

How Does the Adoption of AI Impact Market Structure and Competitiveness within Industries?

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Abstract

The widespread use of AI has caught many industries by surprise, with many uncertain about its effect on the whole economy and specific industries. This exploratory paper hopes to shed light on how the adoption of AI impacts market structure and competitiveness within industries through the analysis of different frameworks, such as Porter's 5 forces and debate around the positive and negative impacts of AI. The paper provides valuable insight into the intricacies of AI and its many effects as it relates to market structure and the overall trend of markets due to AI. Through research, the findings suggest that the impact of AI is varied across industries; however, it is largely predicted to increase competitiveness across multiple industries by lowering barriers to entry, in others though AI can be used to increase barriers to entry and may even provide a road to collusion, thereby lowering market competitiveness.

Keywords

Artificial Intelligence, Market Structure, Algorithmic Collusion, Industry Competitiveness, Economic Theory

1. Introduction

Artificial Intelligence (AI) is revolutionizing market structures and competitiveness across industries, bringing both opportunities and challenges. Beneficially, AI increases efficiency and productivity, potentially lowering costs and improving product quality, as seen in sectors like healthcare, manufacturing, and accounting. It has the ability to lower barriers to entry, allowing startups like Lemonade and Upstart to disrupt established industries. AI also enables personalized services and improved decision-making through advanced analytics. However, there is an

argument that AI may be used for less beneficial activities such as collusion that would negatively impact market competitiveness, with more than 50% of retailers in the US using pricing algorithms, the possibilities of AI being able to effectively collude on a large scale without being caught are increasingly high. The issue's prevalence is highlighted by the US Senate's "Preventing Algorithmic Collusion Act (S. 3686)" and the EU's push on increasing transparency and regulations around AI (Klobuchar, 2024). AI's impact on employment is complex, potentially displacing workers in some sectors while creating new job opportunities in others. It may lead to market concentration as large companies leverage AI to consolidate their positions, potentially hollowing out the middle class and leading to greater wealth inequality. The ongoing "talent war" for AI specialists further complicates the competitive landscape. As AI continues to permeate various aspects of business, it promises widespread benefits in efficiency and innovation, but these advancements come with the risk of concentrated costs, particularly in terms of market structure and labor disruption. Understanding these complex dynamics is crucial for businesses, policymakers, and society at large as we navigate the AI-driven future of commerce. This paper explores these varied impacts.

2. Efficiency and Productivity

Artificial intelligence has been seized upon by many for promised gains in efficiency and productivity. By reducing the LRAC (Long Run Average Cost), SRAC (Short Run Average Cost), and MC (Marginal Cost), AI could deliver on these promises. The reduction in the LRAC, SRAC, and MC can also lead to economies of scale among companies with them being able to produce more goods at a lower average cost. This can lead to larger profits as well as lower prices, increasing competitiveness within the industry and also increasing the consumer surplus due to the competition and lower prices.

An example of this could be implemented in the healthcare sector where AI could be used to better and more quickly faster and better medically diagnose patients using medical scans such as X-rays, MRIs, etc. This could boost the hospital or company's performance as well as lead to increased efficiency with better diagnoses since AI is a tool that can be used countless times with little to no marginal cost, this also helps in reducing prices as well as providing this service to a larger audience due to this lower cost and increased abundance.

Figure 1 taken from Accenture shows the impact of AI on different industries in the coming years using the Gross Value Added (GVA) metric. As per the graph the manufacturing industry is poised to have the largest increase in its Gross Value Added by 2035 as such, next, we will explore how AI is being used in the manufacturing sector.

According to a recent study by the Boston Consulting Group (BCG), most manufacturing sector leaders are optimistic about AI, and nearly 90% plan to integrate it into their processes (Dell'Acqua et al., 2023). The reason is the enormous benefits that come with using AI in the manufacturing process.

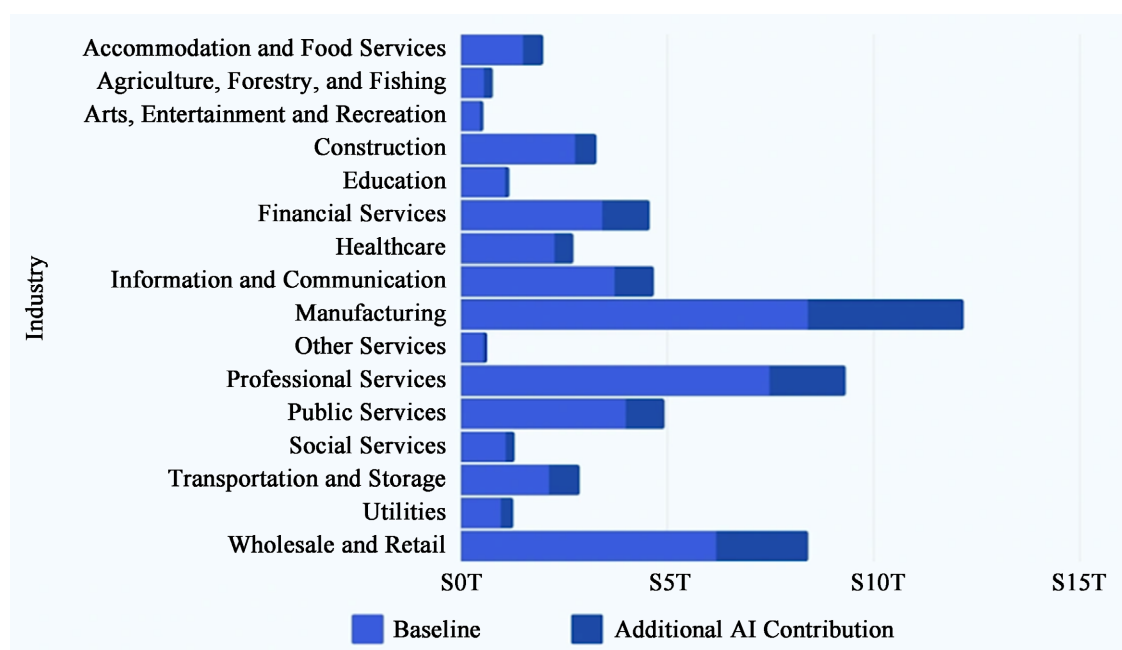


Figure 1. AI gross value added (GVA) in 2035.

AI could be used for predictive maintenance, a method in which the AI can use a large amount of data from the machine sensors and determine which one of them has a high chance of breaking, using this data from the AI the company can then fix the machine. This process can make the life cycle of the equipment longer and therefore reduce a lot of the costs that come with buying new equipment and fixing after it has completely broken down. As can be seen a process like predictive maintenance will make a company much more efficient and productive giving companies who wield AI for such uses a significant advantage over their peers who don't.

Apart from predictive maintenance, AI can also be used for quality control, due to AI being able to spot anomalies more quickly and accurately, the use of AI could make sure that only high-quality products are being produced and sent to market, this once again helps companies not only improving brand value but also in saving costs associated with repairs, once again increasing the productivity of the company as well as the profitability. AI is also being used for inventory management where its optimization skills come in handy in helping companies reduce the costs associated with the manufacturing process by producing the right amount of goods, stock level optimization, and streamlining logistics. Apart from the points mentioned above, AI could help in many other ways such as interacting with equipment directly, leading to less human intervention, i.e., fewer opportunities for human error—and therefore fewer costs, making more informed manufacturing decisions using the amount of data that AI can utilize, and much more (Boutin, 2023) All these ways that AI can help will give companies who utilize AI a significant boost in their efficiency and productivity giving them a huge advantage over competitors who don't.

Companies such as Siemens offer predictive maintenance services for industrial equipment to optimize spare parts inventory. While General Electric utilizes SmartSignal predictive maintenance software to predict, diagnose, forecast, and prevent equipment failures, ABB's Ability Genix Industrial Analytics and AI Suite helps companies minimize operational costs through AI-powered predictive maintenance services. Finally, Honeywell, which provides AI-based asset monitoring and predictive analytics products to enhance asset management and equipment reliability. These are all real examples of how AI is able to transform industries due to its far reaching applications in various fields. These companies have actively used AI to reduce operating costs, provide better services and enhance the companies' overall profitability.

Artificial intelligence technology is already being incorporated into many aspects of life. Here, the innovations to the manufacturing sector have been discussed, however, the principle applies to many other sectors. AI is also fostering change in the accounting sphere, where AI is being used to shave employee costs off by 30% - 50% and still perform the same if not better.

In the accounting realm, AI has almost unlimited potential due to its ability to automate repetitive tasks and advanced anomaly detection. Through the use of AI companies in the accounting sphere have lowered their operating costs and freed up their personnel to focus on higher analysis-based roles. For example, AI can be used for automated data entry and invoice processing, advanced anomaly detection in transactions, real-time financial reporting and forecasting, personalized proactive recommendations for tax preparation and financial planning, and much more. As mentioned above, AI can reduce operating costs by automating the above roles, research indicates by up to 50% in some cases, due to the time savings that continue compounding using AI. For instance, invoicing an average invoice by a human takes an average of 4 minutes, and AI on the other hand can get it done in 30 seconds. Not only does AI result in quicker work and therefore time savings, it also does the work with greater accuracy. Automated bank reconciliations achieved 95% accuracy, in comparison to the 70% industry benchmark for humans. Machine learning algorithms categorized 99.7% of procurement invoices correctly after training on just 550 documents. An anomaly detection model identified 92% of fraudulent transactions in testing far more than average humans. As can be seen AI is proving to be more efficient and less error prone than humans therefore resulting in massive operating cost cuts.

As this is all broad and theoretical, it would help to provide research-based examples of how accounting companies have used AI and their results as it relates to the increase in efficiency and productivity throughout the company. This study discussed by Santiago Poli on Vintti and conducted by leading academics in 2021 involved interviewing 100 companies that have used AI in their businesses for the past 2 years or more. The results showed that "on average, these companies reduced their accounting staff expenses by 30%. On average, the companies saw over 40% greater output per accountant after implementing intelligent automation.

Fewer manual processes also led to substantially lower error rates. The businesses reported 60% fewer errors on average when using AI tools for data management and calculations versus purely manual approaches,” (Poli, 2023).

The results of this study and the previous example of the manufacturing industry help highlight that AI can and is already being implemented in increasing efficiency whether in the production chain or in accounting using automation and many other features, all of which contribute to lowering costs substantially in the places where they have been implemented. These lower costs and improved productivity lead to more competition and better consumer surplus in the market.

AI also impacts the market structure and competitiveness by reducing the barriers to entry, making it easier for entrants to come into industries that were previously thought to be barring new entrants. Increasing the ease of entry simultaneously increases the competitiveness of the industry, impacting the market structure. This increased competition also helps reduce costs, making better products and services and giving more value to the consumers.

Small companies or startups can leverage AI to compete with larger firms in their industry. AI-powered automation can reduce the need for extensive physical infrastructure or large workforces, making it easier for new players to enter the market. This increased ease of entry can enhance market contestability.

To illustrate how AI makes it easier to enter industry and therefore increase competitiveness we will examine a few real-life examples.

3. Lemonade, Disrupting the Insurance Industry

Lemonade is an insurance technology company that leveraging AI and behavioral economics has disrupted the traditional insurance industry. Their AI-powered platform streamlines the insurance process, from purchasing policies to filing claims, making it more efficient and user-friendly. Lemonade’s AI algorithms analyze data to provide personalized insurance products and pricing, challenging established insurance giants. This is a prime example of how using AI companies can enter markets which were previously hard to get into, using AI, Lemonade was able to enter the insurance industry—an industry where the top 3 players regularly hold 30% - 40% of the market share.

4. Upstart, Disrupting the Lending Industry

Upstart is a fintech startup that uses AI and machine learning to revolutionize the lending industry. Their AI models analyze a wide range of data points beyond traditional credit scores to assess creditworthiness more accurately. This approach has enabled Upstart to provide more inclusive and fair lending opportunities, challenging the dominance of traditional banks and lending institutions. Upstart is another great example of how AI has helped in reducing the barriers to entry, financial services is by far one of the hardest industries to get started in due to the capital needed and the dominance of large banks but Upstart was able to do so leveraging AI to map credit scores more accurately.

As we have seen, AI has the potential to reduce costs significantly and offers an enhancement to productivity and efficiency across various industries, reducing prices and increasing competition. AI also enables smaller companies to break into industries which require a large investment or workforce, with examples such as Upstart, and Lemonade which will once again increase the competitiveness within an industry and also force more traditional markets to innovate to stay competitive. All of which results in benefits for the customer either through lower prices, better products or both.

5. Collusion/Anti-Competitiveness

Ever expanding use of AI in business and industry is not without its risks, however. The adoption of AI in markets could impact market structure and competitiveness as AI could potentially disrupt traditional competition policy. Many companies today use AI and computer algorithms to make economic decisions for them. For example, more than 50% of retailers in the US are now using pricing algorithms and 67% of EU firms who track their competitors daily use algorithms to do so. By having AI or other computer models make these decisions, it could potentially lead to collusion by coordinating price movements or impair competition in other ways such as hindering competition illegally.

Apart from using AI for pricing and related things, if AI was used for strategy or making strategic choices, it could lead to strategic convergence between firms which would be a loss for all the companies involved and potentially lead to many losses and anti-competitive behavior in the industry. The concern for collusion or noncompetitive markets due to AI is on multiple things and levels such as horizontal and third parties.

Horizontally, AI could potentially end up colluding prices with other firms in this same market due to the repeated number of interactions with the other players which could result in a game theoretic equilibrium. AI could reach a price or strategy that benefits the players involved in the long run without ending up not getting caught. This means that collusion is only found when the players are caught interacting with each other or communicating in some way or the other to collude is illegal, not the result that happens in the market. As such, AI could very easily collude and the resulting collusion would not be detected or punished due to the lack of communication or agreement to collude being explicit. AI also makes collusion much more feasible. Game theory tells us that the reason most instances of collusion become unstable is that each competitor has the incentive to undercut the other and realize more profits. However, when the deviation from the agreement occurs and is recognized and punished effectively, it results in a much more stable and profitable collusion which can be made possible by AI, as AI would constantly be monitoring and able to react to any price cuts effectively, this fear would make collusion more practical and prevalent.

Further, the possibility of herding behavior and unwanted collusion is very highly probable considering that if most AI would have to use the same data about

the market and are likely to be built on similar architectures, and similar training they could reach the same choices and end up with the same strategies or prices depending on their role in the organization.

In third-party situations, if a company is providing data or algorithms to other companies for them to use, it could once again lead to the same concerns expressed above as the AI might end up making similar choices and lead to anti-competitive behavior. This is similar to a hub and spoke as the company providing the data would be the hub and the spokes would be the companies receiving the data and using it in a similar way leading to unwanted herding.

AI could also potentially target specific buyers or customer segments due to its advanced knowledge and data about these customers. As such they can aggressively market and undercut prices if needed to make more attractive offers to these new customers. These behaviors can lead to predatory pricing (when a firm sets its prices lower thereby incurring a short-term loss, mainly to drive a new or existing competitor out of the market) which is illegal and other such practices.

AI could also potentially result in anti-competitive and collusion practices which could significantly impact market competitiveness making firms more prone to collusion and therefore less competitive (Eschenbaum et al., 2022).

However, to contest the possibility of collusion a lot is being done. Currently there is increased scrutiny of the use of algorithms to determine pricing and potential collusion. A lot of focus is based on the litigation, enforcement, and legislative fronts.

The Antitrust Division in the USA is focusing more resources on algorithmic collusion. In January, an Antitrust Division official said that the organization is “building out a more robust data analytics and data science practice to address those sorts of AI and pricing algorithm issues and also build out some of our market intelligence tools.” In efforts to keep up with the algorithmic collusion which can arise from the adoption of AI, the Attorney General also announced the creation of a new post of Chief Science and Technology Advisor and Chief Artificial Intelligence Officer. Not only that, but many other ways are being pursued such as the Senate “Preventing Algorithmic Collusion Act (S. 3686)” in an attempt to stop algorithmic collusion (it is currently still in the legislative process) (Krotoski & Sibarium, 2024).

It is not only the US, but other places have also been active in trying to make sure that collusion using AI doesn't happen such as Europe where the European Union has been introducing acts which will lead to more transparency and a better regulatory control over AI which would reduce the chances of such algorithmic collusion occurring (Rampersad, 2024).

If the measures being taken prove successful, and to a certain extent they are being shown useful as the Antitrust Division even obtained a criminal conviction involving an agreement “with the goal of coordinating changes to their respective [competitor] prices” based on “computer code that instructed algorithm-based software to set prices in conformity with this agreement,” we could see the

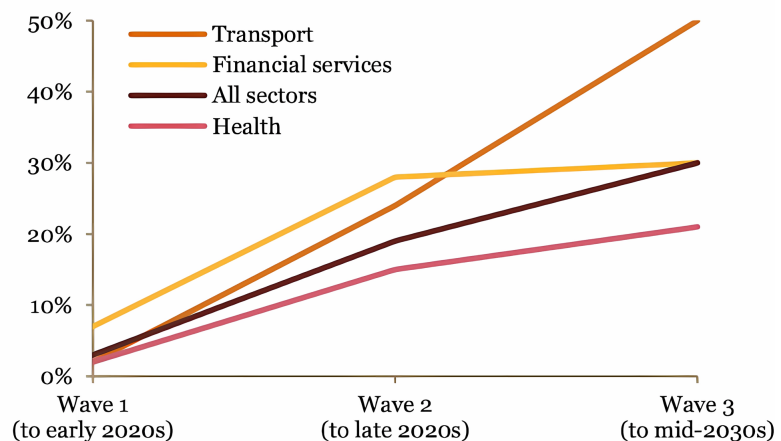
likelihood of uncompetitive and collusion behavior decrease, which would continue to foster the increased competitive landscape and market structure as discussed previously. Not to mention the fact that these new changes towards algorithmic pricing collusion could also help in reducing collusion altogether due to the now increased scrutiny once again leading to more competitive markets.

To summarize, AI could enhance the possibility of collusion, potentially transforming the industry into a de facto monopoly, with all the players having virtually the same products at nearly identical prices, creating higher prices for customers and making the industry less competitive. However, governments around the world have realized this effect that AI can have and have taken steps to prevent against it, the effectiveness of these actions will determine the possibility of collusion.

6. AI Impact on Jobs

One of the main ways that AI can impact industries is its impact on jobs. AI acts as a double-edged sword, on the one hand it can lower costs, however, it can also reduce the need for labor, potentially increasing unemployment. Because of AI, many workers are expected to be displaced due to the ability of AI to automate tasks normally done by workers. This is expected to impact multiple industries due to its wide scope of use.

% of existing jobs at potential risk of automation



Source: PwC estimates based on OECD PIAAC data (median values for 29 countries)

Figure 2. Potential job automation rates by industry across waves.

As can be seen, the above graph represents this danger of automation depending on different sectors that the worker is placed in, this study was conducted by PricewaterhouseCoopers better known as PwC in an effort to find the impact AI would have on the workforce of particular industries. As can be seen from the graph (Figure 2), the transport and financial services industries are the most likely to be affected by AI.

Broadly speaking, when AI automates tasks performed by workers, it leads to the displacement of these workers, particularly, in industries where automation

greatly enhances productivity. The dynamic industry model described by Dawid Herbert (Bielefeld University) and Neugart Michael (Technische Universität Darmstadt) in the journal of evolutionary economics shows that automation affects the allocation of tasks between workers and machines, influencing industry output, wage distribution, and labor share. The competitiveness of markets, particularly barriers to entry, plays a crucial role in determining these outcomes. In highly competitive markets with low entry barriers, firms may invest more in automation to stay competitive, leading to increased productivity and potentially lower prices for consumers. Firms that adopt automation may also see increased profits due to lower production costs, but this can also result in wage disparities between high-skill and low-skill workers. The study by Dawid Herbert and Neugart Michael (2022) highlights that the effects of automation on wage distribution depend on the heterogeneity of workers and firms, as well as the competitiveness of the industry in question. Another article by the Brookings Institute highlights a different aspect of AI job displacement. The article describes how the adoption of AI could lead to the hollowing out of the middle class as stable, well-paying jobs that do not require an advanced degree would be reduced (Korinek & Klinova, 2023). This can lead to increased market concentration as larger firms with the resources to invest in AI and automation gain a competitive edge over smaller firms. Therefore, this would lead to an industry that is dominated by a few big players with the market competitiveness of the industry now potentially reduced. Finally, a study by Harvard discusses how automation could potentially lead to lower quality-adjusted prices due to increased productivity which would end up benefiting the customer. However, the benefits of automation may accrue more to firm owners through increased profits rather than to workers. This can lead to a concentration of wealth and power within industries, further impacting market structure and competitiveness. Another impact of AI on jobs is on talent acquisition for workers specialized in AI. Top tech firms such as Meta, openAI, Alphabet, etc. have started a talent war in trying to recruit the best workers in the field of AI. A prominent example being Google splurging on their acquisition of Noam Shazeer due to his AI expertise. Companies have tried to greedily hire the top AI developers and have enticed them with lucrative compensation packages. This leads to less AI skill and talent for other new entrants to the industry to hire, which causes them to stay behind in the race of adopting AI. This initial disadvantage can convert into a long standing problem as the dominant firms build AI platforms that will take years for new entrants to combat. This increases the barriers to entry for an industry, once again consolidating industry power among a few dominant firms. Another thing AI does is also improve the current staff of a company and help them in its hiring process. By leveraging AI for talent acquisition processes, companies can streamline operations, reduce costs, and improve efficiency. This can provide a competitive advantage by enabling faster time-to-hire, better candidate experiences, and more informed hiring decisions, ultimately contributing to overall business performance. This once again benefits the

dominant players in their respective industries.

As such, the impacts AI can have on jobs and therefore market structure and competitiveness are very varied and complex. Large companies can utilize heavy investments on acquiring talented AI specialists to form a longstanding advantage that would reduce the competitiveness in a certain industry. Workers could be displaced as AI could automate tasks with greater efficiency and more cost effectively increasing both productivity and efficiency of a company and industry. These factors indicate that companies who invest in AI today could reap the benefits for years to come and potentially make it tougher for other smaller companies to break into their respective industry, they also suggest a potential layoff and therefore some cuts on operational costs in the long term for these companies. The following could also lead to lower quality adjusted prices for customers in the long run.

The widespread adoption of AI will lead to a more equipped workforce with certain workers having to reskill themselves in order to continue being productive. Ultimately, societies will have to grapple with the trade off between the reduced cost of goods and the potential changes in the labor market due to AI.

7. AI Impact on Industry Competitiveness Using Porter's 5 Forces

Porter's 5 forces are a very popular tool in the finance world developed by Micheal Porter and is used to assess the attractiveness and potential profitability of an industry by analyzing competition and industry structure. Below we have used this framework to analyze the impact that the adoption of AI could have on each of the 5 forces.

Threat of New Entrants

The adoption of AI can impact the threat of new entrants in multiple ways. First, it can increase the threat of new entrants due to the ability of people to leverage AI platforms and open source platforms to develop AI capabilities which can help them break into an industry. We have seen an example of this with Upstart and Lemonade as they were able to break into their respective industries using AI. However, it can also reduce the threat of new entrants if the investment in AI is so great and impactful from existing players that new entrants will need a lot of capital to enter the industry. Large existing firms could also leverage their data and experience inside a particular industry to develop better AI models and invest more in AI. An example of this is shown by Google with their head of AI saying that over time he expects Google to spend in excess of 100 billion dollars developing artificial intelligence technology which will definitely make it tougher for other smaller companies to replicate their performance or break into their industry.

Due to the potential of AI, any company in the industry would have to continuously innovate and invest in AI to maintain their market position.

Bargaining power of Suppliers

AI can have a huge impact on the bargaining power of suppliers due to the

ability of AI to give suppliers a way to provide more efficient, personalized services to their buyers. They can also leverage AI to optimize their supply chains, reduce costs, and offer unique value propositions that are difficult for buyers to replicate. Therefore, suppliers with strong AI capabilities can command higher prices and better terms, potentially increasing costs for buyers and affecting overall industry profitability.

Bargaining power of Buyers

With the adoption of AI and increased productivity, efficiency and a lower quality adjusted price, the buyers definitely benefit a lot from the adoption of AI. However, as presented before this is only true in an industry where AI reduces the barriers to entry, in such a case the bargaining power of buyers increases as there are more products to choose from. Conversely, if the adoption of AI increases the barriers to entry then it would reduce the bargaining power of buyers as they would be offered less choice and therefore would have less bargaining power. Let's dive deeper into each scenario, if the adoption of AI does reduce the barriers to entry, the industry would become more competitive as smaller companies can also compete. This increased competition will lead to 2 things. First, due to the increased competition, the price of products would decrease as companies try to outmatch each other's offers, smaller, up-and-coming companies powered by AI are also likely to have lower costs due to a lower workforce and fewer organizational frameworks that bigger companies tend to have, thus reducing prices. Second, the quality of goods and services is also likely to increase, along with the possibility of more personalized products for more niche markets which will further lead to a better quality adjusted price and more choice for the buyer in the industry as they can pick out of a wider variety of options and will also benefit from the personalisation, lower costs and better quality of products. However, if the adoption of AI results in a less competitive industry, we can expect the opposite to happen. To understand this, we must first think about how AI can result in a less competitive industry. From our previous analysis the reasons are likely due to either collusion or existing companies investing significant amounts of money in AI such that a new startup cannot replicate their progress. If the reason for a less competitive industry is collusion, then we can expect a higher price for customers as the industry transforms to a more monopolistic nature, as is characteristic of monopolies the bargaining power of buyers would be extremely diminished. On the other hand, if the reason for the industry being less competitive is due to significant investment in AI by existing companies then we can expect 2 things. First, we can expect an increase in the quality of goods in the future as AI will likely enhance the personalisation of products and reduce costs in the long run, however the choices offered to the buyer would still be comparatively lesser as to a scenario where AI increases competitiveness as larger companies will not be able to manufacture a wide variety of personalized products due to the additional costs associated with doing so. This will lead to lower choices and therefore a reduction in the bargaining power of buyers but still an increase compared to if

the industry suffered from collusion due to AI.

To summarize, if the competitiveness of the industry increases then the bargaining power of buyers will increase, on the other hand if the competitiveness decreases then depending on why the competitiveness of an industry decreased the buying power of buyers would decrease. If it was due to collusion the bargaining power of buyers would be much less than if it was due to a significant investment in AI.

Threat of Substitutes

With the adoption of AI, new products and services can be made which could be cheaper, more efficient, better quality, etc. These products and services could not only serve as viable substitutes but be a better fit to the potential customer. For example, AI-powered chatbots can replace human customer service agents, and as discussed before AI-driven diagnostic tools can substitute for traditional medical consultations. The emergence of AI-driven substitutes can erode market share for traditional products and services, forcing companies to innovate and adapt to maintain their competitive edge. With more substitutes the competition in the industry would increase by a lot as well.

Intensity of Competitive Rivalry

AI increases the intensity of competition by enabling companies to rapidly identify and exploit new opportunities. AI-driven data analysis allows firms to anticipate market trends, optimize operations, and enhance customer experiences. This heightened competition can lead to price wars, increased innovation, and faster product cycles. Companies must continuously invest in AI and other technologies to stay ahead of competitors, leading to a more dynamic and competitive market environment.

To summarize this section, through an analysis of the impact of the adoption of AI on each of Porter's 5 forces we understand that depending on the impact AI has on new entrants in the industry, competitiveness can either increase or decrease. However, it is more likely to increase competition than decrease it due to the lower barriers to entry that might exist due to the adoption of AI as well as the ability of AI to replicate work done by a larger workforce more cost effectively and faster. As for other factors, it is becoming clear that AI gives a range of advantages to suppliers and customers. It also increases the threat of substitutes and increases the competitive rivalry within an industry. The adoption of AI would definitely require a lot of investment from new and existing companies if they were to maintain or expand their market position within an industry.

8. Industry Convergence

AI adoption has the potential to accelerate a phenomenon known as industry convergence. Industry convergence is when the lines between 2 or more industries get blurred and they both end up becoming correlated and integrated. AI industry convergence is the blurring of boundaries between previously separate industries as AI capabilities get integrated into existing products and services. This convergence

is fueled by the interplay between AI providers (companies specializing in AI) and traditional base product providers cooperating and merging their competencies. This AI-driven industry convergence is leading to a restructuring and “turning upside down” of traditional industries. Firms have to acquire new AI competencies and business models get disrupted by AI-driven innovations. This industry convergence driven by AI can lead to increased competition as firms from different sectors converge and compete in overlapping markets. This convergence disrupts existing business models, alters competitive dynamics, and creates new opportunities and challenges for firms as they navigate these converging markets driven by AI integration into their products and services. A good example of this is how parts of the tech industry are placing themselves into the automobile industries, with the advent of self-driving vehicles as well as smart transportation systems such as using AI for traffic management.

9. Differentiation and Customization

The adoption of AI has another big impact on market structure and competitiveness by the use of AI for the differentiation and customization of products. With AI, companies can customize products for each customer, offering them a more personalized experience. Companies can use AI to analyze customer data, understand their unique needs, and dynamically adapt offerings accordingly. This level of customization can lead to increased product differentiation and the creation of niche markets within industries. This form of mass customization which was previously seen as impossible due to cost considerations can now disrupt traditional mass-production models and shift industries towards more customer-centric, tailored offerings. With AI customizing the service for the customer, the company can enjoy more brand loyalty, brand differentiation, and a competitive advantage in industries where customer experience is a key differentiator.

10. Conclusion

In conclusion, the impact of AI is far reaching and significant. While it is a double-edged sword to companies in the industry, it is likely to be a boon for consumers, who will benefit the most. Due to AI's significance, companies will certainly have to invest and continuously keep investing in AI to keep their market position or expand it. The use of AI can change the market structure and competitiveness in many ways for an industry depending on the significance and impact that AI will have in transforming that industry. However, with time, AI is much more likely to increase competition in an industry than to decrease it.

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Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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