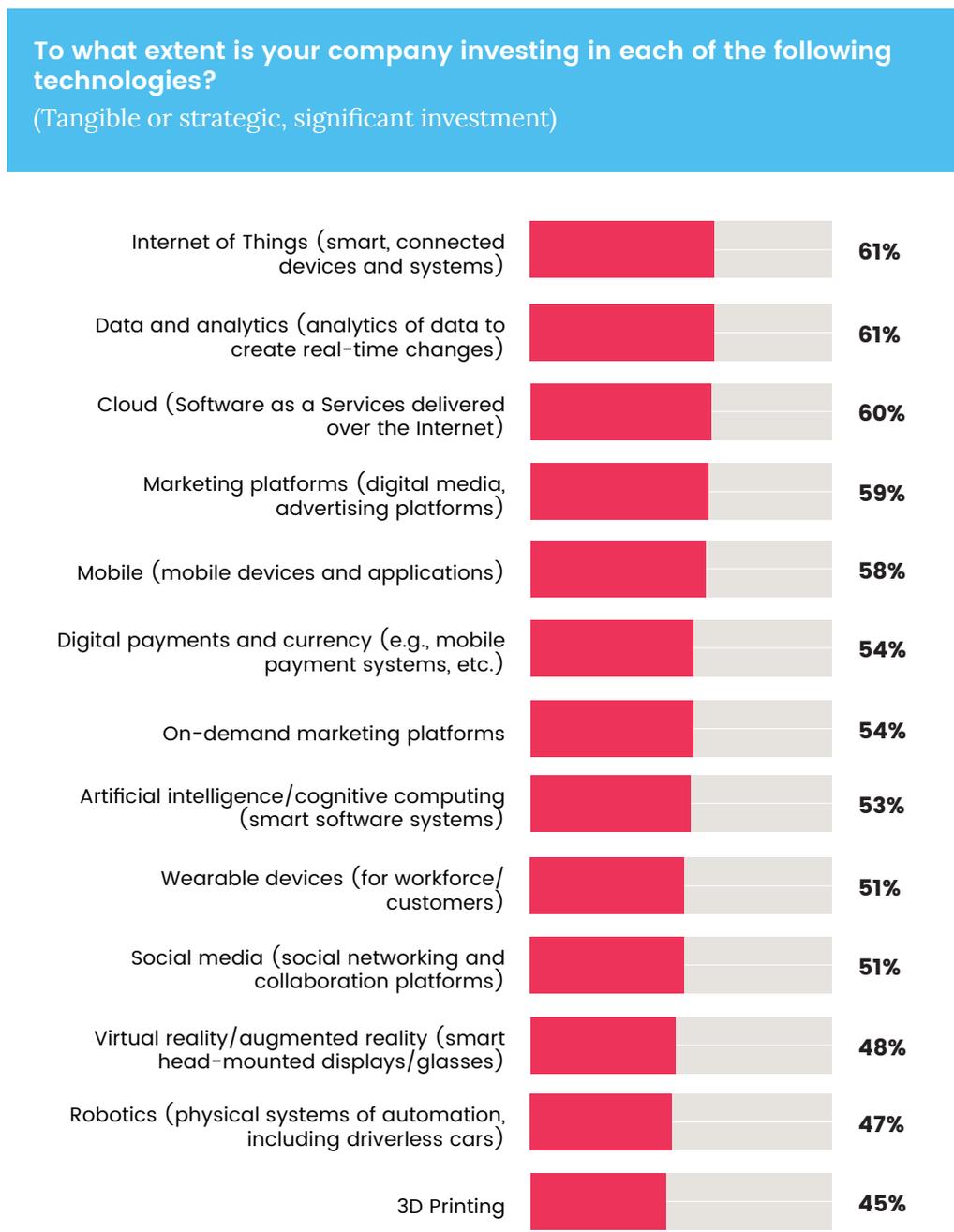
Base: 580 business and IT decision makers at technology companies.

Source: A commissioned study conducted by Forrester Consulting on behalf of KPMG, January 2016

A combination of cloud, data & analytics (D&A) and digital payments, for example, allows enterprise software providers to target small and medium businesses with subscription-based or 'pay-as-you-go' solutions.

As per the same study, IoT tops the list of investments, followed by cloud and D&A. Respondents are especially keen to enhance their products and services, improve productivity, cut costs and increase their competitive advantage (Figure 3).

Figure-3



Base: 580 business and IT decision makers at technology companies.
Source: A commissioned study conducted by Forrester Consulting on behalf of KPMG, January 2016

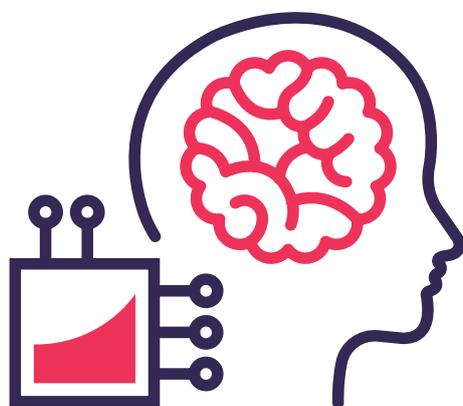
Cloud computing

In the past, hi-tech firms used a 'device-deployment' approach, but this proved to be costly in terms of time, money, data, and effort. Updating software required a systems engineer to update each machine physically, while a system failure resulted in the loss of all data located in the system since the last backup. Then came cloud technologies.

The value of cloud computing is not just in the technology itself, but in the promise of increased mobility, agility and scalability, all of which are essential to the survival of the modern day enterprise. Mobility enables teams to work virtually from anywhere, increasing efficiency while reducing overhead. Companies like Dell, Cisco, and HP, are working toward a Cloud-as-a-Service solution to make it even easier for businesses to adopt the cloud. There are now solutions for public, private, hybrid, and heterogeneous cloud structures to address any kind of concern that a company might have in deploying the cloud.

Using disruptive technology to increase monetization

The cloud has also enabled hi-tech companies to reach customers who were previously inaccessible. Take enterprise software as an example. The traditional go-to-market model involved a large sales force and integration team that focused on bigger, often multinational, corporate clients demanding tailored solutions. The initial outlay made it difficult for small and medium-sized businesses (SMEs) to invest in the technology – until now. Cloud has leveled the playing field by enabling a largely automated online sales process with a standardized solution and cloud-enabled after-sales support, which makes these offerings accessible to a far wider audience. The cloud has also increased the ability of SMEs to reach out to large corporates with their service offerings.



Committee machine -
A neural network that scales artificial intelligence by combining results from other neural networks called 'experts'.

Picture this:

Consider Adobe Systems, a provider of software for creative professionals and consumers that has recently undergone a business transformation of the digital kind. In the past, Adobe sold boxed software; today Adobe has moved its software to the cloud and generates most of its revenue from there. According to a recent case study, this has worked out well for Adobe, as the creative software giant is able to monitor usage which in turn helps the company analyze trends and make adjustments to the software based on usage patterns. The resulting change has been dramatic. Adobe used to release new versions every 18 months. But now upgrades are made continually, based on the company's observations of customer behavior.

AI & Data analytics

The challenge with data is data hygiene and consolidating that data into a single customer view. Hi-tech businesses source data from multiple, and often disparate, channels and platforms, often involving different technologies. Converting all that data into a single, unified snapshot of the customer has proved to be quite a task. A 2016 Epsilon report identifies the lack of technology to integrate data and the ability to integrate multiple sources and technologies as the two main challenges to creating a single customer view.

Converting data into insights is the substance of analytics, a discipline that analyses data from multiple sources, recognizes patterns and delivers valuable insights. AI can help in drawing insights from data that companies can put to use to serve their customers and their own business interests better.

AI, for instance, can analyze data from a production line and predict inefficiencies and the probability of breakdowns, helping to improve performance. D&A can drive better forecasting by analyzing sales trends and linking it to the supply chain, thus optimizing purchasing and inventory, which, in turn, can help companies cut costs and react faster to changes in demand. D&A can also be used to deliver more personalized customer experiences as it can crunch through big data and provide insights that can improve the accuracy of targeting and remarketing. Process automation tools using AI have brought speed and efficiency to routine, repeatable, back-office tasks.

Today, companies like Adobe, HP, Lexmark, and other hi-tech firms, are investing in 'in-memory computing' technology, which can scale to handle enormous volumes of transactions. According to an IDC report, "The hi-tech industry will

be the head of the spear for in-memory computing. It all comes down to speed, and high-tech is looking at the clock while others are looking at the calendar.”

Internet of things (IoT)

The magnitude of data being captured today is astonishing. One contributing factor to this ‘big data’ is the Internet of Things, a technology that records and broadcasts data, such as status reports, error messages, customer usage habits and more, from sensors in instrumented devices (Figure 4).

Although today’s hi-tech firms could easily connect many of their products, managing the voluminous data, and analyzing and gaining insights from it, can be challenging.

Picture this:

For Lexmark’s managed-service customers, sensors in the printers broadcast data in real time, which is analyzed for consumption-based billing and to predict when a device needs toner or is ready for service. It enables the company to provide proactive support rather than reactive. Similarly, Philips could capture and analyze anonymous data from its Hue lighting solution to gain insights into how customers use the product.

To make all this work, hi-tech companies must have an IT platform robust enough to manage the data and deliver timely insights.

Companies like Amazon and Google, which are already embedded in customers’ homes through personal assistants, map functions, and “home” controls, are well ahead in the race to take advantage of the immense amount of data that IoT provides. They have the power to analyze and use those insights for greater market power.

In a study by KPMG, almost half (49 percent) of survey respondents stated that IoT is a crucial driver of business productivity – from improving employee efficiency and project timelines to restructuring supply-chain processes and more. For example, when every aspect of a production process is connected 24/7 through IoT devices and supported by the cloud, those responsible for control can monitor the process in real-time, enabling them to spot faults and proactively maintain and repair equipment, often without the need for human intervention.

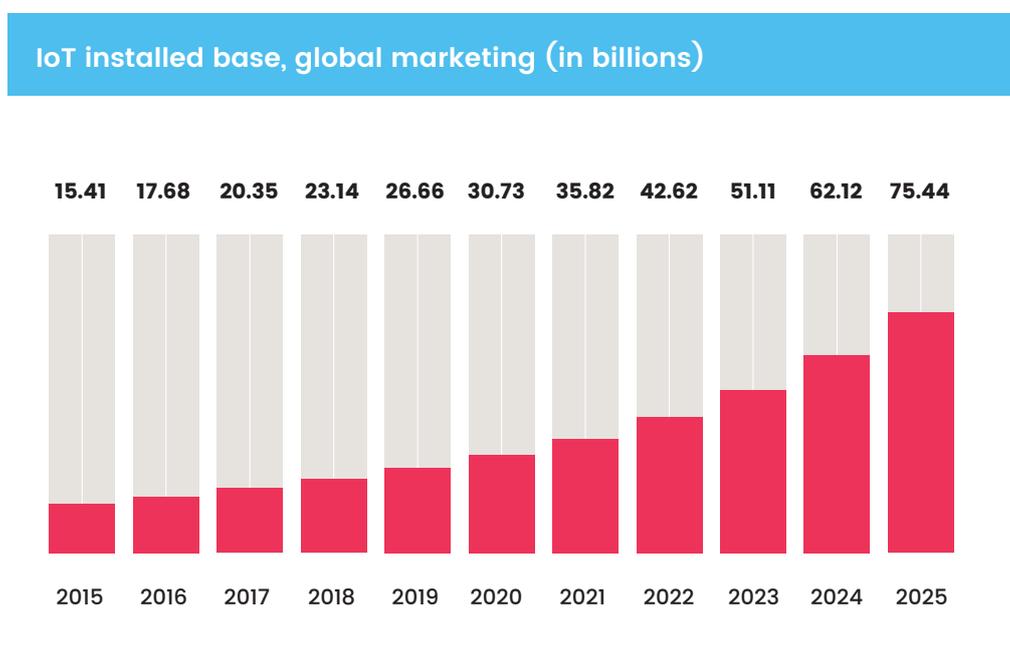
Since most tech companies are now driven by software, with the hardware increasingly becoming commoditized, IoT opens up opportunities for businesses to remotely connect to products and carry out upgrades, making the process both faster and cheaper.

According to a report by IHS, the IoT market will grow from an installed base of 15.4 billion devices in 2015 to 30.7 billion devices in 2020 and 75.4 billion in 2025 (Figure 4).

Picture this.

According to Bloomberg, GE is exploring the value of connecting lightbulbs. These connected lightbulbs could be used by retail customers like Walmart to keep track of foot traffic through a store, by cities to monitor street lights, or even by the police to track the location and direction of gunshots so they can respond more quickly.

Figure-4



Source: IoT platforms: enabling the Internet of Things - IHS 2016

Other emerging technologies

In addition to the technologies mentioned in the previous section, here are some others that are creating ripples in the hi-tech industry.

Automation technologies had a controversial start, yet companies continue to invest in it, as the benefits they receive far outweigh associated problems. Automation is broadly used to introduce efficiencies in repeatable and routine tasks and to cut costs. However, today's intelligent automation has gone a step further and enables intuitive customer interactions and engagement through solutions that include bots, robots, and other smart self-service solutions. (*'Automation technologies for customer engagement,' Forrester*)

Wearables are useful for diagnosis and inspection. It is a source of data and information about the customer, and about products and procedures. By providing real-time information, wearables can help employees monitor and streamline production and quality control.

Digital currencies are reducing the costs of transactions, enabling firms to exchange payments with third parties, and raising the level of trust in transactions.

Virtual & Augmented Reality is another emerging technology gaining ground for providing rich, immersive customer experiences. For instance, Facebook leads in corporate acquisitions with 11 purchases via one of its subsidiaries. Its goal: to incorporate VR into social media.

Marketing Platforms enable companies to expand their reach, introduce efficiencies in their marketing activities, be consistent and provide insight-driven customer journeys—all this while significantly lowering costs. Marketing platforms, supported by D&A, are at the heart of many subscription-based, 'everything-as-a-service' offerings.

Conclusion

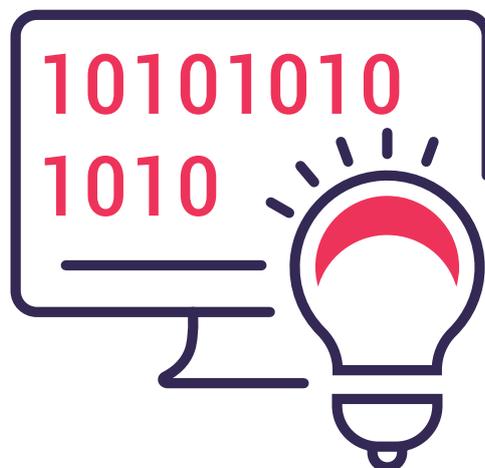
Technology disruptions are universal. How businesses respond to these disruptions determine what separates the leaders from the rest. The speed at which new technologies – and newer ways of doing things – emerge, creates a dilemma for technology leaders.

What are the technology trends that they should bet on? Should they invest in multiple technologies with the risk of diluting their efforts, or should they focus on a select few technologies with the incumbent risk of betting on the wrong ones? How soon should they adopt emerging technology? Should they take a more cautious ‘wait and watch’ approach or should they aim to be the first movers?

Unfortunately, there are no easy answers to these questions. Irrespective of whether businesses want to be innovators or early adopters, we firmly believe they need to selectively invest in disruptive technologies to ensure that they don’t get left behind. While it is risky to adopt new, unproven technology, it is equally perilous to wait too long and allow competition to overtake you.

Tech leaders need to stay agile and adaptable to the changing needs of the customer. Most high tech companies, for instance, are already making a shift from a product-based model to a services-based model. Apple in its June 2018 quarterly earnings, is already being seen by analysts as building a strong services narrative.

Technology is only an enabler. In the end, the companies that surge ahead are those that put customers at the center of their transformation efforts.



Ensemble learning -
A machine learning technique that trains multiple learners using the same data while allowing each one of them to follow a distinct learning algorithm.



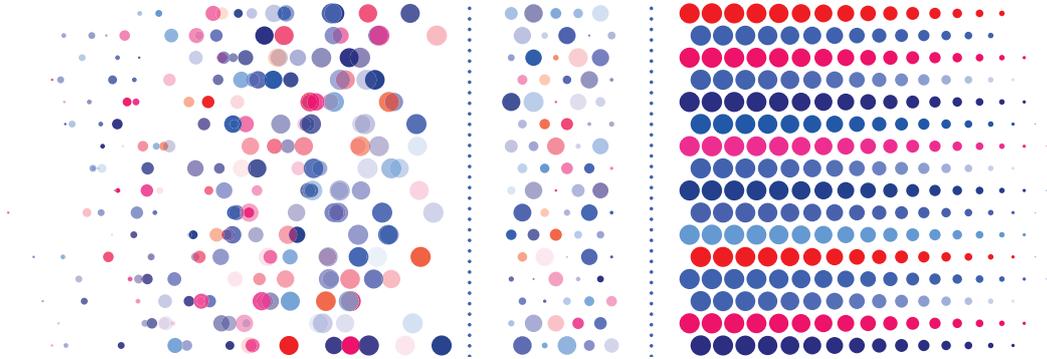
Creating a 3-D value chain

What does a transformed hi-tech firm look like? A useful perspective comes from research firm IDC, which prescribes a 3-D value chain: Demand-oriented, Data-driven, and Digitally-executed.

Demand-orientated requires getting closer to the customer to better meet market demand, calibrating the business to the external cadence of the market and customers, rather than to the internal cadence of product development. Data-driven enables managing production based on data captured for analysis as it is produced; this makes management more accurate, agile, and productive. Digital execution means that the more instrumented and connected the enterprise, the less it will need to rely on slow and imprecise human intervention. An organization executing digitally will be fast, effective, close to the customer, and in possession of highly accurate data.

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About Regalix

Regalix is a Customer Acquisition and Customer Success company that re-imagines digital experiences across hi-tech, ad-tech, and retail domains. The company has partnered with some of the largest global B2B organizations in their efforts at customer acquisition, growth and retention. Regalix works with businesses, supporting their customers' through the entire journey, to deliver reliable products and services in today's subscription-based economy.

Regalix has a long history of creating award-winning ventures with enterprises through co-innovation and idea-driven frameworks that inspire companies to think different. Headquartered in the Silicon Valley—Mountain View, California—Regalix has offices in Europe and Asia.

For more information

To find out how we can help you,
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