Legal Risks of Applying Artificial Intelligence as Robo-advisors: International Experiences and Suggestions for Vietnam

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ABSTRACT
The rise of AI has revolutionized finance, particularly with robo-advisors, offering cost-effective, accessible, and unbiased investment advice. However, this integration presents significant legal hurdles, including liability for financial losses, data protection, algorithmic manipulation, and regulatory gaps. While some nations have established risk-mitigation regulations, Vietnam's user protection framework remains nascent. This paper analyzes the legal risks of AI in virtual financial advisory, comparing Singapore's regulatory model with Vietnam's. It proposes evidence-based policy solutions to optimize the governance and management of these advisors, thereby fostering the advancement of Vietnam's financial market within the ambit of digital transformation.

Keywords: *Legal risks, AI, robo-advisors, Vietnam, financial technology.*

1. INTRODUCTION

The digital revolution, propelled by advanced information technology and the internet, is reshaping Vietnam's economic and financial sectors. Government policies, exemplified by Directive No. 34/CT-TTg, underscore the critical role of digital technologies in driving economic progress. Within finance, the integration of artificial intelligence (AI) has spawned robo-advisors, a fusion of AI and traditional advisory services, offering personalized investment guidance.

Despite the substantial developmental potential inherent in robo-advisory platforms, the deployment of such technologies engenders a constellation of juridical challenges and legal risks. Issues pertaining to algorithmic transparency, the safeguarding of personal data, legal liability in the event of financial losses, and the adherence to prevailing regulatory frameworks constitute salient exigencies necessitating resolution. The prevailing economic and financial uncertainties further exacerbate client apprehension and erode trust in financial advisors, necessitating a robust demonstration of the benefits and value propositions of investment during volatile periods.

Therefore, This research will analyze international regulatory best practices for robo-advisors, aiming to propose policy solutions that establish a comprehensive legal framework. This framework will protect investor rights and promote the sustainable growth of Vietnam's financial market within the digital age.

2. THEORETICAL BASIS OF ROBO-ADVISORS

2.1. Definition of Robo-advisors

Smart investment advisory platforms or robo-advisors, are a product of financial technology (FinTech) innovation, designed to automate investment advisory and asset management services, originating in 2008 with the U.S. launch of Betterment and Wealthfront (Brennan, 2018). Essentially, robo-advisors are digital platforms that analyze client financial data and generate investment recommendations without human involvement (Investopedia, 2022). Their primary advantage is the ability to optimize portfolios using big data and AI, reducing costs and increasing investment efficiency (CFA Institute, 2021). The U.S. Securities and Exchange Commission (SEC) defines robo-advisors as technology-driven financial advisory services, where algorithms substitute human advisors in data analysis and investment decision-making (SEC, 2020).

The operational framework of robo-advisors typically involves three key stages: (i) Data Collection: Clients input personal financial information, investment objectives, risk tolerance, and time horizon; (ii) Portfolio Analysis and Recommendation: Algorithms process client data using advanced financial modeling techniques, such as Modern Portfolio Theory (MPT) (Markowitz, 1952) or the Black-Litterman Model (Black & Litterman, 1992), to construct an

optimal portfolio; (iii) Portfolio Management and Rebalancing: The system continuously monitors market fluctuations in real-time and automatically adjusts the portfolio to maintain alignment with the client's original investment goals (Morningstar, 2022).

2.2. Characteristics of Robo-advisors

Robo-advisors are a technological synergy of AI, machine learning, and FinTech, providing automated investment advisory services without human intervention. According to Jiang et al. (2024), robo-advisors assist individual investors in managing assets by analyzing financial data, risk appetite, and investment objectives. The rise of this service model is driven by the expansion of big data, the demand for lower transaction costs, and the increasing digitalization of financial services (Wei et al., 2024).

Robo-advisors are distinguished by several key attributes. Firstly, they achieve high automation through AI and financial algorithms, enabling optimized, data-driven investment portfolio recommendations (Liu, 2020). Secondly, they offer low costs and high accessibility, significantly undercutting traditional advisors' fees (Figà-Talamanca et al., 2022), thereby democratizing investment advice for retail clients. Thirdly, their algorithm-driven strategies leverage AI to adapt dynamically to market conditions, ensuring portfolio alignment with investor goals and risk management principles (Chen et al., 2023). However, this reliance on AI also introduces regulatory and compliance challenges, necessitating global regulatory bodies to develop frameworks that address liability, transparency, and consumer protection (European Securities and Markets Authority, 2023).

2.3. Types of Intelligent Advisors

Currently, robo-advisors can be classified based on the level of automation and human intervention. According to research by Bonelli & Döngül (2023), robo-advisors in the market can be divided into three main categories:

- Fully Automated Robo-Advisors: This is the most common type, where the entire advisory and portfolio management process is fully executed by AI algorithms without human involvement. The system automatically recommends an investment portfolio based on customer-provided information, including risk tolerance, investment duration, and financial goals (Wei et al., 2024). Notable platforms in this category include Wealthfront, Betterment, and Vanguard Digital Advisor.
- Hybrid Robo-Advisors: This model combines automated advisory with support from financial experts. Customers can receive professional advice when needed, while most of the investment process remains algorithm-driven (Hasanah et al., 2023). Some well-known platforms in this category include Schwab Intelligent Portfolios Premium and Personal Capital.
- AI-Driven Robo-Advisors: This is the most advanced generation of robo-advisors, utilizing Generative AI and Digital Twin technology to analyze real-time financial data and automatically adjust investment portfolios for optimal returns (Bonelli & Döngül, 2023). Leading companies in this field include Morgan Stanley AI-driven Wealth Management and BlackRock FutureAdvisor.

3. TRENDS AND CURRENT STATUS OF APPLYING ARTIFICIAL INTELLIGENCE AS ROBO-ADVISORS

3.1. The trend of using Robo-advisors

Digital transformation is now a fundamental imperative for the global banking and finance sector. A 2023 PwC survey, involving over 30 leading Southeast Asian banks, highlighted the key drivers of this trend. Primarily, banks are prioritizing enhanced customer experience (68%), followed by operational efficiency improvements and cost reductions (6%), and expanding access to unbanked populations (41%). These findings underscore that digital transformation is not a fleeting trend, but rather a critical strategic necessity for financial institutions, particularly in the competitive Southeast Asian market.

Developing related regulations on the use of AI is becoming increasingly common as a continuous challenge for lawmakers, such as the European Union's Artificial Intelligence Act to protect health, safety, fundamental rights, democracy, and the rule of law, and the environment from potential negative impacts – while still ensuring support for innovation, especially for small and medium-sized enterprises (SMEs) in Europe. However, the process of digital transformation also poses many challenges, including ensuring cybersecurity, complying with legal regulations, and training human resources with digital skills (Van, 2024).

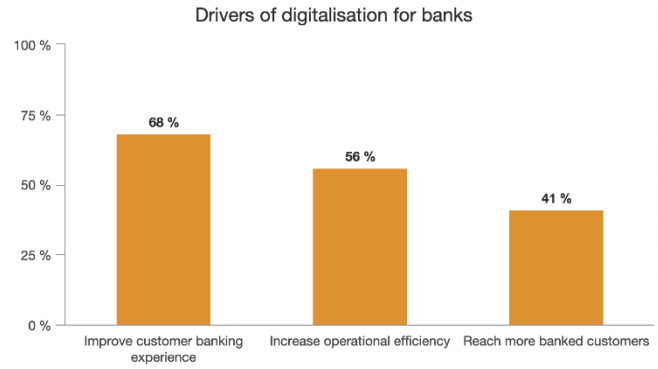

Figure 1 Drivers of digitalization for banks

The development of Robo-advisors, based on computer programs, is creating a significant step forward in supporting individual investors (Goel et al., 2023). In Vietnam, Viet International Bank's introduction of "Vie", a virtual financial expert, represents a pioneering step in integrating advanced technology into banking, bridging the gap between institutions and customers with engaging and accessible information delivery (VIB, 2022). Similarly, Morgan Stanley's adoption of an AI-driven virtual assistant, built on OpenAI's Chat GPT, exemplifies the transformative potential of AI in finance (Marr, 2024). This technology aims to revolutionize customer interaction, optimize advisory efficiency, and liberate financial advisors to focus on comprehensive client service.

The potential of AI to enhance robo-advisor efficacy has spurred significant academic interest. Research is centered on developing advanced AI algorithms for personalized investment recommendations, tailored to individual profit and risk profiles. Furthermore, integrating diverse AI applications into portfolio management, transaction execution, and risk mitigation enables robo-advisors to achieve superior portfolio performance and automate crucial processes like rebalancing and risk management (Vu et al., 2024). This translates to cost and convenience advantages over traditional advisors, with simplified interfaces democratizing access for non-professional investors.

3.2. The practice of using Robo-advisors

3.2.1. Vagueness in determining licensing requirements

The emergence of intelligent investment advisors, a product of the intersection of finance and technology, has posed significant legal challenges in the context of the financial and banking market. Although current laws clearly stipulate that investment activities based on AI require licensing, they lack specificity regarding the type of license required. This creates a legal gap, making it difficult for companies to comply with regulations and operate legally.

In addition, the difference in understanding of "financial advisor" between legal regulations and market practice adds to the complexity. While current legal regulations tend to confine "financial advisors" to professionals licensed under Clause 2, Article 213 of Decree 155/2020/ND-CP, intelligent financial advisory platforms operate without requiring similar qualifications. This discrepancy leads to situations where companies operate in a gray legal area, where the line between legal and illegal activities becomes blurred. The delay in updating and clarifying legal regulations not only creates an uncertain business environment, hindering the development of the intelligent financial advisory industry, but also poses potential risks for both investors and the stability of the financial system.

3.2.2. Complexity and lack of transparency of algorithms

The implementation of virtual advisors introduces intricate legal challenges, primarily due to the inherent complexity of their underlying algorithms. The opacity surrounding algorithm design and operation, particularly the non-disclosure of source code and decision-making parameters, creates an uncontrollable "black box" scenario (Steiner, 2013). This lack of transparency not only prevents investors from comprehending the advisors' internal logic but also necessitates blind reliance on machine-generated advice. Consequently, the likelihood of errors in user profiling and unsuitable investment recommendations escalates. Moreover, the potential for biased input data from financial experts and algorithm developers can result in price discrimination and "information silos", thereby restricting investors' access to diverse market information and undermining market fairness and transparency.

The risk of algorithm homogenization, stemming from the requirement to disclose information to enhance transparency, also poses significant challenges. When virtual advisory platforms use similar algorithms, herd effects can occur, leading to significant fluctuations in the financial market and increasing systemic risks. To mitigate these

legal risks, close coordination is needed between policymakers, technology developers, and financial service providers. Building a comprehensive and clear legal framework, including standards for transparency, accountability, and data protection, is essential. Concurrently, investment in research and development of explainable algorithms is necessary, along with strengthening financial education for investors so they can make informed investment decisions.

3.2.3. Unclear accountability mechanism and not transparent

The proliferation of AI in intelligent investment advisory has created a complex environment where legal accountability is ill-defined (Zhu et al., 2023). Given their substantial influence on investment outcomes, both platform operators and algorithm developers are potential sources of investor harm, whether intentional or not. A central legal debate concerns the liability of AI itself. One view suggests AI, by autonomously processing data and executing transactions, should be legally responsible for its actions. Conversely, the opposing view considers AI a mere instrument, acting on pre-programmed algorithms without independent will, thereby placing liability on its human creators and operators.

In practice, the operation of intelligent investment advisors involves many parties with varying levels of control. The existence of technical issues such as "black box" algorithms further complicates the division of responsibility. Specifically, when investors suffer losses due to algorithms, determining whether the organization that develops the algorithm or the platform operator is liable remains an unresolved legal issue (Zeng, 2019). To address these challenges, a clear and comprehensive legal framework is needed that clearly defines the responsibilities of all parties involved, including algorithm developers, platform operators, and AI users. At the same time, there is a need for regulations on algorithm transparency, consumer rights, and effective dispute resolution mechanisms.

4. SINGAPORE S EXPERIENCE

The development of AI in Singapore has the potential to transform the financial sector in various ways, depending on advancements in new technologies. According to the Economy SEA 2023 report, jointly published by Google, Temasek, and Bain & Company, Singapore has the highest digital penetration rate in Southeast Asia across multiple sectors of the digital economy. The application of AI-powered virtual financial advisory services is among the key areas projected to have significant impacts on Singapore's financial market.

The regulatory direction of the Singaporean Government and the Monetary Authority of Singapore (MAS) aims to provide guidelines for financial institutions in the responsible development and deployment of AI applications in finance. Furthermore, MAS mandates that AI must operate fairly, without discrimination, and with transparency in financial decision-making. According to the World Bank (2020), there are seven regulatory approaches to FinTech regulation globally: (1) Wait and See; (2) Test and Learn; (3) Regulatory Sandbox; (4) Waiver/exemption; (5) Letters of No Objection; (6) Differentiated Regulation; (7) Legal and Regulatory Reforms.

To foster FinTech innovation while managing algorithmic and legal risks, the Monetary Authority of Singapore (MAS) launched the Regulatory Sandbox in 2016. This initiative provides a controlled environment for FinTech firms to test new products and business models for 6-12 months before full implementation, allowing real-world experimentation. Sandbox parameters, determined through MAS-FinTech consultations, address specific product risks, and MAS can relax certain regulatory requirements during testing. To expedite innovation, MAS introduced Sandbox Express in 2019, offering 21-day approvals for select experiments (OECD, 2024). Further enhancing support, MAS launched Sandbox Plus in 2021, providing additional resources to participants (Loke & Teng, 2021). For robo-advisory solutions, the Sandbox facilitates the assessment of AI-related risks, specifically focusing on algorithm transparency, bias prevention mechanisms, decision-making accuracy, and data privacy.

Additionally, MAS has established regulations for Robo-Advisors, requiring them to obtain licenses if they engage in regulated activities under the applicable laws, unless exempted. Specifically, if a Robo-Advisor provides financial advisory services, it must comply with the Financial Advisers Act 2001 (FAA). Furthermore, if a Robo-Advisor facilitates the execution of investment products, must obtain a license under the Securities and Futures Act (SFA) to conduct capital markets activities and fund management (Tam et al., 2024).

The FAA serves as the legal framework governing financial advisory activities in Singapore. The FAA's scope includes investment advisory services, covering investment products such as securities, futures contracts, life insurance policies, and financial product research and analysis. This ensures that virtual financial advisory services maintain transparency, reliability, and client protection. Financial advisory activities, including investment advisory services, life insurance product advisory, marketing of collective investment schemes (CIS), and other financial products, are

regulated under the FAA, which mandates that firms must obtain a Financial Advisers Licence (FAL). Individuals working for a Licensed Financial Adviser (LFA) must also register as representatives under the FAA.

On 2 October 2014, the Monetary Authority of Singapore (MAS) released a consultation paper on legislative amendments to the FAA (Cap. 110) (FAA) and Insurance Act (Cap. 142) to implement the policy proposals under the Financial Advisory Industry Review (FAIR). FAIR was initiated to raise the standards and professionalism of the financial advisory industry, encourage greater efficiency in the distribution of life insurance and investment products, increase market competition for insurance products, and provide consumers with more information to guide their decisions. One of the key policy proposals is the balanced scorecard (BSC) framework, which requires every financial adviser (FA) (unless exempted) to: (i) have a framework for reviewing and assessing the performance of its representatives and supervisors for the purpose of determining their remuneration, and (ii) incorporate non-sales Key Performance Indicators (KPIs) into the framework. The BSC framework will be implemented by inserting a new Division 4A, consisting of sections 44A and 44B, into the FAA, and introducing a new Notice on Requirements for the BSC Framework and Independent Sales Audit Unit (Notice) and Guidelines on BSC Framework Reference Checks and Pre-Transaction Checks.

5. SUGGESTIONS FOR VIETNAM'S LEGAL FRAMEWORK

Vietnam′s regulatory framework for FinTech, particularly the decree on the controlled trial mechanism (Regulatory Sandbox), is currently under development, and consultation, and is expected to be issued shortly. This is a crucial consideration for financial institutions, as the usage of AI in Robo-Advisory services is becoming increasingly prevalent in the banking and financial sectors. However, Vietnam has established legal requirements mandating financial institutions to participate in the Regulatory Sandbox for FinTech operations.

Firstly, given global and regional regulatory trends, the development of a regulatory sandbox framework for FinTech activities is essential. Therefore, the Vietnamese Government should promptly issue a FinTech regulatory sandbox decree to facilitate controlled testing. Additionally, Sandbox Express, similar to Singapore (which allows for expedited approval within 21 days), could be considered for financial institutions whose products pose minimal algorithmic and liability risks.

Secondly, unlike other countries, Vietnam does not have a centralized regulatory authority overseeing financial and banking activities. However, global best practices suggest that different financial sectors can be regulated by their respective specialized agencies. Thus, the Vietnamese Government should direct relevant regulatory agencies, such as the Ministry of Finance (State Securities Commission, Insurance Supervisory Authority, etc.), to swiftly establish regulatory sandboxes for their respective sectors, in addition to the banking sector′s ongoing regulatory sandbox decree development.

Thirdly, Vietnam lacks an established legal framework to regulate standards and impose stringent requirements on FinTech entities, particularly in the application of AI-driven financial advisory services. The usage of AI as a financial advisor carries potential risks, including erroneous decision-making and weak data security. Therefore, it is imperative to establish algorithmic standards and develop a regulatory oversight mechanism. Additionally, a performance evaluation framework for financial advisory services should be introduced, incorporating both sales-based and non-sales-based criteria. Specifically, a Robo-Advisors assessment system should be developed, measuring advisory effectiveness, customer satisfaction levels, and the accuracy and reliability of AI algorithms. Financial institutions should also be required to publish annual performance review reports, ensuring that the core objective of AI-driven financial advisory services remains the protection of consumer rights.

6. CONCLUSION

The transformative potential of AI in financial advisory, particularly via robo-advisors, is tempered by substantial legal complexities, including licensing ambiguities, algorithmic opacity, and unclear accountability. Drawing on Singapore's regulatory best practices, this paper argues for a comprehensive legal framework in Vietnam. This framework must prioritize clear licensing protocols, robust data protection standards, transparent algorithmic processes, and well-defined liability provisions. Furthermore, strategic investment in explainable AI, enhanced financial literacy initiatives, and rigorous regulatory oversight are essential. Establishing such a robust regulatory environment will not only protect investor interests and cultivate trust but also empower Vietnam to capitalize on robo-advisors for sustainable financial market growth within the global digital economy.

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