



The Evolution of Financial Analysis: From Manual Methods to AI and AI Agents

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Motivation & Research Gap

- Financial markets demand instant, data-driven decisions that traditional methods can't deliver.
- Existing AI systems automate tasks but lack strategic decision-making capabilities.
- Bias and bounded rationality in human-driven analysis limit forecasting accuracy.

- AI agents offer autonomy and adaptability—but their role in finance remains poorly understood.
- Research still focuses on AI as a tool, not as an independent decision-maker.
- There is a critical gap in theory and practice on how agentic AI transforms financial logic.



Research Objectives & Questions



Clarify: AI vs. AI Agents vs. Agentic AI



Understand agentic impact on decision-making



Explore risks, benefits, and governance




4 RQs

Theoretical Framework



 **EMH** – *Efficient
Market Hypothesis*



 **Behavioral
Finance** – *Behavioral
Finance Theory*



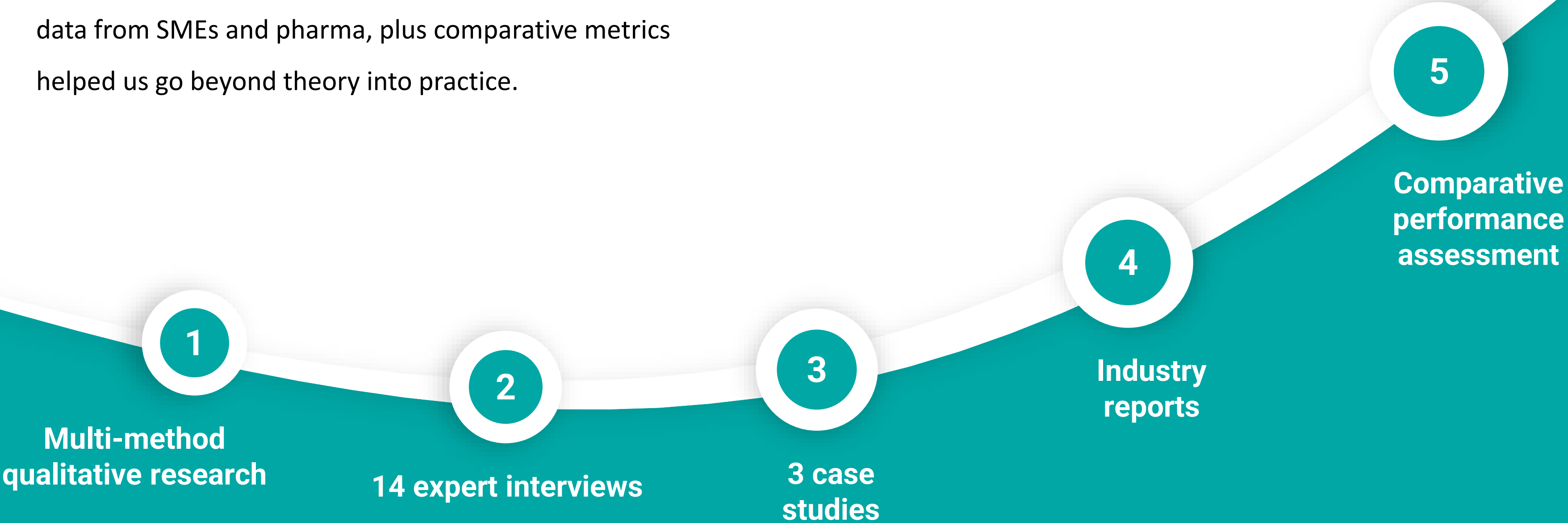
 **AMH** – *Adaptive
Markets Hypothesis*



 **How AI agents
challenge or extend
them**

Methodology

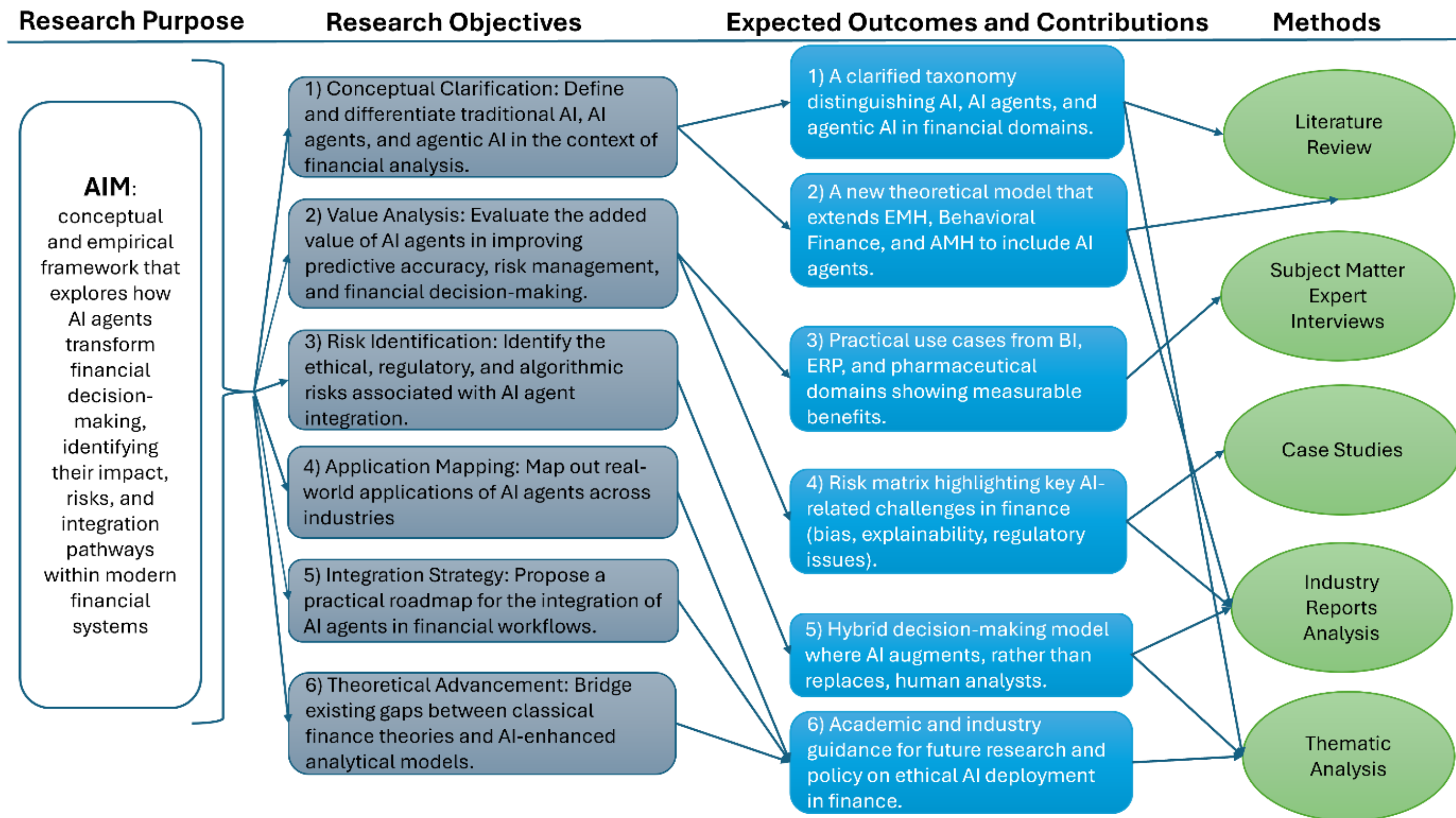
a triangulated, qualitative design. Interviews, real-world data from SMEs and pharma, plus comparative metrics helped us go beyond theory into practice.



Analytical Comparison of Classical Financial Theories and AI Agent Impacts

Theory	Core Assumption	Challenge from AI Agents	Example/Implication
EMH (Fama, 1970)	Markets fully reflect all available information instantly.	AI agents create informational asymmetries by exploiting non-traditional data (e.g., satellite imagery, social media sentiment) faster than human traders.	Early adopters of AI in high-frequency trading consistently outperform the market (contradicts strong-form EMH).
AMH (Lo, 2004)	Market efficiency evolves as participants adapt.	AI agents accelerate adaptive cycles, updating strategies faster than human traders.	AI-driven trading systems continuously evolve without human intervention, potentially destabilizing adaptive equilibria.
Behavioral Finance (Shiller, 2003)	Human biases (overconfidence, herd behavior) cause market anomalies.	AI agents remove human emotion, but inherit training biases from historical data, leading to algorithmic biases instead of human biases.	AI-driven lending models amplify racial or geographic biases present in historical credit data.

Integrated Research Framework for Understanding the Role of AI Agents in Financial Analysis



Matching Research Methods to Research Questions

Research Question	Method	How the Method Addresses the Question	Contribution to the Framework
What is the distinction between AI automation and AI agents in financial analysis?	Expert Interviews	AI developers and financial analysts explain the transition from rule-based AI to autonomous AI agents.	Defines conceptual distinctions between AI, AI agents, and agentic AI.
How do AI agents enhance financial decision-making beyond traditional AI applications?	Case Study: AI in BI for SMEs	Analyzes how AI-driven BI tools automate financial reporting and forecasting.	Demonstrates AI agent autonomy in strategic financial planning.
What challenges arise when integrating AI agents into financial workflows?	Industry Reports & Expert Interviews	Reports from McKinsey, Deloitte, and WEF identify barriers such as data security and cost.	Highlights organizational and regulatory challenges.
How do AI-driven ETL, BI, and ERP automation impact financial forecasting?	Case Studies: AI in Pharma & Corporate Finance	Examines AI-powered data processing and forecasting in financial transactions and pipeline management.	Shows practical benefits of AI in financial analysis.

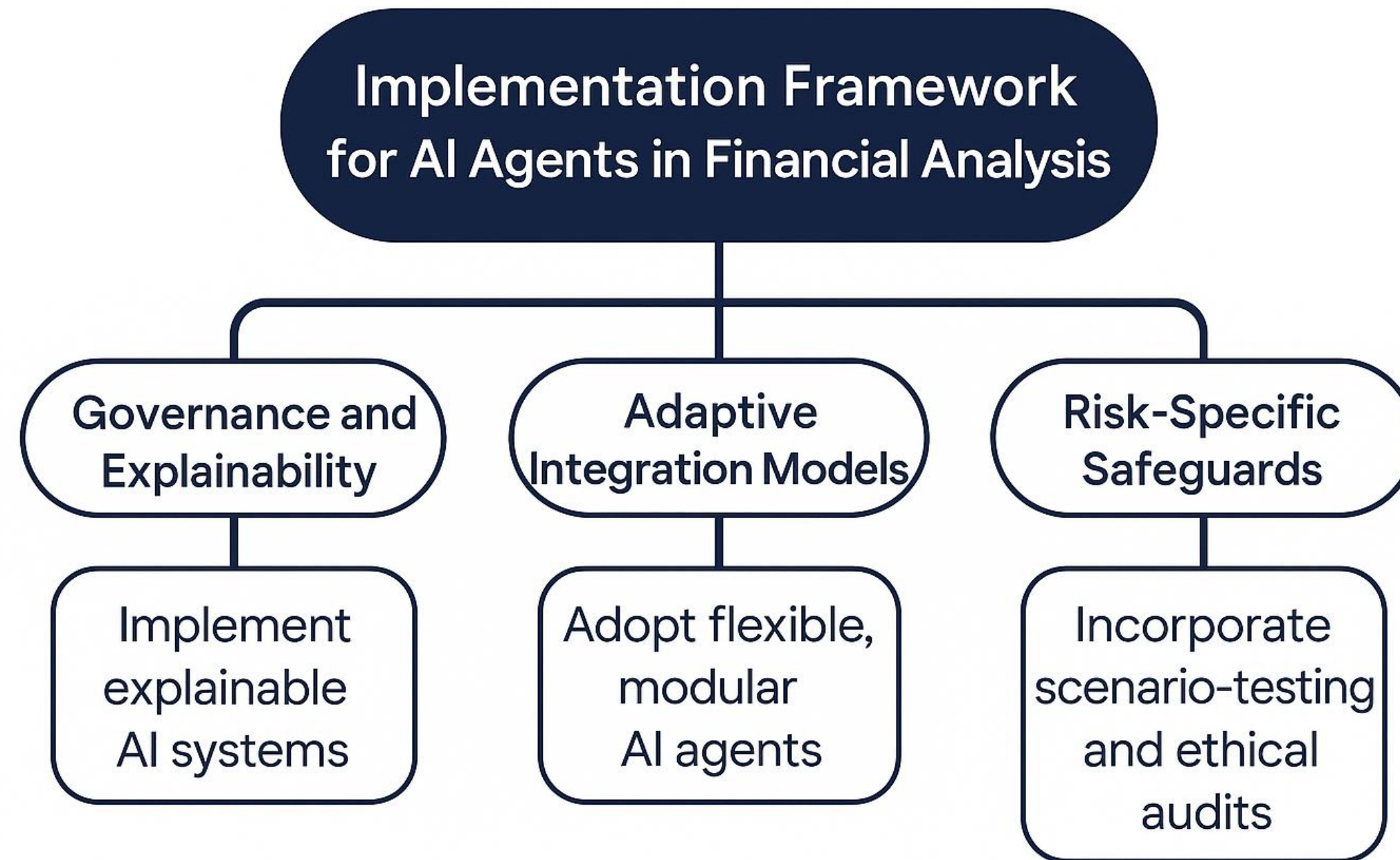
Key insights from the interviews

Theme	Summary of Key Insights from Respondents
AI Agent Definition & Autonomy	AI agents differ from traditional AI because they make decisions independently and adapt to real-time market conditions.
Applications & Use Cases	AI agents are transforming financial reporting, credit risk assessment, and corporate financial planning.
Challenges & Risks	Major concerns include AI biases, regulatory uncertainty, and transparency in AI-driven financial decisions.
Industry-Specific Adoption	AI-driven BI solutions help SMEs, AI-powered ETL optimizes pharma financial analytics, and AI in ERP enhances corporate finance.
Future of AI Agents in Finance	AI will continue to augment financial decision-making but requires governance frameworks to ensure ethical implementation.

From Traditional AI To Agentic AI: Evolution In Financial Analysis

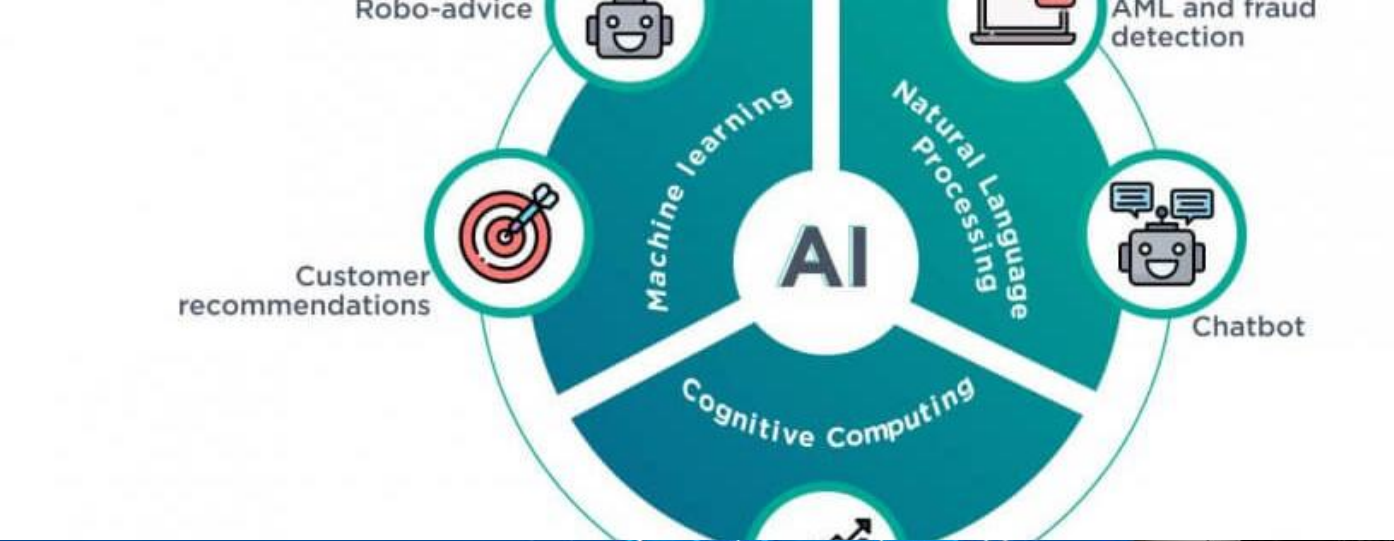
Dimension	Traditional AI	AI Agents	Agentic AI
Core Role	Automates repetitive tasks	Learns and adapts to changing conditions	Makes autonomous financial decisions
Application Domains	Fraud detection, risk scoring	Forecasting, credit modeling, algorithmic trading	Strategic planning, autonomous investing, emergent multi-agent interactions
Degree of Autonomy	Low – rule-based	Medium – ML-based, adaptive	High – self-learning, self-goal-setting, and self-deploying
Goal Formulation Ability (New Row)	None – follows human-defined rules	Partial – adapts goals based on input parameters	Full – autonomously defines and prioritizes financial goals
Key Technologies	ML, NLP	Deep learning, reinforcement learning	Explainable AI (XAI), Large Language Models (LLMs), multi-agent systems
Risk Factors	Low interpretability	Bias in data, semi-black box	Ethical/legal concerns, emergent systemic risks
Human Oversight	Mandatory for decisions	Partial autonomy, human supervision needed	Minimal or post-decision audit, autonomous accountability frameworks
Real-World Examples	Traditional credit scoring tools	AI-based BI dashboards, ERP integrations	Autonomous trading bots, robo-advisors, AI-driven asset management

The Future of AI Agents in Financial Analysis and Future Research Directions



Conceptual Clarification

Feature	Traditional AI	AI Agent	Agentic AI
Autonomy	Low	Medium	High
Learning	Pretrained	Adaptive	Self-evolving
Goal-setting	None	Partial	Full



**BI for SMEs → financial
dashboards**



**Pharma ETL → risk &
compliance**



**ERP/CRM integration →
cash flow & forecasting**



**Agents – for
training and retail**



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