



**Revolutionizing New Product Forecasting: AI-Driven Insights  
for Smarter Predictions**

**Sharon Brand**

# Agenda

- **Why focus on New Product Forecasting?**
- **Why is forecasting new products so difficult?**
- **How is AI being applied?**
- **So, What?**

# Why focus on New Product Forecasting?

- Short life cycles
- Frequent launches
- Multi-functional decisions
- Revenue and profitability consequences
- Challenge of lack of historical data

# Why is forecasting new products so difficult?

no specific technology

limited analytics

use of spreadsheets

dynamic marketplace

bias

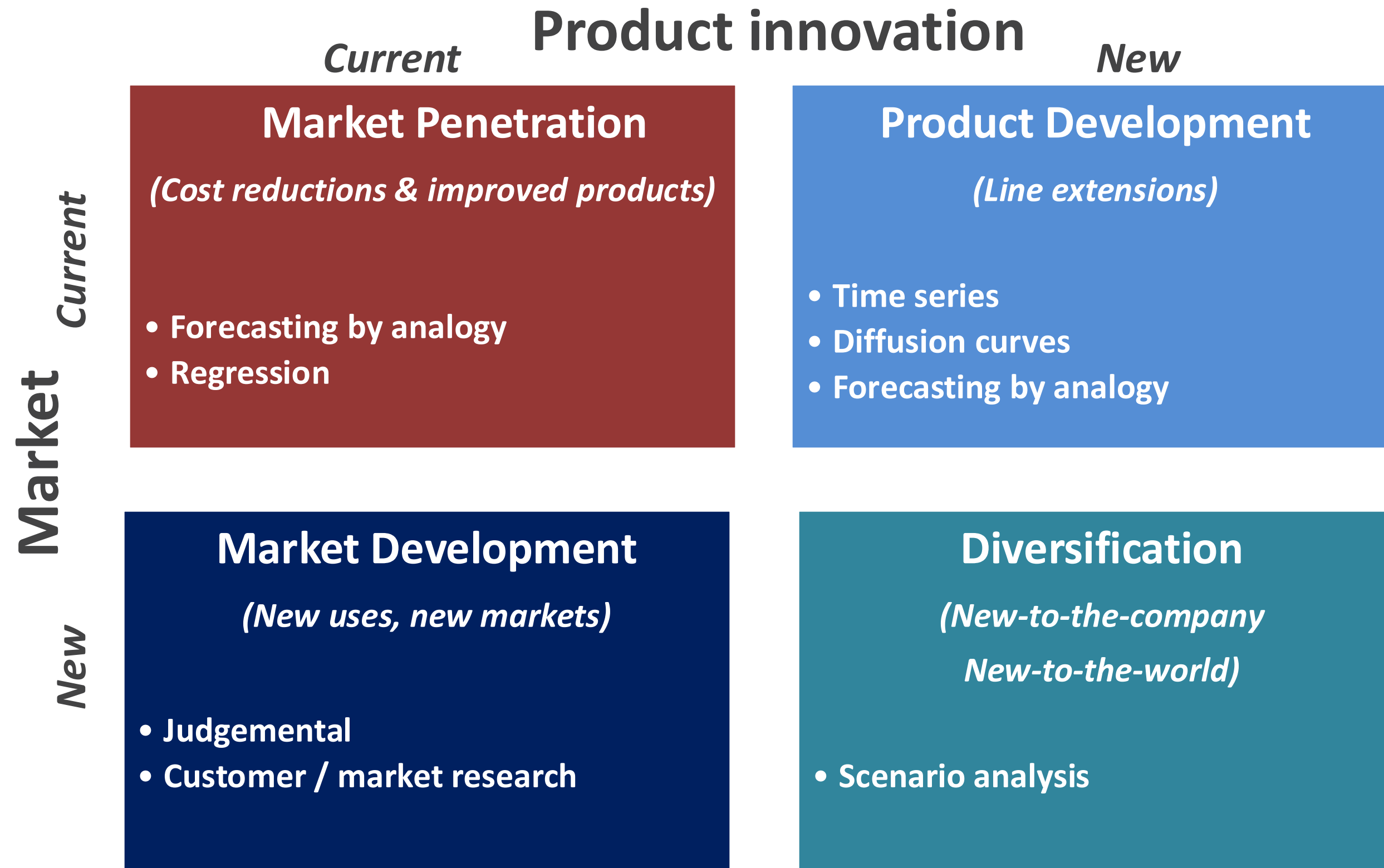
uncertainty

minimal data

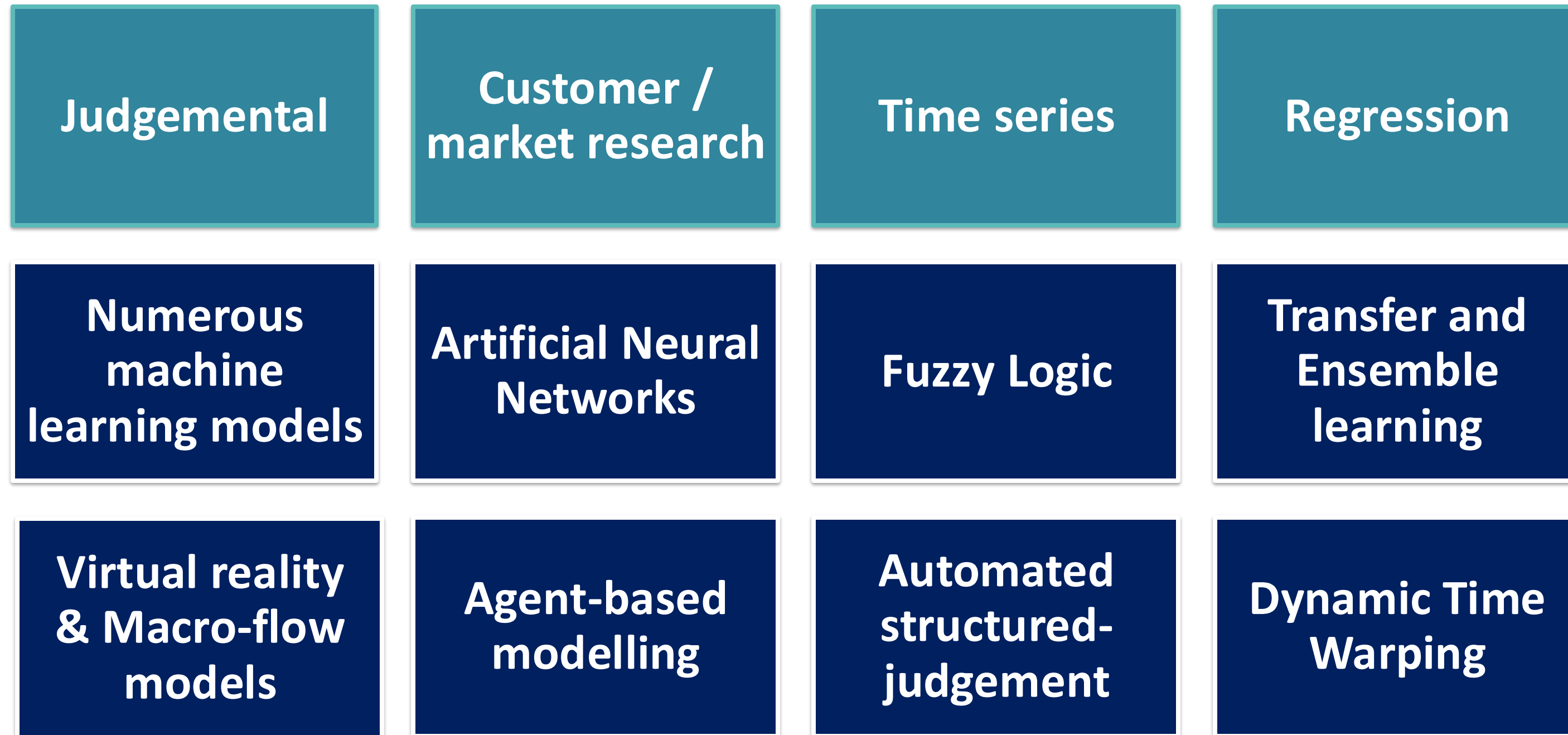
no cross-collaboration

limited customer feedback

# Example: Application of traditional NPF techniques



# How is AI being applied?



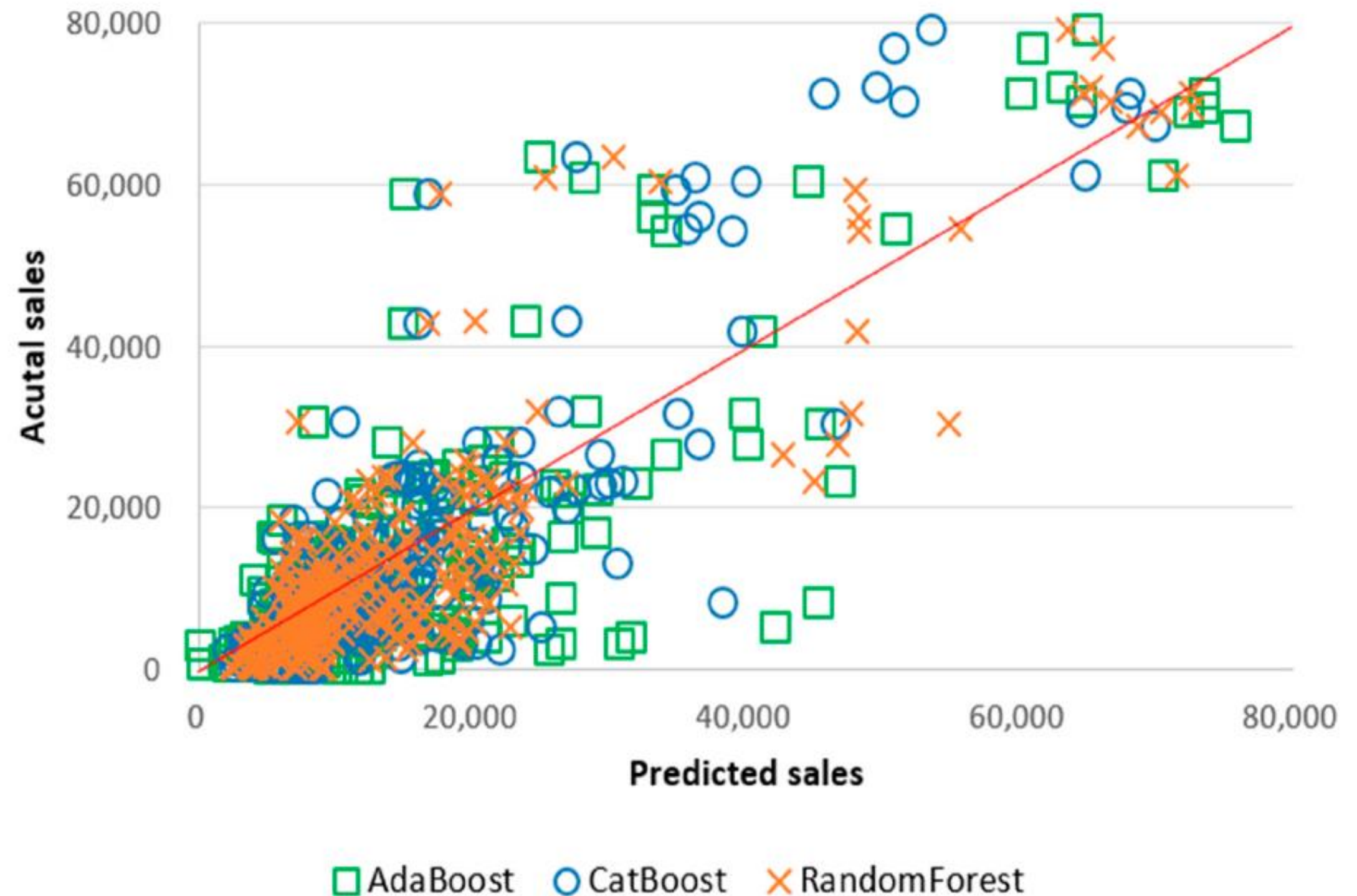
# Machine Learning

- Systems that learn from data to improve performance
- Forecast accuracy rates of 85%



# Comparison of Machine Learning models

- Ridge
- Lasso
- Support Vector Machine (SVM)
- Gradient Boosting Machine (GBM)
- AdaBoost
- LightGBM
- XGBoost
- CatBoost
- Deep Neural Network (DNN)
- Recurrent Neural Network (RNN)
- Long Short-Term Memory (LSTM)
- **Random Forest**
  - Correlation coefficient = 0.86

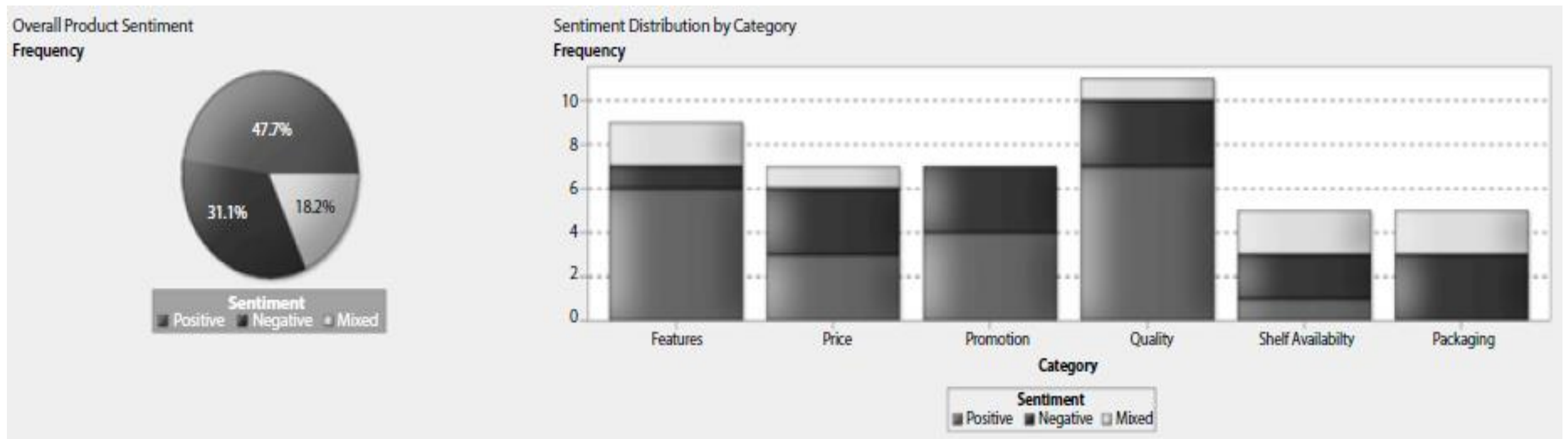


(Hwang, Yoon, Baek & Jeon, 2023)

# ML in sentiment analysis

## Automated structured-judgment procedure

- Integration of structured & unstructured data
- Predict diffusion curves
- Adjust forecast in first 13 weeks of launch



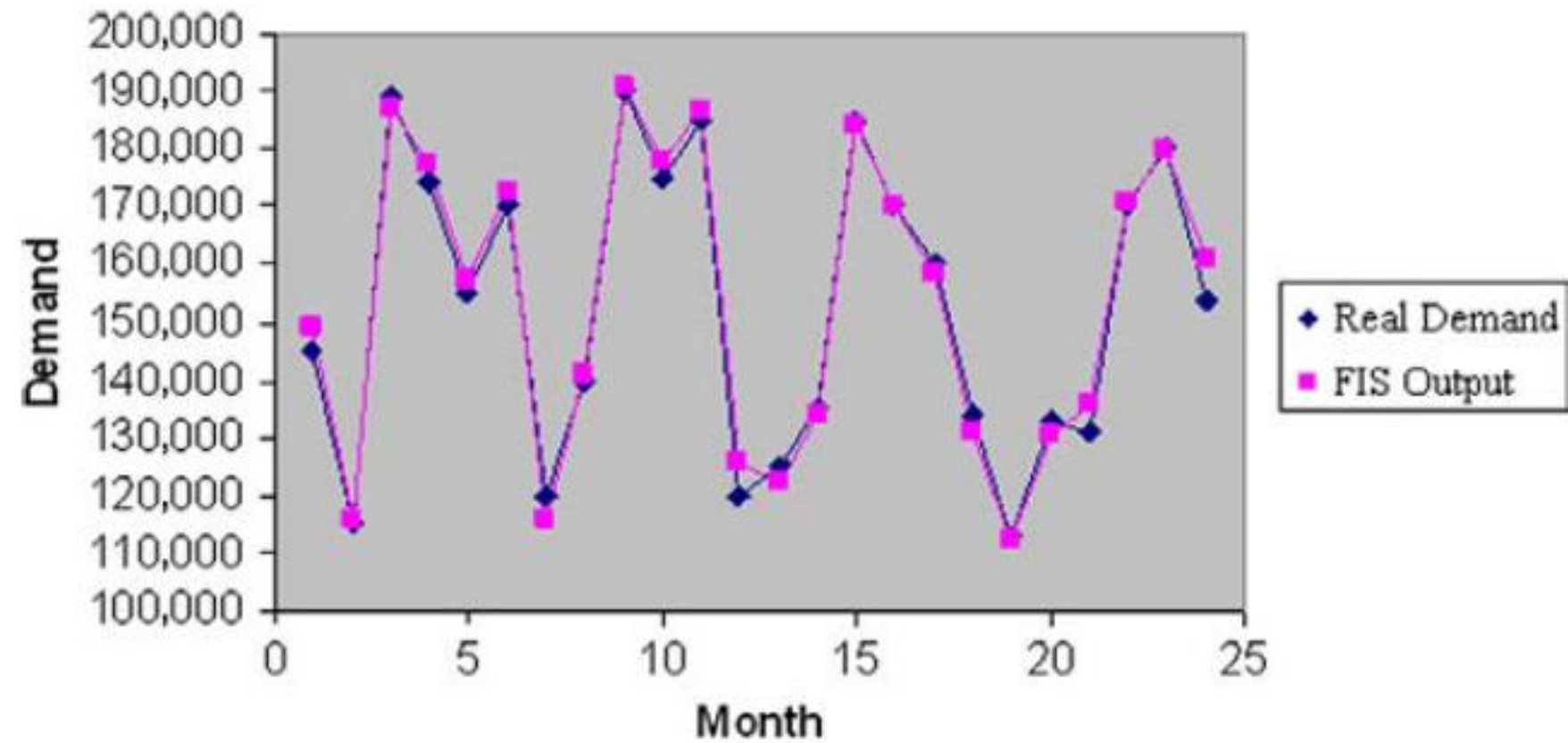
# Artificial Neural Networks



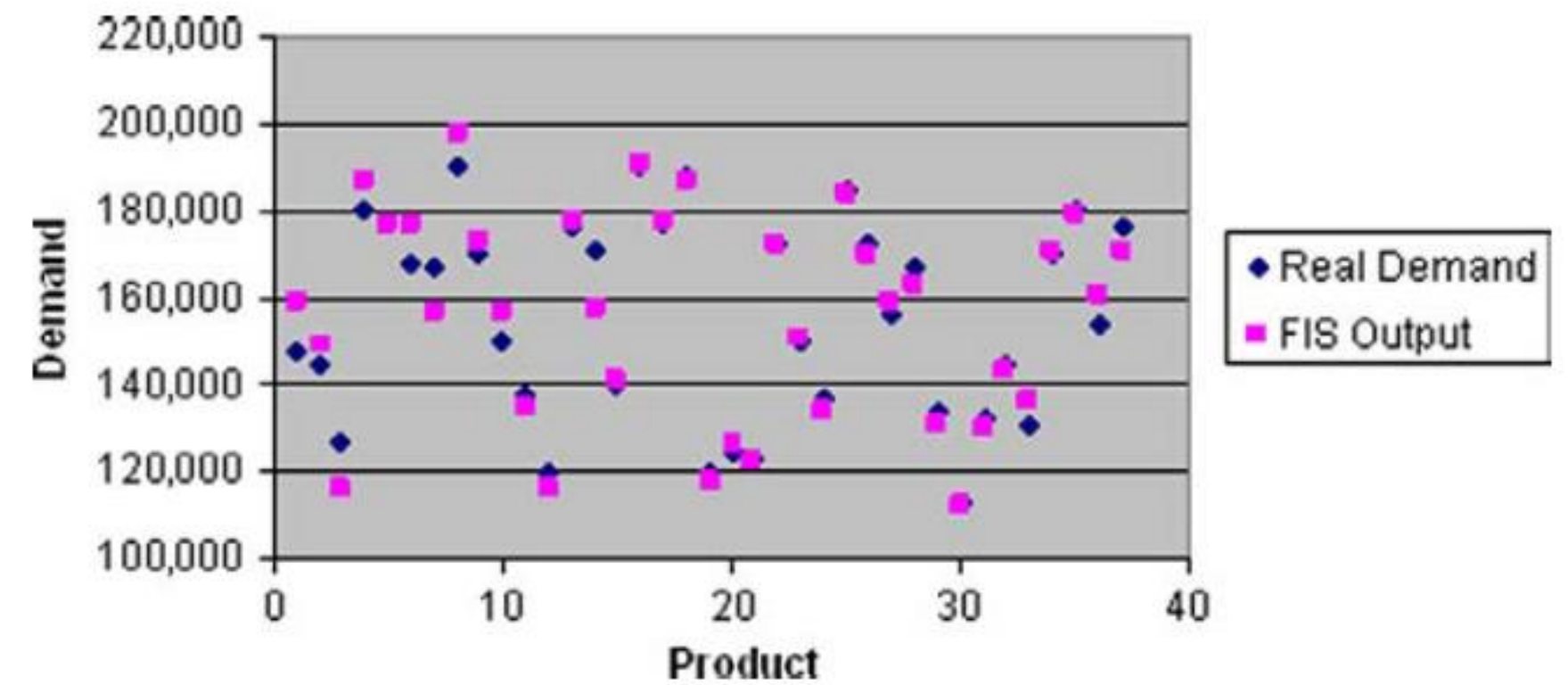
- **Recurrent neural network - long-term dependencies**
- **Attention mechanisms - weighting of inputs**
- **Graphical neural networks - modelling relationships & interdependencies**
- **Bayesian updating process**

# Fuzzy logic systems

## Clothing manufacturer example



Fit of the real demand value and FIS output for a product group

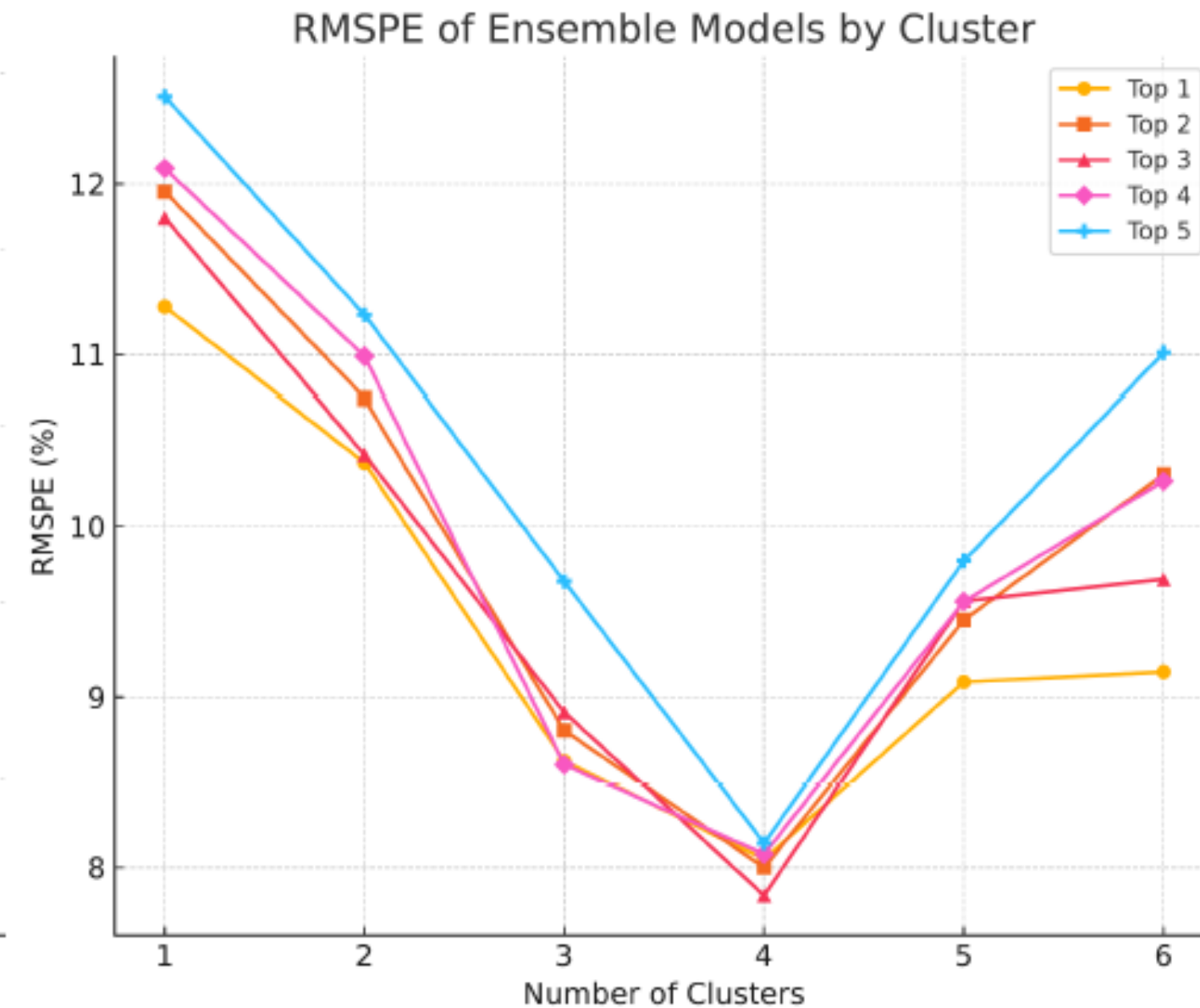
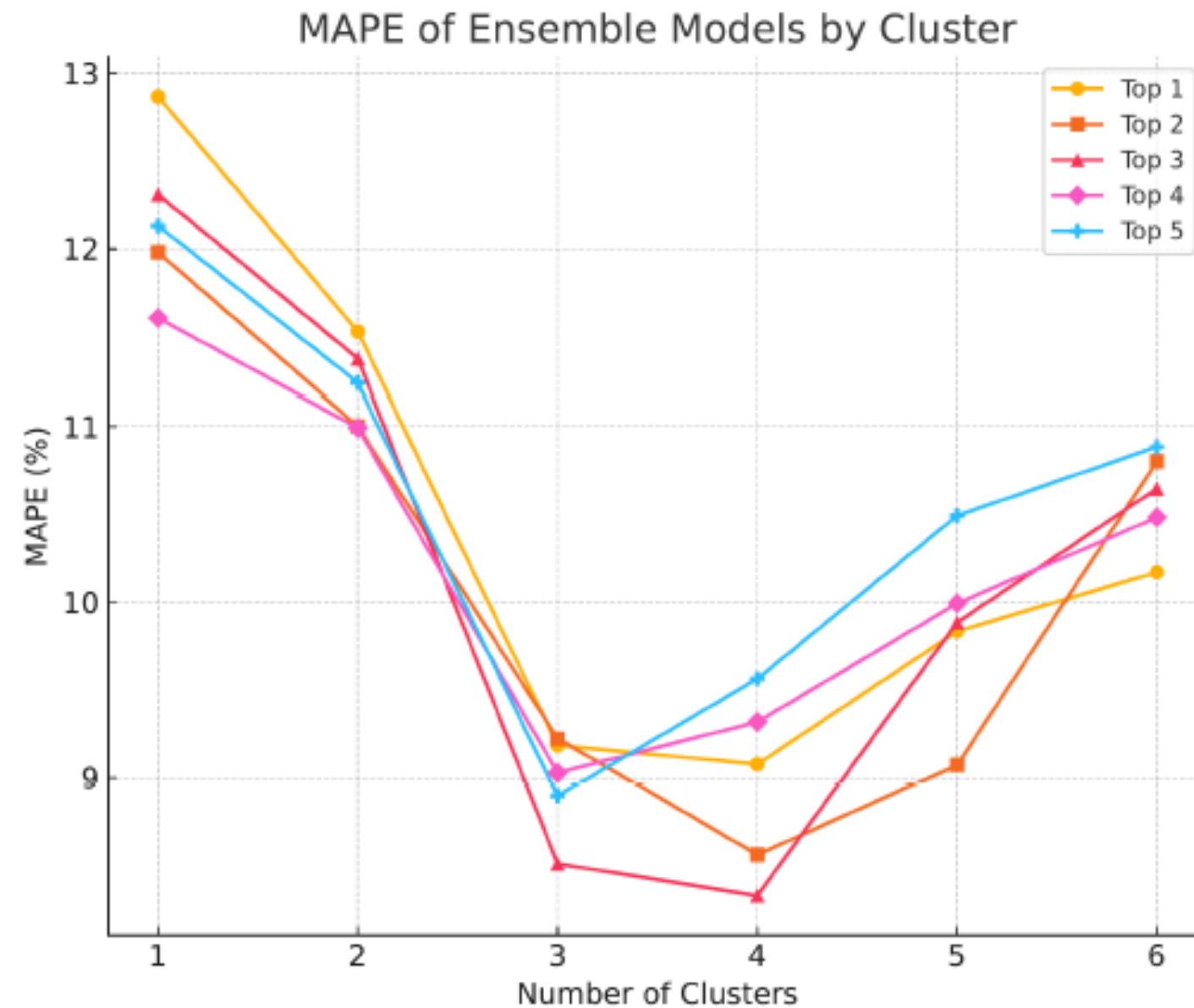


Fit of the real demand value and FIS output for different products

(Aksoy, Öztürk & Sucky, 2014)

# Ensemble Learning Methods

## Smart phone example



Test Mean Absolute Percentage Error (MAPE of 8.3309%) and Root Mean Square Percentage Error (RMSPE of 7.8360%,) results for ML models for clusters 1 to 6

(Hwang, Lee, Jeon & Oh, 2025)

# Virtual reality- based simulation platforms

## Macro-flow models

- purchase journey simulations
- predict flows of buyers

## Virtual reality

- track individual behaviour

## Prelaunch forecasting method

- MAPE = 23%

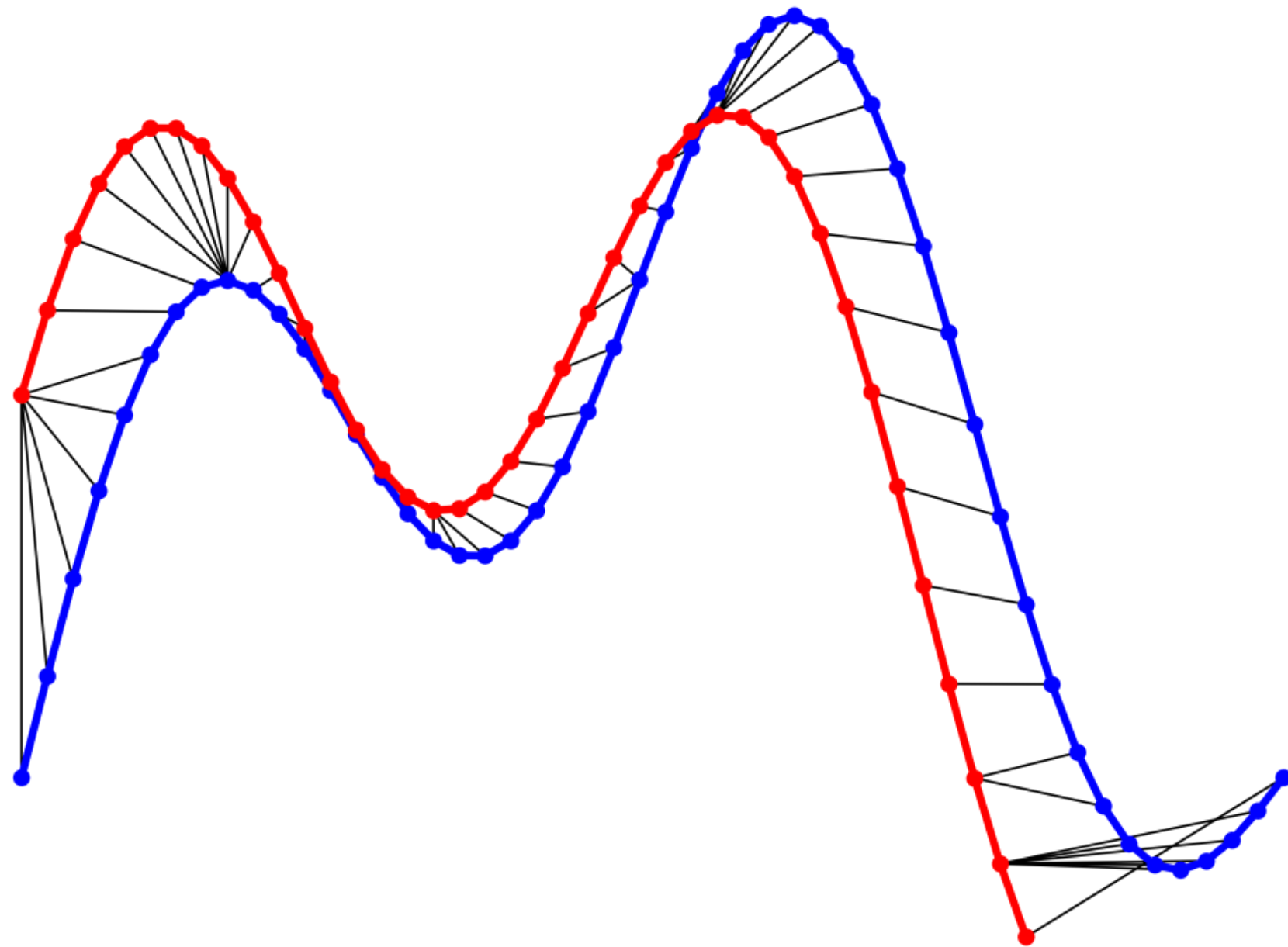




# Agent-based modelling

- Simulations using autonomous agents to assess the effects of individual behaviours
- Enables examination of network effects – influence of behaviours on each other
- Accommodate diverse simulated behaviours

# Dynamic Time Warping



- **Forecasting by analogy in food and beverage sector**
- **Optimal matching**
- **Cluster of similar products**
- **MAPE = 10%**

# Hybrid models

## Examples:

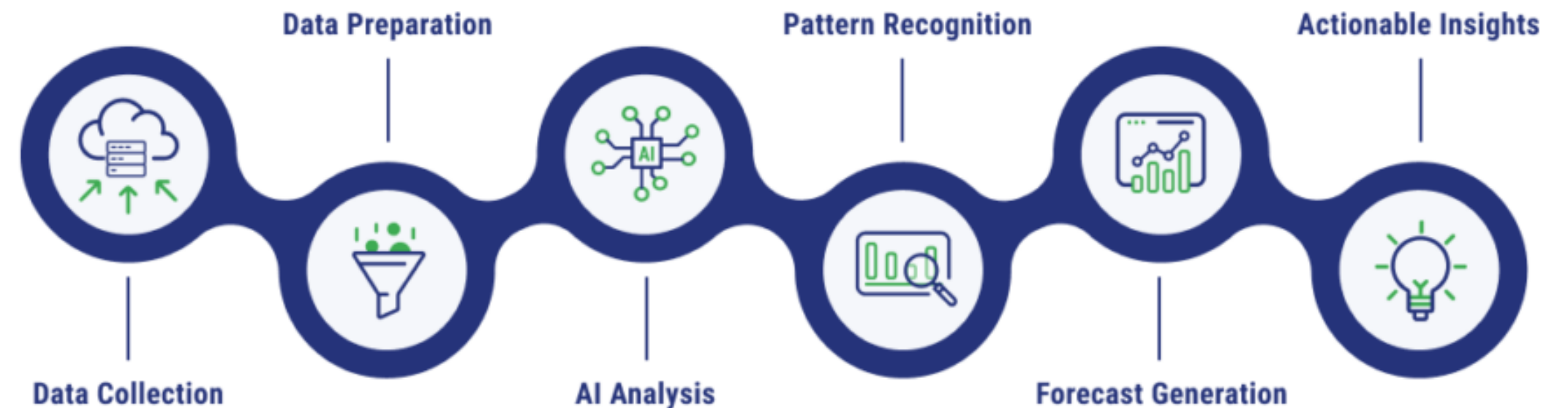
- Modified Bass diffusion models
- ML clustering techniques with regression models
- Structured analogy forecasts
- Expert knowledge with ML



# So, What?

- Objectives & targets
- AI technologies
- Skills & competencies
- Unique forecasting process
- Process integration
- Collaboration
- Develop models & experiment

## The AI Demand Forecasting Process





## **Concluding remarks**

- **NPF = unique process**
- **AI is transforming NPF**
- **Range of AI techniques**
- **Sophisticated, flexible & data-informed tools**
- **Outperforming traditional techniques**
- **AI = strategic role in NPI**

# Key References

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**Thank you!**