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Analisys of Methods for Forecasting Financial Indicators

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Abstract: This article examines key methods for forecasting financial indicators, including regression models, time series analysis, neural networks, and expert-based approaches. Special attention is given to the comparative effectiveness of these methods under conditions of economic instability. Based on the literature review and available empirical data, the article offers practical recommendations for selecting appropriate forecasting tools for small and medium-sized enterprises (SMEs).

Key points: financial forecasting, regression analysis, time series, neural networks, expert evaluation, financial indicators, modeling, decision making.

1. Introduction

Forecasting financial indicators is one of the essential components of strategic planning and financial management. The main goal of forecasting is to provide organizations with accurate information about future trends, risks, and opportunities. Forecasting methods vary in complexity, precision, and data requirements. In an era of digital transformation, inflationary volatility, and unpredictable global markets, analyzing the performance of different forecasting techniques is more relevant than ever.

2. Literature Review

The issue of financial forecasting is actively studied in both national and international literature, particularly in the context of improving decision-making and assessing investment risks.

Brilliant (2018) emphasizes that regression analysis remains one of the most widely used and accessible forecasting tools, especially when historical data is available. However, its accuracy declines in the presence of nonlinear relationships or structural breaks.

The foundational work by Box and Jenkins (1976) introduced time series models, particularly ARIMA, which allow forecasters to incorporate seasonality, trends, and cycles. These models are powerful but require strict statistical assumptions, including stationarity and normality.

With the development of machine learning and artificial intelligence, neural network models have gained prominence. According to Zhang et al. (1998), artificial neural networks (ANNs), and more recently LSTM (Long Short-Term Memory) architectures, demonstrate high forecasting accuracy by detecting nonlinear patterns in large and noisy datasets.

On the other hand, Menshikov (2020) argues that in highly uncertain environments, it is often more practical to apply expert-based methods such as scenario planning and the Delphi method. These techniques incorporate qualitative insights and subjective factors that quantitative models may overlook.

This review suggests that a hybrid approach combining quantitative models with expert input may be most effective, especially when available data is limited or unstable.

3. Comparative Analysis of Forecasting Methods

Forecasting Method	Advantages	Limitations	Applicability
Regression Analysis	Simplicity, transparency, effective with linear data	Poor performance in nonlinear or volatile conditions	SMEs, financial analysts
Time Series Models (ARIMA, ETS)	Captures trends, seasonality, and cycles	Requires data stationarity; sensitive to outliers	Banking, macroeconomic modeling
Neural Networks (ANN, LSTM)	High accuracy, handles complex nonlinear relationships	Requires large datasets, hard to interpret	Fintech, stock market analysis
Expert Methods (Delphi, Scenario Analysis)	Incorporates human expertise, adaptable to uncertainty	Subjectivity; difficult to validate predictions	Strategic planning, policy

The forecasting cycle can be represented as a sequence of consecutive stages:

Stage 1: Analysis of external and internal factors affecting financial performance, their classification, and the determination of forecast values.

Stage 2: Selection of an analysis method, which includes the analysis of forecasting methods, financial planning methods, capital cost calculation methods, and business valuation methods.

Stage 3: Financial planning and preparation of budgets for capital investments and current expenses, as well as budgets for revenues, expenses, and cash flows. This also includes the preparation of the projected balance sheet and income statement.

Stage 4: Calculation of the cost of borrowed capital, which enables the determination of the cost of individual sources of financing and the weighted average cost of capital (WACC).

Stage 5: Business valuation by determining the discounted cash flows for both the forecast and terminal periods.

4. Conclusion

Each forecasting method has its advantages and limitations depending on the context, data availability, and forecasting horizon. Traditional regression and time series models remain useful in relatively stable conditions with sufficient data. In contrast, neural networks provide superior performance in complex and dynamic environments but require significant computational resources and expertise. Expert-based approaches are indispensable when data is incomplete or when qualitative judgments are necessary. A hybrid forecasting framework combining these methods may offer the most balanced and reliable results in modern financial forecasting.

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