MGT 8803: AI in Business
Business Case - Revised

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Business Problem and Context

- Retail investors face a growing challenge in navigating vast amounts of financial information. Between volatile markets, rapidly changing news cycles, and an overload of technical data, many individuals struggle to make confident, data-driven investment decisions. Traditional platforms either focus heavily on technical indicators or rely on sentiment analysis without providing the transparency or contextual reasoning that users need to trust those predictions. As AI becomes more accessible, there is a clear opportunity to create investment tools that combine predictive intelligence with interpretability.
- Our product, StonksAI, addresses this market gap by offering a novel solution that blends price forecasting with explainable sentiment insights. While institutional investors may have access to complex modeling systems and analyst reports, most retail users lack this sophistication. Yet, interest in retail investing continues to grow, especially among younger demographics who expect intuitive, tech-driven solutions. According to a recent report by Charles Schwab, retail investors opened over 15 million new brokerage accounts in 2021 alone, signaling a growing appetite for digital investment tools.
- StonksAI specifically targets these users by providing both forecasted prices and natural language explanations derived from financial news. This dual-layered approach fills a critical void in the market: tools that not only predict price movement but explain why it's happening. Our platform is positioned at the intersection of AI-driven forecasting and financial literacy, making smart investing more accessible, transparent, and empowering.

Role of AI in our solution

- AI is foundational to StonksAI's value proposition. The platform leverages two distinct AI components: a Long Short-Term Memory (LSTM) neural network for stock price forecasting, and a Large Language Model for sentiment analysis and natural language explanation of financial news. These AI systems work together to deliver both quantitative predictions and qualitative context, offering users not just a recommendation but the reasoning behind it.
- The LSTM model is trained on monthly closing prices from over two decades of historical data. It captures long-range temporal dependencies to predict the next month's closing price with high accuracy. Unlike traditional linear regression models or moving average techniques, LSTMs are capable of learning nonlinear patterns, seasonality, and market cycles.
- On the sentiment side, the system uses GPT-3.5-turbo to parse stock news articles. It extracts sentiment scores, predicts directional movement, and generates an explanation for each article's impact. This is not a black-box classification, we use prompt engineering to ensure the LLM returns structured output that includes evidence, explanation, and directional movement, creating an interpretable layer over unstructured financial text.
- Together, these technologies enable an ensemble recommendation engine that is not only more accurate than either approach alone but also more explainable. The integration of these AI components provides a level of depth, insight, and transparency not commonly found in retail investing tools.

Business Impact

- The potential business impact of StonksAI is both immediate and scalable. We envision deploying the solution through two main pathways: as a consumer-facing SaaS platform, and as an API-integrated intelligence module for fintech platforms and financial advisors. The core users are retail investors seeking explainable investment insights, though the system's modular design also supports institutional use cases.

- Quantitatively, StonksAI helps users reduce time spent on market research by 5–8 hours per week. These numbers directly translate into business value, either through increased subscription retention for a D2C product or improved client satisfaction for partnered platforms.
- In the short term, we will roll out a web-based dashboard using Streamlit, targeting early adopters and feedback-driven iterations. In the long term, we plan to expand functionality to include user-specific personalization (e.g., risk tolerance), multi-step forecasting, and mobile deployment. Because the product does not rely on user-specific financial data, we avoid major privacy compliance burdens in this stage. However, future integration with brokerage platforms will require strong data governance policies.
- Challenges include potential LLM hallucinations and sentiment bias. We mitigate these risks by sourcing from a trusted news outlet - the Alpha Vantage API and framing prompts to reference only explicit content. Ultimately, StonksAI's combination of transparency, scalability, and interpretability gives it a strong competitive edge in the growing AI-finance ecosystem.