

GenAI: The Next Supply Chain Technology Revolution— Or The Unknown Everyone Has An Opinion About

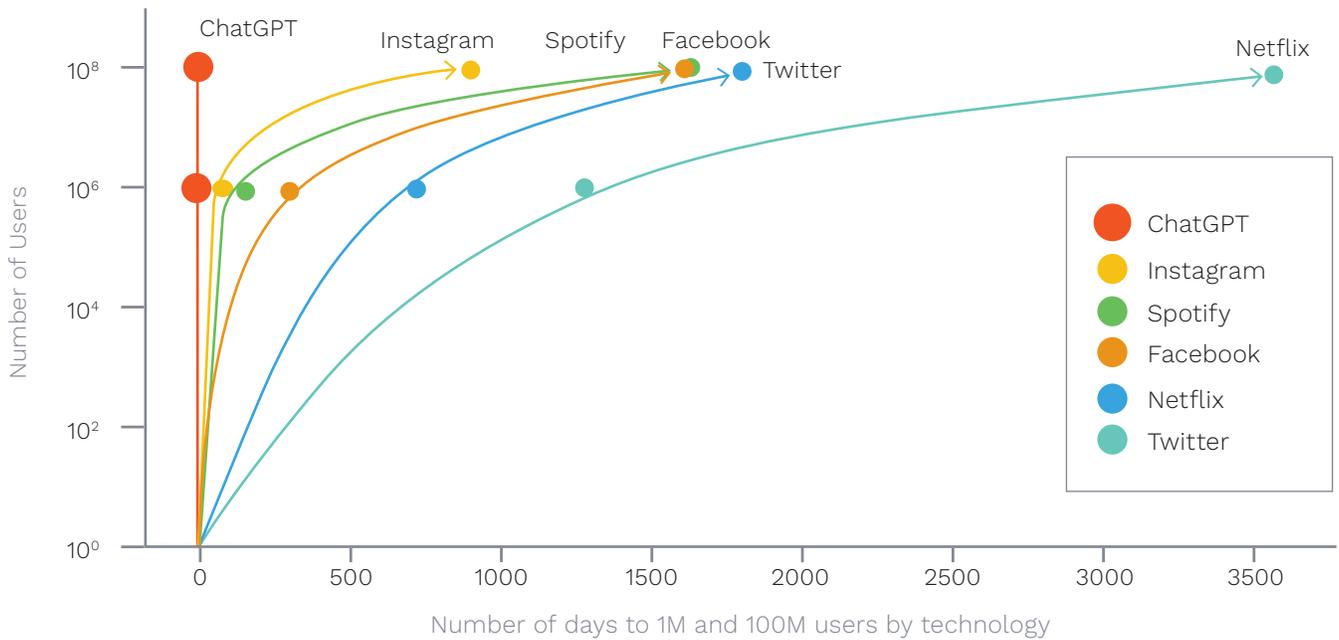
Koray Köse



“Make one step back to make two steps ahead,” they say, so let’s do that. Returning to November 30, 2022, the date the hype kicked off with ChatGPT launching. An era in which a chatbot seemed intelligent enough to understand and truly speak your language. Until then, we all got exposed to numb “answering” and “chatbots” that were merely able to dissect a “yes” from a “no” and a search engine hitting words but not context. Was it the breaking point of machines to adapt and learn about complex questions and queries through human language and interaction? An infinite number of use cases opened, the rally started, and everyone, knowledgeable or not, suddenly turned experts and had their opinions expressed.

Fast forward to today, the standard “hype cycle” is broken, outdated, and gone with the winds of change, more precisely, with innovation at pace. There is no such thing left as “early adopters” in the world of advanced and generative AI. While the product is most complex, with the most recent versions containing up to 175 billion parameters, making it the largest and most complex language model ever built, it’s “working” as promised, mostly. Anyone who doubts, please refer to the chart in figure 1 and think about the pace and try to find the slope of adoption—there is none, versus a typical adoption such as from horse-drawn carriages to petrol cars in the 1920s, as illustrated in Figure 2, which took nearly three decades. (Nakicenovic 1986, graph taken from Grübler et al. 1999, reproduced with permission). The adoption of generative AI, aka ChatGPT, as the beacon is a vertical rocket-ship launch, not even close to a sloped ascent.

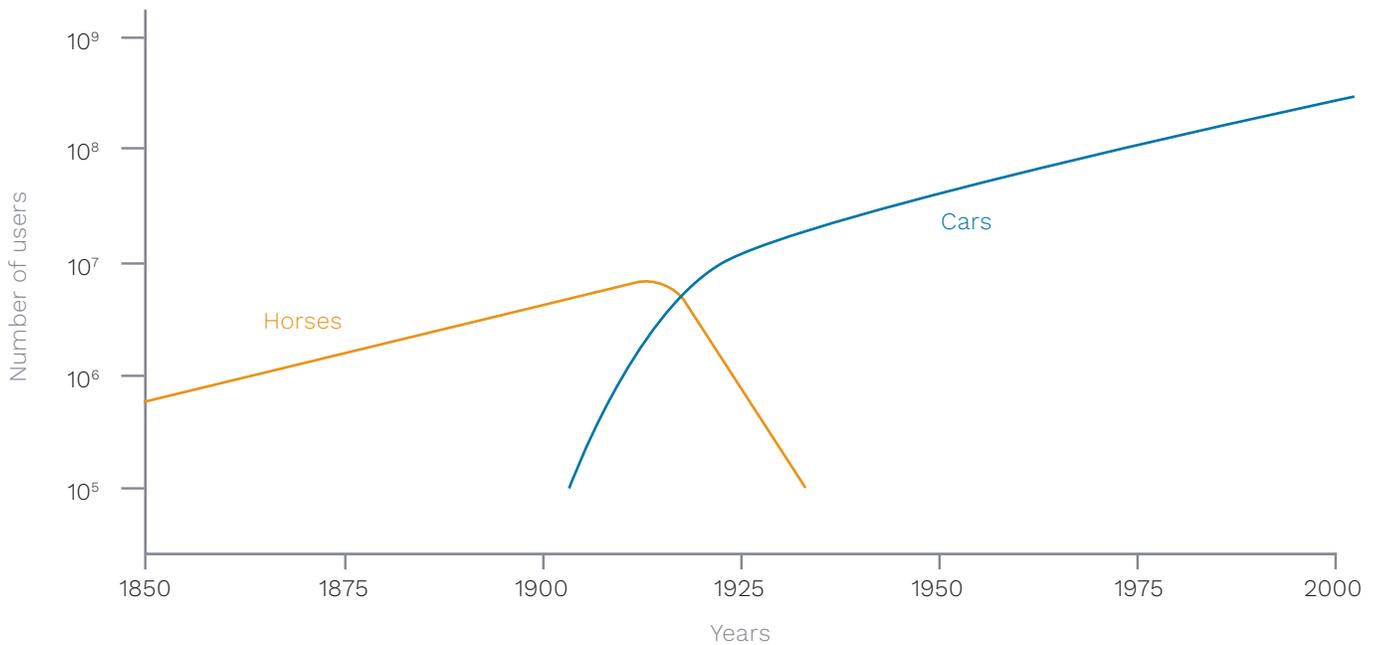
Figure 1: ChatGPT vertical adoption rate compared to other technology adoption



Source: Adapted from the chart by [Kyle Hailey](#)¹

Vs

Figure 2: Traditional technology adoption and transformation flow and pace



Source: Adapted from *An Age Structured Demographic Theory of Technological Change*, figures by Jean-Francois Mercure, 2013²

With no time to adjust, the fear of missing out is loud and clear in every corner of the business and social world. The advancement moves much quicker than regulation, and potential reflection on implications and tradeoffs can, at the same time, we have everyone talking about the disruption, opportunity, and strength of the AI revolution, which now is followed by fear and uncertainty and regulators approach.

Hence, it's important to baseline the definition and establish recent findings to consider comprehensively the power of change within the latest large language models that can make humanity and Supply Chain Technology skip the level. There are many definitions out there; here is mine:

Generative AI takes existing data artifacts and generates new sophisticated artifacts, models, and outputs as a response to human or machine prompts, that can be very similar to originals or even superior and enriched.

It can create novel media content, synthetic data, designs, and specifications of physical objects, such as materials and creative arts. It does it unsupervised and self-directed and can absorb big data sets to learn. Its limitation lies in the algorithm bias and large language models' structure and modality until we see models that fix these autonomously. That seems to scare the creators more than the users, as we can read in the New York Times: 'The Godfather of AI' Quits Google and Warns of Danger Ahead—The New York Times (nytimes.com).³

The need for cutting-edge supply chain technology has been very present in recent years of disruptions. Many hidden fragilities have been built into global trade over decades. Technology augmenting the human decision-making process and the ability to pivot quickly, align on actionable insights, and execute with agility is critical to winning. So are the leaders in critical positions that can translate the language into actionable insights within their organizations to turn into trailblazers rather than followers in a vertical adoption environment.

From Here to There: Findings, Inhibitors, and Accelerators

Key findings that we observe, in the here and baseline for innovation in Supply Chain Risk Technology:

- Generative AI is the key to unlocking Supply Chain Technology's potential to significantly improve the efficiency and effectiveness of value chains and supply ecosystems. The global AI in the supply chain market is expected to reach \$17.5 billion by 2028.⁴
- AI-powered supply chain solutions already deliver many benefits today, including maximum visibility, predictive analytics, and a foundation for autonomous systems to reduce costs, increase agility, and improve customer experience. By 2026, more than 75% of commercial supply chain management application vendors will deliver embedded advanced analytics (AA), artificial intelligence (AI), and data science.⁵
- LLMs like ChatGPT are becoming foundational connectors- and translators of simple to sophisticated user needs

into data models and actionable insights to adapt to any organization's digital journey and maturity. 94% of CEOs want to maintain or accelerate pandemic-driven digital transformation⁶.

Inhibitors and accelerators to watch out for, let's start with inhibitors:

- **The high cost of development and integration into existing products:** Developing cutting-edge technology, primarily powerful AI models, is expensive. Bard AI may have cost Google close to \$10 billion⁷. Businesses that invest in Supply Chain Technologies should consider the balance between cost and value. If an organization is handling significant spending and revenue through a risk software solution, focusing solely on minimal cost differences and negotiations in the tens of thousands of dollars when deciding between solutions may not lead to the best value. Prioritizing the lowest cost alone is likely to be unsuccessful at this critical breakthrough stage. Quality and relevancy of data supersedes, and it requires specialized hardware and software, as well as the expertise of supply chain risk experts, data scientists, and engineers. The human-machine integration in solutions will make the difference today and in the future.
- **The fight for qualified talent in uncertain economic times:** The shortage of qualified talent with the skills needed to implement and use AI in supply chains is a reality. The reality we observe is over-hiring and subsequent layoffs. Human Resources and organizations' relations to talent can turn very toxic with the spread of bad experiences and create challenges to backfill critical roles. This is a significant barrier to adoption, as businesses need to find and hire the right people to make the most of AI on both sides, the solution developers on one side and leaders to drive change in organizations on the other side, aka the users.
- **The unmet need for unlimited data:** Data is the oxygen, hydrogen, carbon, nitrogen, or phosphorus for the AI-driven supply chain technology revolution. The key elements for life are the elements that are essential for the formation and maintenance of living organisms. So is data for AI. Generative AI requires massive amounts of data to train and operate and become better. In a world that is starting to fear data more than knowledge, with restrictions and protectionism of data becoming the top concerns in companies and regulators alike, we can see use cases develop at very different velocities.

Besides the cost of data, the discovery and exploitation are difficult. The regulations and environment are critical components defining the market to become billions or trillions worth. It can be challenging to ensure that the data is accurate and up to date. In the near future, compliance and regulation complexity can create drag that has the potential to become the kill switch for many applications.

- **AI can self-inflicted delay its adoption and commercial advancement:** Open AI capabilities are accessible for many purposes without high barriers. That opens the possibility for nefarious use cases. Its ability to generate hard-to-detect deepfakes, which can be used for fraud, malinformation, and other nefarious intentions, create a real threat outside the web. Developing technologies and tools to accurately identify and detect artificially generated malicious content may not always be possible. Regulations will be called upon to stop the use of generative AI for nefarious and, at the same, misunderstood purposes.

There is light and opportunity in generative AI, so let's switch gears and review accelerators:

- **The need for maximum n-tier visibility is finally answered:** AI is critical to improving visibility across the supply chain, leading to better decision-making. Supply chains are ambiguous when stepping outside the inner circle data of ERP systems trying to concatenate the outside world. Perfect, traditional database model

matches fail time and again. It's not about "the database" one created over many years. It's about the database and actionable insights created in near real-time for purpose X, sourcing project Y, or compliance review Z. Ambiguous, unstructured, and disconnected data cannot be tapped for predictive and prescriptive analytics if the system is "basic" match driven. Graph technology, in conjunction with generative AI, is the future-proof solution now—no way around it. Graph technology that is augmented by generative AI transforms the unstructured data into connected graph value streams that can be traversed to evaluate risks to product or material flows and navigated by generative AI to quickly identify insights to optimize risk management decisions.

- **Disruptions cost money—a lot of it:** Generative AI analytics will pay off with only one event. Hence, return on risk technology investment is given with larger disruptions costing about 6%–10% of revenue per occurrence. Generative AI, in combination with risk management, can drive proactive resilience management to reduce costs by turning operations from "now-ists" to "day-after tomorrow-ists" and mature organizations into risk-optimized value creators. That means specifically to mature from recovery experts to avoidance leaders automating tasks, optimizing processes, and improving agile decision-making and risk response execution.
- **The push for agility and resource optimization conundrum solved:** Technology is critical to unlocking innovation, product harmonization, and supply ecosystem activation. Spec design inputs, reviews, supply ecosystem discovery, and resilience testing of value chains to identify essential paths before product launch are just a few use cases. Managing existing and potential new up and downstream value chains and suppliers without jumping systems is key for agility. If you can manage your suppliers with graph technology, so should you be able to do that for deliveries to your customers and reverse value chains to drive circularity. Think like [Everstream's Connect solution](#) in this context that optimizes, predicts, and provides prescriptive recommendations to manage customer deliveries that depend on upstream value chain orchestration and performance.
- **Enabling innovation at pace as a core advantage in competitive markets:** The requirement of continuous and disruptive advancement in product design, service delivery, and business models creates complexity and significant organizational effort and resource consumption. Generative AI can help businesses to innovate at pace by automating and streamlining the innovation process. This can help businesses to develop new products more quickly, reduce the cost of product development, and improve the efficiency of their supply chains.

Generative AI can not only orchestrate but contribute to the development of products from idea to prototype to launch and absorb iterations in the learning curve. Sophisticated design augmentation, manufacturing scenario planning, and value-driven supply ecosystem creation, including the discovery and onboarding of new suppliers that augment the competitiveness and de-risk the supply chain and operational execution, can be digitized and highly automated, even partially executed autonomously. By automating and streamlining the innovation process, generative AI can help businesses to overcome the challenges of innovating in today's competitive markets.

- **The expectation of successfully competing on customer experience in fluctuating demand and supply environments:** Seasonality was yesterday; today is instant gratification with short-notice demand peaks and unexpected cancellations based on a myriad of reasons. S&OP processes are struggling to deliver accuracy that enables smooth supply chain operations. The lack is data insights and rigid processes that adapt after, not before, disruptions. Comprehensive solutions that break siloes and use generative AI for teams to collaborate better drive customer experience by providing more accurate and faster information to make the perfect delivery a given.

Generative AI is genuinely different in its potential to revolutionize the supply chain industry.

By overcoming the challenges of adoption, regulations, lack of education, and investments, businesses can use this technology to distinguish themselves and establish a unique competitive advantage and turn their investment into effectiveness and efficiency gains.

So What? Next Steps That You Should Consider Now!

To summarize and get started, below are a few questions and to-dos to consider next. There are certainly more tradeoffs under every section mentioned above, but having covered the most critical should do for now to equip you with the most relevant.

The key to unlocking the potential of generative AI, however, comes down to a very human quality: The ability to orchestrate the transformation by visionary, unbiased, and bold leaders and subject matter experts.

The following steps you should start focusing on now should include:

- Thoroughly review your organization's digitization journey.
- Create and review of your organization's risk appetite and operationalization of the resilience and risk management programs.
- Review your existing technology stack and its abilities to match the needs of today AND tomorrow and have emerging technologies like generative AI and graph technology be embedded into the agenda—no way around it.
- Understand the actual cost of your investment—not investing will cause an infinitely high opportunity cost—I am very certain about this.
- Weigh your options in evaluation critically—is the price worth the value, and how much do experience, vision, capabilities, use cases, customer references, and extensive data model expertise play a role? Selecting the right Supply Chain Risk Technology isn't your "commodity," but neither is the price tag, the most critical criterion when you trust billions of revenue into a technology to be managed.
- Review and define your internal roles and responsibilities, and ensure you have a diverse and broken siloes approach. The broader the evaluation team, the better prepared, the more leverage you can get from a solution. A solution is more than a "watch tower," a "dashboard," a "score." It's a philosophy to operate and continuously improve, disrupt, and transform. If the solution can empower that—you got the right match.
- Investigate claims with real insights, fight confirmation bias, and have trustworthy sources to create confidence in AI models and graph technology—ask questions like "What is the baseline for the connection? Is it a Business or Supply Chain Relation? What's the confidence r-square? What's the age of the data used? What's the source

of the data? What's the proprietary difference between data pool solution A versus solution B? Is implementation indeed only weeks, or are we looking at months? What penetration level of discovery can a tool provide—anything below 90% isn't even close to establishing resilience as a competitive advantage.

- Finally, ethical considerations: AI-driven supply chains could raise ethical concerns if automated without oversight. Bias is a reality in algorithms and can show in discrimination or preferences. It is crucial for businesses to be aware of these concerns and to take steps to detect and manage them. Manage the risk in risk management. No pun intended!

The Journey Of Everstream Providing Cutting-Edge Technology And Ai

Supply Chain Mapping

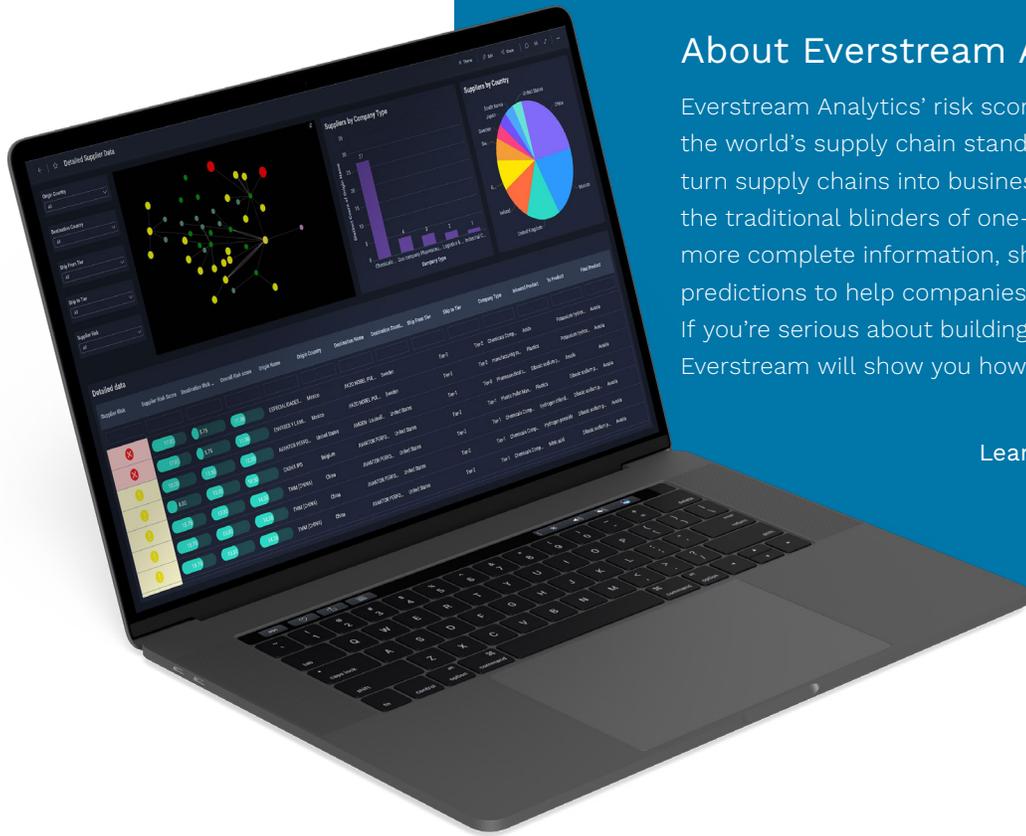
- Everstream maps your supply chain to the nth tier against our custom-built industry-leading knowledge graph of supplier relationships at the facility, material level, and value stream.
- The mapping process utilizes proprietary entity resolution algorithms and graph databases, turning massive input into relevant and accurate actionable insights.

Real-time Monitoring and Disruption Detection

- Everstream continuously monitors global value streams to detect distress signals even before disruptions occur in supply chains.
- Everstream orchestrates and augments human and machine intelligence to enable scalable and comprehensive risk detection without compromising quality and information security.
- AI, natural language processing, graph databases, and sophisticated large language models give our intelligence analysts actionable insights. Depending on complexity and industry, they will enrich incident signals and confirm human-to-human reports tailored to one specific value chain. So relevant information boiled down to the actionable predictive and prescriptive level is provided with no delay to the decision makers.

Risk Assessment

- Everstream's comprehensive risk scoring model combines both the status quo and trend analysis and can provide real-time information about the impact of disruptions on your value-at-risk within your n-tier supply network.
- Predictive analytics gauge priorities and urgencies and help you understand operational impacts, such as shipment delays, financial health risks, and strategic implications, like supply ecosystem resilience, critical paths, and hidden vulnerabilities.
- Prescriptive analytics take actionable insights into motion to manage and mitigate risks proactively and create a competitive edge in value chain creation and value stream protection, maximizing customer experience and revenue protection.



About Everstream Analytics

Everstream Analytics' risk scores and predictive insights set the world's supply chain standard, helping global companies turn supply chains into business-changing assets. Removing the traditional blinders of one-dimensional data, we offer more complete information, sharper analysis, and accurate predictions to help companies get in front of what's ahead. If you're serious about building a better supply chain, Everstream will show you how to get there.

Learn more at everstream.ai

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