BUDAPESTI CORVINUS EGYETEM
CORVINUS INSTITUTE FOR ADVANCED STUDIES

Activity summary of CIAS research fellow in Budapest

Grant category: ☒ junior ☐ senior ☐ non-resident senior

Name: Partha S Mohapatra
Home institute (name, position, country):
California State University, Sacramento
Associate Professor, USA

Academic Year / Semester: AY 2023

Duration: 3 months

Project title:
Project# 1. Role of Machine Learning in Auditing (Solo).
Project# 2. Use of Data Analytics among audit firms in Hungary, and its implications for accounting education (with co-authors, Tarpataki Eleonóra and Lakatos László Péter)
Project# 3. Creating a successful pathway for students with disabilities in accounting profession (with co-author Farkas Jácint)

Project description*:
Project#1. This project is part of the stream of research that I am following on use of machine learning in accounting. In this paper, I delve into the central significance of Machine Learning (ML) within auditing and the vast research horizons it uncovers. While direct literature specifically investigating ML's role in auditing is limited, there exists substantial content within the accounting realm that underscores ML's burgeoning impact, notably in areas such as financial fraud detection, credit risk prediction, and the enhancement of accounting estimates. This paper synthesizes ML

literature across diverse accounting sectors, examining it through an audit-centric perspective. Additionally, the paper proposes potential directions for further exploration of ML in the context of auditing.

Project#2. The global auditing standard setter, the IAASB, is keenly aware of the transformative impact of data analytics on the audit profession. Audits historically transitioned from manual methods to risk-based approaches due to evolving business environments, complex transactions, regulations, and technological limitations. Today, the surge in digital data and advanced analytics tools is reshaping business models and stakeholder expectations, driving auditors to adapt. Data analytics can improve audit quality by providing deeper insights into larger data populations, enabling better risk-based testing. It aids auditors in understanding entities more effectively, emphasizing patterns, deviations, and inconsistencies. However, while technology amplifies the human element, challenges persist. The adoption of these modern analytical techniques signifies a shift from traditional audit methods, optimizing the accuracy, efficiency, and comprehensiveness of audit processes. Such a transformation not only increases the value proposition of audit services but also introduces challenges and demands in terms of skills and knowledge. As a result, there's a pressing implication for accounting education in Hungary. Institutions need to reevaluate and update their curricula to ensure that future accountants and auditors are well-equipped to harness the power of data analytics. This entails a more holistic educational approach, blending traditional accounting principles with courses on data analytics tools, techniques, and their practical applications in the audit realm. By doing so, Hungarian accounting education can produce professionals ready for the evolving demands of the modern audit landscape. Our project is an attempt in that direction.

Project#3: Several historical studies in accounting literature, led by scholars such as Kirkham and Loft (1993), Leman and Tinker (1987), and Tinker and Neimark (1987), have delved into the marginalization of minorities in the accounting field, spotlighting the challenges and inequalities they face. Despite persons with disabilities (PWDs) being the world's largest minority group, research in their role in accounting is sparse. Accounting, largely an intellectual field, can accommodate most physical disabilities with the right provisions, making it a potential fit for PWDs. The benefits of hiring individuals with disabilities are evident, but the profession has seen low attraction from students with visible physical disabilities. This paper aims to uncover barriers PWDs face in accounting education, gauge the support from educators and firms, and strategize ways to boost their representation in the accounting workforce for greater diversity.

Achieved result(s)*:
Project#1. Revising the paper to be submitted to a journal. It will be submitted by end of Oct-2023
Project#2. Survey prepared on Qualtrics, and data collection in progress
Project#3. Interviews with accounting students with disabilities were conducted, and paper writing is in progress.

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Connected publications*

1.
Title: Role of Machine Learning in Auditing: Evidence from literature
Date of submission/acceptance/publication:
Journal: International Journal of Auditing
Journal category (if applicable): ☐ Q1 ☒ Q2 ☐ Q3
Status: ☐ accepted/published ☐ in progress ☒planned

2.
Title: Incorporating data analytics in accounting education in Hungary
Date of submission/acceptance/publication:
Journal: Issues in Accounting Education
Journal category (if applicable): ☐ Q1 ☐ Q2 ☒ Q3

3.
Title: Creating a successful pathway for students with disabilities in accounting profession
Date of submission/acceptance/publication:
Journal: Journal of Accounting Education
Journal category (if applicable): ☐ Q1 ☐ Q2 ☒ Q3
Status: ☐ accepted/published ☐ in progress ☒planned

Professional collaborations, partnerships*

1.
Name: Lakatos László Péter, Professor
Institution: Corvinus University
Field of research: Auditing
Future plans for joined research: Ongoing research on “Incorporating data analytics in accounting education in Hungary”

2.
Name: Tarpataki Eleonóra
Institution: Corvinus University
Field of research:Auditing
Future plans for joined research: Ongoing research on “Incorporating data analytics in accounting education in Hungary:

3.
Name: Farkas Jácint
Institution: Corvinus University
Field of research: Philosophy and Accessibility studies
Future plans for joined research: Ongoing research on “Creating a successful pathway for students with disabilities in accounting profession”

4.
Name: John Goodwin, Professor
Institution: Corvinus University
Field of research: Auditing
Future plans for joined research: Collected partner names for research on “Cultural differences among audit partners, and its impact on audit quality”.

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5.
Name: Andras Ocsai
Institution: Corvinus University
Field of research: Ethics
Future plans for joined research: Plan to research on ethics and machine learning

Additional activities* (public lectures, presentations, professional meetings, media connections etc.):
1. Made a presentation to Accounting doctoral scholars and faculty on the topic: *Data Analytics & Machine Learning in Accounting: Research Opportunities***

Future plans, planned return (if any):
☒ I plan to return to Hungary later
☒ I plan to maintain my professional contacts via e-mail
☐ Any other comment:

****Presentation on Data Analytics & Machine Learning in Accounting: Research Opportunities**

In my presentation, the significance of Data Analytics and Machine Learning in the realm of accounting and their corresponding research opportunities were discussed. The talk covered the adoption of basic techniques like Benford's Law and Fuzzy Matching, the use of analytics by institutions like the SEC, and the evolving exploration of Machine Learning in auditing, with an emphasis on three core research themes. Additionally, the integration of behavioural studies into Machine Learning, instructional necessities for accounting students, the utilization of imagery data, and the idea of a future video audit were outlined. The presentation also delved into the potential of big data in auditing, stating its value as a predominantly external source that minimizes managerial manipulation. Examples of big data usage included GPS data serving as a robust alternative to traditional shipping documents. The power of text analytics was further showcased through the analysis of financial statements to gauge sentiment using established dictionaries. By tracking sentiment shifts over time, analysts can make more informed market decisions. The talk highlighted text fraud analytics, which through the analysis of textual communication patterns, can reveal underlying fraudulent motivations. A case study showed how analysing e-mails using pre-determined keywords tied to different fraud categories can provide insight into fraudulent activities. I also explained the SEC's use of text analytics to detect inconsistencies in the "Management Discussion & Analysis" sections of annual reports was mentioned, underscoring the system's ability to flag potential risks based on linguistic patterns.

I also presented potential research questions that delve into the integration of Machine Learning (ML) into accounting and auditing. Key questions explore whether ML usage by internal auditors can reduce external audit fees, if earnings quality improves with ML's detection of anomalies in financial reporting, and whether ML-enhanced financial departments provide better estimates. A concerning observation is auditors' tendency to value human advice over computer-based suggestions, even if they align (Commerford et al., 2020). The application of ML models, especially those developed using US data, necessitates caution in regions like Europe

and particularly the Netherlands. Data imbalances, as observed in credit risk classifications, pose challenges. There's a keen interest in predicting specific fraud types and accounting estimates using ML.

The educational perspective in my presentation emphasized the need to acquaint accounting students with ML algorithms, favouring a low-code approach to minimize the focus on programming syntax. This initiative foresees a collaboration between ML experts and auditors. The surge in Natural Language Processing (NLP) capabilities and vast textual data has boosted accounting studies using textual analysis. Upcoming accounting doctorates will need proficiency in textual analysis, as noted by Bochkay et al. (2023).