

# **LITERATURE REVIEW**

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# FINANCIAL SENTIMENT ANALYSIS USING LLaMA

## Literature Review:

The Financial Sentiment Analysis technique functions as a critical directional instrument which uses market sentiment tracking to assist capital allocation choices and analyse economic movements. The development of NLP proceeded with the establishment of BERT and its financial adaptation Fin BERT which enhanced FSA effectiveness. Financial understanding modules integrated within these models make them more successful during sentiment classification operations. The capabilities of FSA enhance through LLaMA (Large Language Model Meta AI) because this innovation combines strong performance metrics with extensive understanding capabilities.

Financial sentiment analysis primarily operates on financial text sentiment detection because successful market investments and business intelligence development result from this operation. LLMs have developed into an important technological achievement which brought about LLaMA (Large Language Model Meta AI) to support domain-specific tasks.

Current research proves that Llama demonstrates efficient capability in financial emotion analysis. The Fin Llama model functions in the present system as a result of LLaMA 2 7B modifications with financial text datasets that include labels. The approach enabled the model to process financial documentation better because it acquired stronger capabilities to detect advanced linguistic patterns. The Fin Llama demonstrated superior performance than traditional lexicon-based approaches and other deep learning models by creating better cumulative returns and higher Sharpe ratio during portfolio construction (Iacovides, G., Konstantinidis, T., Xu, M., & Mandic, D. (2024)).

Research conducted by scientists detailed how to prepare LLaMA 2 GPT for carrying out various financial news analysis operations. Using PEFT with LoRA allowed sentiment analysis performance and financial data summarization alongside named entity detection through this approach. The optimized model achieved structured JSON data capabilities through its optimization process which made it fast to integrate with multiple downstream applications (Pavlyshenko, B. M. (2023)). The approach demonstrates how advanced LLMs reach readiness to carry out financial sentiment analysis operations (Zhalgasbayev, A., Khauazkhan, A., & Sarsenova, Z. (2024)).

Research focused on finance-specific LLMs has provided essential proof of domain-specific training importance. Researched teams improved the sentiment detection capacity and asset price forecasting abilities of LLaMA-2 through specialized financial dataset training. The system proved successful for extracting useful financial document insights from 10-K Management Discussion and Analysis sections thus enhancing return forecast accuracy (Chiu, I., & Hung, M.-W. (2024)).

In summary, the fine-tuning of LLaMA models for financial sentiment analysis has produced significant developments in considerate and predicting market sentiments. These progressions highlight the potential of LLMs in converting financial analytics and decision-making processes.

### **Advancements in Financial Sentiment Analysis Using LLaMA:**

The Meta AI developed LLaMA model has become the subject of much interest because of its superior functionality in language interpretation. Its organizational structure enables optimal tuning which enables it to specialize in financial domains. Scientific research has implemented LLaMA for FSA analysis and gathered positive outcomes.

The research of Konstantinidis, T., et al., (2024) delivered Fin Llama as a 7B-version LLaMA derivative which targets financial sentiment detection specifically. The training of FinLLaMA using financial text labels helps it understand complex financial language while providing precision sentiment value detection with intensity evaluations. The dual analytical features of this system allow traders to gain sophisticated understanding which leads to better decision-making processes. The implementation of Low-Rank Adaptation (LoRA) for parameter-efficient fine-tuning enables resource-efficient accuracy optimization which allows its deployment in resource-limited environments.

LLaMA models show high effectiveness as an adaptation platform which Luo, W., & Gong, D. (2024) proved through their study. The researchers applied supervised fine-tuning to LLaMA2-7B using financial sentiment datasets which resulted in top results during Financial Phrase Bank testing. Through this achievement the model proves its expertise in explaining complex financial documents despite having fewer parameters than other LLMs.

## References:

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