**AIM**

This research paper investigates the application of machine learning (ML) techniques to bridge today’s gap in financial valuation practices. More specifically, it examines the case of the London Stock Exchange Group (LSEG), assessing how ML can contribute to a more comprehensive understanding of the market dynamics and shareholder perception. In fact, the recent Refinitiv acquisition makes it an ideal case study: LSEG’s perceived value is shifting from that of an exchange provider to that of a data player. This shift represents a change in the intrinsic value of the company, and it is complex to analyze and quantify with traditional methods. In this case study, the use of supervised learning algorithms can unlock new insights and provide a more complete analysis on LSEG and its peers.

**GAP**

The financial industry is in a state of constant evolution and, as a result, traditional valuation methods are often unable to capture the complexities and nuances of today's constantly evolving market dynamics. However, new predictive analytics models that can address this issue are emerging. These hold the potential to revolutionize the valuation process, by incorporating larger and more comprehensive data and uncovering hidden patterns that may elude their traditional counterparts. The case this dissertation will focus on is the use of ML techniques to achieve a more accurate valuation of LSEG’s financial position in relation to stock exchanges and financial data providers. In focusing on this example, this paper aims at filling a research gap in how new technologies can be used to asses provide more comprehensive analysis of ever changing financial trends.

**ROADMAP**

This paper begins by considering the limitations and advantages of traditional methods in capturing the full scope of market dynamics. The research then delves into the specific applications of ML techniques and analyses their potential in reshaping current valuation techniques.

Leveraging a vast financial database of multiple public companies, this paper tests several supervised learning models and benchmarks them with traditional methods. The algorithms tested are: linear regression, random forests, gradient boosting and neural networks (considering both shallow and deep architecture). These have been chosen because they are the most frequently used learning models in the literature on financial valuation techniques.

Having established which of these machine learning models can determine a more accurate valuation, the dissertation discusses the implications of these findings in the context of the case study. This paper applies the valuation model to LSEG and the identified peers, in order to ascertain whether the intrinsic value of the LSEG stock aligns more closely with data provider companies or exchange provider companies.

In its final section, this dissertation explores potential future applications of ML techniques in the broader context of financial valuation beyond the case of LSEG. While this case study presents some limitations, in fact, it still opens the door for valuable further research and discussion in the field.

**METHOD**

To achieve its objectives, this paper adopts the Microsoft Team Data Science Process (TDSP) methodology developed by Microsoft (Costa and Aparicio, 2020). This is an iterative and agile methodology that deploys predictive analytics solutions for decision making.

The data science lifecycle is composed by five mayor stages being: Business Understanding, Data Acquisition and Understanding, Modeling and Deployment. This methodology imposes an exercise of continuous research and discovery enabling the paper to reach broader findings and deploy tangible results.

This standardized methodology grants clarity and reproducibility, by ensuring robust data lineage. It does so by tracking data from its original source through each transformation, thus ensuring the integrity and traceability of the information used in this research. Moreover, the TDSP’s iterative approach implies regular re-evaluation and fine-tuning of models and hypotheses, therefore ensuring that the research stays adaptable and responsive to emerging insights from the data. Lastly, the TDSP’s emphasis on comprehending business implications and fostering stakeholder involvement ensures that the research remains aligned with real-world needs and be conveyed to a corporate audience.

In conclusion, the TDSP methodology has been chosen because it can increase the research's potential for robust results, tangible application, and broader impact.

**CONTRIBUTION**

This research seeks to provide insights into the extent to which predictive analytics can enhance the valuation process in the financial industry. In doing so, it contributes to bridging the gap between the evolving financial industry and traditional valuation practices. The London Stock Exchange Group serves as a compelling case study, demonstrating the practical implications of ML-driven valuation and its potential to enhance decision-making in the financial industry.

Moreover, this dissertation strives to highlight the synergetic relationship between academic research and industry, advocating for increased collaboration between the two to yield mutually beneficial outcomes. By fostering and harnessing research findings, the industry can drive innovation and enhance its operational efficiency. Conversely, real-world challenges posed by industry can steer academic research towards addressing practical problems, hence contributing the advancement of both domains.

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**Abstract**

This research paper presents a novel exploration of machine learning (ML) techniques to address the present discrepancy in financial valuation practices, focusing on the London Stock Exchange Group (LSEG). Current methods often fail to capture the intricate nature of evolving market dynamics, an issue that could be resolved with innovative predictive analytics models. By implementing supervised learning algorithms such as linear regression, random forests, gradient boosting, and neural networks, this study seeks to provide a more accurate valuation of LSEG’s financial position and a comprehensive understanding of shifting market trends.

The methodology employed follows the Microsoft Team Data Science Process (TDSP). This framework facilitates regular re-evaluation of models and hypotheses, making the research adaptable and responsive to emerging insights from data analysis. This iterative and agile approach enables a structured path for research and discovery, delivering tangible results while ensuring data integrity and traceability.

In its scope, the paper assesses the advantages and limitations of traditional financial valuation methods and analyzes the potential of ML techniques in improving these processes. The analysis is performed on a diverse database of public companies, comparing the performance of several supervised learning models to traditional methods. Moreover, the practical implications of these findings are discussed using LSEG and its peers as a case study. This investigation concludes by exploring future applications of ML in financial valuation and advocating for a more vital link between academic research and industry for mutual benefit.

This study seeks to bridge the gap between the complex nature of the financial industry and traditional valuation practices, promoting better integration of ML and predictive analytics in valuation models and processes. The results from this research hold the potential for a significant impact on the financial industry, driving innovation and enhancing operational efficiency.

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