

Extended Abstract for EuroCHRIE 2025 Conference Submission

Strategic Flexibility and AI-Augmented Decision-Making: Enhancing Real Options Thinking in Hotel Real Estate Investment

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Abstract

This theoretical paper explores how Artificial Intelligence (AI) can reshape hotel real estate investment decision-making, an area that is underexplored in academic research despite its global role as an investment vehicle. Positioned within the Business Model Innovations track, it argues that data-driven methods are common in other investment classes, while hotel real estate investment remains heuristics-driven. Based on Heuristics Theory, Real Options Theory, and the Knowledge-Based View of the Firm, this study introduces a 2×2 typology of AI integration and develops theoretical propositions across the hotel investment life cycle. This work contributes to the intersection of strategic management and AI by proposing a conceptual model where AI acts as both a decision support system and a dynamic enabler of long-term value creation.

Introduction

The hotel sector, alongside other hospitality-related assets such as short-stay apartments and restaurants, is becoming increasingly attractive to investors. Recent statistics indicate a substantial rise in capital flows into this domain reaching \$53.6 billion in 2023 (CBRE, 2024), with projections suggesting a continued growth of 15–25% by 2025 (JLL, 2024). Despite this financial growth, academic engagement with hotel real estate investment, particularly from a strategic decision-making perspective, lags behind compared to other real estate segments like office or residential properties (Newell, 2021).

Investment decisions in hospitality continue to rely on heuristics and static appraisal methods, despite AI's growing adoption in financial services. In academic literature, AI is largely framed as a task-specific automation tool rather than a strategic enabler for complex investment decisions (Wagner, 2024). Hotel investments may be direct, through real estate investment or equity investment in a hotel company; or indirect, via tradable shares in listed firms. This research focuses mainly on direct investment. Scholars have variously described models where AI supports human decision-making as AI-enhanced (e.g., Cui & Yasseri, 2024), AI-supported (e.g., Wang et al., 2023), AI-enabled (Chua et al., 2023) and AI-augmented (e.g., Dumas et al., 2023). This article adopts the term AI-augmented. Recent research calls for theory development in hospitality and tourism (McCabe, 2024; Nunkoo & Armbricht, 2025), while conceptual research in hotel real estate investment remains scarce (Manning et al., 2015; Newell, 2021). While heuristics and behavioural biases in real estate

investment have been examined (e.g., Ayaa et al., 2022; A. Singh et al., 2023), little attention has been given to AI's potential in mitigating these biases and enabling adaptive decision-making. Theoretical lenses such as Heuristics Theory, Real Options Theory (RoT), and the Knowledge-Based View (KBV) remain underutilised in this context.

To address these gaps, we propose an AI-Augmented Decision-Making 2×2 typology, linking AI integration with degrees of strategic flexibility. Therefore, categorising investor behaviour from heuristic-based reasoning to fully adaptive AI-augmented execution. Following this typology, we propose various theoretical proposition that jointly offer practical relevance for investors navigating volatile, high-stakes environments and advances the works by Trigeorgis & Reuer (2017) and Rózsa (2016). The article also responds to broader calls to examine the interaction between human and artificial intelligence in strategic decision-making (Keding, 2021; Trunk et al., 2020), and contributes to literature on heuristics and cognitive bias in complex investments (Ehrig & Schmidt, 2021).

Literature Review

Investment entails the strategic allocation of resources to generate future growth (Bowman & Moskowitz, 2001). The 'Portfolio Problem', first articulated in the 1960s, recognises that investor wealth is limited and each unit of capital can only be deployed once (Merton, 1969). This constraint creates a fundamental trade-off between growth and security, highlighting the need for careful capital deployment (MacLean et al., 1992). Investment decision-making involves selecting one or more assets based on anticipated future cash flows aligned with the investor's time horizon, risk tolerance, and opportunity costs (Virlics, 2013). In practice, this includes identifying investment opportunities, evaluating options using financial and strategic criteria, executing the investment, and monitoring performance (Carr et al., 2010). Rising market volatility and expanding investment choices, driven by globalisation, have led to greater reliance on quantitative tools (Farooq et al., 2022). Investors increasingly employ decision support systems (Carr et al., 2010) and probabilistic methods such as real options analysis and Monte Carlo simulations to improve evaluation and execution. These tools help manage uncertainty and support more informed, data-driven investment decisions.

Heuristics, or mental shortcuts, help individuals make decisions under uncertainty but often introduce systematic biases (Kahneman & Tversky, 1974, 1979). These include representativeness, availability, and anchoring, which continue to shape decision-making in finance and investment (Ahmad, 2024; Martín & Valiña, 2023). Biases such as overconfidence, mental accounting, and loss aversion have been widely observed in financial and real estate contexts (Beracha & Skiba, 2014; Hilbert, 2012; Lehner et al., 1997), including evidence of herding behaviour in UK real estate markets (Byrne et al., 2013; Lowies et al., 2016). Findings demonstrate that in the face of irreducible uncertainty, heuristics can be functional (Mousavi & Gigerenzer, 2014), while others highlight gaps in the study of lesser-known biases like gambler's fallacy and familiarity bias in real estate investment (Singh et al., 2023). Hotel investment is especially prone to such biases due to its operational complexity and uncertainty beyond physical assets, including revenue forecasts, location strategy, and capital expenditure (Guilding, 2003; Manning et al., 2015; Newell & Seabrook, 2006; Poretti et al., 2024; Richardson et al., 2021). Biases can affect key areas; for instance, overconfidence may distort demand forecasts, while anchoring and availability bias can misguide location and budgeting decisions. AI has been proposed to mitigate human bias by surfacing overlooked data and supporting AI-augmented decisions (Harfouche et al., 2023). While promising across strategy and organisational domains (Ehrig & Schmidt, 2021; Hunt et al., 2024; Keding, 2021; Trunk et al., 2020), AI's effectiveness depends on data

quality and integration with human judgement (Raisch & Fomina, 2024), as poorly designed systems may introduce new biases (Ehrig & Schmidt, 2021).

Knowledge in businesses encompasses facts, opinions, models, experience, and expert intuition (Mitri, 2003). It is typically divided into tacit knowledge (experiential and intuitive) and explicit knowledge, which is codified and structured (Nonaka, 1991; Popadiuk & Choo, 2006). Knowledge creation involves converting between these forms through a dynamic, iterative process (Nonaka, 1991). Organisations develop knowledge through internal expertise, external inputs, or process transformation. Integrating external knowledge has been shown to reduce biases such as availability and confirmation bias, while conceptual recombination can mitigate cognitive limitations (Popadiuk & Choo, 2006; Scott et al., 2005). The Resources-Based-View of the Firm (RBV) holds that competitive advantage arises from valuable, rare, and inimitable resources (Barney, 1991). Its sub-stream, the KBV, sees knowledge as the firm's most strategic asset (Grant, 1996), especially in knowledge-intensive sectors like hospitality. Studies stress the importance of individual-level knowledge within organisations (Felin & Hesterly, 2007; Kruesi & Bazelmans, 2023). AI supports knowledge processes by enhancing data analysis, scenario modelling, and pattern recognition, thus enabling adaptive knowledge creation (Weiser & Von Krogh, 2023). However, AI's utility depends on the context: it performs well in data-rich settings but is limited under radical uncertainty. Effective AI design must reflect the type of uncertainty through ambiguity, complexity, or risk (Wu & Shang, 2020). In novel or complex scenarios, a balance between human and AI cognition is recommended (Hillebrand et al., 2025; Weiser & Von Krogh, 2023). Trust in AI tends to increase under conditions of low uncertainty and when users hold favourable attitudes (Chua et al., 2023).

RoT frames investment opportunities as “real options,” comparable to financial options, allowing firms to defer full commitment while gaining more information (Bowman & Moskowitz, 2001; Myers, 1977). Typical examples include expansion, research and development, and capital allocation (Kester, 1984). RoT emerged as a response to the limitations of discounted cash flow methods, which assume certainty and ignore managerial flexibility (Myers, 1977; Trigeorgis & Reuer, 2017). RoT has evolved from a financial tool to a potential strategic management framework, encompassing Real Options Analysis (ROA), Valuation (ROV), and Life Cycle Models (Trigeorgis & Reuer, 2017). It is especially relevant for investment decisions involving uncertainty and flexibility, such as real estate and hotel development (Durica et al., 2018; Lucius, 2001; Slade, 2001; Yuan, 2009). However, some critiques highlight challenges in defining abandonment criteria and differentiating real options from standard investments (Adner & Levinthal, 2004). Hotel investment aligns well with RoT due to its phased, high-stakes nature. Early stages, such as due diligence, mirror real options by offering the right, but not the obligation to proceed (Manning et al., 2015; Musgrove, 2016; Newell & Seabrook, 2006). The theory also informs strategic flexibility in market entry, such as franchising and management contracts (Contractor & Kundu, 1998b, 1998a; Dixit & Pindyck, 1994; Kruesi et al., 2017).

Methodology

The present paper is a theoretical paper, based on an integrative literature review and theory synthesis, that proposes a novel investor's decision-making typology and various theoretical contributions in the hotel real estate context. Drawing on guidance from Jaakkola (2020), we integrated insights from Heuristics Theory, RoT and the KBV to identify theoretical gaps and provide guidance for future empirical research. The typology and propositions in the following section are not tested within this research, yet are logically derived from existing scholarship and are framed to encourage future quantitative or

qualitative studies.

Propositions

A synthesis of current scholarship shows that AI is predominantly positioned as a tool for automating specific, routine tasks rather than as a catalyst for reshaping strategic decision-making. This narrow focus has left a conceptual void: existing literature has yet to meaningfully connect AI’s adaptive potential to established frameworks such as RoT, which is concerned with investment flexibility under uncertainty. To bridge this gap, we introduce a conceptual 2 × 2 typology (see Figure 1) that maps investment decision-making approaches across two critical axes: (1) the extent of AI augmentation and (2) the degree of strategic flexibility applied. This typology is intended to explain patterns in investor logic and to reframe AI as a mechanism for supporting more adaptive and resilient strategies in high-uncertainty environments.

The first quadrant, Traditional Heuristic-Based Decision Making, reflects a reliance on fixed valuation models, like discounted cash flow analysis, supplemented by investor instinct and legacy knowledge. These decisions, often based on lagging indicators like revenue per available room (RevPAR) or gross-operating profit (GOP), are neither tech-supported nor adaptable to changing conditions.

The second category, Intuitive Real Options Thinking, aligns philosophically with RoT. Here, investors allow for staged commitments or optionality, but this flexibility stems from tacit expertise rather than systematic analysis, limiting organisational agility.

In contrast, AI-Augmented Risk Reduction incorporates predictive tools and data-driven insights to minimise bias and enhance reliability. Yet, without an embedded logic of staged execution or contingency planning, this model underutilises the strategic flexibility that RoT enables.

The final quadrant, AI-Augmented Real Option Execution, represents the most advanced synthesis of technological capability and strategic agility. This approach combines scenario modelling, real-time data integration, and dynamic decision sequencing, allowing investors to actively manage uncertainty and optimise long-term value creation. It marks a shift from passive forecasting to interactive, adaptive investment logic.

		AI-Augmented Decision Making	
		Low	High
Strategic Flexibility	Low	Traditional Heuristic-Based Decision-Making	AI-Augmented Risk Reduction
	High	Intuitive Real Options Thinking	AI-Augmented Real Options Execution

Figure 1 2x2 Investment Decision-Making Typology

In the remainder of this section, we provide various theoretical propositions to transit from Traditional Heuristic-Based Decision-Making to AI-Augmented Real Options Execution. These theoretical propositions explore how AI can be meaningfully embedded into hotel investment decision-making processes: (1) AI-augmented heuristics and decision-making, (2) AI's role in knowledge creation and uncertainty reduction, (3) AI's influence on real options thinking, and (4) AI in investment execution and learning.

AI-Augmented Heuristics and Decision-Making

Investment decisions are typically made under conditions of uncertainty, shaped not only by empirical data but also by subjective factors such as investor preferences, prior experience, and risk tolerance (Davar & Gill, 2007; MacLean et al., 1992). This uncertainty may arise from external factors like market volatility or internal sources such as incomplete or asymmetric information (Trigeorgis & Reuer, 2017; Walters et al., 2023). In the absence of reliable data, investors frequently rely on heuristics, while occasionally effective, can also give rise to systematic biases (Kahneman & Tversky, 1974; Mousavi & Gigerenzer, 2014). These challenges are especially acute in hotel investment, which involves complex operations and multi-stakeholder dynamics (Newell & Seabrook, 2006). AI can assist by identifying patterns and anomalies that may be invisible to human analysts, helping to reduce bias without excluding intuitive judgement (Ehrig & Schmidt, 2021; Shah et al., 2018).

AI's Role in Knowledge Creation and Uncertainty Reduction

While knowledge creation is often framed as a means of counteracting uncertainty (Nonaka, 1991; Popadiuk & Choo, 2006), it is important to recognise that not all uncertainty is data-driven. Much of it stems from the lack of interpretive context or frameworks (Kogut & Zander, 1992). AI systems, though not capable of human understanding, can act as powerful tools for surfacing insights and supporting decision-makers in the interpretive process (Jarrahi et al., 2023). By generating, testing, and iterating hypotheses across large data sets, AI effectively narrows the uncertainty space. This has been demonstrated in sectors such as healthcare and marketing, where AI-enabled decision-making has led to more robust outcomes (e.g., Begoli et al., 2019; Harish et al., 2021). However, the success of such systems in reducing uncertainty is contingent on thoughtful integration and user trust.

AI's Influence on Real Options Thinking

RoT, originally developed within financial economics, has been applied in strategic literature through which investment under uncertainty can be conceptualised. It allows decision-makers to treat strategic moves, such as market entry, project expansion, or deferral, as staged commitments similar to financial options (Trigeorgis & Reuer, 2017). AI enhances this paradigm by improving the information environment in which options are identified and evaluated. For instance, machine learning can assist in scenario generation, while probabilistic models refine forecasts for key variables such as demand, RevPAR, or operational risk (Keding, 2021). These capabilities support more precise valuation of options, allowing firms to more confidently categorise initiatives as growth, abandonment, or deferment options. AI, in this context, becomes a critical input into the strategic design and timing of real options, improving both granularity and realism in option modelling.

AI in Investment Execution and Organisational Learning

Following the Real Option Life Cycle, the execution of an option represents a commitment of capital and resources, reducing the flexibility that earlier stages afford (Trigeorgis & Reuer, 2017). At this point, the cost of error increases, placing a premium on both organisational learning and the reliability of supporting systems (Keding, 2021). AI can

play a central role here by enabling real-time performance monitoring, flagging deviations from projections, and facilitating agile mid-course corrections (Jaakkola, 2020; Trigeorgis & Reuer, 2017). Moreover, through continuous data assimilation, AI contributes to post-investment learning loops that inform future decisions. For hotel investors, this could mean dynamically adjusting capital expenditure plans, or revisiting expansion strategies based on updated operational metrics. In this sense, AI becomes a partner not only in planning but also in adaptive execution, closing the loop between strategy formulation, investment action, and organisational learning.

Conclusion & Implications

Hotel real estate has become a high-stakes asset class, with global investment volumes exceeding \$53 billion. Yet, scholarly attention remains disproportionately narrow (Manning et al., 2015) and focused on REITs (e.g., Almudhaf, 2018; Ampountolas, 2022; Jain et al., 2017). While AI has seen growing application among other investment vehicles, it is typically confined to automation and analytics, not strategy formulation. This paper addresses that gap by proposing a 2×2 typology and four theoretical propositions offering a novel view on how AI can support flexible, staged investment in hotels.

This study contributes to three major theoretical domains: Heuristics Theory, the KBV, and RoT, by conceptualising AI not merely as a computational tool but as a strategic enabler. First, within Heuristics Theory, AI is positioned as an augmentation mechanism that helps correct, rather than discard, human biases. In line with Thaler's (2016) behavioural economics perspective. This aligns with a "nudge" approach where AI enhances, but does not replace, human intuition in high-stakes investment scenarios. Second, in the context of RoT, this paper advocates for a shift in focus from valuation toward dynamic, AI-supported option execution. While previous studies applied RoT to value hotel growth options (e.g., Cunill et al., 2008), few have leveraged AI to guide option sequencing, execution timing, and conditional commitments. This study directly contributes to bridging the gaps identified by Trigeorgis & Reuer (2017) including the need to embed organisational learning and behavioural realism into RoT. Thirdly, through the KBV lens, this research reframes AI as a co-producer of knowledge. By continuously interacting with human agents, AI helps interpret ambiguous signals, reduce knowledge asymmetries, and incrementally close uncertainty gaps. This positions AI as a strategic asset in knowledge-intensive investment environments like hospitality, where soft variables, such as brand equity, location, or service potential, play a critical role in long-term value. Finally, this research contributes to the relatively limited existing stock of direct hotel investment literature. Additionally, most of the available literature is empirical and applied research (Manning et al., 2015; Singh et al., 2012), leaving room for theoretical contributions.

The propositions offer hotel investors and managers actionable pathways for integrating AI into strategic investment practices. First, AI systems can improve judgement by supplementing human decision-making with predictive analytics, thus reducing the risk of cognitive bias and enhancing consistency. This is especially valuable during feasibility assessments and early-phase appraisals, where subjective heuristics often dominate.

Second, operators should incorporate AI into organisational workflows, not only in marketing or revenue management, but also in capital allocation and risk planning. By aggregating cross-functional data streams, AI enables a more holistic and real-time understanding of market dynamics, operational risks, and opportunity costs. This supports better strategic alignment across departments and enhances organisational agility.

Third, AI-enabled scenario modelling can help investors simulate the implications of different operating models (e.g., ownership, lease, or management contracts). In diversified

or international portfolios, this allows for precise tailoring of investment models to suit local market conditions, stakeholder objectives, and risk profiles. Such adaptive modelling becomes critical in volatile economic environments.

Finally, there are implications for public policy. Regulators and urban planners could use AI-enhanced decision tools to evaluate and incentivise sustainable hotel investments. By embedding AI in sustainability assessment frameworks, policymakers can promote developments aligned with environmental targets, resilience benchmarks, and inclusive employment standards.

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