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VOICE ENABLE SMART WEALTH MANAGEMNT

By

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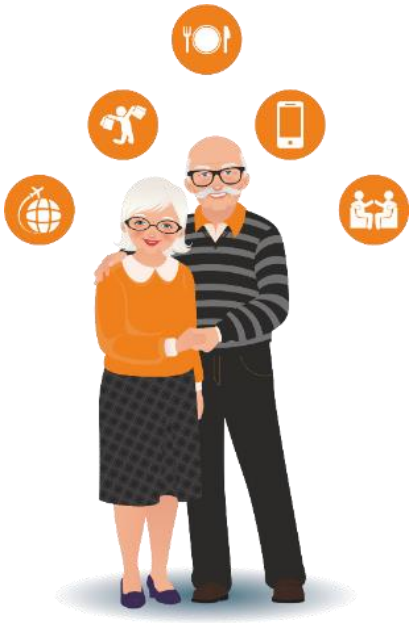
Abstract

Artificial Intelligence (AI) and Machine Learning (ML) driven voice recommendation technology has emerged as a transformative force in the finance industry. This report explores the potential positive impacts of this technology on financial services. By leveraging voice-based interactions, AI-driven voice recommendation systems can enhance accessibility, offering a more inclusive experience for individuals with limited financial literacy or physical disabilities. Additionally, these systems provide personalized financial guidance by analysing vast amounts of data, empowering individuals to make informed decisions tailored to their specific needs. Moreover, voice recommendation technology improves efficiency by enabling quick and hands-free interactions, streamlining financial transactions and inquiries. It also enhances risk assessment capabilities by analysing market data and providing real-time alerts and mitigation strategies. Furthermore, real-time market insights provided by voice recommendation technology enable individuals and institutions to stay updated on market trends and optimize their investment decisions. The integration of advanced security measures, such as voice biometrics and fraud detection algorithms, ensures secure financial transactions and protects sensitive information. Lastly, voice recommendation technology enhances customer service experiences by delivering prompt and accurate responses and offering personalized assistance. Overall, AI-driven voice recommendation technology has the potential to revolutionize finance by improving accessibility, providing personalized guidance, enhancing efficiency, enabling advanced risk assessment, delivering real-time market insights, enhancing security, and streamlining customer service.

1. CHALLENGE

How will the integration of open data and open financial education impact the finance industry? What societal changes need to occur to ensure that open data benefits both individuals and institutions? In an increasingly competitive market, how should service providers reallocate resources and shift their attention to maintain relevance, particularly in the context of finance voice recommendation technology?

Middlemen in wealth management often introduce additional costs and inefficiencies into the investment process. They act as intermediaries between clients and investment opportunities, leading to higher fees and potential conflicts of interest. Additionally, communication and decision-making can be slowed down due to the involvement of multiple parties.



By leveraging AI and ML technologies, the need for middlemen can be reduced or eliminated. These technologies can automate various tasks, such as data analysis, risk assessment, and portfolio optimization. With direct access to real-time market data and advanced algorithms, AI-powered platforms can offer more accurate, personalized, and timely investment recommendations.

Removing middlemen in wealth management streamlines the investment process, reduces costs, and enhances efficiency. Clients can benefit from lower fees, faster execution, and increased transparency. Moreover, AI and ML can improve

investment outcomes by leveraging vast amounts of data, identifying patterns, and adapting strategies based on market conditions

2. TEAM MEMBERS

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Passionate about data analytics and IT professional with 5 years of experience

"Big Data is not just about collecting and analysing information; it's about transforming data into knowledge, and into meaningful impact."

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Experienced in data analyst skilled in Python, Tableau, and machine learning." I transform raw data into actionable insights, leveraging my expertise to drive data-driven decision-making and deliver comprehensive reports for management." (analyticalharry.github.io)

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Dedicated and ambitious third-year student of Policy and Politics Social Science. With a strong passion for understanding the intricacies of governance and societal dynamics, they have delved deep into subjects like public policy, political theory, and international relations. Through active engagement in debates, and research projects.

Executive Summary

Artificial Intelligence (AI) and Machine Learning (ML) technologies have made remarkable advancements in recent years, opening new possibilities for the financial industry. Among these advancements, voice recommendation technology stands out as a powerful tool that can revolutionize the way financial services are accessed and utilized. This report explores the positive impacts of AI-driven voice recommendation technology in the finance sector, highlighting its potential to foster inclusivity, provide personalized guidance, enhance efficiency, improve risk assessment, deliver real-time market insights, ensure security, and streamline customer service.

Improved Accessibility Voice-based interactions offer a more inclusive and accessible way for individuals to engage with financial services. This technology enables a wider audience, including those with limited financial literacy or physical disabilities, to participate in the financial system, thereby enhancing financial well-being. The report discusses the role of voice recommendation technology in fostering inclusivity and improving accessibility in the financial industry.

Personalized Financial Guidance AI and ML algorithms can analyse vast amounts of financial data to provide personalized recommendations and guidance. Voice recommendation technology leverages these algorithms to deliver tailored investment strategies, financial planning advice, and personalized insights, empowering individuals to make more informed decisions. The report explores how this technology can transform the way individuals approach their financial journeys.

Enhanced Efficiency Voice commands streamline financial transactions and inquiries by providing quick and hands-free interactions with financial services. This efficiency reduces the time and effort required for tasks such as balance inquiries, bill payments, and account management, benefiting both individuals and institutions. The report examines the ways in which AI-powered voice assistants enhance efficiency in financial operations.

Advanced Risk Assessment AI and ML algorithms enable real-time risk assessment and mitigation strategies by analysing market data, historical trends, and risk factors. Voice recommendation technology can alert individuals to potential risks and suggest appropriate risk management approaches, improving investment outcomes. This section of the report discusses the transformative

impact of AI-driven voice recommendation technology on risk assessment in finance.

Real-Time Market Insights Voice recommendation technology provides instant access to real-time market data, news, and analysis, empowering individuals and institutions to stay updated on market trends, make timely investment decisions, and optimize their portfolios. The report delves into the significance of real-time market insights facilitated by AI-driven voice recommendation technology.

Enhanced Security AI-powered voice recommendation technology incorporates advanced security measures, such as voice biometrics and fraud detection algorithms, to ensure secure financial transactions and protect sensitive information. This section of the report highlights the importance of security in financial services and how voice recommendation technology enhances it.

Streamlined Customer Service Voice recommendation technology improves customer service experiences by providing prompt and accurate responses to customer inquiries and offering personalized assistance. This section explores how AI-driven voice recommendation technology enhances customer satisfaction and loyalty in the finance industry.

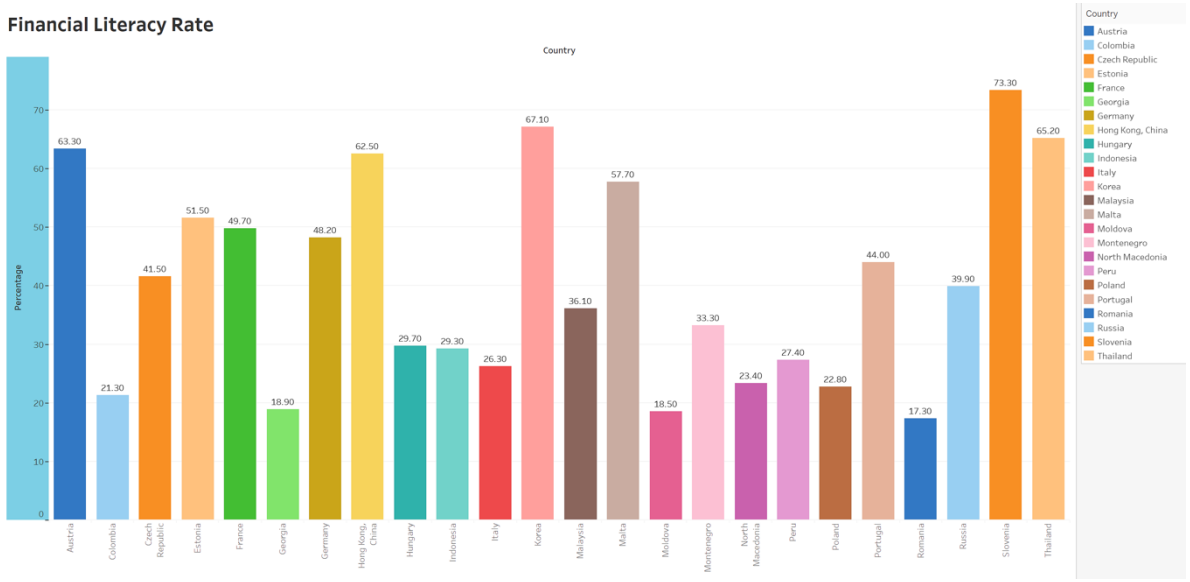
3. FINANCIAL LITERACY SURVEY RESULTS

Financial literacy plays a crucial role in the growth and stability of economies around the world. The findings from the Standard & Poor's Ratings Services Global Financial Literacy Survey (S&P Global FinLit Survey) and the OECD/INFE International Survey of Adult Financial Literacy shed light on the impact of financial literacy on individuals and the broader economy.

According to the S&P Global FinLit Survey, approximately 3.5 billion adults, accounting for roughly 33% of the world's adult population, are financially literate. This highlights the significant number of individuals who possess the knowledge and skills necessary to make informed financial decisions. Financially literate individuals are more likely to understand financial products and services, manage debt effectively, and make sound investment choices.

The OECD/INFE International Survey of Adult Financial Literacy provides further insights into the impact of financial literacy on various aspects of individuals' financial lives. For financial knowledge, the survey reveals that 56% of adults achieved the minimum target score of 5 out of 7. This indicates that a substantial portion of the population possesses a solid understanding of key financial concepts and principles.

In terms of financial behaviour, the survey shows that 49% of adults achieved the minimum target score of 6 out of 9. This suggests that a significant number of individuals demonstrate responsible financial behaviours such as budgeting, saving, and managing credit effectively. These behaviours contribute to financial stability and resilience, both at the individual and societal levels.



Furthermore, the survey highlights that 42.5% of adults achieved the minimum target score of 3 out of 5 for financial attitude. This indicates a positive attitude towards financial planning, risk management, and long-term financial goals. Such attitudes foster a culture of financial preparedness and enable individuals to make informed decisions that positively impact their financial well-being.

The correlation between financial literacy and economic growth is well-established. Financially literate individuals are more likely to participate in the formal financial system, take advantage of investment opportunities, and make productive financial decisions. This, in turn, drives economic growth by promoting entrepreneurship, increasing savings and investments, and facilitating access to credit.

Moreover, a financially literate population contributes to the stability of the financial sector. With a greater understanding of financial products and services, individuals are less vulnerable to fraudulent schemes and predatory lending practices. This reduces the risks associated with financial instability and enhances consumer protection.

To harness the full potential of financial literacy, there is a need for comprehensive educational initiatives and accessible resources that promote

financial knowledge, skills, and attitudes. Governments, financial institutions, and educational institutions play a critical role in fostering financial literacy through targeted programs and initiatives.

4. MACHINE LEARNING MODEL

Machine learning is a subset of artificial intelligence that provides the ability to learn and improve from experience without being explicitly programmed. It has garnered significant attention in recent years for its ability to empower computers to learn and make decisions using statistical techniques without explicit programming. This technology hinges on the principle that computers can autonomously learn from data, identify patterns, and make informed decisions with minimal human intervention.

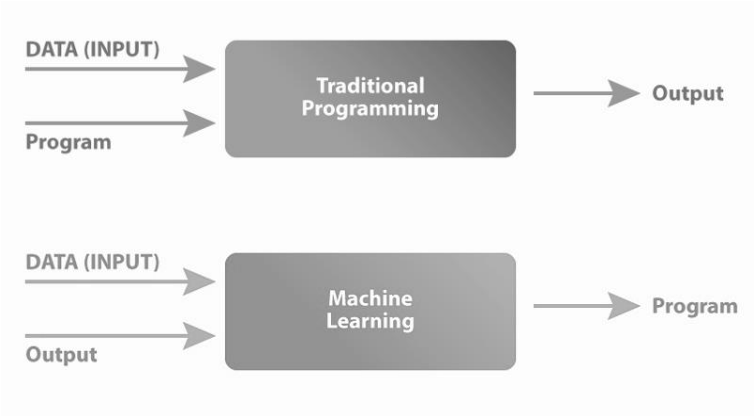


Figure 1: Traditional programming & ML

Machine learning seeks to imbue machines with more human-like behaviour and decision-making capabilities by enabling them to learn and develop their own programs. The learning process is automated, and the system's performance improves based on the experiences acquired throughout this process. To achieve this, high-quality data is supplied to the machines, and various algorithms are employed to construct machine learning models that train the machines on this data. The choice of algorithm is dictated by the nature of the data and the specific task that requires automation.

A key distinction between machine learning and traditional programming lies in the approach to problem-solving. In traditional programming, input data and a well-crafted, tested program are fed into a machine to generate output. In contrast, machine learning involves supplying both input data and output during the learning phase, enabling the machine to devise a program autonomously.

In finance, machine learning algorithms which is subset of artificial intelligence are used in a variety of applications, including algorithmic trading, fraud detection and prevention, portfolio management, and loan underwriting. These algorithms help financial institutions make better trade decisions, detect and prevent fraudulent financial transactions, provide automated financial advice, and simplify the loan underwriting process. By analysing large volumes of data, machine learning in finance helps financial institutions to make faster and more accurate decisions, reduce risk, and optimize portfolios.

5. POLITICAL

The rapid advancement of artificial intelligence has triggered concerns among industry insiders and external observers alike, highlighting the urgency for governments to address the associated risks and challenges. The potential benefits of AI, such as the development of life-saving drugs, are indisputable. However, the increasing capabilities of text and image generative models have also exposed threats ranging from massive job losses to entrenched discrimination and a surge of disinformation.

Dr. Thomas Ferretti from the London School of Economics and Political Science (LSE) discusses the ethical and political issues surrounding artificial intelligence (AI) and machine learning (ML) in this article. Ferretti challenges the idea that knowledge is inherently good, arguing that its use must be evaluated in practice. While AI and ML have positive applications, such as discovering exoplanets, reducing energy consumption and emissions, and improving medical diagnoses, they also pose ethical concerns, including algorithmic bias and opaque decision-making. Furthermore, he warns that the power of AI can exacerbate existing power imbalances in society, making it crucial to have principles of AI ethics and institutional safeguards to ensure the responsible use of AI. Finally, Ferretti emphasizes the importance of legitimate consensus-building strategies and public scrutiny to mitigate the potential negative impacts of AI.

Regulatory Framework in Europe

The European Commission is proposing the first-ever legal framework on artificial intelligence, addressing the risks posed by AI and positioning Europe as a global leader in the field. The regulatory proposal aims to offer clear requirements and obligations to AI developers, deployers, and users regarding specific AI use cases while minimizing administrative and financial burdens, particularly for small and medium-sized enterprises (SMEs).

The regulatory framework is part of a broader AI package that includes the updated Coordinated Plan on AI, which together ensures the safety and fundamental rights of people and businesses while promoting AI uptake, investment, and innovation across the EU. The proposed AI regulation is designed to in still trust in AI technologies among Europeans. While many AI systems present little to no risk and can contribute to solving societal challenges, certain AI systems pose risks that must be mitigated to prevent undesirable outcomes. Existing legislation provides some protection, but it is insufficient to address the unique challenges posed by AI systems.

The proposed rules aim to:

1. Address risks specifically created by AI applications.
2. Propose a list of high-risk applications.
3. Set clear requirements for AI systems for high-risk applications.
4. Define specific obligations for AI users and providers of high-risk applications.
5. Propose a conformity assessment before the AI system is put into service or placed on the market.
6. Propose enforcement after such an AI system is placed in the market.
7. Propose a governance structure at European and national levels.

The proposed regulation aims to be future proof, allowing rules to adapt to technological changes and ensuring AI applications remain trustworthy even after being placed on the market. Following the Commission's proposal in April 2021, the regulation could enter into force in late 2022 or early 2023, with a transitional period for setting up governance structures and developing standards. The regulation could become applicable to operators by the second half of 2024 at the earliest.

United Kingdom establishing a pro-innovation approach to regulating AI.

The United Kingdom holds a prominent position on the global stage in numerous facets of artificial intelligence, ranging from our esteemed academic institutions to a robust business ecosystem that nurtures AI enterprises of all scales. Artificial intelligence serves as a catalyst for innovation in a multitude of sectors, including healthcare and agriculture, and propels advancements in research, scientific breakthroughs, and economic growth throughout the nation.

The UK government has taken a proactive approach to regulating AI, focusing on high-risk AI systems and ensuring the safe and secure use of AI in financial services. The government has also emphasized the importance of accountability and responsibility for AI outcomes and has left the definition of "fairness" to be

defined by regulators. The government seeks stakeholder feedback on its proposed approach. The forthcoming White Paper will provide further details on the framework and implementation plans, informed by input from the AI ecosystem, industry, civil society, academia, and other stakeholders.

Challenges to create a pro-innovation regulator environment for AI in the UK.

1. Lack of clarity and consistency: The current patchwork of AI regulation and guidance can create confusion for businesses and individuals, and hinder innovation. Ensuring clarity and consistency in the regulatory landscape is essential for continued growth in the AI sector.

2. Overlapping or conflicting regulations: With multiple regulators and organizations issuing guidance and standards, there is potential for overlapping or conflicting rules that could further confuse stakeholders and impede innovation.

3. Reactive rather than proactive approach: The rapid pace of AI development requires a regulatory approach that anticipates and addresses potential risks before they become significant issues. A proactive approach to regulation will help the UK maintain its competitive advantage in AI.

4. Balancing innovation and risk management: Striking the right balance between promoting innovation and addressing potential risks is critical to fostering a thriving AI ecosystem. The regulatory framework should be designed to support and encourage innovation, while effectively managing risk.

5. Adapting to the evolving AI landscape: The AI sector is constantly evolving, and the regulatory framework must be flexible enough to adapt to new developments and technologies. This requires ongoing engagement with stakeholders and a commitment to refining the regulatory approach as needed.

6. Ensuring global competitiveness: As AI innovation occurs on a global scale, the UK must ensure that its regulatory approach is competitive and aligned with international best practices. This includes working closely with international partners and organizations to shape global approaches to AI regulation.

7. Public trust and ethical considerations: Ensuring public trust in AI technologies and their applications is crucial to realizing their full potential. The regulatory framework should address ethical considerations and promote transparency and accountability to build public confidence in AI systems

U.K Government proposed cross-sectoral principles are as follows:

1. Human-centred values and fairness: AI should be designed and used to respect human rights, democracy, and the rule of law. It should be used fairly and transparently to ensure that it does not lead to discrimination or unjust treatment.

2. Transparency and explain ability: AI systems should be transparent and easy to understand. Their processes and outcomes should be explainable to the people they affect, including regulators, individuals, and businesses.

3. Robustness, safety, and security: AI systems should be robust, safe, and secure in their design and implementation. They should be resilient against threats, including cyber threats, and should be designed to minimize errors and unintended consequences.

4. Accountability: Actors in the AI lifecycle, including developers, users, and regulators, should be held accountable for the decisions made by AI systems. They should be able to demonstrate that AI systems are being used responsibly and ethically.

5. Data privacy and governance: AI systems should adhere to data protection laws and should be designed to protect users' privacy. Data governance practices should be in place to ensure that data is collected, stored, and used ethically and securely.

6. Collaboration and cooperation: The development and deployment of AI should involve collaboration between stakeholders, including businesses, individuals, regulators, and government. Cooperation at the national and international level should be encouraged to ensure that AI technologies are developed and used ethically and responsibly.

7. Environmental sustainability: AI systems should be designed and used in a manner that promotes environmental sustainability, minimizing

their impact on the environment and contributing to efforts to combat climate change.

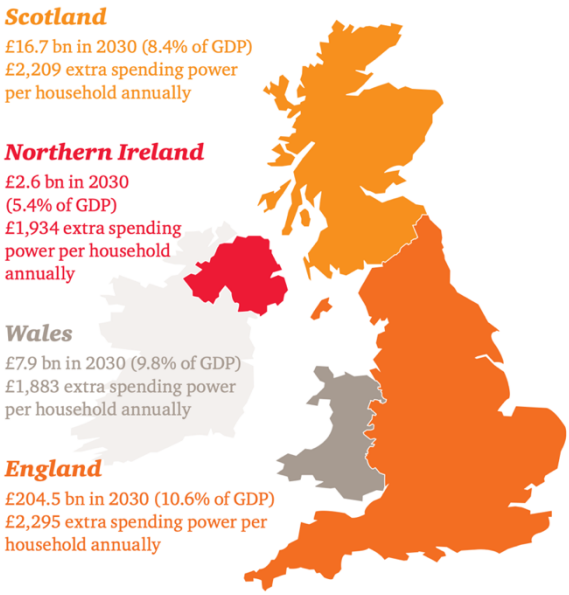
8. Innovation and economic growth: AI should be developed and used in a manner that supports innovation and economic growth, while ensuring that the benefits of AI technologies are widely shared across society.

6. ECONOMIC

Artificial Intelligence (AI) is expected to have a transformative impact on the global economy. While it has the potential to increase efficiency, support intelligent decision-making, and create new business models and industries, it also carries potential risks, including micro-financial and macro-financial risks in the financial sector. The development of AI is expected to lead to increased automation, restructuring of the labour market, and changes in employment demand and talent requirements. While AI may replace some jobs, it is also expected to create new job opportunities that require a combination of technical skills and soft skills such as creativity, emotional communication, and complex problem-solving. Therefore, the impact of AI on the global economy is complex, with both challenges and opportunities.

Impact on United Kingdom economy

The United Kingdom's GDP is projected to increase by up to 10.3% in 2030 due to the integration of AI, representing an additional £232 billion and establishing AI as one of the most significant commercial opportunities in the rapidly evolving economy. The impact over this period will arise from productivity gains (1.9%) and consumption-side product enhancements, coupled with new firm entry stimulating demand (8.4%). All UK regions, including England, Scotland, Wales, and Northern Ireland, will experience substantial gains, with each region witnessing an AI-driven impact on their 2030 GDP of at least 5% and additional spending power per household ranging from £1,800 to £2,300 annually.



2: Impact of A.I & M.L on U.K economy (www.pwc.co.uk)

Impact on Europe economy

Europe is facing a significant challenge in capturing the full potential of digital and AI technologies, and that this gap is likely to widen without faster and more comprehensive engagement in these fields. The potential benefits of closing the gap are substantial, with the potential to add trillions of euros to the collective GDP by 2030. The findings suggest that Europe should prioritize action in five areas to accelerate its path to AI, including increasing investment in AI, promoting the adoption of AI technologies, fostering the development of AI start-up ecosystems, and addressing the skills gap. By taking these steps, Europe has the potential to close the digital and AI gap and to reap the benefits of these technologies for its economy and society.

According to the discussion paper "Notes from the AI frontier: Tackling Europe's gap in digital and AI" by the McKinsey Global Institute (MGI), Europe's average digital gap with the world's leaders is being compounded by an emerging gap in artificial intelligence (AI). The paper suggests that if Europe develops and diffuses AI according to its current assets and digital position relative to the world, it could add about 20% or €2.7 trillion to its combined economic output by 2030. If Europe were to catch up with the US AI frontier, a total of €3.6 trillion could be added to collective GDP in this period. The paper also highlights that Europe has solid assets to bring into play in the next wave of AI, such as close to six

million professional developers, but its disadvantage in digital diffusion is likely to spill over into AI, where a new gap is appearing.

The paper suggests that there are three channels that will determine the extent of the productivity boost from AI: competition, innovation, and new skills. European companies perceive AI to be a competitive play and many are motivated by the pursuit of capital productivity and the efficiency of non-labour inputs. The biggest barriers to AI adoption in European companies are linked to having the right workforce in place, with the ability to use ICT tools in work and companies' need for skills to provide new AI applications and services being the two biggest barriers.

The paper suggests that Europe's average ability to capture the full potential of AI masks a significant disparity among countries and sectors. The most advanced Northern European countries and the Anglo-Saxon countries lead in Europe, ahead of China, while Southern and Eastern Europe lag behind. The paper suggests that Europe's different strengths and weaknesses on AI enablers can be leveraged by countries to create a more favourable and more enabling environment for AI.

Europe has the potential to achieve a significant productivity boost through AI, and that the 10% of European companies that are the most extensive users of AI to date are likely to grow three times faster than the average firm over the next 15 years.

7. SOCIAL

Artificial intelligence (AI) can have both positive and negative impacts on society. On the positive side, AI can increase productivity levels, reduce human errors, and spare humans from performing risky tasks. AI can also automate routine jobs and allow people to focus on more complex and creative roles.

However, AI also raises concerns regarding privacy and data exploitation. Many tech products that people use daily are vulnerable to AI data exploitation, and people's movements can be tracked and monitored in real-time. Additionally, AI can make people lazy and dependent on technology, which can be problematic for future generations.

It is important to note that the impact of AI on society is not yet fully known, and it is up to us to take responsibility for the ethical use and development of this technology. We must ensure that the benefits of AI outweigh its potential negative impacts and that society as a whole benefit from its advancements. Such social

concern has given rise to A.I bioethics. It is the branch that focuses on the ethical concerns surrounding the development and use of artificial intelligence. It is concerned with ensuring that AI is developed and used in a way that benefits humanity, respects privacy and autonomy, and avoids unintended harm. Principles such as beneficence, value upholding, lucidity, and accountability are often cited as important in AI bioethics. As AI becomes more prevalent in our lives, addressing ethical considerations will be crucial for ensuring its responsible development and use.

BIOETHICS

A.I continues to develop and impact society; it is crucial to consider and develop principles of AI bioethics. There are several potential areas of concern when it comes to AI bioethics. For example, AI algorithms may contain bias, leading to discriminatory outcomes for certain groups of people. Additionally, the use of AI in decision-making may raise questions about accountability and responsibility. There are also concerns around the potential impact of AI on employment and the workforce, as well as the potential for AI to be used for harmful purposes, such as cyberattacks or surveillance.
To address these and other ethical concerns related to AI, many organizations and experts are developing principles of AI bioethics. These principles are intended to guide the development and use of AI technology in a way that maximizes its benefits while minimizing potential harm.

Some proposed principles for AI bioethics include:

1. **Transparency:** AI systems should be designed and implemented in a way that makes their functioning and decision-making processes clear and understandable to humans. This allows for easier monitoring and assessment of AI systems to ensure they are functioning as intended.

2. **Accountability:** Developers and operators of AI systems should be held accountable for their creations' actions and consequences. This includes taking responsibility for any unintended negative outcomes that may arise from AI deployment.

3. **Fairness:** AI systems should be designed to minimize biases and treat all individuals fairly. This includes addressing potential discrimination based on factors such as race, gender, or socioeconomic status. AI systems should also be designed to promote social justice and reduce inequalities in society.

4. **Privacy:** AI systems should respect individuals' privacy and protect their personal data. This includes implementing robust data security measures and ensuring that AI systems only use personal data for their intended purposes.

5. **Safety:** AI systems should be designed to minimize risks to human well-being and ensure the safety of users and the public. This may involve incorporating fail-safe mechanisms and constantly monitoring AI systems for any potential hazards.

6. **Human-cantered values:** AI systems should be designed with human values and interests at their core. This means prioritizing human well-being, dignity, and autonomy when developing and deploying AI technologies.

7. **Collaboration:** Developers and operators of AI systems should work together with various stakeholders, including ethicists, policymakers, and the public, to ensure that AI technologies are developed and deployed responsibly and ethically

10. TECHNOLOGY

The UK economy is greatly influenced by technology, particularly in the areas of artificial intelligence (AI) and data science. The UK government has made significant investments and initiatives to support the growth of AI and data-driven industries, such as the AI Sector Deal and the National Data Strategy. The Alan Turing Institute, established in 2015, is the UK's national institute for data science and AI and is working with 13 universities to advance research and development in this field.

Artificial Intelligence (AI) and its ecosystem in the UK and the Netherlands. The UK has a thriving AI community, with London being the number one city in Europe for AI and boasting strong investor networks and world-class AI research universities and institutions. The UK government has demonstrated its commitment to the development and deployment of AI through various initiatives and funding opportunities, such as the AI Strategy, the AI Sector Deal, and the Office for AI, among others. The text data highlights the advancements in AI, such as advanced machine learning techniques like federated learning and explainable AI, and their potential to bring benefits to various sectors of the economy.

Dutch government in engaging with the UK's AI community. The Dutch government can best engage with the UK's AI community by building closer relationships with key UK government bodies, launching bilateral funding mechanisms for AI innovation and R&D, setting up a UK-Netherlands AI industry innovation and adoption forum, and exploring, building, and delivering AI demonstrators for industry and innovation players in both countries.

There are over 1,500 AI start-ups and scaleups in the UK, with London being the number one city in Europe for AI. The UK's AI start-ups community is thriving, and the government has demonstrated its commitment to supporting the development and deployment of AI through various initiatives and funding opportunities. The text data also mentions that 60% of UK AI start-ups are considered at "low risk" of closure due to the COVID-19 pandemic, which is a promising sign for the AI ecosystem.

11. A. I DRIVEN COMPANIES

Alchera Technologies is a cutting-edge start-up based in Cambridge that specializes in IoT and machine learning technology. The company provides cloud-based machine learning software that offers enterprise-grade intelligent mobility and infrastructure applications. With this software, operators and commercial users of road infrastructure can access real-time data on vehicle and pedestrian movements in cities and major infrastructure. The software operates with greater coverage, lower cost, and higher reliability compared to existing solutions, as it integrates various sensor networks, including CCTV, IoT, mobile, and connected car technologies, to create a comprehensive and enriched single data feed. This enables real-time digital twins that provide valuable insights into the optimal routes for distribution vehicles, reducing idling time in traffic, and improving the efficiency of drop-off points.

CityMaas - A London-based Machine Learning start-ups are a cutting-edge platform that harnesses the power of machine learning to bridge the gap in transportation and mobility access for individuals with disabilities. The platform offers easy searchability for accessibility information and relevant travel data prior to a trip, enabling businesses to be more inclusive and empowering individuals to undertake comfortable journeys within cities.

Mobilized Construction, a Cardiff-based machine learning start-ups, offers real-time city-wide data analysis to detect road deterioration before it leads to dangerous and costly hazards. The company's analytics provide valuable insights for cost-effective road network management strategies, by gathering data across the entire road network daily and delivering real-time snapshots of road deterioration.

Adoption of AI and machine learning technology is hindered by various challenges that can be summarized as follows:

1. **Return on Investment (ROI)** - Companies often focus on immediate business value and ROI, and there is pressure to achieve fast results within the same quarter rather than waiting for a return in a few years. The average ROI of AI projects is less than 2% and the average time to see results is 17 months.

2. **Legacy Systems and Data Availability** - Outdated technology stacks and legacy systems can limit the usability of data for AI algorithms, making it difficult for companies to develop AI-ready datasets. The reluctance of companies to share data also exacerbates this challenge.

3. **Outsourced IT Contracts and Technical Debt** - Long-term IT service contracts can limit data storage capabilities and make it difficult for companies to make changes to their data storage or structure.

4. **Scalability** - Companies may have concerns about the scalability of solutions offered by start-ups, and whether the same product will have success in multiple contexts.

5. **Company Culture and Readiness** - There is often a risk-averse culture in traditional industries, and a reluctance to make changes to company structure. The transition to digitized processes can be challenging for companies where digital processes are not part of daily work practices.

12. Environmental

Carbon impact is a growing concern for the environment and sustainability. AI is being used for tasks such as environmental monitoring, energy management, and waste reduction. AI-powered sensors can be used to monitor air and water quality, and AI algorithms can be used to optimize energy use and reduce waste in industrial processes. While AI has the potential to help mitigate the effects of the climate crisis, it is also a significant emitter of carbon. The carbon cost of training large machine learning models, as well as the carbon impact of the infrastructure around big tech's deployment of AI, must be addressed to reduce AI's carbon impact.

To address this issue, researchers are developing tools to quantify the carbon cost of machine learning models and making this information transparent. They are also encouraging researchers to prioritize computationally efficient hardware and algorithms, report training time and sensitivity to hyperparameters in published

performance results and perform a cost-benefit analysis of AI models for comparison. using renewable energy grids for training neural networks is the single biggest change that can be made to reduce AI's carbon impact. Still, it needs to become more of a mainstream conversation to include getting researchers to divulge how much carbon dioxide was produced by their research, reusing models instead of training them from scratch, and using more efficient GPUs. It is crucial to keep an eye on the emissions level of AI to reduce its carbon impact soon.

Some companies believe, Artificial intelligence (AI) can be a gamechanger for companies looking to reduce their greenhouse gas (GHG) emissions and cut costs, according to Boston Consulting Group (BCG). BCG's report suggests that AI could contribute 2.6 to 5.3 gigatons of CO2e reduction, or 5% to 10% of the reduction required to meet the Paris Agreement's goal of limiting temperature rises to 1.5°C. The report also highlights the potential impact of AI on corporate sustainability, which could generate $1.3tn to $2.6tn in value through additional revenues and cost savings by 2030. BCG recommends prioritizing high-emission areas with a payback period of under 24 months and analysing AI's own emissions.

Additionally, research by PwC UK commissioned by Microsoft indicates that the application of AI across sectors such as agriculture, water, energy, and transport could contribute up to $5.2tn USD to the global economy in 2030, representing a 4.4% increase relative to business as usual. AI could also reduce worldwide greenhouse gas emissions by 4% in 2030, equivalent to 2.4 Gt CO2e or the annual emissions of Australia, Canada, and Japan combined. Furthermore, the application of AI could create 38.2 million net new jobs, offering more skilled occupations as part of this transition to a sustainable future.

13. LEGAL

On July 18, 2022, the UK government announced its new proposals for regulating the use of artificial intelligence (AI) technologies while promoting innovation, boosting public trust, and protecting data. The proposals reflect a less centralized and more risk-based approach than in the EU’s draft AI Act. The UK government intends to regulate the use of AI, not the technology itself. The proposal sets out the core characteristics of AI, while allowing regulators to set out more detailed definitions according to their specific sectors. The government has identified two core characteristics, "adaptiveness" and "autonomy." The government has set out six cross-sectoral principles that will apply to all actors throughout the AI lifecycle, and these principles will be interpreted and implemented in practice by existing regulators. Some regulators have already identified areas of focus within

the AI space, such as the Information Commissioner and the Financial Conduct Authority.

In the UK, data protection law, which is made up of the General Data Protection Regulation (GDPR) and the Data Protection Act 2018 (DPA 2018), regulates the collection and use of personal data. When AI uses personal data, it falls within the scope of this legislation, which can be using personal data to train, test, or deploy an AI system. Administrative law and the Equality Act 2010 are also relevant to providing explanations when using AI.

The GDPR and the DPA 2018 do not directly mention AI or any associated technologies such as machine learning, but they do have a significant focus on large scale automated processing of personal data, and several provisions specifically refer to the use of profiling and automated decision-making. The GDPR has specific requirements around the provision of information about, and an explanation of, an AI-assisted decision where it is made by a process without any human involvement, and it produces legal or similarly significant effects on an individual. In these cases, the GDPR requires that you are proactive in giving individuals meaningful information about the logic involved, as well as the significance and envisaged consequences. Additionally, individuals have the right to obtain human intervention, express their point of view, and contest the decision.

Furthermore, the GDPR principles of fairness, transparency, and accountability are of relevance when it comes to explaining AI-assisted decisions. If an AI-assisted decision is made about someone without some form of explanation of (or information about) the decision, this may limit their autonomy and scope for self-determination, and it is unlikely to be fair. Transparency is about being clear, open, and honest with people about how and why you use their personal data. Providing an explanation, in some form, will help you be transparent. To be accountable, you must be able to demonstrate your compliance with the other principles set out in Article 5 of the GDPR, including those of data minimization and accuracy.

How can you show that you treated an individual fairly and in a transparent manner when making an AI-assisted decision about them? One way is to provide them with an explanation of the decision and document its provision.

Other laws may also be relevant that mean it is good practice to explain AI-assisted decisions, such as the Equality Act 2010, which applies to a range of organizations and prohibits behaviour that discriminates, harasses, or victimizes another person on the basis of protected characteristics such as age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity,

race, religion and belief, sex, and sexual orientation. Additionally, individuals can challenge the decision made by a public sector agency or private bodies contracted by the government to carry out public functions where they have deployed AI systems to support decision-making.

A.I & Legal in Financial Industry

The financial services industry relies heavily on information production, assessment, and manipulation, making AI tools widely adopted. In the UK, regulation of AI systems and software in financial services is at an industry level, so existing industry-specific rules must be applied to new technologies. To determine the application of rules to AI used in financial services, the location of the regulatory perimeter in relation to relevant services must first be identified. Regulated activities are licensed and supervised by the Financial Conduct Authority (FCA), the UK regulator for financial services.

The obligations relating to regulated activities fall into several conventional categories, such as responsibility, conduct, transparency, and risk management. The FCA Handbook principles include paving regard to the interests of customers, paving regard to the information needs of clients, and taking care to ensure the suitability of advice. Therefore, it is necessary to ensure that applications of AI are tested against and defensible against these principles.

To evidence that appropriate steps are taken in relation to AI usage within the business, financial institutions should produce a "transparency matrix." This matrix should cover what AI is used in the business, how it is procured, who is responsible for it at a policy and technical level, when and how it is used in customer-facing and consumer-facing roles, and how technical information about it is disseminated in ways that are understandable by all those with responsibility, among other things.

14. CURRENT STATE

AI was already making significant strides in the finance industry. However, the specific developments and advancements in AI in finance since then may not be possible to state in a few words. Nevertheless, it is obvious that the development has been significant. AI in finance took the lead role in financial reshaping in today’s time.

Now a days AI in specifically applied into

- Fraud Detection

- Algorithmic Trading
- Risk Assessment and Management
- Customer Service and Personalization
- Compliance and Regulatory Reporting
- Market Analysis and Prediction

But we are looking for the development of Robo-advisors (everything automated) and **voice output.** Robo-advisory platforms leverage AI algorithms to provide automated investment advice and portfolio management services. These platforms analyse user data, financial goals, risk tolerance, and market conditions to generate customized investment strategies, making investing more accessible and affordable.

15. FUTURE DEVELOPMENT

We are thrilled to announce the successful development of a voice-based AI and ML prototype that offers predictions and recommendations. This cutting-edge technology utilizes voice as the interface, enabling users to effortlessly access predictions and recommendations without the need for manual input. Although the solution is currently in the prototype or MVP stage, extensive testing and refinement are yet to be conducted. Nevertheless, we have great confidence in its potential and firmly believe that with further development and testing, it will prove to be an asset across multiple industries. The combination of voice interface and powerful AI and ML algorithms sets this solution apart, making it a highly promising project for the future. We eagerly anticipate its continued refinement and eventual market launch.

We have developed a ground-breaking AI and ML solution that utilizes voice as an interface, offering users a seamless and hands-free experience to access predictions and recommendations. This unique technology, which has never been seen in the market before, has the potential to revolutionize how people interact with predictive and recommendation systems. By integrating AI and ML algorithms, our system continuously learns from data, resulting in increasingly accurate predictions and recommendations over time. Its versatility and cutting-edge capabilities make it an asset across multiple industries, including retail, healthcare, finance, and more. We believe that this innovative approach will attract significant attention and investment from companies and organizations aiming to stay at the forefront of the rapidly evolving field of artificial intelligence.

16. EXISITNG MARKET

The market for voice-based AI and ML solutions can be considered relatively untapped. This creates a unique opportunity for us to position our solution as a market leader and establish industry standards for future competitors. Being the first to introduce this innovative technology to the market allows us to build a strong brand presence and capture a substantial market share. However, it's essential to remain mindful that new competitors may emerge over time. Therefore, we must maintain a culture of innovation and consistently enhance our solution to stay ahead of the competition.

17. VALUE PROPOSITION

We have created an innovative and distinctive solution for accessing financial information, predictions, and recommendations. Our solution stands out by combining a voice-based interface, financial education, and advanced AI and ML algorithms, resulting in a more convenient, personalized, and efficient way to access financial insights. The key value proposition of our project lies in addressing a specific market problem through a hands-free and effortless approach to accessing financial information. By integrating voice-based technology, financial education, and AI and ML algorithms, our solution continuously learns from data and improves its predictions and recommendations over time.

Our project offers several competitive advantages that contribute to its commercial success. Firstly, the voice-based interface of our solution enhances user adoption by providing a more convenient and accessible way to access financial information, predictions, and recommendations. This is especially beneficial for individuals who are on-the-go or have limited time. Secondly, our solution improves the overall user experience by offering a seamless and intuitive interface that simplifies the process of obtaining financial insights. Moreover, our inclusion of a financial education component sets us apart, as it helps to increase financial literacy and empower users to make informed decisions regarding their investments and finances. Additionally, as part of our strategy, we plan to launch a comprehensive financial education and machine learning course. This initiative not only complements our smart trading app but also enhances our brand's visibility and credibility, positioning our company as a leader in the financial technology and education sector

18. Value Proposition/ Personal Interpretation

18.1 By Kiran Babu Basnet

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18.2 By Hemant Thapa

Artificial Intelligence continues to advance and become increasingly integrated into our lives and work, it's important to consider both the potential benefits and the potential consequences. On one hand, AI has the potential to increase efficiency, productivity, and accuracy in decision-making, making work easier and more efficient for many people. It can also provide new opportunities for businesses and individuals, leading to innovation and growth.

However, on the other hand, there is a risk that AI may also lead to widespread job displacement and inequality, particularly for low-skilled workers. The use of AI in decision-making also raises concerns about accountability and

transparency, and there is a real danger that AI could be used to perpetuate existing biases and injustices.

In my personal interpretation, AI represents both a challenge and an opportunity. As AI continues to develop, it's essential that we work together to ensure that its benefits are shared equitably and that its potential risks are mitigated. This will require collaboration between businesses, governments, and workers to develop responsible and ethical uses of AI technology, and to ensure that everyone has the skills and resources they need to participate in the new economy.

18.3 By Lee Nicol Mcleens

It is crucial to develop new models for AI, such as "Provably Beneficial AI", that ensure that AI systems are aligned with human values and goals. This will help to ensure that AI is not just a tool for maximizing profits or efficiency but is also designed to be beneficial for humanity.

One potential benefit of AI is that it can help us tackle some of the world's most pressing challenges, such as climate change, poverty, and disease. For example, AI can help us to analyse vast amounts of data, identify patterns and trends, and make predictions about future outcomes. This can be particularly useful in fields like healthcare, where AI can help us to develop new treatments, improve patient outcomes, and reduce costs.

At the same time, there are concerns about the potential for AI to be used for malicious purposes, such as cyberattacks, surveillance, and the development of autonomous weapons. It is therefore essential that we develop robust ethical and legal frameworks for the use of AI, and that we ensure that these frameworks are implemented and enforced effectively.

Well, the future of AI is both exciting and uncertain. While AI has the potential to bring about significant advancements in many areas of our lives, it also poses significant ethical, social, and economic challenges. To ensure that AI is developed and implemented in a responsible and beneficial way, it is essential that we work together to address these challenges, and that we remain vigilant to the potential risks and opportunities of this rapidly evolving technology.

19. CONCLUSION

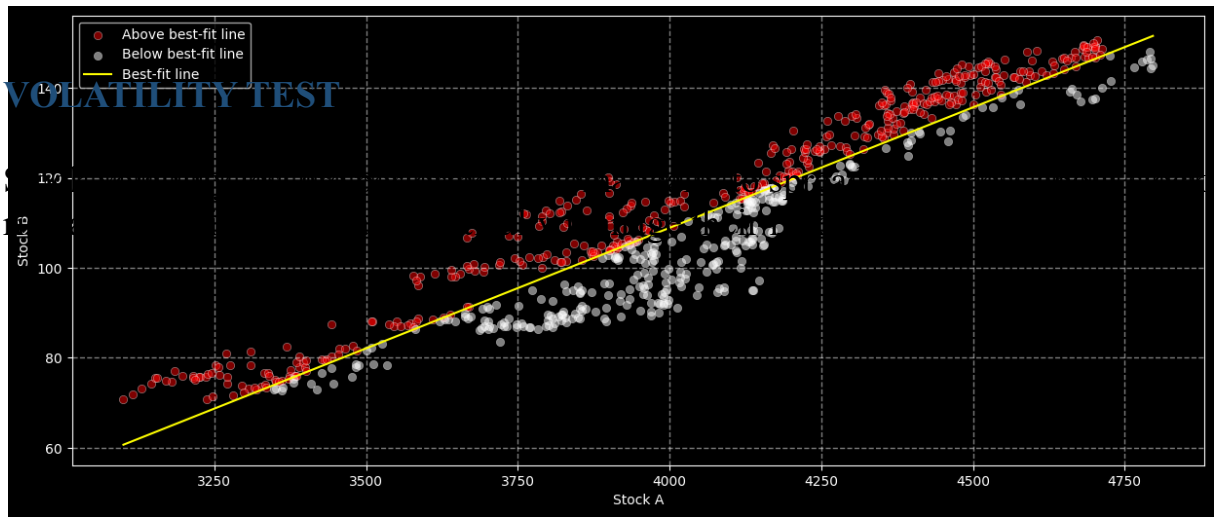
We intended to develop a smart trading app that encompasses various features and functionalities designed to support users in making informed investment decisions. Alongside the app, we are preparing to launch a comprehensive financial education and machine learning course. The primary objective is to make financial education accessible to a wider audience, fostering greater financial literacy and empowering individuals to make well-informed investment choices. By offering a machine learning course, we also aim to equip individuals with valuable skills in a rapidly expanding field. This initiative has the potential to attract a diverse range of users to our smart trading app and position our company as a respected leader in the financial technology and education sector. Our unwavering commitment to this holistic approach demonstrates our dedication to enhancing brand visibility and establishing credibility within the industry.

TREND ANALYSIS

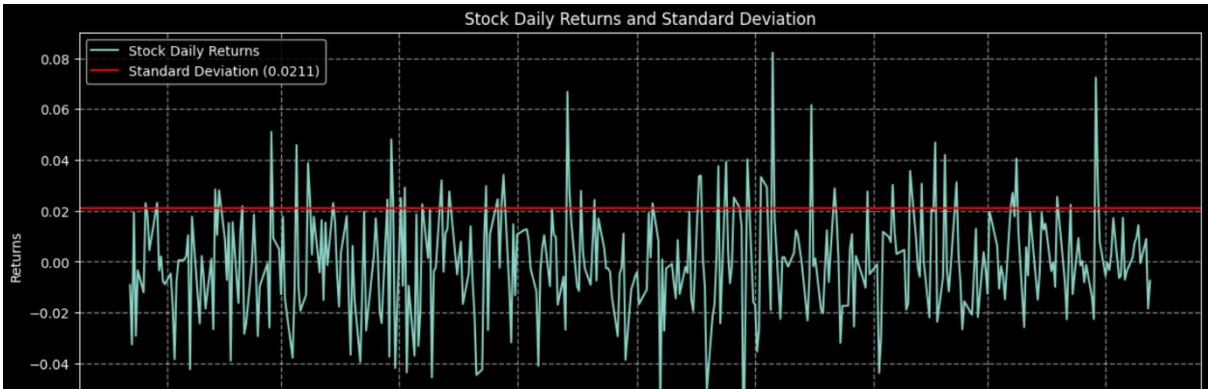
Our Machine Learning Algorithms use trend analysis to keep update on stock and keep tracking individual portfolio.

CORRELATION ANALYSIS

Similarly, individual can perform correlation analysis to check relation between two assets, which can be stock and index fund.

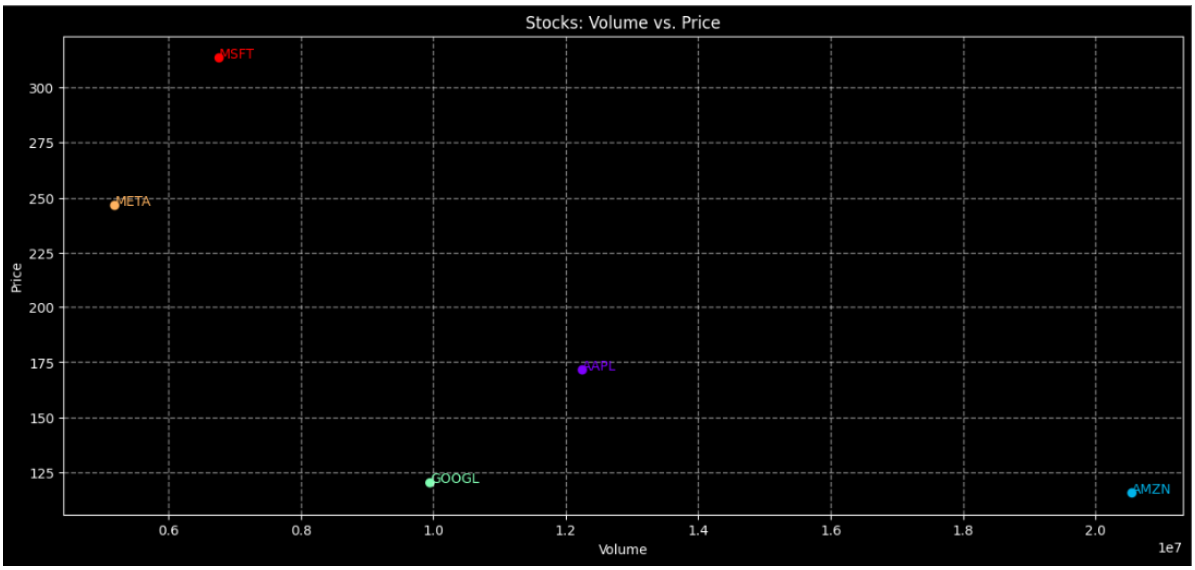


VOLATILITY TEST



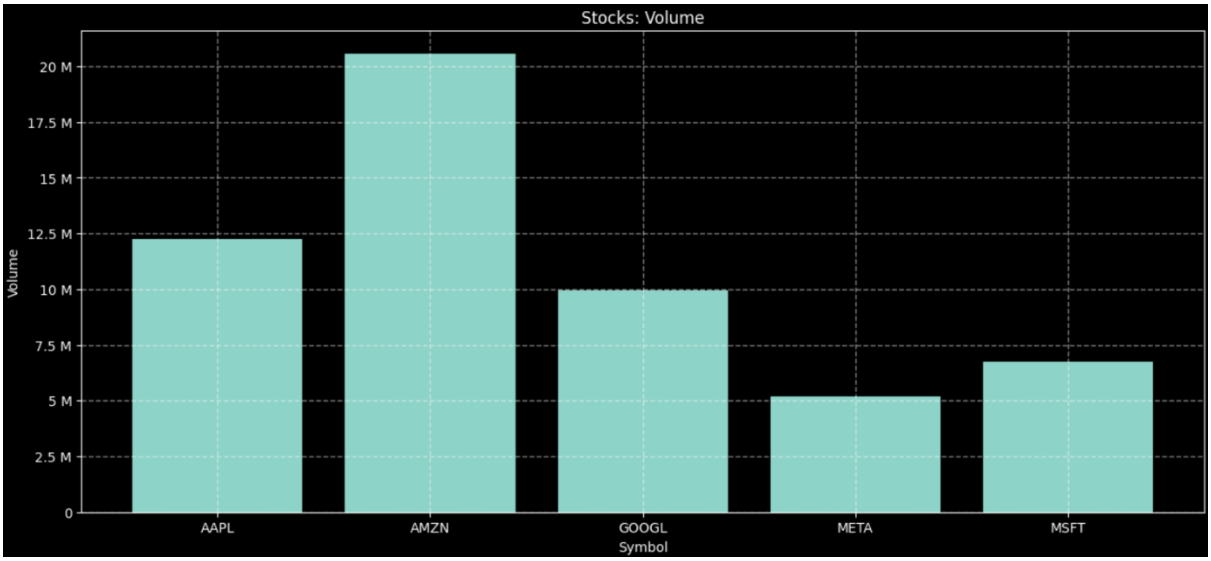
STOCK CONFIGURATION

Scatterplot are used to identify the stock configuration using price and volume. Individual can apply to identify opportunities for an investment.



VOLUME ANALYSIS

Volume analysis help individuals to determine the number of holders on each company.



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