



A Prescription for Success: FUTURE-PROOFING PHARMA WITH NEXT-GEN BUSINESS MODELS

Please note - this is a follow up article to my previous article
**'PHARMA'S TOUGH PILL TO SWALLOW:
THE PRESSING NEED FOR NEXT-GEN BUSINESS MODELS AND TRANSFORMATION USING AI'**
which can be read [here](#) and downloaded from this [URL](#)

By Dr. Andrée Bates,
CEO, Eularis

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In *The Invincible Company*, authors Osterwalder, Pigneur, Etienne and Smith describe an invincible company as “an organization that constantly reinvents itself before it becomes obsolete.”

But this begs the question—what leads to obsolescence?

One major driver of obsolescence is a failure to keep up with the rapid pace of technological change. Or, perhaps more accurately, with those that successfully leverage new technologies to disrupt industries. Think of Kodak, Blackberry, and Borders Group.

Another factor is a failure to understand and meet shifting customer expectations. Companies that fall out of touch with their customer base inevitably fail. Recall Blockbuster’s famous rejection of the offer to buy Netflix. (In fairness, its reasons for doing so at the time were legitimate and the story is [more complex](#) than Blockbuster’s then-execs get credit for. But the subsequent several years still demonstrated a fundamental misunderstanding of their customer’s changing demands. The bungled “erasure” and reinstatement of late fees, for example.)

Finally, businesses that fail to adapt to market changes, including the competitive landscape, regulatory requirements, environment, and public opinion, rarely fare well. In the 1970s, Nestle came under fire for its aggressive marketing of baby formula in 3rd-world countries that was seen to (very wrongly) discourage breastfeeding and increase the risks of infant mortality. (Nestle has made plans to stop marketing formula for infants under the age of six in 2023, but regular criticism of their marketing tactics [still abounds](#).)

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An invincible company as “an organization that constantly reinvents itself before it becomes obsolete.”



PHARMA FAILS THE LITMUS TEST

What of Pharma? How does it fair in the litmus test of impending obsolescence?

Not well, some would say.

Pharma, tech, and the upshot of outsourcing

Pharma companies, traditionally, are slow to move. Behemoth healthcare incumbents are only now starting to take advantage of new technologies that are well-established in the wheelhouses of fast-moving tech start-ups and industry leaders.

This failure exists in critical areas, such as marketing, logistics, and even Pharma's bread and butter, R&D. The rise of gene therapy and gene-editing technologies, for example, has the potential to revolutionize drug development—but many pharmaceutical companies have been slow to embrace these new approaches. Of course, there are strict regulations around gene therapies, and rightly so. But to say that the industry has taken advantage of every opportunity would be a false statement.

In fact, it would be fair to say that pharma has actively contributed to the current situation by encouraging and funding the development of lean, technological advances businesses in its efforts to outsource more and more core processes.

It began with the outsourcing of clinical trials. Pharmaceutical companies seeking to minimize costs and maximize returns recognized that clinical trials posed a significant financial burden. By enlisting contract research organizations (CROs) to carry out these trials on an as-needed basis, pharma giants could allocate their resources more effectively, and thus, boost profitability.



This initial success with outsourcing spurred further expansion into other areas, as the industry, following traditional business models, focused efforts on its core competencies and outsourced the rest. Soon enough, discovery and R&D were delegated to contract organizations, biotech firms, and academia. Consequently, the proportion of drugs originating from external companies and in-licensed endeavors increased—reaching up to 30% and above.

Outsourcing permeated other aspects of the pharmaceutical value chain, as CROs expanded their service offerings to include discovery, formulation, contract manufacturing, marketing, and detailing. For example, Covance acquired Eli Lilly's early drug development site, signaling an increasing trend towards outsourcing. Additionally, contract manufacturing organizations and contract sales reps began to play more prominent roles in the industry, further fragmenting the once-integrated process.

The comprehensive outsourcing of services has led to a situation where pharmaceutical companies have become mere project managers, purchasing drugs, coordinating clinical trials, and contracting sales and marketing services. This disintegration of the value chain has had unintended consequences for the industry giants.

By breaking down the once-monolithic structure of Big Pharma into smaller, more manageable pieces, they inadvertently lowered the barriers to entry for other players. The emergence of virtual pharma companies and the proliferation of biotech start-ups have crowded the drug discovery and development space, with Big Pharma no longer holding a dominant position.

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This disintegration of the value chain has had unintended consequences for the industry giants.



Consumer preferences, personalisation, and diagnostics

The pharmaceutical industry has also struggled to adapt to changing consumer preferences.

This is true particularly in terms of pricing and transparency. Consumers are increasingly demanding more affordable and accessible healthcare options, and many are looking for greater transparency around drug pricing and clinical trial results. The high cost of many drugs and the lack of transparency around pricing and clinical trial data, for example, have led to increased scrutiny of the pharmaceutical industry and has resulted in calls for greater regulation and oversight.

Another example has to do with the loss of diagnostics from Pharma's toolbox. In the past, many pharmaceutical firms sold off their diagnostics units, deeming them low-value additions to clinical decision-making, with thin margins in comparison to therapeutics. Consequently, precision diagnostics remain reimbursed at low rates, stifling the development and use of genetic and molecular diagnostics that, albeit costly, could deliver substantial savings to the healthcare system and satisfy the public's growing demand for precision medicine.

Diagnostics have emerged as a critical component in determining therapeutic efficacy. It has become evident that pharma's future profits lie at the nexus of diagnostics and therapeutics. A decade ago, molecular diagnostics companies like Applied Biosystems began acquiring pharmaceutical companies, while others, such as Millennium Pharma (now Takeda) and Roche, have long straddled both fields. Roche's Herceptin for HER2+ breast cancer exemplifies the potential of precision medicine: the test cost \$366 to perform, but the financial benefit of doing so yielded \$24,000 in savings per patient.

It has become evident that pharma's future profits lie at the nexus of diagnostics and therapeutics.



The market and managing meager growth

Finally, the industry has also faced challenges in adapting to evolving market conditions, particularly in the area of drug discovery and development. Many pharmaceutical companies, for example, have struggled to bring new drugs to market, and have been criticized for focusing too much on incremental improvements to existing drugs rather than on developing truly innovative new treatments.

Serendipitous drug discoveries, like Prozac and Viagra, once paved the way for blockbuster revenues. However, as companies grew, achieving consistent growth became increasingly challenging. A company earning \$50 billion per year requires an additional \$5 billion for 10% growth. This led to prioritizing “me too” drugs targeting broader markets over smaller, niche areas.

Recently, this approach has shifted as big markets saturate with generics, and niche cancers and rare diseases become more attractive. Many drugs target symptoms (e.g., Lipitor for cholesterol), but precision medicine’s rise will likely fragment these markets further.

Current business models, unprepared for serving small niche markets, face challenges. With drug development costs starting around \$1 billion, addressing niche conditions with few patients necessitates exorbitant prices to recoup investments. Precision medicine, fragmenting markets into smaller segments and lowering revenues per product, demands a complete overhaul of cost structures and investment models.

The pharmaceutical industry’s evolution may involve transitioning from specialized sales teams to direct-to-consumer (DTC) models, currently prevalent in the US and NZ. As DTC becomes dominant, companies like Amazon, with experience in healthcare value chains—discovery, telehealth, patient medical records, pill packing businesses, and pharmacies—may lead the charge. The industry may witness big tech perfecting DTC models, delivering next-day medications with services like Amazon Prime, thus reshaping the pharmaceutical landscape.

Pharma certainly isn’t alone when it comes to ignoring signals that change is necessary. Disruption is often most obvious when seen from the outside. But the view from the outside shows that existing pharma companies cannot wait any longer to change if they are to survive. Either that or go the way of Barnes and Noble - maybe not dead but significantly decimated.

Precision medicine’s rise will likely fragment these markets further.

DISRUPTION



NEW BUSINESS MODELS OFFER HOPE

A business's approach to technology, customers, and the market constitutes its business model, the manner in which it makes a profit by offering a product or service to specific individuals in a given context.

Drawing on models explored in *The Invincible Company*, there are several ways pharmaceutical businesses can adopt new business models that embrace disruption and leverage new opportunities, including artificial intelligence. We explore these below.

Shifts in value proposition

How can we improve the value we offer our customers?


From product to recurring service

One key transformation recommended for the pharmaceutical industry is to transition from selling products (such as pills) to offering recurring services that encompass more than just the medication.

This approach differs in scale and approach from previous attempts to move "beyond the pill", which focused largely on supplementary services rather than a fundamentally new business model.

The escalating costs of R&D and current rates of failure are unsustainable. Marketing new drugs is not only expensive but also a continuous process. Although developing recurring services necessitates investment, it is likely to be significantly less than what is required for new drug development. In turn, this approach yields more predictable and regular revenue streams that are primed to experience exponential growth. The lifetime value of individual customers also increases.

There are several ways pharmaceutical businesses can adopt new business models that embrace disruption and leverage new opportunities, including artificial intelligence.



A notable example of such a shift from outside of the pharmaceutical sector is Rolls Royce. The company transitioned from a pay-per-car model, akin to pharma's pay-per-pill approach, to a subscription service where customers are charged per mile of usage. This change has led to the highest revenue in the company's history.

The company made a similar move in the airline industry back in the late 1990s. Rolls Royce started by selling engines to airlines, who were left to maintain these extraordinarily expensive, highly complex, and highly varied machines. But **they quickly realized** that "airlines didn't want to be in the 'jet engine business', [they] wanted to focus on flying passengers from point A to B." So they developed a new subscription model called "power-by-the-hour", and took over installations, check-ups, maintenance, and decommissioning. Airlines loved it, and engine failures were made rarer, to boot. This couldn't be more relevant to the pharmaceutical industry, because, unsurprisingly, doctors don't want to be in the pharmaceutical business—they want to be in the patient business. They want to connect patients to long-term, sustainable solutions, and a subscription is one way to do that.

It's good for patients, too. Car companies on the "power-by-the-hour" model are incented to keep the car running as long as possible. Subscribers to a pharma company that are provided with medication—whatever medication—they need based on a monthly subscription are of greatest value when they live long, healthy lives. Curing diseases would be just as profitable as treating them.

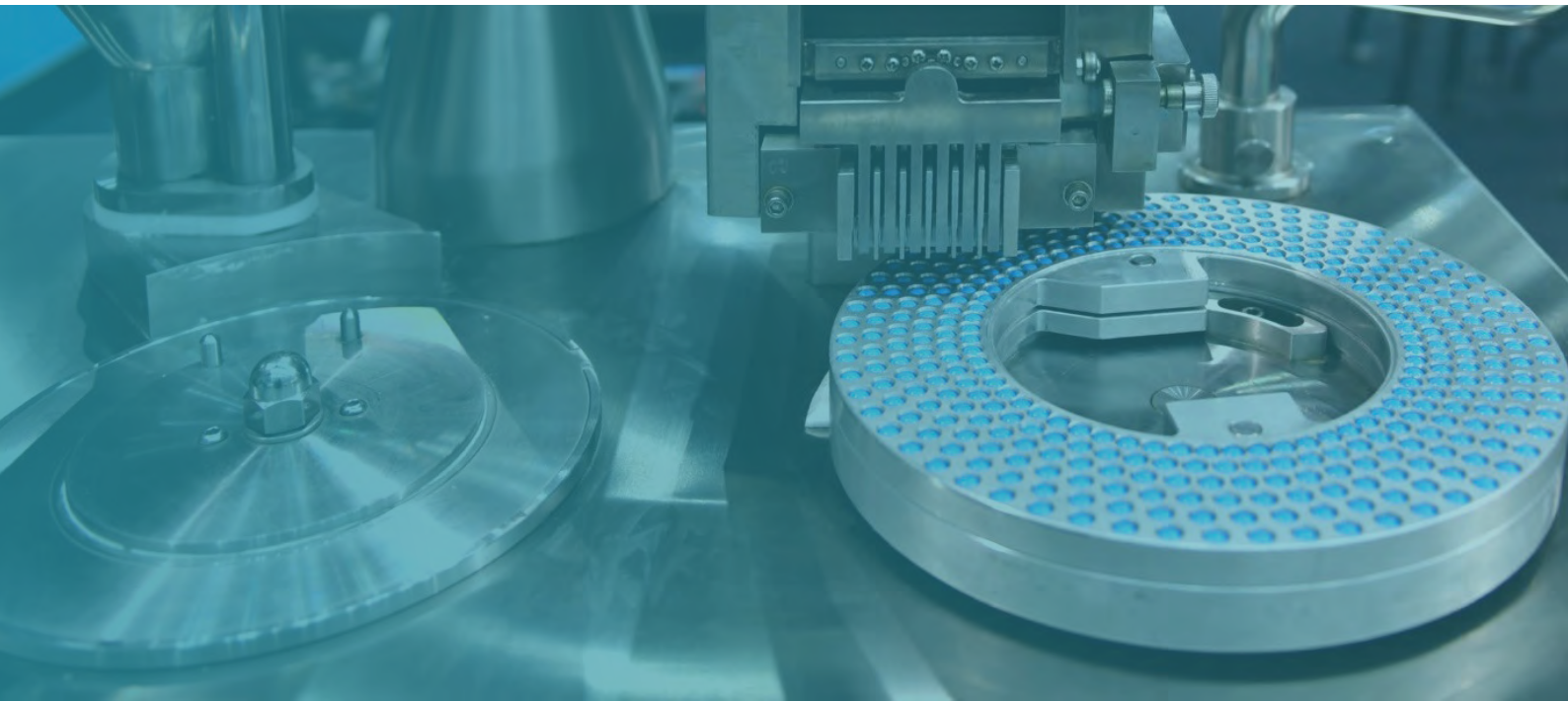
There are also advantages for the state. The United Kingdom's NHS initiated a new trial involving a subscription-based payment model to encourage pharmaceutical companies to create novel antibiotics targeting antibiotic-resistant bacteria, something they've been hesitant to invest in due to falling returns from volume-based payment models.

"A 'Netflix-style' subscription model for antibiotic reimbursement changes the financial incentives for pharma companies; making the development of novel antibiotics that meet clinical unmet needs more attractive," explains GlobalData senior analyst James Mather. Likewise, Louisiana and Washington have both individually agreed to fixed, monthly costs for a drug company's Direct-Acting Antiviral, instead of paying per prescription.

Another instance of a successful transformation comes from Hilti, a company that initially manufactured tools. Hilti shifted from producing tools to offering a comprehensive tool management service designed to enhance productivity. By adopting a tool "fleet management and leasing" model based on subscriptions, the company became highly relevant to construction firms that prioritized efficient tool usage and reduced worker downtime over tool ownership. Hilti discovered that customers were willing to lease significantly more tools than they had previously purchased. During the 2008 financial crisis, when many companies halted tool purchases, Hilti's recurring subscription model allowed them to weather the storm as clients continued to rent tools.

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From low-tech to high-tech

Labor-intensive, low-tech value propositions are costly, resistant to change, and prone to disruption. Pharma companies need to embrace high-tech solutions, including AI and new forms of discovering, manufacturing, and delivering drugs. For example, there are exciting opportunities in [3D printing](#). One major advantage of 3D drug printing is the ability to create personalized medications tailored to a patient's unique needs. By adjusting the arrangement and density of active and inactive ingredients within pills, companies can produce drugs with precise release and absorption rates, enabling a new era of personalized medicine. Additionally, 3D printing allows for custom dosages at virtually no extra operational cost, increasing flexibility in medication production.

Another benefit of 3D printing is the creation of pills that are easier to swallow. For example, Aprexia's ZipDose® Technology enables the manufacturing of highly porous, rapidly disintegrating pills that improve patient adherence. Custom polypills, designed for patients with multiple medications, can also enhance adherence and overall patient experience.

Moreover, 3D printing could lead to the democratization of pharmaceuticals, with hospitals and doctors' offices potentially being able to manufacture their own medications. This can result in reduced costs for unused medication, more efficient storage, and better patient outcomes in remote areas.

Likewise, AI in pharma R&D offers several potential benefits, including redefining longstanding workflows, eliminating knowledge silos, and lowering costs. By increasing efficiency, accuracy, and effectiveness, AI can replace manual tasks and provide valuable statistical insights for improved decision-making. Furthermore, AI-powered knowledge-sharing and communication tools can break down knowledge silos, promoting collaboration and resource utilization. Lastly, AI can significantly reduce drug discovery costs by identifying inefficiencies, reducing redundancies, and optimizing processes, with some estimates suggesting savings of up to 70%.

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From Sales to Platform:

Business models based on recurring product sales demand continuous effort. By transitioning from a product-centric approach to a platform-based model, it's possible to achieve much greater stability. Users of the network benefit through access and use of its many interconnected resources. It's an instance of the whole being greater than the sum of its parts, and platforms as a result are more resistant to disruption than individual products.

Best Buy, a company outside the pharmaceutical industry, successfully adopted this approach. Previously on a downward trajectory, Best Buy incorporated a platform focused on digital health, including AI-driven monitoring of elderly individuals in their homes, providing assistance in emergency situations such as falls. They also instituted one of Amazon's successful tactics - offering a marketplace for big brands such as Samsung, Microsoft and Google. Their platform also includes subscription offers, contributing to the company's dramatic growth and reversal of decline.

Another example is Apple, which shifted its business model with the launch of the App Store in 2008, connecting app developers and iPhone users. This transformation significantly increased customer value, created customer loyalty, and generated strong network effects. Consequently, Apple moved from solely selling hardware and its own software to managing a powerful platform—one that actually enhances the utility and attractiveness of its core products.

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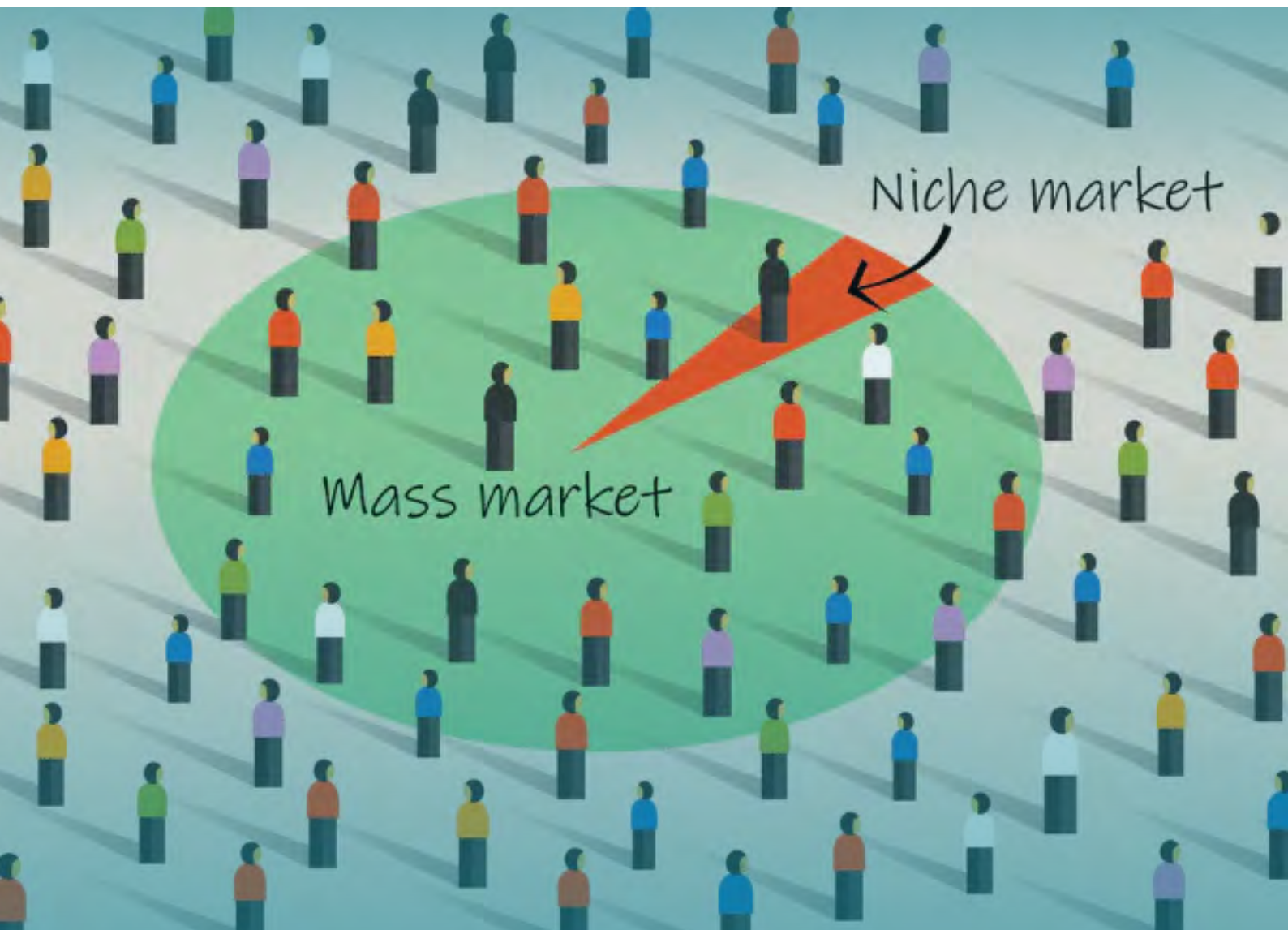
“Profiting together”

An example from within the pharmaceutical industry comes from Novartis' Biome initiative. Launched in 2018, [Novartis Biome](#) is a digital network of “innovation hubs” that fosters collaboration between Novartis and various other technology startups, healthcare providers, and other stakeholders. The goal is to develop innovative digital solutions that can address unmet healthcare needs and improve patient outcomes.

By creating the Biome platform, Novartis moved beyond the traditional pharmaceutical business model focused on drug (i.e., product) development and sales, instead leveraging their expertise and resources to build a network of partners that could jointly create and share value. This has allowed Novartis to indirectly explore digital health solutions in areas such as remote patient monitoring, AI-driven drug discovery, and personalized medicine. This not only increases value for customers but also creates synergies with Novartis' core pharmaceutical business—much like Apple's App Store did for its hardware products.

This is a prime example of what PricewaterhouseCoopers [predicted in 2007](#) would become necessary by 2020. “The strategy of singlehandedly placing big bets on a few molecules, marketing them heavily, and turning them into blockbusters will not suffice.” Pharma needs to “profit together” by joining forces with a wide range of organizations. The resultant network offers greater value to customers than any single company could alone, and it makes the operator of the network indispensable and thus more resistant to disruption.

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Frontstage-driven shifts

How can we target different customers and deliver products and services in new ways?

From niche market to mass market

Pharma in recent years has experienced a “niching down”, and pharmaceutical companies have good reasons for doing so. Advances in genomics and molecular biology have allowed for more target therapies for specific populations; there has been a growing emphasis on developing drugs for rare (“orphan”) diseases, as encouraged by the FDA and EMA; the market has become increasingly competitive, and saturated; fragmentation of the payer landscape has required pharma to tailor its offering to specific payer groups (e.g. private insurers, government programs, and integrated healthcare networks); and personalized care is becoming increasingly sought after, leading to greater focus on niche markets and specialized therapies.

All of these are legitimate reasons to “niche down”, and they are trends that are unlikely to see a reversal any time soon (at least where the personalization of medicine is concerned).



But there are ways for pharma to maintain the benefits of these new approaches, while still capturing mass markets. One potential approach would be to concentrate on health and wellness generally instead of solely on illness and targeted drug therapies. The industry has a wealth of existing genetic knowledge and expertise, for example, that it could leverage to offer a broader range of services to the general public, rather than just patients.

A pharmaceutical company offering a \$99/month subscription service that includes genetic analysis for subscribers would not only provide personalized recommendations to help individuals avoid or manage conditions they may be genetically predisposed to, but it would also ensure access to necessary medications if they eventually develop those conditions. By offering such a subscription, pharmaceutical companies could transition from a niche market to a mass-market approach, simultaneously expanding their customer base and promoting preventive healthcare.

Plus, it would provide pharma with access to even more genetic data, which could be used to better understand specific populations, develop better and more target drugs, and further increase the benefits of the subscription by offering better recommendations—not just around illnesses and drugs, but overall health and general lifestyle. Moving out of the “disease market” and into the “general health” market would be a big win for the industry.

From B2B to B2(B2)C:

With a few notable exceptions, pharmaceutical companies largely exist as faceless entities to the end consumer, because they deal mainly with physicians. But business structures are becoming flatter across all sectors as the gap between customers and businesses narrows. Pharmaceutical companies must become more relevant to the customer directly.

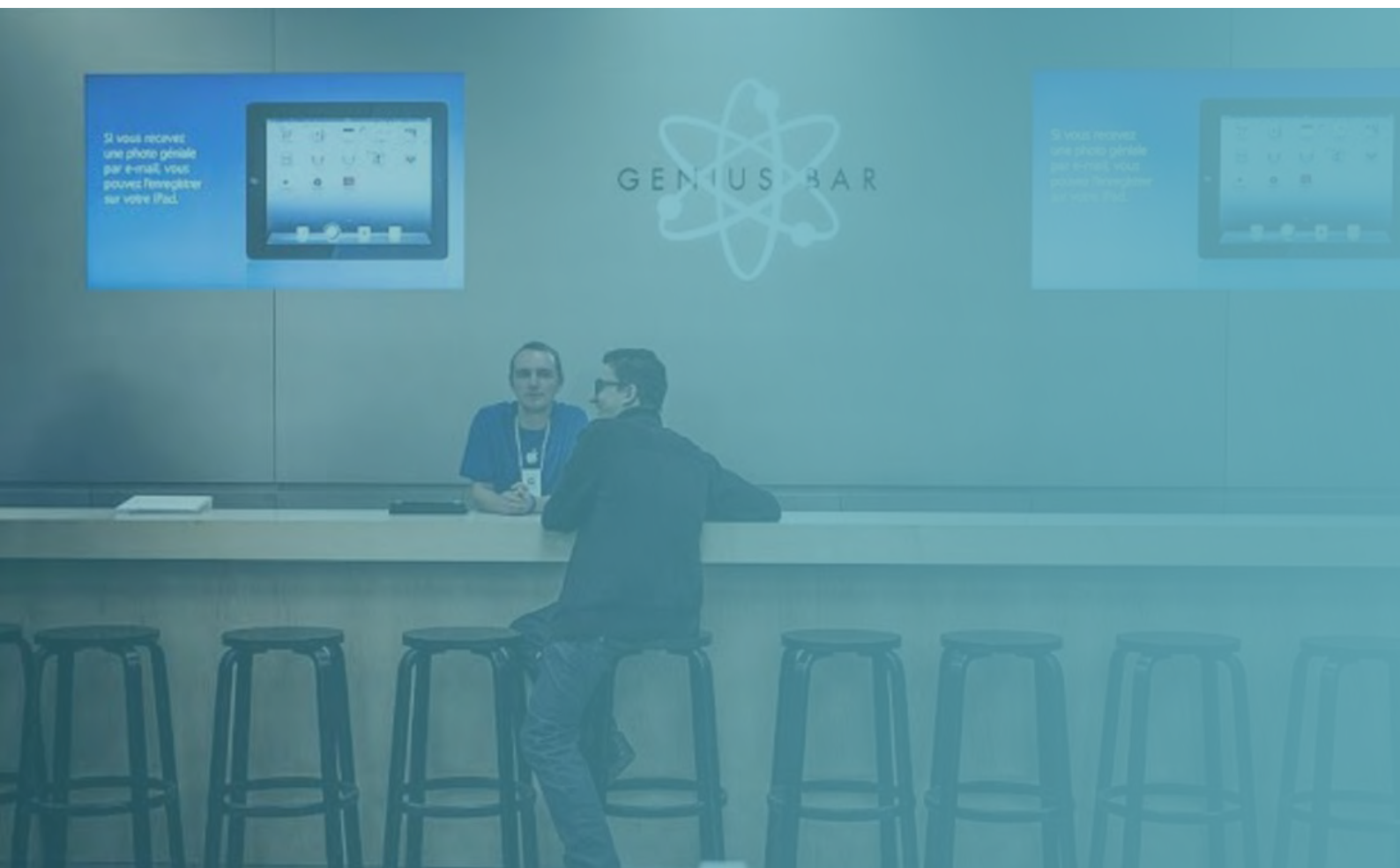
In the 1990s, for example, Intel launched its “Intel Inside” campaign to move from selling hardware just to PC manufacturers to educating consumers that this label meant a high-quality laptop. This allowed Intel to differentiate itself, charge more, and grow faster.

This can only be made possible by understanding patient experiences and building relationships in new ways. Transitioning from the faceless—even distrusted and shadowy—guise of “Big Pharma”, as it’s seen by the public today, to a trusted health facilitator is essential—and there are many ways to do it.



Pharma has already made inroads with direct-to-consumer advertising, patient support programs, and greater social media engagement. To continue these efforts, pharmaceutical companies should:

1. **Emphasize corporate social responsibility (CSR)** by funding research for neglected diseases, improving access to medications in underserved communities, and promoting environmental sustainability. By showcasing commitment to these issues, the industry can create a more positive image and strengthen its connection to consumers.
2. **Develop consumer-oriented digital tools**, such as mobile apps or wearable devices, that help individuals monitor their health, track symptoms, and manage their medications. (See, for example, Novartis' smart [NovoPens](#).)
3. **Collaborate with patient advocacy groups**, to better understand consumer needs and develop more patient-centric products and services, while also building trust and credibility within the patient community.
4. **Personalize medicine and genetic testing**, as previously mentioned, and thus move beyond the traditional role of drug manufacturers and become more integrated into the overall healthcare ecosystem.



From low-touch to high-touch:

High-touch approaches emphasize the importance of human interaction, empathy, and personalized care, which are considered crucial in building trust and understanding individual needs. On the other hand, low-touch solutions leverage technology, automation, and data analytics to streamline processes, reduce costs, and improve efficiency. The growing adoption of low-touch solutions, such as telemedicine, AI-driven diagnostics, and digital health platforms, has raised concerns about the potential erosion of human connection and empathy in healthcare delivery.

Importantly, the Covid-19 pandemic led to a rapid acceleration of low-touch (albeit highly convenient) approaches and tools in pharma and beyond. But, as we've seen above, there is a desperate need for pharma to become more personalized and more personable. We must consider the value of high-touch experiences in healthcare to achieve these goals, and strike a balance between low-touch and high-touch experiences, adeptly and seamlessly offering each as appropriate.

Apple exemplifies this balance. Unsurprisingly, the tech giant leverages automation and data analytics to provide extremely convenient, simple and intuitive low-touch experiences for purchases, support, and more. But they also offer personal, human interactions via the Genius Bar, present in every store and always busy. In-store buying experiences are likewise high-touch. Apple has understood that those who prefer low-touch will naturally gravitate towards such tools, if they are offered and powerful; and those who prefer high-touch interactions will similarly seek them out.

The Covid-19 pandemic led to a rapid acceleration of low-touch (albeit highly convenient) approaches and tools in pharma.



By providing both, Apple has managed to satisfy a highly diverse market.

Examples can be found within pharma, as well:

1. **NOVO NORDISK'S *NovoCare platform*** combines digital tools and personalized support with resources like financial assistance, educational materials, and personalized care plans, as well as access to diabetes care specialists who can provide one-on-one guidance.
2. **SANOFI'S *MyStar Connect*** app provides personalized coaching and support for persons with diabetes, allowing them to track their blood glucose levels, set goals, and monitor their progress. In addition to the digital tools, Sanofi collaborates with healthcare professionals to *offer patients access to educational programs*.

Integrating technology-driven solutions with human interaction ensures patients receive both efficient support and personalized care. Notably, artificial intelligence can help automate the customer journey towards different touch points in a seamless manner. Next-generation chatbots and digital humans, for example, can provide high-touch experiences with low-touch stress on business, and help gather information for a human end-of-journey experience that's highly personalized and successfully responds to customer expectations and needs.

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FUJIFILM

Value from Innovation

Backstage-driven shifts

How can we use resources differently and more effectively?

From dedicated to multi-usage resources

Businesses that can extract greater value from existing, especially untapped resources benefit from new and more diversified revenue streams and reduced costs of labor and raw materials. They can offer more to consumers and target new ones as well.

British Petroleum (BP) [adopted this business model](#) with great success when they started supplying petrochemical products to make clothes and building materials, produced refined petroleum products and scaled up co-processing of lower carbon fields, and identified new resources and development options for the exploitation an extract of oil and gas to extend the life of existing assets.

These existing resources needn't necessarily be material in nature, though. Expertise and knowledge is also a resource that can be exploited in new ways.

With the digitization of film, FujiFilm was forced to pivot from analog film to other industries. They leveraged their expertise in collagen—a major component of both film and skin—to create [Astalift skincare](#). This new adjacent business allowed them to bounce back when the analog film business declined, unlike Kodak. FujiFilm then expanded into medical devices, functional materials, and pharmaceuticals, building an entirely new value proposition while leveraging their existing expertise in collagen.

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There are a few ways to do this in pharma, but one exciting and highly relevant way is by leveraging owned data sources with artificial intelligence. Pharmaceutical companies sell drugs, but they have many adjacent assets: data, relationships with doctors and patients, medical expertise, labs, supply chains, clinical trials, and more. Pharma must find new ways to combine and use these.

There are already some exciting examples in the industry:

1. Pfizer [partnered with Concerto HealthAI](#) to utilize real-world data and AI to optimize clinical trial design and accelerate drug development.
2. Novartis [partnered with Microsoft](#) to develop an AI-powered drug design platform to expedite the drug discovery process.
3. AstraZeneca [partnered with BenevolentAI](#) to use AI to identify new drug targets for chronic kidney disease.
4. Roche [partnered with GE Healthcare](#) to develop a digital platform that uses AI to optimize patient outcomes by analyzing data from medical imaging and other sources.
5. Sanofi [partnered with Google](#) to use AI and machine learning to improve their drug development processes and accelerate the discovery of new therapeutic targets.

A final notable example comes from 23andMe. They began by selling direct-to-consumer genetic testing kits for ancestry and health analysis. Roughly 80% of buyers opted in to having their data used by the company, which quickly developed a database of genetic data and was able to sell it, anonymised, to medical researchers, governments, universities, the military, and more. They then went into drug discovery, both on their own and in collaboration with pharmaceutical companies, and have since developed at least one drug.

Pharma has equal access to rich and highly relational medical data whose uses go well beyond current applications.

Other ways to transition from dedicated to multi-usage resources include:

- Recycling and repurposing products, byproducts (both material and immaterial), and waste. For example, some byproducts and waste materials of pharmaceutical manufacturing can be used as fuel, raw materials for other industries, and in the production of other pharmaceutical products.
- Traditional manufacturing processes in pharma rely on dedicated production lines and equipment optimized for specific products. Adopting flexible manufacturing processes allows for the repurposing and sharing of resources across different product lines.
- Sharing research and development resources with other players within and beyond pharma to reduce duplication of efforts.

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New Concept Solutions to Commercialize Innovations

From asset-heavy to asset-light

Many aspects of the pharmaceutical industry are asset-heavy. The development and operation of manufacturing plants requires significant capital investment, specialized facilities, and equipment that meets regulatory standards. R&D and clinical trials, likewise, require specialized facilities, equipment and expertise, and complex supply chain and distribution networks are necessary to ensure timely delivery of drugs.

Many pharmaceutical companies have wisely begun looking for ways to reduce their asset-heavy operations and transition to asset-light business models, by outsourcing manufacturing, divesting non-core assets, and leveraging intellectual property and knowledge. There are two primary ways of achieving this.

The first is to outsource asset-heavy operations. The [ATL ATL Innovation Center in China](#) is a good example of this. The center offers a range of services to pharmaceutical companies, including R&D, clinical trials, manufacturing, and supply chain management. By outsourcing these operations, pharmaceutical companies can reduce their asset-heavy operations, reduce costs, and focus on their core business of developing innovative drugs.

Another pertinent example comes from BestBuy, which was able to shift the cost of show-rooms by allowing Samsung, Microsoft and Google to open up kiosks within BestBuy stores—a move that helped save the company from bankruptcy when faced with stiff competition from Amazon. The business model allows both sides to share in the risks and rewards of getting closer to the customer.

The second is to leverage recent advancements in technology to transform once asset-heavy operations into light ones. For example, the advent of 3D printing, though, offers new ways for pharmaceutical companies to produce drugs in smaller batches, allowing for greater variation and personalization in the drugs produced.

And these two methods needn't be mutually exclusive. The ATL ATL center already offers pharmaceutical companies access to 3D printing technology to manufacture drugs, allowing pharmaceutical companies to reduce their capital expenditure and operational costs, while still maintaining regulatory compliance and ensuring the safety and efficacy of the drugs.



From closed to open innovation

With [*open innovation*](#), firms create and leverage partnerships with startups and disruptors, rather than relying exclusively or primarily on in-house efforts to innovate. The job of the central business then becomes one of coordination. Pharma is no stranger to this model, and partnerships with AI tech developers and start-ups are already common.

Novartis established the [*Novartis Venture Fund*](#) to identify and fund early-stage life science companies. AstraZeneca's [*Open Innovation Gateway*](#) provides a platform for external researchers and startups to collaborate with the company on drug discovery and development. Many labs, including Zoetis and Pfizer, have Compound Transfer Programs to the same end.

There are several key ways pharmaceutical companies can continue championing and benefiting from open innovation:

- 1. Partnering with experts in AI and ML** to analyze data from internal and external sources, such as research papers, clinical trials, and patient data, to identify new drug candidates.
- 2. Launching online** platforms and contests to engage the public, including patients and caregivers, in "crowdsourced" drug discovery.
- 3. Partnering with patient advocacy groups** to identify unmet medical needs and innovate new ways to support existing patients, especially beyond the pill.
- 4. Partnering with experts in blockchain** for secure data sharing between pharmaceutical companies, external researchers, and other stakeholders.
- 5. Collaborating with non-traditional partners**, such as consumer goods companies, to develop new drug delivery systems, improve patient engagement, and enhance patient monitoring.

The name of the game is synergy, and there are countless opportunities for pharmaceutical companies with the growing number of startups, both within and beyond health sciences, as well as incumbents in other areas.



Shifts in profit formula

How can we adjust the relationship between revenue and costs?

From high- to low-cost:

Historically, pharmaceutical business models have avoided low-cost products because they appear to offer low returns. But with newer technologies, business models can adapt to create cost structures that attract customers with smaller budgets.

In 2002, Dow Corning (now Dow Silicones Corporation) recognized that the market for silicone was becoming increasingly competitive, and that their business was under threat. In response, they created a new business model to offer silicon products at a lower cost than their competitors, which they called Xiameter. Xiameter ran alongside their original, high-cost silicon business.

Apple's various lineups are another example. Customers can purchase an iPhone Pro Max for \$1200 or an iPhone SE for \$300; an Apple Watch Ultra for \$800 or an Apple Watch SE for \$250.

Pharma could do the same with generic drugs. Currently, they mostly let them go (although Novartis and Pfizer both produce branded and generic drugs, to great effect). And demand for generic drugs has more than doubled in the last 10 years, capturing roughly 75% of prescriptions.

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But with newer technologies, business models can adapt to create cost structures that attract customers with smaller budgets.



From transactional to recurring revenue:

We already explored one way of doing this above with subscription models. The case is well illustrated with Adobe Creative Cloud;

- 1. From transactional to subscription.** Adobe moved from perpetual software licenses to a monthly subscription service for Adobe Creative Cloud, and was able to increase revenue year on year.
- 2. From sales to recurring service propositions.** The perpetual software license required seasonal software upgrades. With Creative Cloud, subscribers get immediate access to upgrades, online technical support, online storage, publishing, and file-sharing capabilities.
- 3. From transactional to long-term relationship.** The move to Creative Cloud meant that relationships between the customer and Adobe moved from a punctual, transactional event to a long-term engagement and relationships. Adobe leveraged this to create a thriving online user community that greatly contributes to the overall value proposition.
- 4. From continuous, hard-won customer acquisition to single, first-time acquisitions.** Finally, the move allowed Adobe to focus on acquiring customers once, and then providing them with a lifetime of products and services.

There are other ways to make the transition from transactional to recurring revenue:

- 1. Maintenance and Support:** Pharmaceutical companies can (and do) offer ongoing monitoring of patient health and regular check-ins with healthcare providers through partnerships with healthcare providers and through the development of proprietary software and monitoring tools.
- 2. Service Contracts:** Pharmaceutical companies could offer service contracts that provide ongoing access to certain services, such as telemedicine consultations or access to specialty pharmacy services. These contracts could be sold directly to consumers or through partnerships with healthcare providers.
- 3. Memberships:** Pharmaceutical companies could create membership programs that provide access to exclusive products, services, or content. For example, access to patient education materials, personalized health coaching, or discounts on prescription drugs.

Implementation of these models in the pharmaceutical industry can be challenging due to the complex regulatory environment and the need for extensive clinical testing and safety monitoring. However, there are opportunities for companies to innovate and explore new ways of generating recurring revenue and building long-term relationships with customers.



From conventional to contrarian

Old-school business models are slow to shed resources that no longer drive revenue, especially when they still deliver value to the customer. Unfortunately, conventional approaches often tolerate legacy situations for too long. A more contrarian but long-term successful approach is to quickly identify and eliminate the most costly resources from the business model (whatever shape they may take), even if it creates short-term pain. Then, repositioning efforts and expenses to other areas that deliver greater returns.

There's no magic formula for successfully contradicting prevailing approaches in business, although there are [certain tactics](#) leaders can use:

- 1. Start with a clear vision:** Define a clear and compelling vision for the future, then work backwards to identify the strategies and actions needed to achieve that vision.
- 2. Challenge assumptions:** Question assumptions and challenge conventional wisdom in a data-driven and thoughtful way. Seek out diverse perspectives.
- 3. Build a culture of dissent:** Create a culture that encourages dissent and diverse viewpoints. Welcome feedback and criticism, and stay open to changing course if the data warrants it.
- 4. Manage risk:** Taking risks is necessary for innovation and growth and must be managed intelligently. Identify and mitigate potential risks, and build in contingencies to minimize the impact of unexpected events.
- 5. Stay focused on the long-term:** Focus on long-term outcomes, even in the face of short-term setbacks. Resilience and adaptability are key.



Multi-shift models

How can we combine different transformations to make businesses unique and hard to replicate?

Of course, while it is possible to shift the business model so that it predominantly embraces one of the shifts above, it may work to incorporate multiple business model shifts. Indeed, in many cases, it is beneficial to create a unique business model that draws on different aspects, creating a highly-customized business model. Business models that combine different multi-shifts, as appropriate to the individual business, are generally more competitive and much harder to replicate, disrupt and displace. A complex web of business model strands ensures competitive advantage.

Ørsted is a Danish energy company. In 2009, it recognized that fossil fuels were neither environmentally sustainable nor financially viable. The company made the decision to shift from fossil fuels to green energy technology, with three key drivers to combat climate change:

1. It aimed to phase out coal by 2023 and generate nearly 100% green energy by 2025, focusing entirely on renewables.
2. It strove to become a leader in offshore wind and develop innovations and large-scale deployment of onshore wind, solar energy, and storage solutions, with the goal of delivering green energy to hundreds of millions of people.
3. It sought to gradually phase out natural gas trading activities while increasing the green share of power traded, and work with suppliers to reduce carbon emissions from the manufacturing and installation of renewable energy.



To achieve these goals, Ørsted made several shifts in their business model, starting in 2012.

- 1. A shift from dedicated resources to multi-usage of key resources.** Ørsted was a leader in offshore drilling know-how in the North Sea and decided to move to building offshore wind farms, facilitating a radical shift from fossil fuel energy to renewables.
- 2. A move from low tech to high tech,** investing significant costs to move to new high-tech green power plants. The government facilitated this transition through subsidies to support Ørsted's move to wind farms.
- 3. A transition from volatile transaction revenues to predictable recurring revenues.** Traditional revenues from fossil fuels were volatile due to price dependence and geopolitical factors, including fluctuating commodity prices. Wind-based energy, however, has fixed pricing due to subsidies, which allowed Ørsted to move their fixed pricing to 81% of their portfolio in 2018.

Ørsted's successful transition to renewable energy was facilitated by strategic shifts in their business model, including a move to multi-usage of key resources, a shift from low tech to high tech, and a focus on predictable recurring revenues.



Another example comes from one of pharma's main players, Danish company Novo Nordisk.

Founded in 1923, Novo Nordisk is not a newcomer to the pharmaceutical arena. It made its name as a specialist in diabetes management and has become one of the world's leading insulin producers. Diabetes is a growing global health crisis, with 463 million living with the disease worldwide.

Novo Nordisk realized that straightforward insulin and diabetes care products were insufficient for the future and needed to innovate to become sustainable. Using artificial intelligence and other technological tools, Novo Nordisk now provides connected tools, platforms, programs and services for those with diabetes, helping to improve their care and wellbeing.

In terms of business model shifts, Novo Nordisk undertook many of the above, including moving from transactional to recurring revenue, changes from sales to platform (while still maintaining the pay-per-pill alongside the new revenue model), and a shift from dedicated resources to multi-usage resources. Fundamentally, they undertook a value proposition shift while retaining some core elements of being a drug company. They underwent a seismic change from being drug-led to becoming customer relationship-led. Using AI tools, they became industry leaders in digital therapeutics in the diabetes space.

Novo Nordisk's business model incorporates artificial intelligence in multiple ways. For example, their diabetes pens track accurate dosing data, linked, using Near Field Communication, to a user's chosen app so that patients can view insulin and blood sugar data together. This provides better data and insight to patients and their physicians, allowing for better diabetes management. It also ensures a more personalized customer approach with digital therapeutics that allow individual choice. Alongside this, there is a shift to multi-usage resources using data collected to optimize the development of new diabetes solutions with better predictions.

Novo Nordisk's success is a testament to its ability to change its business model radically.



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COMMON TRAITS AMONG FUTURE-PROOFED COMPANIES

Businesses that demonstrate resilience to disruption and shifting markets share several common traits.

Keys	AirBnB	Alibaba	Amazon	Google	Healx	Ikea	Lego	Rolls Royce	Uber	Wayfair	Zara	Zipcar
Personalization	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Asset Sharing	✓				✓				✓			✓
Collaborative Ecosystem	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Closed Loop						✓		✓		✓		
Usage based pricing		✓	✓	✓			✓	✓	✓			✓
Agility	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Pharma would do well to adopt these in its efforts to transition to more sustainable, profitable and future-proofed business models.

- 1. Personalization:** Personalization is becoming increasingly important in pharma, as patients demand more customized treatment options. By leveraging data and technology, pharma companies can create more personalized medicines and treatment plans, which can lead to better health outcomes for patients.
- 2. Asset Sharing:** Pharma companies can adopt asset-sharing models to reduce costs and improve resource utilization. For example, companies can share manufacturing and research facilities, as well as equipment and personnel, to improve operational efficiency and reduce waste.
- 3. Collaborative Ecosystem:** Building a collaborative ecosystem within pharma can enable companies to share knowledge and resources more effectively, fostering innovation and driving better health outcomes for patients. Collaboration can also help reduce the time and cost of drug development, bringing new treatments to market more quickly.
- 4. Closed Loop:** Pharma companies can adopt closed-loop systems to reduce waste and improve sustainability. Closed-loop systems involve using waste materials or byproducts from one process as inputs for another process, creating a circular system that minimizes waste and maximizes resource utilization.
- 5. Usage-based Pricing:** Usage-based pricing models can help make medicines more affordable and accessible for patients, especially in developing countries where affordability can be a major barrier to accessing healthcare.
- 6. Agility:** The pharmaceutical industry is constantly evolving, and companies that can adapt quickly to changing market conditions and patient needs will be better positioned for success. By adopting agile processes and technologies, pharma companies can respond more quickly to market demands and patient needs, improving their competitiveness and profitability.



HOW PHARMA CAN FUTURE PROOF WITH NEXT GENERATION BUSINESS MODELS

Change is never easy, and resistance is normal. However, disruptors to the pharmaceutical industry won't sit idly by, waiting for big players to make a change. All signals point to a radically different future for pharma, where the pay-per-pill blockbuster model no longer serves pharmaceutical companies, physicians or patients.

Now, it's a case of getting on board or getting left behind. Technology and AI are already revolutionizing healthcare with a shift from treatment to prevention and early detection. Digital therapeutics (DTx) are proving as effective as drugs without the bothersome or dangerous side effects, and nanobots promise to revolutionize all areas of medicine in a future that's not as distant as some might believe.

Numerous big tech businesses and start-ups are focused on redesigning healthcare for the coming generations, and the pharmaceutical industry must plan carefully for long-term survival with similar profit margins.

Business model shifts require reflection, insight and courage. Transformation is challenging, but it is necessary and can be successfully implemented. The most effective way forwards is to create an innovative framework by leveraging the experience and expertise of leaders in transformation, such as [Eularis](#), who have successfully created and executed strategies to help pharma companies leverage enablers and new business models, make better-informed decisions, increase efficiency, and improve their profitability through the strategic use of AI and other innovative solutions.

Technology and AI are already revolutionizing healthcare with a shift from treatment to prevention and early detection.

ABOUT THE AUTHOR

Dr Andrée Bates

Dr. Andrée Bates is a pharmaceutical industry veteran with 30 years in the industry and 20 years working specifically in pharma AI. She brings blended expertise in Artificial Intelligence (AI), Pharmaceuticals, and Strategy. Dr. Bates has led Artificial Intelligence powered projects for numerous top-tier pharmaceutical companies in diverse areas such as clinical trials and R&D, market access, regulatory, medical affairs, and sales and marketing. These have all resulted in measurable growth in revenue, profit, and market share for her clients. Having worked in the pharmaceutical industry since 1993, and AI in Pharma since 2003, she has a detailed understanding of the pharmaceutical environment and how AI can be leveraged compliantly and effectively. She has authored many articles in peer-reviewed journals and industry reports. She has also been a guest lecturer on Healthcare Innovation and AI in multiple university MBA programs: INSEAD Business School (Fontainebleau), the Erivan K Haub School of Business at St Joseph's University (Pennsylvania), Fordham University (New York) Global Healthcare Innovation Management postgraduate program, and Bayes Business School (Formerly Cass Business School – The University of London), and she lectures on AI for Boards at Henley Business School at the University of Reading, as well being a guest speaker in numerous internal pharmaceutical company meetings and international conferences in UK, USA, Latin America, Canada, France, Germany, Spain, Hungary, Poland, Japan, China, Singapore, and Australia.



E U L A R I S

About Eularis

Eularis exist to help biopharma and healthcare commercial teams who want to weave FutureTech like Artificial Intelligence (AI) and Machine Learning (ML) and Virtual Reality (VR) and Augmented Reality (AR) and Internet of Things (IOT) to solve their challenges and deliver unprecedented measurable results.

The Eularis team of experts have extensive qualifications combined with many years of real-world experience in both biopharma and AI companies. The mix of qualifications (MD, PhD, MBA, M. Sc., M Engineer.) along with prior experience in executive-level positions in top 20 pharmaceutical companies ensures our clients have the right strategic and tactical questions solved and planned with cutting edge technology and AI. You have access to Pharma AI Futurists, Pharma Board level team, and AI Strategists, and Data Scientists and Big Data Engineers and Developers to ensure you are playing at the top of your game.

Every project is unique and begin by developing a deep understanding of your strategic needs and your data. Then, we plan the right approach to meet your strategic needs and transform your performance.

Learn more
eularis.com

TRY ONE OF OUR CORE SERVICES

AI STRATEGIC BLUEPRINT

1

Give us your most difficult challenges to solve with AI and FutureTech!

The problem of poor AI impact comes down to a lack of strategy and pre-strategy. We know AI is impressive, and we see the results all around us. So why do many pharma AI project never pass the pilot stage? There is a plethora of evidence as to why not having a strategic AI blueprint before you begin is problematic and leads to project failure. We create strategic AI blueprints to ensure all AI projects meet the company's strategic objectives and move the needle for maximum impact.

AI DEPLOYMENT BLUEPRINT

2

Ensuring the key foundational elements required for success in your AI FutureTech projects are in place.

In the pharma environment, we face unique challenges. Knowing where you want to go is one thing, but the trap many then fall into is ensuring that the key foundational elements are in place (e.g., finding the right data, getting through internal legal and compliance, buy vs build, tech planning SOW, choosing the optimal AI vendor etc.) so that you can execute quickly. Our deployment blueprint accelerates your ability to industrialise the opportunity effectively by taking care of all these foundation pieces enabling you to easily commercialize the most effective solutions rapidly and seamlessly.

TRANSFORMATION ENGINE

3

Assess emerging risks, identify drivers and sources of sustainable competitive advantage, and how to leverage these for sustainable growth.

Technology is moving into every aspect of pharma. Within this changing landscape, new risks and opportunities are emerging for pharma. We help you navigate this fast-changing environment and help you identify, analyse, and operationalize techniques that not only address the emerging risks to your business, or your part of the value chain, but also deliver strategic solutions that will yield the growth and futureproofing you need to thrive in the new normal and ever-changing world.

[Contact us](#)