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METHODOLOGICAL CONSIDERATIONS ON MEASURING THE EFFECTS OF AI USAGE IN FINANCIAL REPORTS

1. Introduction

The emergence of generative AI (GenAI) tools such as ChatGPT, Claude, and Gemini is reshaping the production of financial disclosures. Particularly in Management's Discussion and Analysis (MD&A) sections of annual reports, GenAI is increasingly deployed to generate or support narrative content. This trend raises important methodological questions for researchers interested in the capital market implications of financial communication: how can we meaningfully measure the effects of AI usage on investor reactions?

This paper contributes to the emerging literature on AI in financial reporting by outlining conceptual and methodological challenges in isolating the impact of GenAI-assisted disclosures. The focus lies on short-term investor reactions, measured typically through abnormal stock returns around disclosure events. We argue that while the application of machine learning tools to detect GenAI usage and conventional event study methodology are promising, several assumptions require critical scrutiny.

2. The Nature of AI-Assisted Disclosure

Narrative disclosures such as MD&A provide qualitative context to financial performance and strategic outlook. Traditionally authored by senior management, these texts serve not only to inform but also to signal competence, judgment, and credibility [5]. The integration of GenAI changes this dynamic. It introduces a layer of algorithmic intermediation in disclosure authorship, which may alter investor perceptions independent of textual content.

Empirical studies on text characteristics have long established the importance of readability (e.g., Flesch Reading Ease Score) and linguistic tone in shaping investor behavior [2,3]. The introduction of GenAI necessitates an additional conceptual distinction: the *provenance* of the text. This notion, though not yet widely operationalized in capital markets research, may constitute a third dimension—alongside content and form—that affects investor trust and market response.

3. Measuring Investor Reactions: The Event Study Paradigm

Short-term investor reactions are commonly assessed through event studies using cumulative abnormal returns (CARs) within defined event windows around the publication of financial disclosures.

Detection models such as Originality.AI [1] offer a probabilistic score for GenAI-generated content based on large language model (LLM) fingerprints. Such models can be used ex post to classify firms or filings according to their likely AI usage. However, unless GenAI authorship is explicitly disclosed—which it usually is not—investors can

only react to its indirect effects: changes in style, structure, tone, or the perceived "flatness" of AI-generated text.

This raises a methodological ambiguity: are we measuring investor reactions to GenAI per se, or to the linguistic consequences it introduces? While regression-based approaches can test for associations between GenAI usage scores and CARs, the interpretation of such relationships depends on whether GenAI use is observable or merely latent to the market.

4. Mediation and the Attribution Problem

To address this ambiguity, recent research has adopted causal mediation analysis (CMA) frameworks, which allow researchers to decompose the total effect of GenAI usage into direct and indirect components [4]. The indirect pathway typically operates through mediators such as readability and tone—dimensions known to affect investor processing and market outcomes. The direct pathway, in contrast, captures any residual investor response that is not explained by these linguistic features.

This decomposition allows for more precise interpretation of empirical findings. One critical assumption is that the mediators are causally downstream of the treatment variable (i.e., GenAI usage), and not jointly determined by unobserved firm-level characteristics.

Causal mediation analysis requires careful modeling of both the mediator and outcome equations, as well as sensitivity checks to assess robustness. In the case of GenAI, where detection is probabilistic and usage is rarely disclosed, the very definition of the treatment variable is fuzzy. This makes it difficult to separate the *perceived* from the *actual* use of AI, and undermines the clean identification of investor reactions as either direct responses to GenAI or indirect responses to changes in textual form.

5. Toward a Research Agenda

The issues outlined above suggest a fertile terrain for further inquiry. Future research should first address the role of disclosure transparency in the evolving reporting landscape. As long as GenAI usage remains undisclosed, market participants are left to infer its presence from textual cues—a process that introduces noise and interpretive ambiguity. Experimental studies or field-based evidence on how investors respond to explicit disclosure of AI assistance could clarify whether transparency mitigates or exacerbates negative reactions.

A second promising direction concerns temporal dynamics. As GenAI becomes normalized in corporate reporting, investor expectations and heuristics may evolve. What is initially perceived as inauthentic or opaque may gradually gain acceptance, particularly if the quality and informativeness of AI-generated disclosures improve over time. Longitudinal designs could help uncover whether market reactions reflect transitory suspicion or a more enduring shift in the perceived legitimacy of algorithmic authorship.

Finally, comparative and cross-jurisdictional research could reveal important institutional moderators. Regulatory frameworks differ markedly in how they treat AI in financial communication. Some markets may encourage disclosure of AI usage or even standardize GenAI-assisted reporting, while others may resist automation in favor

of human-authored narratives. Understanding how investors interpret GenAI usage in different institutional contexts will be crucial for developing both firm-level strategies and regulatory guidelines.

In sum, measuring investor reactions to GenAI usage in financial reports is not only a methodological challenge but a conceptual one. It requires researchers to confront new forms of disclosure agency, rethink assumptions about authorship and trust, and develop more nuanced tools for tracing the impact of technology on market behavior.

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ІСТОРИЧНИЙ АНАЛІЗ БАНКРУТСТВА ПІДПРИЄМСТВ

В умовах економічної нестабільності банкрутство є поширеним явищем, що впливає на фінансову систему, зайнятість населення та загальну економічну стійкість країни. Світова практика демонструє, що в бізнесі «прибутковість та банкрутство насправді є двома сторонами однієї медалі». Банкрутство має дуалістичну природу: з одного боку, воно є невід'ємним елементом ринкової економіки, що сприяє вирішенню проблеми із неплатоспроможністю, усуненню неефективних підприємств і перерозподілу ресурсів, а з іншого – його масове зростання може дестабілізувати економіку, зумовлюючи втрати робочих місць, зниження рівня ділової активності та підвищення ризику навмисних та фіктивних банкрутств.

Причини банкрутства можна поділити на внутрішні (неефективне управління, проблеми з ліквідністю, стратегічні помилки) та зовнішні (економічні кризи, законодавчі зміни, форс-мажорні обставини). В Україні