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Artificial Intelligence – Where Are We Now?

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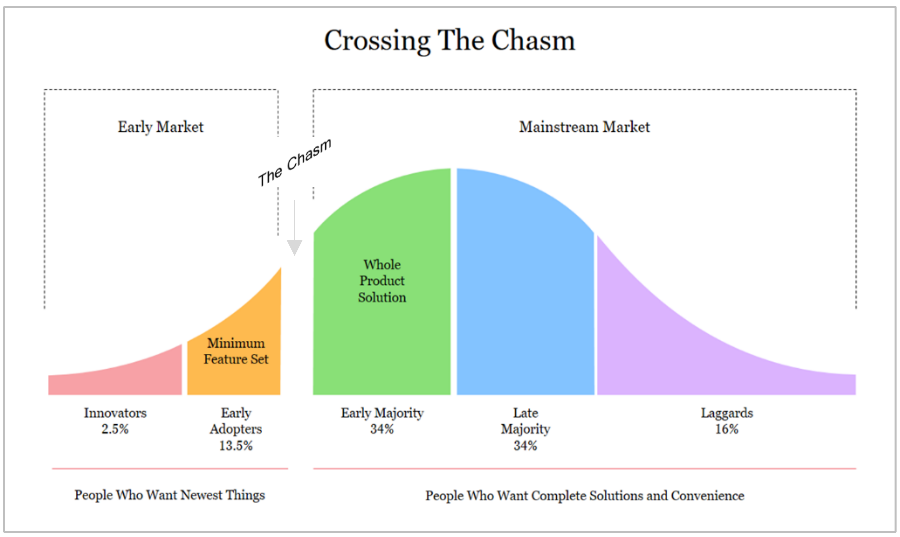
Executive Summary

- **Artificial Intelligence is a very promising technology**
- **Most new technologies follow a similar adoption curve that is not smooth**
- **There will be stock market beneficiaries in multiple industries**

We are often asked our opinion on Artificial Intelligence (AI) and its impact on client portfolios and the world at large. We believe that AI is a very promising technology that can have significant positive impacts on a multitude of industries and the global economy at large. However, we also know that as investors, it can take longer than optimists expect for meaningful impacts that are anticipated to arrive. In Geoffrey Moore's powerful book, Crossing the Chasm, he provides a simple framework for how to think about the adoption curve for new technologies. In our opinion, the model he outlines successfully explains the behavior of a new technology user, whether it be an individual or a corporation, as well as his thoughts on investing in the companies that provide the new technologies.



Source: Crossing the Chasm, written by Geoffrey A. Moore

Referencing the illustration above, in the "early market" period, promising technologies are developed, and the first products come to market. Investors in public equity markets will see multiple initial public offerings from promising companies with point products in the new market. Most of these companies are not profitable as the focus of management is to build out a market and drive revenue growth but driving that revenue can be costly. Stock performance can be strong because the prices are often driven by sales growth, no matter the level of losses, and valuations are based on Price-to-Sales ratios. Everyone wants in on the "Next Big Thing."

Inevitably, the products produced by these companies will not work as intended and the early adopters will seek to understand what the actual benefit is to utilizing the new technology. This causes a slowdown in the market growth as the number of "pioneers" for any new technology is limited in size. This period is "the Chasm." It is when some companies fail, and the industry typically consolidates into a smaller number of stronger companies. Stock prices for the industry lag. But not all is lost in the Chasm. While an industry or company is there, products mature to a point where they deliver actual positive returns on investment for the companies that purchase them.

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Companies that survive the Chasm emerge stronger with more seasoned management teams and better internal business processes that are ready to benefit from the technology entering the mainstream market. Because the public equity markets are often reluctant to fund companies in the Chasm, survivors are forced to become profitable and self-funding. Valuations are usually based on measures of profitability or cash flow. At NBW Capital, we typically focus on companies that are in this phase of their development.

This brings us to AI. In our opinion, the technology is still in the "early market" phase of its adoption. Anyone that has tried using the AI powered chat bot from Venmo, Spotify or even their cable company can tell you that the technology is not yet ready for prime time. McDonalds recently abandoned a trial of AI powered order systems at 100 restaurants because it did not deliver the expected results. This is not to say the technology is bad. The providers of the technology are constantly learning and improving the products. They will eventually work very well and will be adopted by the mass market as a means of improving the efficiency of the companies that deploy the technology.

Because large language models that power AI require tremendous amounts of computing power to work, it is large companies with strong balance sheets that can afford to build out the data centers required to run the software. Companies like Microsoft, Amazon, Alphabet and Meta are investing billions in the infrastructure that will power the AI-related products that companies and individuals will eventually purchase to improve the efficiency of their operations.

Semiconductors will be a crucial component of the buildout because you cannot build a data center without servers, switches, data storage devices and power management products. All these products contain them. Currently, NVIDIA is the leader in chips that power the buildout of data centers, and the company has seen unprecedented growth since the first quarter of 2023. However, several competitors have announced that they are building chips that will compete in the market. Without predicting the eventual outcome of the race to provide these chips, it is safe to say competition will eventually erode some of the company's market share and potentially its record profit margins.

NBW Capital's AI investments are following the gold rush model, investing in the picks and shovels, rather than the mines. Our holdings include the hyperscalers that own the data centers, Microsoft and Alphabet. We also own stocks that will benefit from the buildout's requirement for ever faster and more powerful chips, Marvell and Cadence Design Systems. Palo Alto Networks uses AI as a means of improving its security products to detect potential intrusions into corporate networks. Apple has announced iPhones that will have embedded AI in them. Finally, the new data centers will require more electricity generation capacity, since a significant level of this need will be met by natural gas fired power plants, our energy holdings are weighted to companies that produce and transport the commodity. We believe these companies will benefit today from profitable growth trends in AI while we continue to look for new ideas that cross the chasm into sustainable profit growth.

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