Investigation of artificial intelligence in stock market prediction studies: Review

Jafar Abdollahi
Department of Computer Engineering, Ardabil Branch,
Islamic Azad University,
Ardabil, Iran
Ja.abdollahi77@gmail.com

Laya Mahmoudi
Faculty of Management and Accounting,
Allameh Tabataba'i University
Tehran, Iran
laya.mahmoudii@gmail.com

***Abstract*— Artificial intelligence (AI) has been introduced in data analysis recently, especially in Iran, as one of the branches of computer science, and has brought significant changes in the fields of agriculture, industry, and medicine. Today, the application of AI has expanded to such an extent, used in all scientific fields such as stock and Forex forecasting. In the current essay, after a brief review of AI fields and time series models, the application of this system in the field of Forex and stock forecasting is discussed. First, the method used by AI to predict is presented. In the forecasting phase, the algorithms, after learning the process of trading cryptocurrencies and stocks, proceed to extract the pattern from data, and they are then able to predict the future value of trading on stocks and cryptocurrencies. It is hoped that this article can be effective for researchers in economics, statistics, and AI in solving complex problems.**

Keywords: gold, gold prediction methods, Artificial Neural Networks

I. INTRODUCTION *(HEADING 1)*

Price forecasting is an integral part of economic decision-making. Forecasts are also employed in numerous ways; specifically, individuals may use forecasts to earn income from speculative activities, work out optimal government policies, or create business decisions. Like every other good, gold's price depends on supply and demand. However, unlike vegetable oil, say, where most of the present supply comes from this year's crop, gold is storable, and therefore the supply is accumulated over centuries. As an example, within the year 1998, the entire world supply of gold is 125,000 metric tons, and therefore the annual ranges around 2,400 tons. This implies that in contrast to oil, corn, or soybeans, this year's production has little influence on prices [1]. In recent years, investors have paid significant attention to investing within the gold market thanks to huge profits within the future. Gold is that the only commodity that maintains its value even within the economic and financial crisis. Also, gold prices are closely associated with other commodities. The longer-term gold price prediction becomes the warning system for the investors because of unforeseen risks within the market [2].

Since gold behaves less like a commodity than long-lived assets like stocks or bonds, gold prices are forward-looking, and today's price depends heavily on future supply and demand. Thus, the forecast of the gold price depends on the market's psychological perception of the worth of gold which successively depends on a myriad of interrelated variables, including inflation rates, currency fluctuation, and political turmoil [1].

This article examines the recent literature in the field of machine learning techniques and time series used to predict stock market movements, especially the gold market. The main contribution of this survey is to provide researchers with a cohesive overview of recent developments in stock index forecasting and to identify possible opportunities for future research.

II. LITERATURE REVIEW

Medline, PubMed, Science Direct, and Google Scholar were conducted a literature search, evaluating Forecasting gold. Mokhtari et al. (2021) alleviate the problem of stock market forecasting using artificial intelligence techniques in such a way that two main analyses namely technical and fundamental are applied to model stock market prediction. In their study, the stock price is predicted due to the historical