

Get Ready For “Super-platforms” In Healthcare and Pharmaceutical Research

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What is a super-platform?

A “super-platform” is a term which describes a relatively new phenomenon in a modern technological world -- an online-to-offline (O2O) type of digital infrastructure, which spans across multiple sectors of economic activity providing a way for users (both businesses and consumers) to operate with multiple resources, products and services within a uniform, standardized, and highly interconnected way.

Imagine, you want to be able to search for information, shop online, pay for products and services, communicate with someone by email, or chat, create and manage text and spreadsheet documents, translate them into any language on the go, store and organize data like photos and videos, find local restaurants and get driving directions, or just entertain yourself by playing games -- and you prefer to have all of that in one place without needing to search for numerous websites and resources? You can do just that in your single Google account. This is what a super-platform does: it provides a way to conveniently engage in totally different types of activity across different sectors.



Similar idea is driving rapid growth of other technological giants -- Facebook, Amazon, Alibaba, Apple, Tencent, and Microsoft to name a few. All of them are different in many ways, but are similar in that they create business ecosystems where various sectors fit together seamlessly. It appears that users, their data, and businesses become a part of a large independent machine creating a frame for smooth data and money flow across sectors, a world without sector borders.

It is important to note that super-platforms are not only represented by global corporations like the above-mentioned “blue chips”, they can be of domestic significance as well. For example, a local bank can combine “traditional” financial services (deposits, loans, money transfers) with a diversified set of user-friendly options to pay for Internet, TV, utility services, taxi, shop online at various ecommerce platforms, get discounts and use coupons, rent cars and houses -- all with a single e-bank mobile application. Once domestic supremacy is achieved, this kind of bank might decide to expand internationally, for example, include overseas logistics and global ecommerce to the list of its in-built options.

So, it is not a size of a super-platform that appears to be the main factor of identifying one as such, rather, the ability to orchestrate various business ecosystems and data flows as one, connecting the dots between distant sectors of economy.

As seen in the example of China's super-platforms -- Tencent, Alibaba, Baidu, Meituan etc, a growth of this phenomenal platforms is driven by both consumers and companies. According to Peking University professor Jeffrey Towson, consumers prefer having a single mobility app offering multiple services like hailing taxis, bike rental, ride-sharing, rather than having to manage them separately. On the other hand, in a large market like China, companies are struggling to provide a large number of physical assets -- bikes, taxis, or supermarkets -- making it harder for smaller companies to compete and forcing all involved sectors to gravitate toward large players orchestrating everything -- super-platforms.

While the phenomenon of super-platforms has already seriously transformed such industries as finance, mobility services, and consumer services, it only recently emerged in healthcare industry, and, as we shall see below, is poised to impact pharmaceutical research industry in the nearest years. Let's review the latter two cases in more details.

Super-platforms in healthcare industry

One of the most illustrative examples of a super-platform in healthcare industry is Chinese internet giant Tencent which has become the number one e-health solution in this country.

Before moving to healthcare, Tencent already had WeChat, an "app for everything" in China. People used WeChat everyday for managing almost all kinds of daily activities -- from communication to shopping, transferring money, and paying for all sorts of consumer services available there. Essentially, WeChat was already a super-platform in its own right, when in 2014 Tencent penetrated healthcare industry with it and provided users an opportunity to access all sorts of medical services: get medical online consultations, book appointments with doctors, make payments for drugs and services at hospitals, etc. Over 38 000 medical institutions already had WeChat accounts in 2017 and were able to serve their patients via Tencent's digital infrastructure.

On top of that, Tencent recently partnered with Babylon Health, a British startup developing virtual healthcare assistant app. This partnership now allows Chinese users to get immediate medical consultation online just by messaging their symptoms.

Finally and most notably, Tencent co-invested in iCarbonX, a Chinese artificial intelligence-driven healthcare unicorn which tries to develop a complete digital representation of one's biological self -- taking into account genetics, epigenetics and other factors, and allowing for a truly personalized medicine to

emerge.

Super-platforms in pharmaceutical research

It appears that super-platforms are not going to limit its presence to only healthcare sector. Recent moves by Tencent, and Google, for example, clearly demonstrate their plans to gain a decent position in basic pharmaceutical research sector -- the one, traditionally dominated by "big pharma" companies.

Tencent is aggressively expanding into the drug discovery space with two multimillion-dollar deals just this year, both involving U.S.-based artificial intelligence-driven drug discovery startups (Atomwise, XtalPi). Besides, Tencent took root in Seattle hiring a lot of researchers and building up AI capabilities -- aiming at becoming a global leader in genomics and personalized medicine.

Google, in its turn, is actively investing in drug discovery and biotech startups including XtalPi (AI-driven calculations), BenchSci (AI-driven antibody search), Fulcrum Therapeutics (gene therapy), Spy Biotech (vaccines), Magenta Therapeutics (stem cells), Spero Therapeutics (bacterial infections), Arcus Biosciences, and Forty Seven to name a few. Besides, Google is utilizing own computational and AI resources to partner with multiple academic and industrial organizations towards its drug discovery ambitions.

Once they accumulate sufficient basic expertise in drug discovery -- via investing and M&A activity -- they will be able to expand their super-platforms into this space and completely change traditional paradigm of doing pharmaceutical research.

Take such different tasks as sourcing lab consumables and materials, mining data from research papers and patents, identifying chemical compounds for screening projects from commercial catalogs, performing compound design, conducting virtual screening, obtaining and modeling data from public and private databases, correlating data from various sources and disciplines, collaborating with peers -- what if there would be a super-platform which were able to effectively orchestrate all these activities in a single desktop application? The question is who will be behind such application -- traditional drug makers, or tech giants entering the industry?

Needless to say, big pharma is trying to keep up with super-platform movement, and one recent example is a partnership between Merck, Accenture and Amazon Web Services with the idea of creating a research platform for drug discovery.

It is expected that a new platform will enable an ecosystem of pharmaceutical professionals who would be able to enjoy open, industry-standard digital infrastructure, involving specialized application programming interfaces (APIs) with core research functions. This platform will accelerate innovation by essentially democratising technological and research capabilities, lowering barriers for users and businesses to interact and efficiently conduct data-intensive research.

Essentially, this partnership is an ambitious move in the direction of creating, eventually, a super-platform for pharmaceutical research.

Artificial intelligence (AI) is driving super-platform' growth

Needless to say, one of the key aspects making super-platforms so valuable is the ability to integrate data across various sectors to achieve synergistic data-driven performance for all users involved.

There is no other technology that does data mining and integration better than artificial intelligence (AI).

The use of cloud based modular AI systems, involving multiple components with different purposes (data mining and normalization, data wrangling, feature generation, modeling and analysis), orchestrated by a higher hierarchy system components to coordinates the whole process -- this is what makes super-platforms head and shoulders above "traditional" corporations. Such AI-driven systems can work with multiple diverse sources of data -- both structured (public and private databases) and unstructured (research articles, patents etc) -- to allow for the most informed and data-driven decisions to be made, and actions to be taken.

All "blue-chip" super-platforms out there -- Google, Tencent, Baidu, Alibaba, Facebook etc -- either already have staggering AI capabilities, or are actively developing them.

Artificial intelligence is one of the prerequisites for a successful super-platform, so if big pharma companies are to align with this new phenomenon, they have to move aggressively into AI space -- via competitive investment, mergers & acquisitions.

Novel competitive challenges for drug makers

Summarizing the above considerations, it is clear that super-platforms will inevitably emerge and dominate in healthcare and pharmaceutical industry. Likely, they will be created by technology giants, like Google, Tencent, Amazon etc.

On the one hand, the emergence of this global digital infrastructures will provide huge novel opportunities for traditional drug makers: cloud-based computation, AI-driven technologies, specialized APIs etc.

On the other hand, super-platforms are potential competitors in their own right. Consider automotive industry: large car manufacturers are now starting to compete, unexpectedly, with tech giants -- Baidu, Google, Apple (all building their own autonomous cars). Likewise, large entertainment companies start competing with Amazon -- because it sells digital media and entertainment products.

Inevitably, large drug manufacturers will have to face novel competition challenges, and they have to get ready to maintain superiority in their own industry.