

Insight Report

Operating Models for the Future of Consumption

A Report by the World Economic Forum's System Initiative on
Shaping the Future of Consumption prepared in collaboration with Accenture

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Preface



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The Fourth Industrial Revolution is transforming entire systems of production, distribution and consumption, providing opportunities for value creation through game-changing technologies and challenges to ensure inclusivity. To ensure success in the midst of digital disruption, there will be a premium placed on innovation, a willingness of organizations to disrupt themselves, a quest for active collaboration and a commitment to advance inclusive growth strategies.

In the context of this seismic change, the World Economic Forum System Initiative on Shaping the Future of Consumption envisions a future where technology is firmly embedded in people's lives, making their daily experiences simpler, highly personal and more enjoyable as well as imbued with trust and harmonious with nature. It takes a holistic view by addressing the question, "How can technological disruption drive enhanced models of consumption with sustainable benefits for business and society?"



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Introduced in June 2016, this System Initiative features a portfolio of projects designed to create forward-looking scenarios with corresponding roadmaps as the consumption landscape rapidly evolves. Its inaugural project, Shaping the Future of Retail, deepened the understanding of how the world of retail, the largest private employer in the world, will continue to evolve over the next decade, fuelled by hyperconnected consumers and a multitude of technology-enabled business models. In 2017, the Operating Models of the Future project explored how organizations must transform to support innovative business models and integrate disruptive technologies and data analytics into the DNA of their businesses to realize benefits across the enterprise.

The Forum is pleased to present this insight report developed in partnership with Accenture to global leaders as they manage disruption on multiple fronts. Extensive qualitative and quantitative research was conducted to understand the current environment and develop a vision of the future. The future-oriented insights along with the commensurate challenges in the report can be applied to a broad range of businesses that are preparing to navigate the uncharted waters of the Fourth Industrial Revolution. It is important to highlight that the transformation of operating models will impact employees by altering roles, requiring new skills and changing how work is done. To mitigate employment risk, the private and public sectors have the opportunity to leverage the perspectives in this report and proactively advance workforce transition strategies to meet the demands of the digital age while also ensuring economic equality.

It is only through collective effort that a pathway to realizing a prosperous future with substantial benefits for both business and society can gain momentum. On behalf of the Forum's Future of Consumption System Initiative team, our profound appreciation and gratitude are extended to all parties that played a key role in the development of this insight report: the Accenture team led by Oliver Wright, the project Steering Committee and all participants who contributed via interviews and workshops.

Executive Summary

Introduction

The Fourth Industrial Revolution will accelerate the introduction of game-changing technologies that will further empower consumers and enable once-impossible business models. The ability to respond to changing needs of the marketplace will be key to future success and implies material changes to the way companies operate. Businesses must re-invent themselves by establishing an agile and enduring enterprise in a highly disruptive world while also ensuring inclusive societies.

This insight report presents a perspective on the future of consumer-centric enterprises, identifies essential characteristics that companies of the digital age must embrace and integrate into their operating models, and illuminates the significant societal challenges that are underway and the commensurate call to action.

The Imperative: Making the Case for Change

As explored in the 2017 *Shaping the Future of Retail* insight report, over the next decade consumers will have more choices and control than ever before. They will be presented with a growing array of products and services customized for their specific preferences. Over this period, new innovative approaches to meet consumer expectations will proliferate, particularly with eCommerce penetration growing from 10% to more than 40%. As these shifts catapult the importance of how data is utilized and shared to new heights, consumers' fears regarding privacy, security and transparency will only elevate.

Despite these consumer and market opportunities, evidence suggests that business transformation is not occurring at the pace and scale required. 41% of Consumer Industry companies in the S&P 500 have either been acquired or gone out of business since 2000. Moreover, half of current S&P 500 companies are predicted to face the same fate within the next ten years.

To survive disruption and thrive in the future, companies must move to the modern and find their purpose. This unequivocally demands a comprehensive change in each component of the operating model including how it is governed, how it deploys processes and technologies, how it organizes its people to get work done, as well as the ecosystems it creates. The reinvention must not only deliver efficiencies for the business but also be orchestrated with a profound sense of responsibility for all stakeholders of the enterprise - consumers, the workforce, shareholders, communities and the environment.

The Outlook: Consumer-Centric Enterprises of the Future

Consumer landscapes will change more in the next 10 years than they have in the past 40. Wholesale disruption will redefine every element of business. Industry boundaries will fade as technology and consumer-centric industries fuse. To deliver optimal consumer experiences, companies will be compelled to leverage extensive ecosystems, doing far less in-house than ever before. Co-opetition will multiply as companies that were previously competitors work together to deliver value that they cannot deliver on their own. At the extreme, small groups of individuals will create virtual organizations to orchestrate full ecosystems that design, make, market and distribute products and services.

At its core, each digitally-enabled company will be "consumer-obsessed" with a relentless focus on creating growth through holistic consumer value, delivered across the lifecycle of consumer engagement. As consumer needs and demands shift, so will the company by developing and scaling new opportunities that disrupt and ultimately cannibalize existing businesses.

Large organizations will have fewer layers and use contingent workers as market needs change. Small management teams at the center will use data to direct the activities of front line employees more precisely than ever before. Productivity improvements will be created through the concurrent arrival and scaling of two massive disruptions: the comprehensive automation of repetitive tasks across the front and back office; and the use of analytics to drive decision-making down to the front line.

The workforce will transform to consist of internal employees, freelancers and even consumers. Continuous learning will be the norm, with workers seeking ongoing enhancement of "soft" skills and "hard" skills. With a focus on self-directed project work, workers will take unprecedented accountability for their own careers and personal development.



The Transformation: Essential Characteristics of Future Operating Models

Incremental changes will not suffice. To support the aforementioned view of the future, each component of the operating model must embrace seven transformative characteristics that will establish new mindsets and structures, ensuring economic viability in a disrupted world.

- **Mindset:** A profound shift in culture and ways of working
 1. **Human:** Purpose is deeply embedded in the organization of the future to empower employees to deliver consumer outcomes, while also being authentically engaging and partnering with employees to foster intrapreneurial, life-long learning
 2. **Living:** Businesses operate in a highly agile organization that continually re-shapes and adapts by using self-organising teams, prioritizing progress over perfection and acting at a vastly accelerated pace
 3. **Enhanced:** The use of technology and analytics transforms each function and, ultimately each worker's role
- **Structure:** Fundamental changes in the shape and execution
 4. **Ecosystem:** A network of relationships enables each participating company to accomplish far more than it can alone; ecosystems form to deliver consumer solutions, capabilities, or data sharing where each company has a clear understanding of its core capabilities and relies on others for the rest
 5. **Modular:** Businesses within the business monetize internal capabilities by establishing a “plug-and-play” structure to efficiently accelerate the development and integration of new business ideas, start-ups, acquisitions and outside capabilities
 6. **Liquid:** Companies source and manage their workforces by accessing the best talent at the right time to meet demand through employment models that include permanent employees, company affiliates, partners, publicly available talent and consumers
- **Economic Viability:** Responsibility to generate lasting performance and sustainable impact
 7. **Enduring:** The holistic application of the other six characteristics and focus on achieving sustainable, profitable growth that is aligned to societal values and establishing lasting trust and transparency

The Implications: Addressing Societal Challenges to Achieve a Brighter Future

The reinvention of future operating models will require significant effort, impacting all of society. Implications range from the ability of workers to engage in digitally-enabled organizations, security to protect individuals in fluid labor markets and measures to both democratize and protect information. Public-private partnerships across these key areas are vital to minimize risks and optimize the potential for value creation.

– Worker Enablement in the Digital Age

The technology-driven reinvention of the operating model will create new digital skills requirements for jobs, in addition to rapidly impacting existing roles. Today, 54% of the activities currently performed by Consumer Packaged Goods (CPG) workers and 40% of those performed by Retail workers could potentially be automated. Therefore, the workforce must be supported to master new technological, analytical and interpersonal skills, while embracing new ways of working to be effectively prepared for jobs in the digital age.

– Flexicurity

As consumer-centric industries transition to more flexible operating models, workers that engage in non-traditional career paths deserve access to similar safety nets historically afforded them in more traditional employment models. New contracts for employment, with transparency and transferable benefits, will be needed to support worker flexibility. Governments, industry and individuals must collaborate to establish these new contracts, which will be vital to promote a liquid workforce, foster radical reskilling, support job mobility and ultimately ensure worker welfare.

– Consumer Data Principles

The success of consumer-centric industries will be predicated on the exponentially increasing use of consumer data. Recent surveys find that 57% of consumers are concerned with how businesses use their information, with 41% of consumers feeling they need greater transparency into companies to have confidence in their products/ services. To build long term trust, the industry must carefully protect the privacy and security of consumers' data and be transparent about how they are utilizing it.

In conclusion, the decade ahead will fuel the acceleration of technology-driven change which can lead to the creation of significant value for consumers, workers and the enterprise. As operating models transform to enable these new opportunities for growth, there is the potential for both positive and negative impacts on society. To ensure an inclusive society, key stakeholders must work together in focused collaboration to proactively manage this disruption to achieve a brighter future.

Why Do Organizations Need to Change?

Disruptive technologies, new business models and the empowered consumer are accelerating industry change. Companies must transform to survive.

For decades, the largest CPG and retail companies dominated by exploiting economies of scale across a linear value chain. Big-format shops offered wide ranges of products at competitive prices and – as long as those products delivered on expectations – consumer loyalty was assured.

Owning and selling big, global brands no longer guarantees survival. This trend is further challenging the long-standing symbiotic relationship between CPG and retail. Manufacturers are selling directly to the consumer. Innovation has emerged from unexpected sources, with small CPG companies generating more than half of industry growth in many categories. Extrapolated across the industry, analysis indicates that half of future value will come from new sources of growth.¹ Retailers and e-commerce players alike are aggressively pursuing private labels. Five of the largest e-commerce players who dominate the global e-retail market present the most compelling examples of value creation through ecosystems.

41% Percentage of S&P 500 Consumer Industry companies that have gone bankrupt, been acquired or ceased to exist since 2000.²

50% Percentage of today's S&P 500 that are expected to face the same fate within the next ten years.³

49% Percentage of global e-commerce market held by the top five largest retailers.⁴

53% Percentage of US food and beverage industry growth captured by small companies in 2016 compared to 2% growth captured by incumbents.⁵

Companies must shift their strategies and make the related adjustments in how they operate, or risk obsolescence. For incumbents, those existing companies currently at the forefront, this reality will compel them to undertake the largest changes in operating models since the Second World War.



For consumer-centric industries, this Fourth Industrial Revolution has three driving forces:

1. *Disruptive Technologies*

The impact of technology is exponentially greater because individual innovations increasingly work together. These “combinatorial technologies” have enabled new entrants to offer novel methods of consumer engagement that create, deliver and capture value. Barriers to entry have fallen as visibility and brand presence no longer depend on expensive television advertising. Combinatorial technologies are also transforming company operations. Last year's *Future of Retail* insight report outlined the impact of eight technologies on the value chain of consumer industries. In the past 12 months, this impact has shifted and deepened at a faster rate than previously anticipated. For example, consider how 3D printing companies have truncated R&D, scale production and distribution. Historically, rapid prototyping was the core use-case in 3D printing; today, technological advancements have reframed these organizations as active scale manufacturers (that is, those that can actively, in an agile way, scale operations up or down to meet demand). These changes have long-reaching impacts, including the potential repatriation of manufacturing as companies bring production closer to end consumers. (For more on these changes, see Appendix A.)

2. *Proliferating New Business Models*

Rapid growth in the number of new business models makes it much easier for companies to micro-target offerings that meet precise consumer needs. Instead of employing a discrete business model, industry players will operate flexibly across a portfolio of models. No company will be able to do everything in-house. Firms that were previously standalone will need to become “ecosystem enablers”, where success is measured, in part, by the overall impacts the system produces. This ability will be dynamic, with the most successful companies continuously evolving what they do while making conscious choices about how they generate economic value.

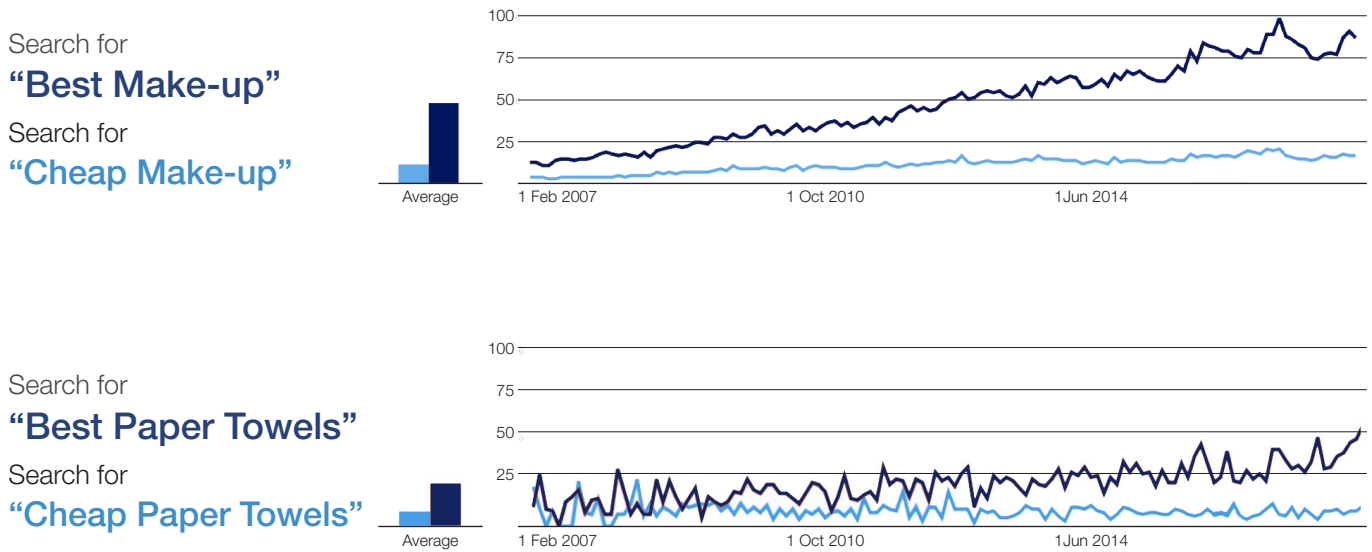
3. *Empowered Consumers*

Ever-connected consumers have higher expectations than ever before as combinatorial technology and new business models provide many ways for them to discover, purchase and engage. Not only are consumers dictating exactly what they want, but they are embedding themselves at all stages of the value chain – acting as developers, marketers, salespeople and even employees. This is a fundamental change in the consumer value equation, amplifying historic drivers – cost, choice and convenience – and adding both control and end-to-end experience.

In many cases, a tailored experience outweighs cost considerations. Analysis of Google search data⁶ shows that consumers are increasingly seeking the “best” versus

the “cheapest”; this trend holds true for both high-touch products, such as make-up, as well as utilitarian products such as paper towels.

Figure 1: Consumer Search Analysis



This means that companies are no longer just selling products to consumers, but are instead anticipating and meeting consumers’ needs as part of deeper, more enduring, and in many cases increasingly interactive, relationships. This implies a shift in focus from maximizing market share and revenue to creating material consumer value.

Consider, for example, that a food company may move from simply selling food items to participating in a healthy-eating ecosystem. This network might provide a range of offerings, including healthy packaged foods, personalized nutrition subscriptions, and physical and emotional coaching. In this scenario, rather than maximizing individual profits, participants will strive to maximize the value of the entire system, while realizing sustainable value for each stakeholder – consumers, partners and self.

To ensure continued success, firms will need to craft an operating model that recognizes these significant changes in profit pools — the sources and distribution of profit within the industry— across consumer-centric industries, and design both organizations and ecosystems to unlock opportunities. Profit pools of the future will focus on the consumer. Companies will need to seek revenue opportunities that increase consumer value and balance cost savings with consumer outcomes.



What Will Operating Models Look Like in the Future?

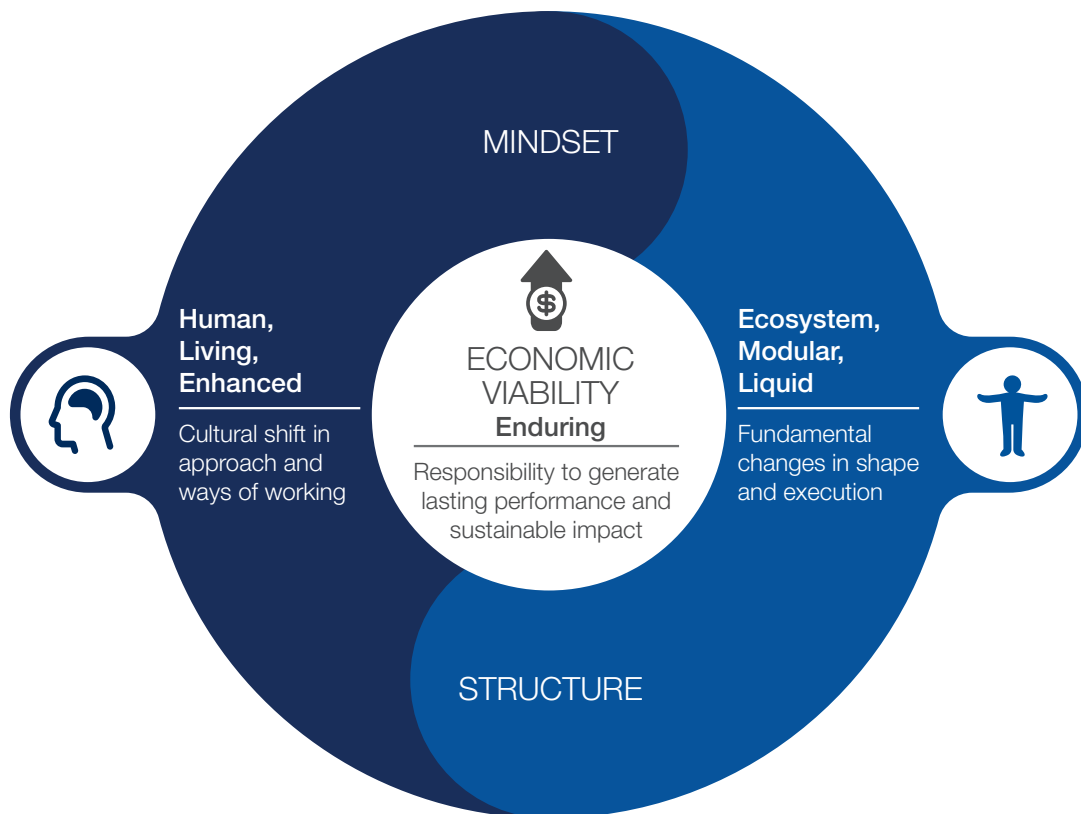
Operating models of consumer-centric businesses must embody three core principles, enabled by seven essential characteristics, to transform for the future and ensure their continued existence in a disruptive world.

Characteristics of Future Operating Models

Operating models of the future – tightly focused on consumers – will be built on characteristics that define the mindset, structure and economic viability of the company.

Mindset outlines the substantial cultural change that needs to occur in an organization’s vision, objectives and ways of working. *Structure* describes the integration within ecosystems and the internal platform that facilitates liquid talent and capabilities. *Economic viability* combines lasting and renewable business impact with the licence to operate through sustainable practices.

Figure 2: The Three Core Tenets of Future Operating Models



Mindset: The Cultural Shift in Approach and Ways of Working

Human

In the future, companies will be more human – driven by an organizational purpose and focused on consumer-centric outcomes. In a world where technology is embedded into all consumer interactions, this purpose will connect employees to consumers and consumers to the company or brand. Authenticity and personalization will be woven throughout the culture, as well as the consumer experience. Purposeful organizations will drive personal accountability, with individual employees able to define their unique contribution to the company’s purpose, while also maximizing their potential. Employees will now be able to chart their own course at a

company and direct their own skill development through continuous learning. By creating clear decision-making criteria and managing outcomes, rather than activities, employees at all levels will be “masters of their own fate”. These workers will be able to act as “intrapreneurs”, who use an entrepreneurial mindset within a larger organization.



We have a saying at Andela – ‘YOYO Learning – You Own Your Own Learning’. The people who do this are the ones who will succeed.



Jeremy Johnson – Chief Executive Officer of Andela

Case Study: Picnic – Empowerment Through Purpose

Picnic is a Dutch online grocery organization that uses a “milkman” model, where the same “runners” deliver to the same homes at regular times. Customers trust and enjoy seeing their favourite runners, who are selected for both their people skills and their problem-solving abilities. Importantly, and unusually, individual runners are able to determine the best way to solve customer service issues. If a product is missing, the runner can decide to purchase it in a local outlet or deliver it at another time. The company also shares its data with runners so that runners can proactively address situations. Most people who started shopping at Picnic two years ago are loyal customers, making an average of 40 purchases per year. With very low customer acquisition costs – 75% of customers join Picnic via word-of-mouth – and the efficiency of the last mile (that is, delivering locally, all the way to the consumer’s doorstep), every customer adds considerably to the contribution margin of the operation.

Human organizations will, thus, be characterized by a fundamental change in how leaders lead. Critical leadership skills will include the ability to focus on mobilizing the right resources, regardless of tenure, and an understanding of how best to act on the opportunities that will truly make a difference. This is a shift that P&G Europe President Gary Coombe calls “servant leadership”. To support this objective, P&G leaders employ “upward” mentorship by looking to junior members for insight into areas such as technology and social media.

Future leaders in consumer-centric industries will need to embrace this mentality and augment their approach into “student leadership” – seeking mentors and learning from non-traditional disruptors to maintain a high level of external awareness. Leaders must adopt a new continuous-learning mindset that contrasts with the “command and control” behaviours that persist in many organizations today.

Living

A hallmark of operating models of the future will be their agility. Only 15% of today’s industry leaders believe their operating models can respond sufficiently quickly to changing market conditions, while more than 62% of digital disruptors believe their operating models can do so.⁷ Living organizations will continually evaluate the external environment and nimbly adjust to changing conditions. They will be self-organizing, and their work will be project-based, with new initiatives forming organically. Teams will act with resolve and resiliency, prioritizing progress over perfection – a “corporate garage” model enabling rapid experimentation and the development of “minimum viable products” that they test quickly, learning from successes and failures. Teams will also respond to changing market dynamics and innovate at a rapid pace, having the will to experiment and the ability to do so. The end goal will be value creation across all stakeholders.

Case Study: Instacart – Rapid Experimentation

Instacart serves a large network of physical locations, carrying out millions of shopping occurrences. This allows for rapid, statistically significant experimentation in real-life situations. The San Francisco-based grocery delivery company runs hundreds of experiments at any point in time, ranging from two to four weeks in length. Chief Business Officer Nilam Ganenthiran describes Instacart’s “culture of experimentation” as one where individuals must be comfortable with fast failure as only 10–20% of experiments succeed.

Case Study: Graze – Unleashing Agility

London-based Graze is a natural-food company that delivers directly to the consumer, sells to retailers in the UK and US, and has a subscription model business with personalized, monthly snack boxes. Explicit objectives, well-defined guardrail metrics (which help to guard against potential negative outcomes by covering additional dimensions on which the primary objective is not necessary focused) and independent initiatives enable unusual agility through a series of sprints. Just seven weeks after entering Sainsbury’s, Graze created an alternate full line of products with simultaneous packaging development, manufacturing and marketing. Once in market, teams took a test-and-learn approach, making immediate adjustments based on signals within days of products being placed on shelf.

Enhanced

Operating models of the future will see the creation of both turbocharged capabilities and new ways of working through technological innovation, continually enhanced by data that improves decisions and resulting activities. Digitalization will permeate every functional area; intelligent automation and artificial intelligence will be incorporated into operations to increase efficiency and accuracy, freeing human workers to drive market growth and efficiency.

Recent press articles have focused on a dystopian scenario sometimes called the “Terminator” future, one in which robots replace humans. Research and in market examples, however, suggest an “Iron Man” future, with technology instead enhancing human abilities, creating “super workers” capable of delivering twice as much as non-augmented peers.⁸

This will involve a significant shift in mindset and the ongoing discovery and use of technology. Technology will no longer be defined as the provenance of IT. Instead, it will be the responsibility of each business unit and individual employee to understand the new opportunities that technology unlocks, and integrate those technologies into their day-to-day activities – an ability that only 33% of current companies claim to have.⁹ At the same time, the role of IT will expand, with a focus on identifying and exercising disruptive technologies, to unlock combinatorial technology that opens new strategic options. As a result, each worker across the organization will embrace technology and every company will become a technology-powered company.

27% Percentage of processes digitalized by incumbent consumer industry companies.

50% Percentage of processes digitalized by consumer industry disruptors.¹⁰

Case Study: Voodoo Manufacturing – The Power of Combinatorial Technology

“

To borrow a software development term, the future of manufacturing is agile, not waterfall.

”

Jonathan Schwartz – Co-founder of Voodoo Manufacturing

Voodoo Manufacturing, the New York-based 3D printing start-up, uses combinatorial technology to continually improve production efficiency on a manufacturing floor that seamlessly melds human technicians, robots, 3D printers, AI and other technology. In-house design software manages and coordinates the process from order to shipping. Machine learning increasingly streamlines processes. Voodoo is adding robotics to automate tasks currently performed by technical staff (for instance, robots “harvest” completed printing plates and put clean ones in the printer). In the future, they believe robots will clean parts, ensure quality and automate packing and shipping, while human technical support troubleshoots and continually enhances the effectiveness of the line.

Next to technology adoption, a data mindset and analytical capabilities will be the most significant factors in determining future success: these are the building blocks for enabling technology and understanding customers and consumers. While few companies dispute the importance of data, most have not yet gone through the dramatic change necessary to become truly data-driven organizations. Future operating models will view and incorporate data as DNA, the fundamental ingredients for the entire organization, governed by a top-down mandate and actively supported by every employee. Serving the core, consumer-obsessed purpose of the company will require significant increases in individual consumer insight. As the pace of change accelerates, dramatically expanded and continually renewed data becomes vital to survival. Data will be the vital factor enabling leaders and individual employees to make the best decisions at the optimal speed.

Imperatives for the data-driven organization include:

- Top-down mandate, with leadership themselves actively using data, driving its improvement and extending data as DNA to every member and structural component of the organization
- Exponential insights aided by data science and a real-time data system across every function and role within the company
- Centrally facilitated and seamless flow of data across business models, functions and project teams

- Obvious, rapid decisions based on a single version of the truth, driven by undisputed facts; time to action is reduced by a factor of ten.

Case Study: StitchFix – Enhancing Style with Data Science

This San Francisco-based on-demand styling service and apparel subscription company marries predictive data science with human skills to create a virtuous cycle that achieves and sustains consumer relevance by unifying sales, marketing, R&D and supply chain. The 80+ data scientists link every aspect of operations. Algorithms guide human stylists to the clothing choices that clients are most likely to enjoy and purchase. Simultaneously, data science informs the supply chain, determining the logistical flow that optimizes delivery to the client’s door. Finally, live feedback from clients generates a vast amount of consumer preference data by clothing characteristic, which the company uses to predictively design its private label line.¹¹

Case Study: Farmers Business Network – Unlocking Agribusiness Value through Data Sharing

Farmers Business Network (FBN) is a US-based analytics and commerce platform that crowd-sources data from farmers to help farmers make better decisions. Participants contribute their individual data, which is consolidated into a significant and powerful base of knowledge. This collaboration allows all participants to benefit from the shared insights across the platform. FBN farmers generate 9% higher corn yields and 11% higher soy bean yields than average, illustrating how good data and information enable this community to make better decisions to increase output. Additionally, FBN offers the first national e-commerce buying system for farm inputs, premiums for speciality crops, and access to credit programmes. While some farmers are at first hesitant to share information with competitors, FBN has expanded primarily through word-of-mouth as farmers realize the benefits to be had in terms of profits of the digital farm economy and gain strength in numbers during big agriculture’s era of mega-consolidation.

Structure: The Fundamental Change in Shape and Execution within the Operating Model

Ecosystem

Operating models of the future will be transformed structurally, bringing ecosystems to the core of companies’ strategies. Extending far beyond the existing supplier/customer value chain relationships, an ecosystem is the network of cross-industry players who work together to define, build and execute market-creating customer and consumer solutions. An ecosystem is defined by the depth and breadth of potential collaboration among a set of players: each can deliver a piece of the consumer solution, or contribute a necessary capability.

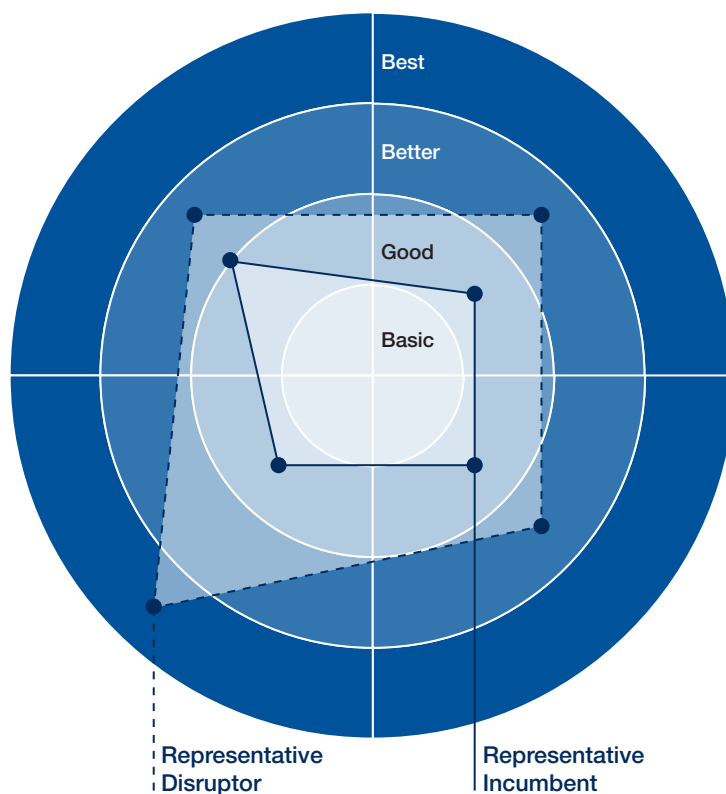
Figure 3: Components of the Data-Driven Organization

Data Sources

- Basic:** No data
- Good:** Internal quantitative data
- Better:** Diversity and depth of real-time internal/external quantitative and qualitative data
- Best:** Ecosystem of partners with two-way data sourcing

Data Engagement

- Basic:** Sporadic usage of data
- Good:** Standalone analytics team
- Better:** Analytics are embedded in each function
- Best:** Every individual actively and directly uses data, from leadership on down



Data Exchange*

- Basic:** Individuals hold data
- Good:** Data shared within functions
- Better:** Cross-functional data sharing
- Best:** Cross-business model data sharing

Decision-Making

- Basic:** Asymmetric decisions loop; no “right” answer
- Good:** Clear enterprise financial targets; tactical targets by team
- Better:** Teams independently empowered to drive targets
- Best:** Individual empowerment – clear guardrails allow employees to make rapid and independent decisions

* For example, the corporate centre takes in data from across business models and facilitates the continuous flow of data between them – thus, what one business model learns about a consumer is immediately known to and affects the activities of other business models touching that consumer.

The power of the ecosystem lies in the fact that no single player need own or operate all components of the solution, and the value the ecosystem generates is larger than the combined value each of the players could contribute individually. Company strategies will assess which capabilities and assets are truly “core” and vital to control – either because they are vital to the business value proposition or because there are winning economies of scale/scope. Ecosystems accelerate the development of new markets as potential solutions and capabilities can be quickly exploited as an idea is born. This requires executive management and strategists to collaborate to acquire these capabilities and have an agile, innovative mindset.

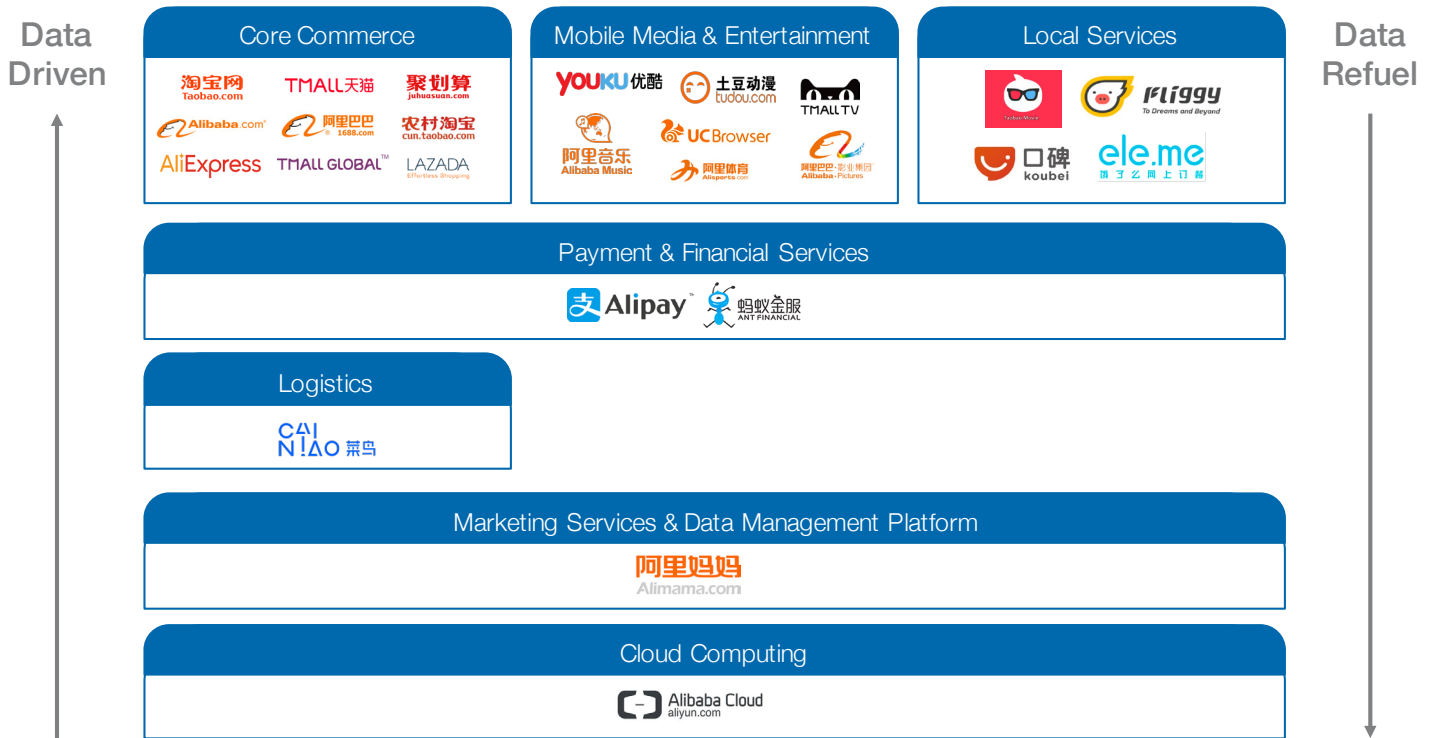
Companies will need to create ways to engage with start-up and accelerator communities by hosting competitions, setting up collaborative working spaces and creating large open-sourced innovation networks, often involving up to a thousand different companies. Today, internet players have some of the most sophisticated models, a complex web of capabilities and relationships representing what ecosystems will look like in the coming years.

Case Study: Alibaba – Ecosystems Expanding Market and Industry Reach

Alibaba, the Chinese internet giant, manages a complex web of business models, capabilities and other investments. This ecosystem allows them to access capabilities from best-in-class providers, expand new businesses quickly and extend into adjacent industries:¹²

- **E-commerce Platforms:** Alibaba manages many business-to-consumer and business-to-business marketplaces (e.g. Taobao, Tmall and Alibaba.com), online-to-offline businesses (e.g. Koubei) and investments in other marketplaces (e.g. Lazada)
- **Capabilities:** In support of its diverse businesses, Alibaba has built and invested in alternative payments (e.g. Ant Financial, Paytm), logistics (e.g. Cai Niao, Didi, Lyft), marketing analysis (e.g. Alimama) and supporting technology (e.g. Alibaba Cloud)
- **Extra-Industry Ventures:** The company is building its consumer health offerings through AliHealth.

Figure 4: The Alibaba Ecosystem



Case Study: Royal Philips – Creating an Ecosystem to Deliver Consumer Solutions

As digitalization reshapes healthcare, Philips is adapting from a transactional, product-focused technology company to a solutions provider with customer needs at its centre. Established in 2013 and now 20 people strong, Philips HealthWorks runs 90-day programmes that have worked with over 50 start-ups this past year to help build, test, de-risk and expand new businesses in health technology. For each cohort, Philips looks externally to select seven companies out of around 400 to provide mentoring, access to the expertise in the Philips network, and connections to help grow these small businesses. Each cohort is selected based on a singular theme (e.g. cardiology or neonatal care) and matched to be non-competitive, allowing them to work easily together on solutions. Companies are chosen without commitment to future ownership.

To extend the ecosystem, Philips started the HealthTech Ventures investment organization in 2017 to formalize partnerships with select companies in the HealthWorks programmes and other early-stage companies. From seed funding, indirect investing in fund-to-funds, and minority stakes in select companies, Philips exchanges capital and expertise for access to products and exposure to companies in the direct fund that are agile, flexible and have specific skill sets not currently found in the larger Philips organization. The four-person team starts by assessing 2,000 companies, then vetting 300 of those to identify 12–15 companies in which to invest. By investing in innovation, creating an ecosystem within the healthcare space, and learning from small companies, this global health-technology player is strengthening its impact in the hospital and the home.

Currently, companies' reluctance to share data for fear of losing competitive advantage is often a key inhibitor to ecosystem engagement. This attitude severely constrains the value that players can gain from a more open approach. Best practices for open data sharing include:

- Define data-sharing agreements that recognize comparative advantage, and optimize total ecosystem value, while protecting individual interests
- Outline data governance for appropriate use, including compliance with local regulations
- Build integrated technology platforms that support data interoperability, as well as protect data security.

Ecosystems or Platforms?

Platforms are one type of ecosystem. While every company will be part of an ecosystem, some may have only peripheral involvement in platforms. Research has identified three types of platforms:

1. *Marketplace Platforms* hosting buyers and sellers
2. *Internal Company Platforms* that support multiple business models
3. *Business-to-Business Platforms* on which ecosystem partners trade capabilities (e.g. borrowing or monetizing another's existing capabilities and assets, such as manufacturing or regulatory management)

While conventional definitions focus on the first type of platform, all three will play significant roles in the future. What differentiates platforms from the types of exchanges seen in the past is that platforms are enabled by technology and data, and based on network effects that enhance the value of the platform as the number of participants increases.

Modular

To meet market demands in the future, organizations will employ modular capabilities to support various business models. “Modular” is a characteristic that is defined as the ability to develop and deploy a business capability that can be utilized in a flexible, repeatable way across multiple business models with minimal re-design. This is a deliberate, “plug-and-play” approach that is distinctly different from previous eras in business that were focused on driving efficiencies through linear process design for a single business use case (e.g. business process re-engineering). Modular capabilities enable the organization to adapt quickly to market changes and more easily pivot their strategies and business models.

Case Study: GLAMSQUAD – Building A Modular Business

GLAMSQUAD is a New York-based multi-business model platform supporting beauty services and products. The company’s portfolio of business models includes: on-demand beauty services, retail partnerships to provide salon services in stores, beauty services for fashion designers’ runway shows, sales of partners’ products and beauty tools, and their own private label products leveraging alliances with established manufacturers. GLAMSQUAD leverages a level of trust established with the consumer across business models to create an end-to-end consumer experience.

A modular design is also a key building block and facilitator of ecosystem strategies, tapping into the \$1.5T potential value from increased collaboration between companies.¹³ Modular capabilities can be used to support external partners or provide core capabilities to deliver an ecosystem-driven consumer solution.

Case Study: Louis Vuitton Moët Hennessy – Multi-brand Luxury Platform

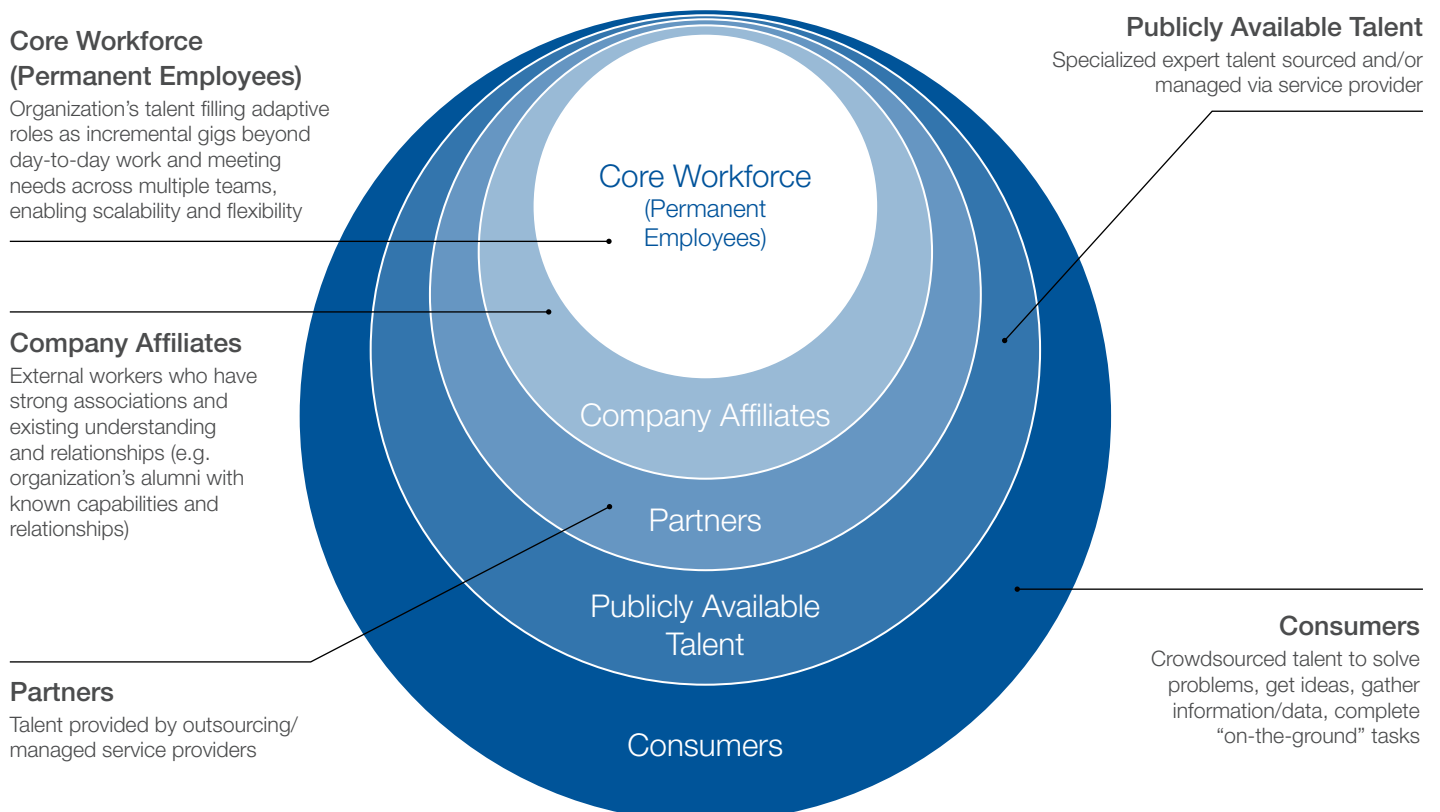
Louis Vuitton Moët Hennessy (LVMH), the French luxury goods company, has launched 24 Sèvres, an eCommerce luxury platform that carries not only LVMH’s in-house brands, but also those of other prestigious fashion houses. Brands on the platform leverage the platform’s overall features, including chatbots, on-demand stylists, stunning graphics, efficient checkout and fast delivery. In addition, the company gathers and analyses cross-brand consumer insights across the platform.¹⁴

A lean corporate centre will orchestrate the entire entity, managing multiple, autonomous business models. The application of a “plug-and-play” approach allows for internal usage across business models as well as external usage by ecosystem partners, who will seamlessly integrate and utilize the organization’s assets and capabilities. Consumer insights, new innovations and technologies will flow from each of these businesses back into the corporate center to be leveraged for new value creation as relevant.

Liquid

Liquid organizations unlock value through ecosystems by seamlessly accessing the best talent to meet demand and respond to changing market conditions, whether inside or outside traditional company boundaries. Through a liquid workforce, companies will source and manage talent via internal and external employment models.

Figure 5: The Five Employment Models of the Future



Case Study: Quri — Using Consumer as Employees

Quri is an American retail intelligence company that employs consumers to collect data, which provides real-time visibility into products and promotion performance in-store. Used by roughly half of the top 25 CPG companies, Quri allows companies to convert consumers into employees by completing “on-the-ground” tasks. For example, Quri collected promotion compliance and execution data for a beer and wine manufacturer, which then created an incentive programme that increased display execution performance by 8% and annual revenue by \$45 million.¹⁵

Case Study: Pluralsight – Expanding with New Employment Models

Pluralsight is a Utah-based training platform that creates and delivers educational content for software developers, IT administrators and creative professionals. All of the courses are taught by experts in their respective fields. To maximize scalability and “fresh” content, Pluralsight uses new employment models with more than 800 core employees, 5,000 affiliated freelance “mentors” and several thousand experts who help author the 6,000-plus courses offered. Pluralsight has thoughtfully designed its employment structure to keep pace with technology and enable its customers to do the same.

While only 16% of the consumer industries’ workforce is currently comprised of freelancers, the CPG industry is the most active user of the full range of employment models of any industry globally.¹⁶ Some 79% of executives believe a liquid workforce provides a competitive advantage and 81% believe freelancers will be a seamless part of the workforce within three years.¹⁷ Historically, human resources (HR) has owned traditional employment while contractors have typically fallen under the purview of procurement. This separation can limit an organization’s ability to effectively source and engage the best talent. By contrast, Upwork CEO Stephane Kasriel advocates “total talent management” – merging procurement and HR activities to oversee a fluid base of external workers. To exploit the full potential of liquid workforce strategies, the industry should take a leadership role in defining how best to support the movement to a more fluid way of working that supports the best outcomes for society.

Economic Viability: The Responsibility to Generate Lasting Performance and Sustainable Impact

Enduring

Operating models of the future will be defined by their ability to subsist in a disrupted world. Enduring organizations will establish the necessary mindsets (human, living, enhanced) and structures (ecosystem, modular, liquid) to ensure that the company has long-term economic viability. Companies will drive financial value through sustainable practices and by enabling trust and transparency, as well as by reflecting stakeholder values.

Stakeholders will consider the company’s corporate citizenship when determining whether to do business with the enterprise – as consumers, employees or partners. Enduring companies will develop strong relationships with their stakeholders through the development of mutual trust and by displaying behaviour that is consistent with the expectations of society and stakeholders.

Succeeding in an increasingly difficult environment takes a combination of skill and will: companies must have the capabilities for a wholesale transformation, as well as the desire and willingness to execute it. The challenges of survival are clear. In the 1920s, the average lifespan of an S&P 500 company was 67 years; today it is 15.¹⁸ This underscores the need for companies to design their operating models in a flexible manner to allow for sustained business performance and ensure long-term economic viability.

The Path Forward

Organizing to Drive Operating Model Transformation

Activating the three core principles, and the seven essential characteristics, will require significant changes to enterprises’ organization, processes and ways of working. Today, 80% of executives believe that company goals will increasingly be completed in collaborative teams, with less emphasis on functional roles.¹⁹ In the future, organizations will move from traditional functional groups to end-to-end integration. This will lead to a blending of skills across jobs (e.g. supply chain experts will also need to understand marketing, as these activities directly link to one another, and procurement experts will need to collaborate with HR teams to efficiently manage non-traditional talent). Instead of being organized by role, cross-functional teams will work together to achieve holistic outcomes.

Case Study: Hepsiburada – Organizing to be a Truly Consumer-Centric

Hepsiburada, the Turkish e-commerce leader, is organizing its business around defined consumer “personae” (e.g. “Working Mothers”, “Techies”, “Sports Man”), bringing them physically to life within the working environment. The new persona teams focus on providing an end-to-end experience across traditional functional roles, tailoring each aspect of consumer engagement to the specific persona.

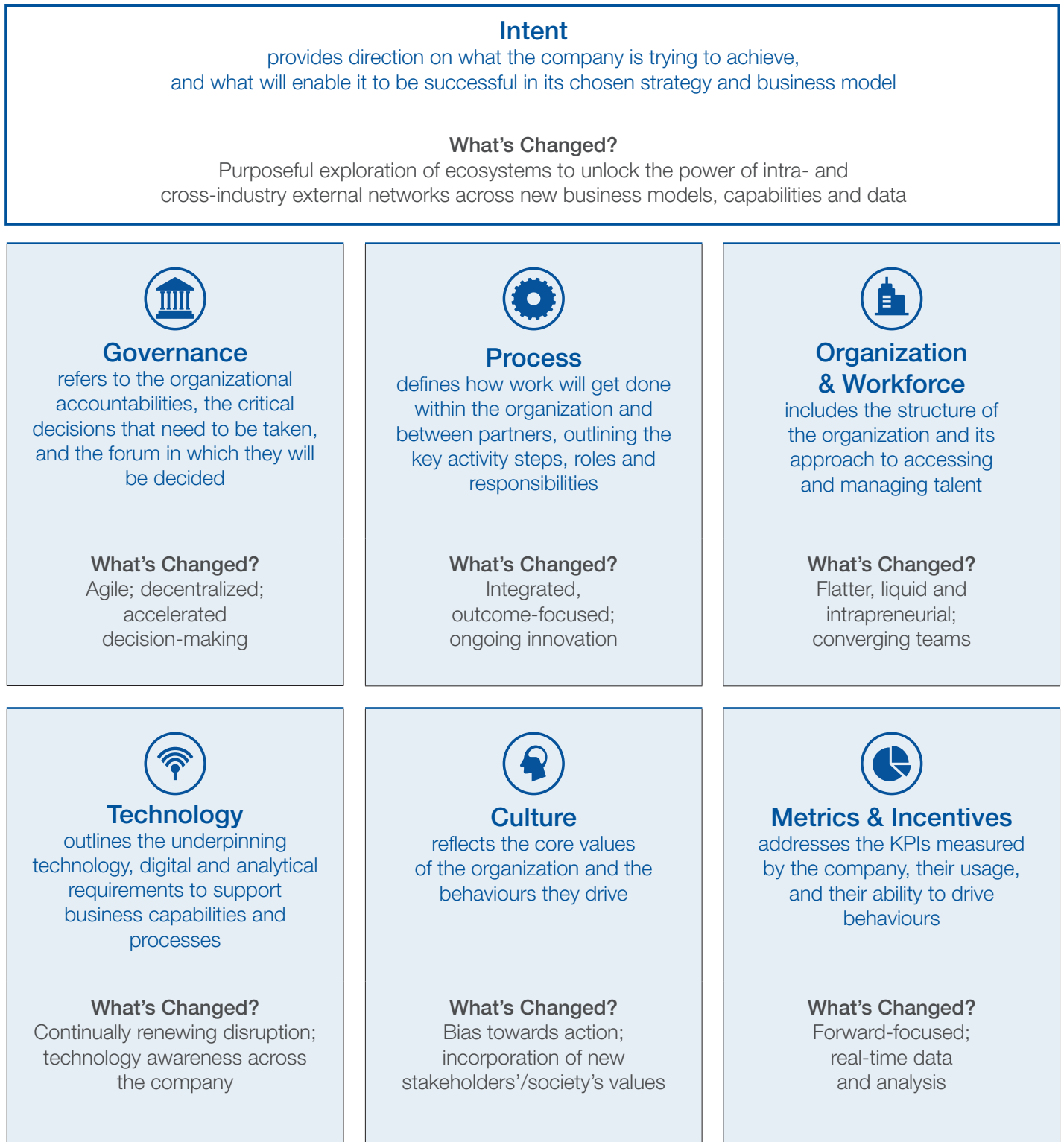
As companies move from single to multiple business models, go-to-market functions will need to change accordingly – from standardized central functions to flexible functional support organized around, and simultaneously managing, each business model’s distinct objectives, activities and metrics. Functions will become porous, with a rapidly expanding ecosystem changing players’ roles, responsibilities and activities, and with companies borrowing or lending entire capabilities to other partners. “Co-boting”, the collaboration between people and machines, will be commonplace in the automation of simple tasks and more so as artificial intelligence amplifies truly human capabilities. Technology will help create the functions of the future by integrating and redesigning activities to drive efficiency and create greater consumer value.

Case Study: Carbon – Technology Blurs Functional Lines

Carbon, the San Francisco-based 3D technology manufacturer, enables design-to-manufacturing at astonishing speed. With ongoing prototyping and iterative, parallel processes, Carbon reduces design, prototyping and manufacturing processes that usually take 8–12 months to a matter of days. The company sees opportunities to merge manufacturing and distribution and is in discussions with shipping carriers to house 3D printers in their distribution centres, which would enable carriers to receive orders, print products and ship directly.

As traditional “back-office” functions change focus by linking into the extended ecosystem, they will achieve scale and flexibility with partnerships providing on-demand capabilities. The nature of these functions will need to shift from supporting services to actively driving business outcomes. HR will manage both a liquid workforce and fluid processes. Finance will evolve from a compiler of historic financials to a true strategic partner by exploiting predictive analytics. Procurement will enable liquid capabilities, working with both project teams and central functional areas to identify, secure and integrate external capabilities.

Figure 6: Operating Model Framework of the Future



Operating Model Design

The sheer complexity of operations now requires a more refined operating model execution framework. That is, as companies look to make changes, a more detailed framework is needed to account for the key components in the executional complexity of today's operating models.

Developing an operating model for the future will involve every operating model building block – but not in the same way for each company. While these operating model components are common to all companies, one thing remains certain in consumer-centric industries: incumbents must become more like disruptors in their approach to operating models.







The differentiating features of each component exhibited by disruptors can be adopted by incumbents. While understandably more difficult, given the significant transformation required and sea-change implications to governance, culture, and metrics and incentives, it can be done, and the impact will be extremely powerful.

Learning from Disruptors

Much is made of the “advantages” of disruptors. They benefit naturally from different market expectations and performance metrics, as well as a lack of legacy (historic) operations. This has allowed them to develop a series of “disruptive behaviours” from which incumbents can learn:

- Risk-embracing behaviour
- Intense focus on chosen core competencies while divesting the rest
- Data as DNA at every level of the organization
- Willingness to disrupt market and self
- Viewing failure as a learning opportunity
- Persistently seeking the one “yes” (rather than being derailed by the one “no”).

Figure 7: Operating Model Design – Incumbents versus Disruptors

Component	Traditional Operating Models	Disruptive Operating Models
 Governance	Top-down decision-making, guided by experience	Data-driven decisions, individual empowerment with clear decision guardrails all the way to the front line
 Process	Functional groups, managing dependent but separate activities	Functions merge to deliver outcomes, enabled by combinatorial technology
 Organization & Workforce	Defined as an independent, individual company; maximizing company financial value	Porous organization with plug-and-play platform supporting self-organizing project teams focused on driving outcomes; multiple internal/external employment models
 Technology	Enterprise IT, with focus on standardization; shadow IT addresses specific business needs	Technology roadmap developed with intentionality continually renews – scan and integrate new technologies, creating business opportunities; AI and automation simplify activities
 Culture	Tradition and excellence; valuing experience and historical knowledge; focus on preserving and building on legacy; value of leaders is determined by size of team and book of business managed	“Disrupt thyself” and learn by doing; risk tolerant; prizes individual intrapreneurship; student leadership; value of leaders is determined by impact to the business
 Metrics & Incentives	Premium placed on stability, longevity, predictable growth and profitability; standardization across businesses	Consumer value and forward-looking metrics; different metrics for different business models

Future Jobs and Skills

New Jobs Within Future Operating Models

As the market refocuses on living services and the delivery of holistic consumer experiences, individual roles will change. In 2016, OECD analysis showed that 65% of children would work in jobs that do not yet exist,²⁰ underscoring the need for a highly adaptive workforce, career-long continuous learning and educational reform. In consumer-centric industries, roles such as retail sales associates or manufacturing machine operators will be redefined around human activities – for instance, providing a creative, personalized in-store consumer experience or applying complex problem-solving to optimize robotic production.

Case Study: Amazon – The Evolution of Warehouse Jobs

Seattle-based online retail giant Amazon has been at the forefront of automation, with more than 100,000 robots working in its facilities around the world. In addition to efficiency gains, the company intends to have machines perform monotonous or physically strenuous tasks, refocusing humans on more engaging roles such as managing a group of robots and troubleshooting issues. To aid this transition, the company provides courses in robot operation. Making workers more efficient through the use of technology ultimately boosts employee productivity, generating almost \$400,000 in revenue per employee in 2016 – nearly twice that of leading traditional retailers.²¹

New Skills for Employment

Future operating models will require a broad range of new roles, significantly altering the composition and structure of the workforce. The nature of the skills in these new roles will be significantly more multidisciplinary. This will open up a broad range of career paths for workers. Rather than following linear career paths, workers will increasingly move fluidly across organizations.

Historically, companies targeted individuals with specific experience and knowledge. In recent years, the balance has tipped to demand for “hard skills” such as coding or data science. Looking ahead to an era of continuous change and flexible careers, human skills will be an increasingly important complement. For a company to remain viable, it must enable its employees to build both soft and hard skills.

Case Study: Digital Skills Create Job Opportunities

In 2017, a global study exploring the current and future landscape of jobs conducted by Boston-based labour market analytics company Burning Glass Technologies found that 82% of jobs that pay a living wage and do not require a bachelor’s degree, currently also known as middle-skill jobs, require digital skills. The share of these jobs is increasing rapidly, providing improved economic opportunities for workers, commanding 17% higher salaries than non-digital roles.²²

Figure 8: ‘Soft’ and ‘Hard’ Skills for the Future



Between now and 2020, the World Economic Forum anticipates growth in demand for cognitive abilities (52%), systems skills (42%) and complex problem-solving skills (40%).²³ Looking ahead, organizations will need to seek out individuals with strengths in learning agility and adaptability. With the half-life of a learned skill at five years²⁴ and the half-life of a developer’s skillset at two years,²⁵ the accelerating pace of change requires constant reskilling, putting a premium on individuals who drive their own development paths and embrace continual learning, as well as a premium on organizations that encourage this type of learning.

Incumbent companies face an additional challenge, with workforces designed for a different market. These workers frequently lack the critical skills for the digital age – as many as 20% of adults in developed countries are considered “digitally illiterate”.²⁶ For example, in a recent digital skills analysis, New York-based education technology company General Assembly found that “digital-native marketers” (e.g.-marketers working at companies that were founded during the digital age) outscored “corporate marketers” (e.g. marketers at traditional companies, CPG brand managers) by 72%. The distinctions were even more profound when examining the very top performers who were clustered in digital-native companies.²⁷ Because of the speed with which skill needs will change, organizations must continually assess the digital skills of employees and address development gaps. This will require HR to fundamentally rethink the role of the hiring function within the company.

Figure 9: Example – Digital Skills Assessment within Marketing Function

Digital-Native Marketers

at younger companies born in the digital age (e.g. Email Marketing Manager at VC-backed start-up)



Corporate Marketers

at long-standing corporations that are transforming in the digital age (e.g. Brand Manager at CPG)



Non-Marketers

work in functions outside Marketing (e.g. Sales, IT, HR, Legal, Creative)



In addition to sourcing talent across several internal and external workforces, companies need to consider reskilling rather than expensive recruitment of in-demand talent. General Assembly found that “radical reskilling” is 63% more cost-effective than recruiting external software engineers.²⁸ Massive Open Online Courses (MOOCs) and virtual learning are tools that scale and flex quickly to enable radical reskilling and meet changing market conditions.

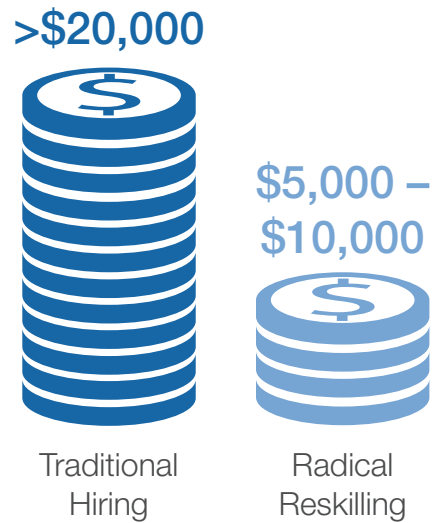
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It is neither through ‘cheap labour’ nor through attracting a narrow set of the ‘best and the brightest’ and winning a ‘war for talent’ that countries can optimize their long-term human capital potential, but through building up deep, diverse and resilient talent pools and skills ecosystems in their economies that allow for inclusive participation in good-quality, skilled jobs by the largest possible number of people.

”

World Economic Forum – Human Capital Report, 2017

Figure 10: Cost Reduction of Radical Reskilling vs Traditional Hiring for Software Engineers over Three Years



How Can Society Achieve a Brighter Future?

The advances in digital technologies and shifts in consumer behaviour have profound potential impacts on society. Public-private cooperation can accelerate positive changes, enable inclusive innovation, and mitigate adverse effects – if purposeful efforts begin now.

In the future, successful companies will be consumer-obsessed, and their operating models will reflect this. The scale and scope of the transformation required to operate in this new way are significant, and will have a commensurate impact on workers and consumers. For workers, the change implies navigating a more fluid career journey rather than following a linear career progression. For consumers, the change involves becoming much more proactive in understanding how providers are collecting, using and protecting their information.

The implications are widespread and complicated. Public-private partnerships can help businesses and consumers alike by minimizing risks and realizing the potential benefits of the changes. Such partnerships must include a diverse array of stakeholders beyond industry and government, including individuals and academic institutions, and they must enable disruptors such as education technology companies and freelance platforms. These partnerships need to focus on three areas:

- **Worker Enablement in the Digital Age:** Helping workers acquire and apply new skills
- **Flexicurity:** Supporting fluid career flexibility with transparency, social safety nets and transferable benefits
- **Consumer Data Principles:** Managing and protecting consumer data while unlocking value

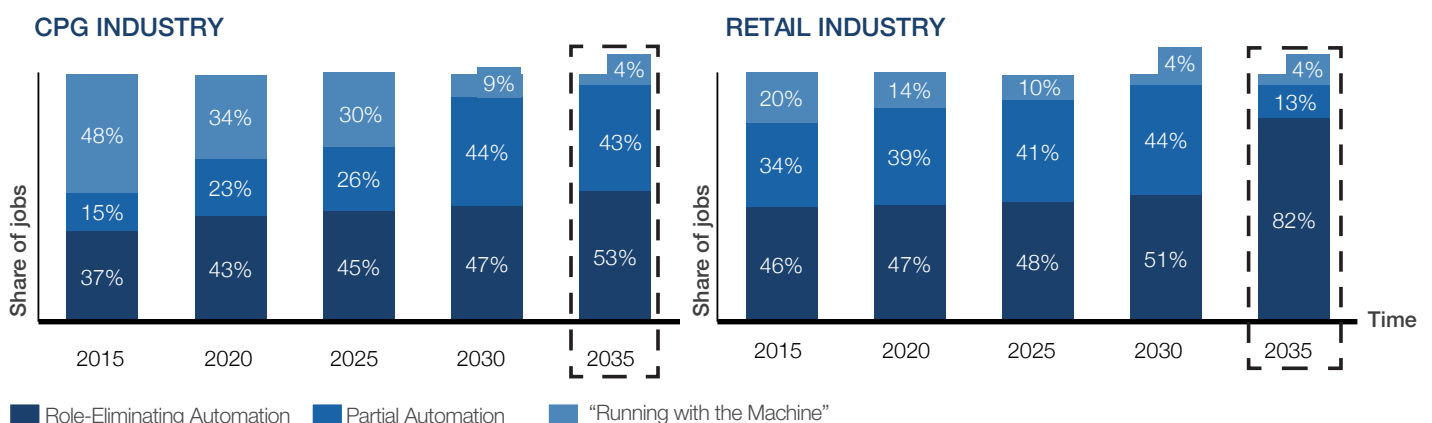
Worker Enablement in the Digital Age

Technology can provide value across every aspect of the industry. Artificial intelligence alone has the potential to double annual economic growth rates and boost labour productivity by up to 40 percent by 2035.²⁹ As this change progresses, the need for employees to work alongside technologies will grow increasingly urgent as many employees lack the digital skills required to undertake this journey.

This is a massive challenge – consumer industries employ 19% of the workforce across the OECD.³⁰ As transformations of operating models of consumer-centric industries creates new opportunities for workers, it may also cause widespread displacement for millions of people.

In this US alone, consumer industries employ 30.5 million people.³¹ Analysis indicates that 54% of the activities currently performed by CPG workers and 40% of those performed by retail workers can, in fact, be automated (for details on methodology, see Appendix B).³² If these tasks were automated today and no new roles were found for workers, this displacement could effectively double the US unemployment rate.³³ Workers are feeling this pressure directly as well: 43% of individuals believe that their job is likely to be automated in the next 10 years.³⁴ Similar patterns are expected to play out in other markets.

Figure 11: Estimated Impact of Automation on CPG and Retail Industries Workforce in the United States



Role-Eliminating Automation: More than 75% of activities can be automated

Partial Automation: Between 25% and 75% of activities can be automated

"Running with the Machine": Less than 25% of activities can be automated; Running with the Machine considers that workers will reallocate time to more "human-like tasks" and work in a collaborative, fully integrated manner alongside machines

A closer analysis of those tasks that can be completely or partially automated reveals that while low-skill workers are often considered the most vulnerable, most of the activities, and jobs, at risk actually correspond to middle-skill workers. Middle-skill jobs are those occupations that require more education and training than a high school diploma but less than a four-year college degree, and where repetition is high so the need for critical thinking is low once the skill is learned, such as health technicians, sales personnel, back office administrators, etc.³⁵ By contrast, low-skill jobs require less training or education and involve frequent manual tasks, such as house cleaners or restaurant waiters. Given the nature of tasks in middle-skill jobs, automation has led to a significant decline in the availability of work at that level. In fact, the share of workers in middle-skill jobs fell by almost 10% from 1995 to 2015, while share of workers in high-skill jobs increased and in low-skill jobs remained relatively stable. As the middle-skill jobs lost are replaced – 80% by high-skilled work and 20% by low-skilled work³⁶ -- the potential for occupational polarization risks becoming a reality as technological changes yield primarily high-skill jobs.

“

People [with] low and middle incomes have seen their wages stagnate and the share of middle-skilled jobs has fallen, contributing to rising inequality and concerns that top earners are getting a disproportionate share of the gains from economic growth.

”

– OECD Employment Outlook 2017

As new jobs form across the industry, stakeholders will need to support this growth in an inclusive way. CPG manufacturers and Retailers must invest in reskilling their workforces through targeted learning and skill development to ensure that all employees can succeed in the digital age.

Continuous Learning

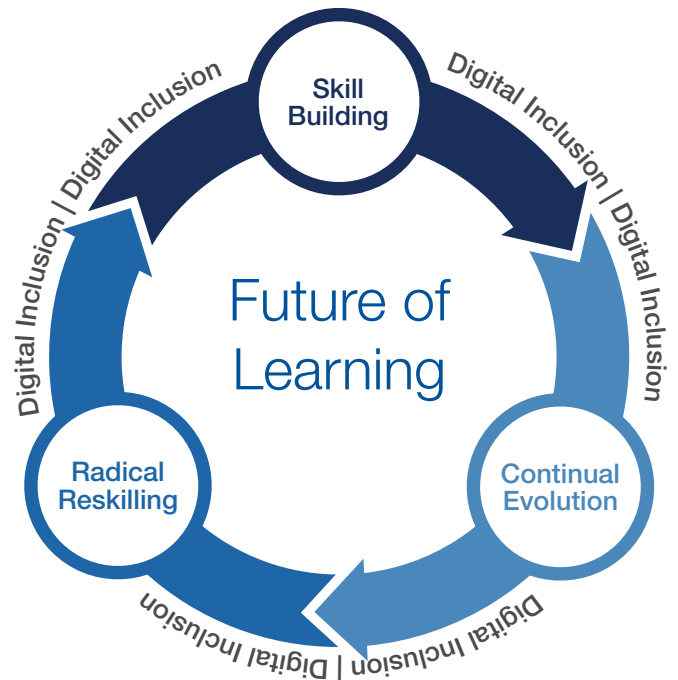
The ever-increasing pace of technology will require all workers to commit to ongoing learning. Today, the process and culture of learning is sequential – from primary and secondary education, through vocational training and higher education to job-specific training. The underlying assumption is that the resulting formal education will serve individuals for their entire career. This is no longer the case. Digital inclusion, developing an overarching digital and technology literacy to support market changes, provides access to digital technology for all workers at all stages – not just the few. It must be accomplished.

The future of learning involves a continuous cycle in which digital inclusion is achieved through:

- **Skill Building:** Preparing individuals for the workforce with new skill training, practical courses that combine academic and real-world experience, and active job placement

- **Continual Evolution:** Reinforcing and advancing workers' capabilities as the business evolves; supporting continuous learning as employees increasingly chart highly varied courses throughout the organization
- **Radical Reskilling:** Retraining workers for new opportunities as existing roles are displaced, offering a path to employment in new skill areas.

Figure 12: Continuous Learning Cycle



Case Study: SkillsFuture Singapore – Offering Incentives to Participate in Reskilling Programmes

Through the national Work Trial skill-building programme, Singaporean employers offer short-term trials in which jobseekers can work between 16 hours and 3 months, with 30% of wages subsidized by the government. Participants learn skills “on the job” while employers test candidates for fit and capability. The Ministry of Education has also set up SkillsFuture Singapore to strengthen the country's adult training infrastructure and provide access to quality programming and educational institutions. Some 126,000 Singaporeans – 2% of the population – enrolled in the programme's first year in 2016.³⁷

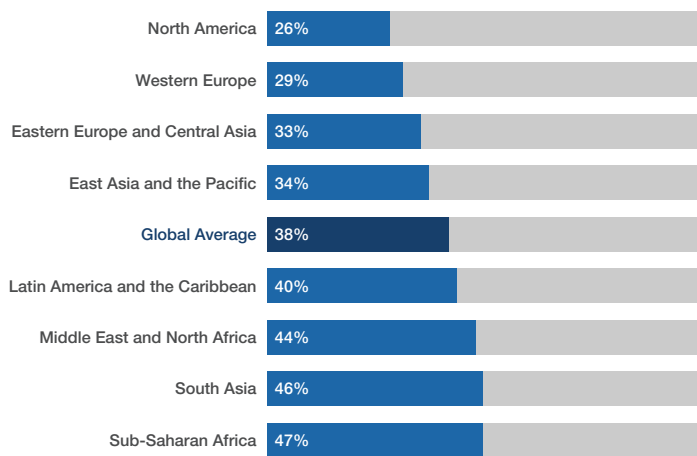
According to the World Economic Forum's *Future of Jobs* report, 30% of consumer industry core skills will change by 2020, accelerated by new business models and technology. Workers are not ready. Almost one in three individuals is concerned they will not be able to develop the skills necessary to succeed in the field they wish to pursue in ten years.³⁸ The objective of learning needs to shift from formal certification to ongoing skill development. Educational providers also need to shift their approach from helping students earn a static diploma to enabling workers to continually evolve their capabilities both within their current roles and as they transition to new ones.

Case Study: Skillful by the Markle Foundation – Creating Platforms to Bring Stakeholders Together

Skillful connects people to middle-skill jobs by supporting employers to shift from certification-dependent to skills-based hiring practices. The organization provides access to local talent pools, encourages the teaching of in-demand skills and prepares workers for new jobs with the help of their career coaches. Skillful has defined and piloted, and is now promoting, tools and practices to accelerate the shift to a skills-based labour market, working across the network of employers, educators, government and non-profit support organizations. Launched in 2016 by the State of Colorado, Microsoft, LinkedIn and local partners, 375 businesses have engaged with Skillful's network, and 20 companies are now working to fully embrace skills-based hiring practices. As of June 2017, more than 60,000 people have engaged with Skillful, and more than 1,400 people have actively engaged with Skillful's career coaches.

Workers do not only need to acquire job-specific skills, they must also have the ability to navigate career changes through transitional education. These programmes help people better identify their skills, develop and use networks, and use support services effectively. More broadly, such efforts will help unlock the potential of underused talent. Global human capital is developed to 62% of its potential,³⁹ which indicates that the world is wasting or neglecting 38% of its talent.

Figure 13: Gap in Human Development⁴⁰



“

All too often, however, human potential is not realized, held back either by inequality or an unrealistic and outdated faith on the part of policy-makers that investment in small subsections of highly skilled labour alone can drive sustainable, inclusive growth.

”

Klaus Schwab – Executive Chairman of the World Economic Forum⁴¹

In this digital age, skill development requires continuous learning on a global scale. This creates opportunities to develop hard technical skills, provides basic digital literacy to populations who lack it and enables individuals through infrastructure to achieve digital inclusion.

Case Study: Andela – Upskilling Non-traditional Candidates

Andela is a technical talent company that trains software developers from the African continent and places them as full-time distributed team members with Fortune 500 companies ranging from Viacom and Mastercard to dozens of high-growth disruptors such as GitHub and Gusto. Currently working with 500 developers, Andela has invested in an advanced training infrastructure and offers support services to help its developers achieve success in their careers.

Case Study: Chattanooga – Providing Universal Access to Stimulate New Growth

The City of Chattanooga built a government-owned, fibre-optic cable network to provide a high-speed internet service, while simultaneously increasing electricity reliability in rural parts of the city. Based on an independent study conducted by the University of Tennessee, the Electric Power Board (EPB) of Chattanooga's network has directly created 2,800–5,200 new jobs for the city and generated \$1 billion in economic benefit over the past five years.⁴⁰

Securing employment in the digital age will require stakeholder groups to collaborate to support professionals mastering new skills, embracing new ways of working and building both intrapreneurial and entrepreneurial capabilities.

Flexicurity

Given how important it is to develop agility, along with the responsibility to ensure economic inclusivity, the market is shifting to a more “liquid” workforce. In a recent Accenture survey, 52% of individuals say they are likely to work in the gig economy and 53% would prefer to work as a freelancer rather than as a formal, full-time employee. However, 72% expressed worry about a freelancer's lack of employee benefits.⁴³ Legacy support structures for labour markets have not kept pace with the development of new workforce models. As such, these legacy structures threaten the welfare of workers, who stand to lose the benefits of permanent employment, and will restrict the willingness of many workers to find new roles that could be more lucrative and fulfilling.

A new contract for employment is vital not only for worker welfare but to promote a liquid workforce and support job mobility. Flexicurity ties benefits (e.g. pensions and healthcare) to the individual and enables talent mobility with portable skills transcripts, helping workers maximize their long-term economic opportunity. This support structure reduces friction in the labour market, enabling optimal matching of supply and demand of talent.



Our policy-makers need social innovations to fully embrace the idea of flexibility and social protection – ‘flexicurity’ – by giving all workers the same rights and benefits, regardless of what contract they have.



Alain Dehaze – CEO, Adecco Group⁴⁴

While public discourse has focused on minimum guaranteed wages, other benefits to consider include health insurance, unemployment insurance and pensions. In addition to traditional benefits, stakeholders will need to consider alternatives for filling skills gaps, with easily accessible training and learning opportunities. A small number of governments have introduced individual learning accounts, which give employees the financial assistance to invest in their own continuous training, independent of employers.⁴⁵

Case Study: The Portable Benefits for Independent Workers Pilot Program Act (Proposed)

In 2017, US Senator Mark Warner and US Representative Suzan DelBene proposed legislation to pilot, test and evaluate portable benefit programmes. Eligible models include a variety of benefits such as healthcare, training and educational assistance, workers compensation and retirement savings. Senator Warner is the co-chairperson of the Aspen Institute’s Future of Work Initiative, whose 2016 paper highlighted existing programmes that could serve as models: multi-employer benefit plans in construction and entertainment, pooled workers’ compensation in New York livery, and health insurance in San Francisco.⁴⁶

Finally, there are some less obvious enablers of a fluid career. As employment velocity increases, networks become more important. Deviating from a formal career path impedes workers’ ability to communicate skills and accomplishments to new employers. Workers will increasingly be in situations where they are an unknown quantity; as learning increasingly shifts beyond traditional credentials such as the four-year university degree, a traditional curriculum vitae will no longer communicate the majority of an individual’s capabilities – nor will there be a universal taxonomy and language to describe competencies.⁴⁷ Fortunately, both industry disruptors and emerging technologies are targeting these challenges.

Case Study: Portfolium – Enabling Digital Portfolios

As employers increasingly value competencies that extend beyond the standard skills and experience reported on a traditional curriculum vitae, Portfolium provides individuals with the opportunity to build their own digital portfolio, capturing and curating examples of their academic and extracurricular work. Portfolium also serves as a social network, linking potential workers with academic institutions and employers.⁴⁸

Case Study: Learning Machine – Blockchain-verified Transcripts

Chris Jagers, CEO of Learning Machine, has been working with the MIT Media Lab to use blockchain technology to enable individual students to hold and share their verified official records with others in a safe, tamper-proof manner. This approach allows students to “act as their own lifelong registrar”, holding records not only for traditional education, but also for corporate training and alternative schools.⁴⁹

Flexicurity is vital for workers and employers alike, enabling agility and access to vastly expanded pools of talent. Companies have their own part to play in helping employees navigate a non-linear career path. To do this, businesses need to shift their focus towards radical reskilling – especially when it comes to helping steer workers through periods of digital disruption. Some business leaders have even raised the idea of a “carbon tax” model whereby companies that are more effective at skilling workers would lower their required contribution to state-administered unemployment benefits. Flexicurity provides highly skilled workers with the portability to meet professional needs, a safety net for those low-skilled workers most vulnerable to market disruption, and freedom for employers to use the best available talent.

Consumer Data Principles

Lastly, there is a significant opportunity – and risk – associated with consumer data. Recent reports have framed data as the “new oil” – the most valuable resource in the world. This idea should be expanded to include data as the “new soil” – the basis on which consumer and market value can grow.

Given that the fundamental driver towards future operating models is a reorganization to address consumer needs, copious amounts of personal data are required to establish consumer intimacy. This ongoing data collection gives rise to concerns about the privacy and security of personal information and how companies are using it. Recent surveys find that 57% of consumers are concerned with how businesses use their information,⁵⁰ with 41% of consumers stating they need companies to have greater transparency if they are to have confidence in their products/services.⁵¹

Consumer data is critical for technology to function. It serves as the primary input and building block for technologies such as artificial intelligence and connected devices. Industry and society need to collaborate to establish and protect consumer trust, while increasing the value created for consumers. To do so requires alignment on the following principles:




- Communicating consumer data collection and usage procedures in a simple, understandable way
- Outlining consumer data ownership and acceptable sharing practices
- Agreeing on data monetization protocols
- Understanding the necessary infrastructure and activities required to support consumer data security.

Realization of these principles will require both protocols and potential constructs or platforms – (for example, a “data passport”) in which consumers can securely store the data that they explicitly agreed to share with companies across multiple marketplaces.

If Not Now, When?

As technology-driven change continues to accelerate, the long-term viability of the economic system depends on thoughtful, collaborative, purposeful and immediate stakeholder action. These specific societal implications are intrinsically linked by a common purpose to drive societies towards digital inclusivity. Stakeholder groups can, and should, actively explore ways to mitigate these societal impacts through both individual and collaborative actions.

Figure 14: Calls to Action – Stakeholder Involvement to Achieve a Better Future

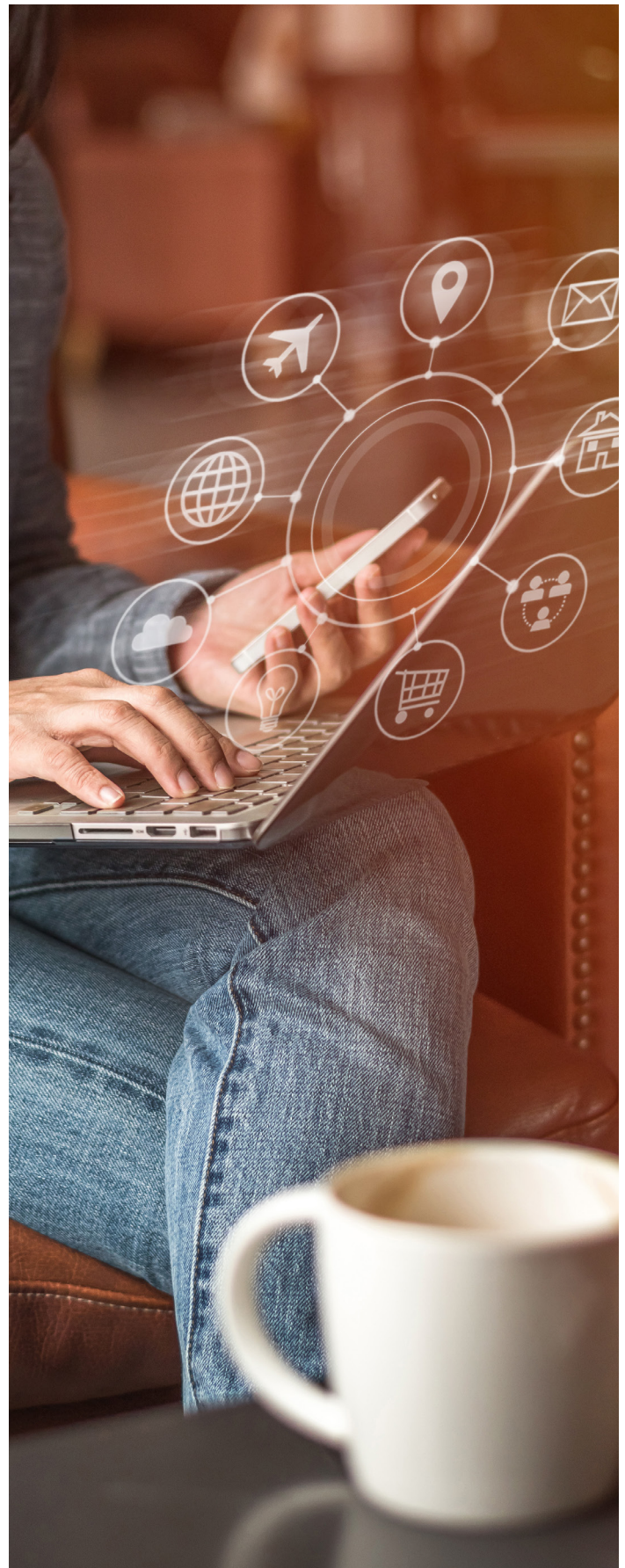
THEME	CALL TO ACTION	STAKEHOLDERS				
		Individual Workers	Industry	Government	Academic Institutions	Enabling Disruptors
 Worker Enablement in the Digital Age	Transform academic curricula and culture from focus on knowledge and four-year degree to lifelong learning	X	X	X	X	X
	Use data to drive right-skilling that recurrently identifies and builds newly required skills; measure the ROI of programmes		X	X		
	Address the affordability hurdle of alternative learning			X	X	X
	Couple education/skills programmes with career opportunities		X		X	
	Enable the “digitally underprivileged” with digital literacy and infrastructure			X		
 Flexicurity	Reform to tie benefits to the employee rather than company; broad-based benefits, including learning accounts		X	X		
	Invest in platforms and technology that enable workers to provide a transparent and verified record of their competencies		X	X		X
 Consumer Data Principles	Create comprehensible overview of consumer data collection and usage	X	X	X		
	Deploy control mechanisms, (e.g. consumer data passport)	X	X	X		X
	Define data security requirements and infrastructure		X	X		X

Conclusion

Disruptive technologies will continue to accelerate the pace of change. In light of this, this report paints a vision of the future for consumer-centric industries, provides a rich perspective on why organizations need to transform rapidly, and explains the seven essential characteristics of operating models that businesses should adopt. Furthermore, it provides a holistic view of the potential implications for business and society.

In summary, the goal of this report is to inspire responsive and responsible action – for industry leaders to change how they lead and transform their enterprises, while ensuring inclusive growth for the workforces they employ and the consumers they serve. Enabling this journey will require the full range of stakeholders – individual workers, industry, government, academic institutions and enabling disruptors – to collaborate in support of a prosperous future for all.









The time to act is now.



Appendices

Appendix A: Eight Disruptive Technologies – Value Chain Applications

The use of disruptive technologies across the entire value chain is driving high-impact benefits through a range of applications and has become a key source of value creation.

Consumer Industries Value Chain – Technology and Use-Cases						
Disruptive Technology	Recent Development	Design & Innovation	Manufacture, Plan & Buy	Distribute & Move	Sell	After Sales
 <p>Internet of Things (IoT)</p>	IOT is enabling data sharing within the ecosystem across the entire value chain	<ul style="list-style-type: none"> Foundational use-cases: quality management; storage conditions control; fleet management; digital stores; real-time omnichannel marketing; electronic shelf labels; beacons & geolocation; wearables Emerging use-cases: automated replenishment; remote diagnostics; predictive maintenance Pioneering use-cases: living services; real-time engagement feedback 				
 <p>Autonomous Vehicles/Drones</p>	Advancing technology continues to open possibilities in distribution efficiency	<ul style="list-style-type: none"> Foundational use-cases: Self-driving commercial trucks; Last mile delivery; Self-driving drones Emerging use-cases: Self-driving personal automobiles; Self-driving public transportation (buses, etc..) Pioneering use-cases: Drone consumer intelligence; Dronevertising 				
 <p>Artificial Intelligence/ Machine Learning</p>	New models for 'Human+Machine' augmentation are emerging, extending from supply chain operations to customer-facing applications	<ul style="list-style-type: none"> Foundational use-cases: Trend and volume forecasting; Descriptive analytics; Chatbots; After-sales service; Robotics Process Automation; Development Operations Automation Emerging use-cases: Predictive recommendations; Smart Search Assistance; Intelligent S&OP planning; Stock allocation forecasting; AI-assisted merchandising; Dynamic pricing Pioneering use-cases: Scenario-driven prescriptive analytics; Brain-simulation ideation; DNA workforce profiling 				
 <p>Robotics</p>	Robotic-enabled manufacturing lowers operational costs, enabling repatriation of manufacturing to bring production closer to the end-consumer	<ul style="list-style-type: none"> Foundational use-cases: Robotics-enabled prototyping; Robotic manufacturing; Robotic picking Emerging use-cases: Automated warehouse; Automated sales assistants; Automated customer support Pioneering use-cases: Co-bots; Cognitive robotics; Dark manufacturing; Robotic shopping carts 				
 <p>Digital Traceability</p>	Consumer demand for trust and transparency continue to increase	<ul style="list-style-type: none"> Foundational use-cases: Product source tracking; inventory replenishment; Supply chain product traceability; Merchandise tracking; Product authenticity mapping; Product warranty 				
 <p>3D Printing</p>	The convergence of R&D with prototyping and manufacturing is effectively shrinking the supply chain	<ul style="list-style-type: none"> Foundational use-cases: Prototyping; In-store product printing; Real-time manufacturing Emerging use-cases: In-store 'point-of-sale marketing' printing; In-store customization Pioneering use-cases: Real-time inventory production; 3D printed fashion; Custom promotional material; Custom workplace solutions 				
 <p>Augmented Reality/ Virtual Reality</p>	Application of AR/VR growing to include training the workforce and facilitating Human+Machine collaboration in manufacturing	<ul style="list-style-type: none"> Foundational use-cases: Virtual planogramming; Product design; Virtual retail locations; AR/VR engagement Emerging use-cases: Virtual changing rooms; Immersive campaigns; Virtual training environments Pioneering use-cases: Virtual market research, Virtual sourcing; Virtual customer service; Virtual hiring 				
 <p>Blockchain</p>	New applications emphasize trusted verification of individually held information	<ul style="list-style-type: none"> Foundational use-cases: Authenticity verification; Supply-chain verification; Online wallet; Transaction verification Emerging use-cases: Employee data verification; Education transcript verification; Professional credentials (e.g. legal) verification Pioneering use-cases: Smart contracts; Warranty tracking; Shared ledgers 				

Appendix B: Future Workforce of Consumer Packaged Goods and Retail Industries in the US: Econometric Model, 2017

The model is used to identify the portion of employment subject to automation under different assumptions of the “state of skills” in the workforce. It employs an estimated inverse relationship between the importance of skills that run with the machine and time allocation to “human-like” tasks within occupations, on the one hand, and the probability of automation, on the other. The analysis takes a task-based approach that accounts for human versus machine-like skills and tasks in occupations, in a similar way to the OECD’s research by Arntz, Gregory and Zierahn (2016),⁵² to address an important gap in occupation-based estimations (e.g. Frey and Osborne, 2013),⁵³ which assumes that occupations as a whole, rather than single tasks, can be automated by technology. This leads to an overestimation of automation – in reality, most occupations contain a substantial share of tasks that are hard to automate.

This analysis is based on the state of technologies today and accounts for future technological improvement (advancement/adoption) in a constant (linear) fashion. It considers the fact that the adoption of new technologies is often a slow process and workers are able to adjust by learning skills and switching tasks, preventing unemployment. The share of workforce subject to automation must not be equated to its current “as of today” possibilities.

Assumptions were made about the pace of reskilling the workforce in the future in terms of “run with the machine” skills, the reallocation of working time to human-like tasks and the reduction in learning years needed by the workforce in the United States to be ready to “run with the machine”.

Methodology:

- Country-specific analysis for CPG and retail industries in the United States
- Data basis: O*NET database, OECD PIACC survey, the work of C.B. Frey and M.A. Osborne (Oxford University), combined with the work supply demographics of the individual countries derived from the respective national account statistics on employment

Modelling Approach:

1. Constructed consistent data that links automation probabilities, skills, job activities, job descriptions and employment data
2. Defined those job activities that require strong human-like skills (that are not automatable) through regression analysis
3. Computed the share of employment in each country that is subject to total automation (= more than 75% probability), based on econometrics to estimate how the automation probability depends on PIACC activities of employees
4. Computed the average automation probability of each task grouping to calculate the total amount of tasks that can be automated across all jobs

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