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AI Prospects in Financial Mathematics Editorships and Reviews

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ABSTRACT
As financial mathematics accelerates along dimensions today, the need to adapt artificial intelligence becomes necessary for the best of practice. This article presents an AI-driven framework for transforming reviews and editorships in theory and application. The editorship models presented harness several capabilities and potentials for improving quality, editorial efficiency and innovative publishing with effectiveness guarantees that explore the transformative power of AI in financial mathematics publishing.

KEYWORDS
MathFin tools, arm, editorships, reviews, hybrid

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INTRODUCTION

Artificial Intelligence (AI) is a machine-based simulation programmed to work like humans. Financial mathematics (MathFin) is the mathematics of money and associated institutions. Generally, money matters are critical matters as are money writing spaces (MathFin journals). In order to solve these matters, the synergy between AI and MathFin must be uncovered and put to use. Today, MathFin research is surging over the horizon and editorial processes[1,2] like article reviews (averaging 120-180 days) (Huisman and Smits[3]) are prolonged and are carried out with alarming error rates (up to 30%)[4]. These negatives hinder innovations and breakthroughs along time dimensions[5,6].

Furthermore, human reviewer biases and inconsistencies in the form of poor decisions on submissions are compromising research quality[7]. Leveraging machine learning (ML) and Natural Language Processing (NLP) advancements, AI-assisted reviews and editorships can help mitigate these challenges if applied properly over the landscape[8]. This article explores the potentials of AI tools and analytics in MathFin reviews and editorships and examines implications for quality and evolving synergy of human-AI collaborations.

The junction where AI meets MathFin has given rise to a revolutionary paradigm in academic publishing[9-11]. As complexities and volumes of economic and financial data submissions and editorial responses continue to mount, traditional peer-review processes once the diamond standard in science

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publishing face unprecedented challenges. Today, filtering MathFin articles makes the process difficult, leading to increased review times and potential oversight of important research. There is the issue of expertise availability for evaluating submissions; this shortage leads to inaccurate evaluations and review bottlenecks. These cogent issues render quality maintenance across multiple submissions challenging for editors to maintain consistency in their evaluations and lead to inconsistent evaluation criteria across submissions and increased variability in quality over the evaluation process.

The advent of MathFin AI-powered review and editorship systems that optimize the evaluation process by mitigating inherent subjectivities and biases is a good omen for reviewers, editors and researchers by some synergistic fronts. Evidentially, human expertise and MathFin AI tools can herald a new era of publishing where integrity and reliability are fortified by the precision and speed of machine learning algorithms[9,12]. As MathFin editorships and reviews navigate this shifting landscape, they are confronted with daunting questions on the potential of AI-powered review systems to elevate quality and credibility in this subject area. The general answer is to embrace hybridization where human expertise and MathFin AI-driven analytics converge to create robust and efficient publishing process[13]. This way, editorships and reviews cannot only enhance accuracy and reliability, but also foster a more inclusive and diverse research community where innovative ideas and perspectives[14] are encouraged, nurtured and applied for best of practice.

BENEFITS OF THE HYBRID TASK FRAMEWORK

If we want to share publishing tasks between AI and humans, questions include who does what and what are the benefits[15]. To start with, sharing duties between AI and humans brings numerous benefits. First, there will be faster manuscript processing since MathFin AI tools automate routines and reduce manuscript evaluation and processing times. Manuscripts can then be handled successfully and MathFin journals increase publication volumes for profit. Benefits for improved accuracy and quality through MathFin AI tools can verify equations and notations faster reducing errors and inconsistencies in the process[8,13,16]. Again, MathFin AI tools can identify grammatical errors and even suggest corrections to improve manuscript clarity and readability for quality enhancements. They can perform several magic for editors and reviewers in detecting plagiarism and duplication in manuscripts. Editorships can derive data-driven insights using MathFin AI as tools for more informed decisions about acceptance and rejection faster. Equivalently, such faster decision making MathFin tools bring on board objective evaluation over the entire process reducing the influence of personal biases and opinions by human subjectivities.

In terms of cost and sustainable publishing, the use of MathFin AI tools reduces editorial workload and by so doing, lowers operational costs associated with processing expenses. This way, MathFin authors enjoy faster publication times where tools reduce publication times so that authors share research quickly[17]. This way, the entire process garners additional transparency and informative feedback to authors helping them improve their manuscripts. By embracing MathFin AI tools in the task process, our journals can demonstrate commitment to innovations and remain ahead in quality differentiating themselves from conservatism competitors through high level reputation for excellence in the sight of authors[18]. In this respect, the human arm concentrates on high level tasks like those required in MathFin manuscript evaluations and decision making, originality and contributions[1]. Other areas include fitting contexts, critical thinking and judgment for quality (Table 1).

Apart from the two independent arms, there is the mixed arm that combines both for optimal performance. Table 2 summarizes areas for enhancing MathFin publishing.

Table 1: Optimal hybrid task framework

Human arm	MathFin AI arm
High level manuscript evaluation	Initial manuscript screening
Technical review checks	Non-technical review checks
Contextual understanding and interpretation	Duplication interpretation
Critical thinking and judgment	Confirmation bias
Communication from peer review stage	Communication until peer review stage

Table 2: Mixed arm framework

Publishing aspect	Joint tasks
Review and validation	Expertise (Human), Basic errors (MathFin AI)
Analysis and visualization	Insights (Human), Analysis (MathFin AI)
Modeling and simulation	Developing models (Human), Optimization (MathFin AI)
Literature and knowledge graph	Extraction (Human), Graph curation (MathFin AI)
Editorial decision support	Qualitative metrics (Human), Quantitative metrics (MathFin AI)

By combining both arms, MathFin journals can enhance quality, efficiency and impact of publications by reducing biases since MathFin AI tools help identify and reduce biases in peer reviews[19] and free editors to focus on high-level decision making. The MathFin AI tools can assist in tasks like copy editing, typesetting and proofreading reducing errors and improving overall quality. In optimal balanced publishing, MathFin AI tools carry out screening processes like paper screening over basic criteria like mathematical errors. These tools further assist with identifying potential peer reviewers and facilitating the review process while humans finalize edited manuscripts in an unbiased publishing process framework[20].

OPTIMAL EDITORSHIP FRAMEWORK (OEF)

The OEF harmonizes and integrates the human editorial expertise and the MathFin AI tools to enhance manuscript evaluation processes, peer review and publication quality through an increased accuracy that raises efficiency, consistency and transparency[21] so that high level ethics is harnessed. The framework guarantees fairness within an entire publishing process irrespective of author's spatial frames. Key components of the OEF are summarized in Table 3.

Human editors (H) are expected to provide specific but occasionally exhibit subjectivity. To ensure high-quality manuscript evaluation, the OEF posits that human specific expertise must match or complement those provided by AI, removing biases and enhancing knowledge globalization[22,23]. There are compelling reasons why human oversights are necessary for validating AI decisions and vice versa in the initial manuscript evaluation stage since humans possess nuanced understanding of mathematical finance and by adding AI's efficiency, journals ensure high ethical decision making at the first stage to optimize editorial decision making.

In review process, the OEF specifies combination of human and MathFin reviewers for manuscripts. MathFin AI review should analyze manuscripts providing feedback on technical quality, relevance and plagiarism while human reviewers should evaluate manuscripts in light of MathFin AI feedback and provide combined assessments[24,25]. Reports are integrated along known weighing strengths and weaknesses of the two components. Finally, editorial decisions for acceptance or rejection are made on combined reviews in closed related weighting pattern and allocation. Here, decision matrix should be designed based on combined assessments (Table 4).

The decision matrix ensures proper calibration with regularly compared outcomes for proper alignment and a consistent feedback loop for better publishing experience and operations management of the entire system. In this case, decision topology witnesses improved accuracy through error reduction and rising efficiency levels through MathFin AI tools assisting review and editorship processes for effective experience[26,27].

Table 3: Optimal editorship framework for MathFin journals

Aspect	Arm	Benefits
Submission	H and AI editors	Fairness
Initial decision	H and AI editors	Efficiency and improved author satisfaction
Peer review	H-reviewers and AI-reviews	Enhanced quality
Final decision	H and AI editors	Advanced transparency and accountability
Publication	H and AI systems	Quality and best practice

Table 4: Decision matrix for final decision

Decision	Human reviews	MathFin reviews
Accept	Accept as it is	Accept as it is
Accept with minor revisions	Accept	Accept as it is
Accept with minor revisions	Accept as it is	Accept
Accept with major revisions	Accept with minor revisions	Accept as it is
Accept with major revisions	Accept as it is	Accept with minor revisions
Reject	Accept with major revision	Accept with minor revisions
Reject	Accept with minor revisions	Accept with minor revisions

CRAFTING THE STEPS

This is the step-by-step demonstration of the OEF publishing process "on the topic "optimal solution for the K-investment problem with stock rotating tendencies"" using the hybrid frame between MathFin AI tools and humans:

Step 1: Submission (Human Author)

- Human author submits a 15-page article to the financial mathematics journal through an online portal

Step 2: Automated Screening (MathFin AI)

- MathFin AI system checks the article for:
- Plagiarism
- Formatting consistency
- Basic mathematical errors
- MathFin AI system provides a preliminary report to editorships

Step 3A: Editorial Review (Human)

- Editorial team reviews the article to determine its relevance, significance and overall quality
- Human checks for:
    - Alignment with the journal's scope and focus
    - Originality and contribution to the field
    - Clarity, organization and writing style
    - Editorships decide whether to send the article for peer review

Step 3B: Editorial Review (MathFin AI tools)

- MathFin AI reviews the article to determine its relevance, significance and overall quality
- MathFin AI checks for:
    - Alignment with the journal's scope and focus
    - Originality and contribution to the field
    - Clarity, organization and writing style
    - MathFin AI decides article suitability for peer review in percentage
    - Analysis-(Human)
    - Average 3A and 3B; if sum >65%; send for peer review; otherwise reject

Step 4A: Peer Review (Human)

- Article is sent to 5-10 peer reviewers with expertise in investment analysis and financial mathematics
- Reviewers evaluate the article based on:
    - Technical soundness
    - Methodological rigor
    - Contribution to the field of financial mathematics

- Clarity and presentation
- Human reviewers provide detailed comments and recommendations to editorships

Step 4B: Peer Review (MathFin AI tools)

- MathFin AI tools evaluate the article based on:
  - Technical soundness
  - Methodological rigor
  - Contribution to the field of financial mathematics
  - Clarity and presentation
  - Grade attributes in percentage
  - (Human) Average the scores in 4A and 4B; if >75% accept (as the case may be) otherwise, reject

Step 5: Revision and Resubmission (Author)

- Author addresses reviewers' comments and revises the article accordingly
- Revised article is resubmitted to the journal

Step 6: Automated Quality Check (MathFin AI tools)

- AI system re-checks the revised article for:
  - Consistency in formatting and style
  - Accuracy in citations and references
  - Completeness of supplementary materials (if applicable)
  - MathFin AI system provides a final quality report to the editorships

Step 7: Final Editorial Decision (Human)

- Editorial team reviews the revised article and the AI quality report
- They make a final decision on:
- Acceptance for publication
- Rejection
- Request for further revisions
- The editorships notify the corresponding author of the final decision

Step 8: Copy Editing and Typesetting (Human)

- If accepted, the article undergoes copy editing and typesetting to ensure consistency in formatting and style

Step 9: Proofreading and Final Check (Human)

- Proofread article is reviewed for errors or inconsistencies
- Editorships verify all necessary corrections made

Step 10: Publication (Human)

- Final accepted article is published in the financial mathematics journal, both online and in print (if applicable)
- Journal is disseminated to subscribers and the article is made available on the journal's website

CONCLUSION

As AI continues its revolution in financial mathematics, editorships must evolve accordingly for best practice. This research envisions an AI-driven editorial ecosystem where human expertise converges with artificial intelligence as the future prospect of publishing on the subject. Future studies should explore AI explainability, transparency and ethical considerations to ensure responsible innovation. The needed frameworks that sharpen the future are proposed and discussed. Future insights and developments along the line should prioritize AI clarity, clearness and ethical considerations to guarantee responsible innovation in scholarly publishing in financial mathematics.

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REFERENCES

1. Kadaifci, C., E. Isikli and Y.I. Topcu, 2025. Fundamental problems in the peer-review process and stakeholders' perceptions of potential suggestions for improvement. Learned Publ., Vol. 38. 10.1002/leap.1637
2. Arumugam, A., P. Mehta and G.D. Baxter, 2020. Double-blind peer review of manuscripts: Opportunities, challenges, and way forward. Phys. Ther. Rev., 25: 1-6.
3. Huisman, J. and J. Smits, 2017. Duration and quality of the peer review process: The author's perspective. Scientometrics, 113: 633-650.
4. Aarssen, L.W., 2016. Three common sources of error in peer review and how to minimize them. Ideas Ecol. Evol., 9: 40-43.
5. Wang, Z., Y. Chen and W. Glänzel, 2020. Preprints as accelerator of scholarly communication: An empirical analysis in Mathematics. J. Informetrics, Vol. 14. 10.1016/j.joi.2020.101097.
6. Björk, B.C. and D. Solomon, 2013. The publishing delay in scholarly peer-reviewed journals. J. Informetrics, 7: 914-923.
7. Pethig, F. and J. Kroenung, 2023. Biased humans, (un)biased algorithms? J. Bus. Ethics, 183: 637-652.
8. Munoko, I., H.L. Brown-Liburd and M. Vasarhelyi, 2020. The ethical implications of using artificial intelligence in auditing. J. Bus. Ethics, 167: 209-234.
9. Bahoo, S., M. Cucculelli, X. Goga and J. Mondolo, 2024. Artificial intelligence in finance: A comprehensive review through bibliometric and content analysis. SN Bus. Econ., Vol. 4. 10.1007/s43546-023-00618-x.
10. Andreu, L., L. Ferruz, J.L. Sarto and L. Vicente, 2007. FIAMM return persistence analysis and the determinants of the fees charged. Span. J. Finance Accounting, 36: 689-706.
11. Creamer, G., 2012. Model calibration and automated trading agent for Euro futures. Quant. Finance, 12: 531-545.
12. Wanke, P., M.A.K. Azad, C.P. Barros and M.K. Hassan, 2016. Predicting efficiency in Islamic banks: An integrated multicriteria decision making (MCDM) approach. J. Int. Financ. Mark. Institutions Money, 45: 126-141.
13. Callegaro, G., C. Fontana, M. Grasselli, W.J. Runggaldier and T. Vargiolu, 2024. Recent advances in mathematical methods for finance. Ann. Oper. Res., 336: 1-2.
14. Azevedo, B.F., A.M.A.C. Rocha and A.I. Pereira, 2024. Hybrid approaches to optimization and machine learning methods: A systematic literature review. Mach. Learn., 113: 4055-4097.
15. Teng, J., 2024. A hybrid approach of deep learning to forecast financial performance: From unsupervised to supervised. Syst. Sci. Control Eng., Vol. 12. 10.1080/21642583.2024.2305411.
16. Faris, H., M.A. Hassonah, A.M. Al-Zoubi, S. Mirjalili and I. Aljarah, 2018. A multi-verse optimizer approach for feature selection and optimizing SVM parameters based on a robust system architecture. Neural Comput. Appl., 30: 2355-2369.
17. Ahmed, S., M.M. Alshater, A. El Ammari and H. Hammami, 2022. Artificial intelligence and machine learning in finance: A bibliometric review. Res. Int. Bus. Finance, Vol. 61. 10.1016/j.ribaf.2022.101646.
18. Ahmed, A., A. Al-Khatib, Y. Boum, H. Debat and A.G. Dunkelberg *et al*., 2023. The future of academic publishing. Nat. Hum. Behav., 7: 1021-1026.
19. de Moor, L., P. Luitel, P. Sercu and R. Vanpée, 2018. Subjectivity in sovereign credit ratings. J. Banking Finance, 88: 366-392.
20. Hu, Y.T., R. Kiesel and W. Perraudin, 2002. The estimation of transition matrices for sovereign credit ratings. J. Banking Finance, 26: 1383-1406.
21. Aguinis, H. and S.J. Vaschetto, 2011. Editorial responsibility: Managing the publishing process to do good and do well. Manage. Organ. Rev., 7: 407-422.
22. Rynes, S.L., J.M. Bartunek and R.L. Daft, 2001. Across the great divide: Knowledge creation and transfer between practitioners and academics. Acad. Manage. J., 44: 340-355.

23. Schminke, M., 2009. Editor's comments: The better angels of our nature-ethics and integrity in the publishing process. Acad. Manage. Rev., 34: 586-591.
24. Hadan, H., D.M. Wang, R.H. Mogavi, J. Tu, L. Zhang-Kennedy and L.E. Nacke, 2024. The great AI witch hunt: Reviewers' perception and (Mis)conception of generative AI in research writing. Comput. Hum. Behav.: Artif. Hum., Vol. 2. 10.1016/j.chbah.2024.100095.
25. Lee, M., P. Liang and Q. Yang, 2022. CoAuthor: Designing a Human-AI Collaborative Writing Dataset for Exploring Language Model Capabilities. CHI '22: Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems, April 29-May 5, 2022, Association for Computing Machinery, New York, United States, pp: 1-19.
26. Baruch, Y., 2008. Opening the Black Box of Editorship: Editors' Voice. In: Opening the Black Box of Editorship, Baruch, Y., A.M. Konrad, H. Aguinis and W.H. Starbuck (Eds.), Palgrave Macmillan, London Borough of Camden, ISBN: 978-0-230-58259-0, pp: 209-222.
27. Zedeck, S., 2008. Editing a Top Academic Journal. In: Opening the Black Box of Editorship, Baruch, Y., A.M. Konrad, H. Aguinis and W.H. Starbuck (Eds.), Palgrave Macmillan, London Borough of Camden, ISBN: 978-0-230-58259-0, pp: 145-156.