

The Impact of Artificial Intelligence on Accounting: A Topic Modeling Investigation of Digital Transformation and Emerging Technologies

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Abstract: The rapid evolution of artificial intelligence (AI) and digital transformation is reshaping traditional accounting practices, necessitating a deeper understanding of its implications. This study employs topic modeling techniques to investigate how AI-driven technologies influence modern accounting, particularly in cost accounting and financial management. By analyzing academic literature and case studies, the research explores the adaptability of the accounting profession to emerging technologies, the potential benefits and challenges of AI adoption, and its impact on decision-making accuracy. Findings suggest that AI enhances efficiency, accuracy, and predictive capabilities but also presents challenges related to implementation, ethical concerns, and workforce adaptation. The study contributes to the ongoing discourse on AI's role in accounting by offering insights into the evolving landscape of digital transformation in the field.

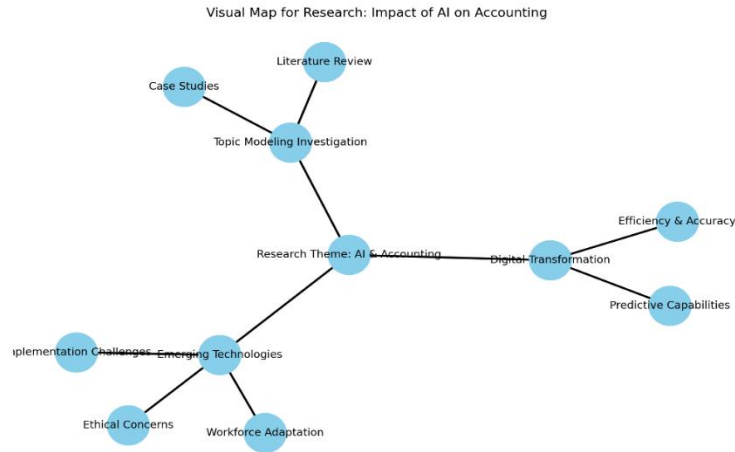
Keywords: Artificial Intelligence, Accounting, Digital Transformation, Topic Modeling, Cost Accounting, Financial Management, Decision-Making, Emerging Technologies, Automation, AI in Accounting.

1 Introduction

The field of accounting currently serves a significant role in the endeavors of organizations since business enterprises, nowadays, must pay close attention to financial management in order to remain competitive. Remarkable advancements have been implemented in computer technology, including artificial intelligence ('AI'), in recent years. The Diebold supervision, and to evaluate the overall relevance and importance of AI in the accounting field in the foreseeable future (Jaslove, 2017). In light of the fundamental points contained in the document that is intended to be analyzed, a particular concern would lie in the foreseeable impact brought about by such revolutionary technologies on modern accounting.

Two topics: "The Rise of Artificial Intelligence: An Analysis on the Future of Accountancy" and "Assessing Digital Transformation of Cost Accounting Tools in Healthcare" were chosen, which concentrates on the research questions, methods, data sets, and results. In principle, the Diebold opinion suggests the importance of adaptability as regards the accounting field due to the rapid advancement of associated computer technologies. From a perspective focusing on the knowledge of cost accounting tools, the aforementioned topics would further aim at understanding the potential benefits and challenges brought about by the adoption of these technologies. In order to gain a further

understanding of such matters, a broader investigation would be carried out on a number of randomly selected related summaries from academic journals (Antoaneta Vărzaru, 2022). In addition to theoretical concerns, practical questions would revolve around how to apply the knowledge learned from such analyses to properly handle the potential cost accounting issues that would arise for a future practicing professional. From a theoretical point of view, the implication question further outlines the expected leap beyond the traditional functions of AI while touching upon the possible impact of AI on the accuracy of decision-making in accounting. (Challoumis, 2024)



1.1. Background and Rationale

As of 2019, “accounting and auditing” is the eighth most threatened field of work due to the rise of artificial intelligence (Andersen, 2019). The other nine most threatened jobs are taxi drivers, couriers, receptionists, telemarketers, factory workers, salesman, haircutters, factory workers, and fast-food workers. Working as a professional in a threatened field, however, it is clear, how can it be much easier than doing jobs such as cashier or hairdresser can be resolved by robots. Nevertheless, like everything else, accounting is changing as the current system is replaced by its modern versions. It can be clearly seen that, like the rest of the fields considering the influence of globalization and neoliberal reforms, accounting field has been reshaped in accordance with this understanding. From now on, accounting has to be examined with its new dimension, as in recent years, it became under the influence of artificial intelligence.

The nature of information production, dissemination, and consumption in the accounting field is likely to change. Accountants cannot provide accurate competition advice for their customers only by finding out the costs of producing the goods and services they sell these days. In short, we need to soothe effectiveness, which means seeing the big picture and understanding what is happening in interconnected events. Of course this results in an increase in workloads, on the other hand, it necessitates accountants to be at a global

standard rather than a regional accounting standard. On the other hand, in this conglomerate world it is not so easy to run operations at this level. (Hasan, 2021)

1.2. Research Objectives and Questions

Responsible by the development of critical information, expert systems and artificial intelligence are gradually permeating into the various activities' organizations must undertake for their operation and management. Accounting professionals occupied with auditing services, tax advice or consulting firms are catching on as most affected by such developments (Jaslove, 2017). However, organizations are exploring the scope of applying advanced ICT tools on applicative or even basic processing activities of accounting. Furthermore, investment and asset management firms dominated by financial accounting undertakings may be equally affected.

The following research is intended to provide useful insights on AI technologies impact on accounting services and sector through a topic modeling investigation. Research is conducted using the method of topic modeling techniques, in order to identify the most important topics which provide the potential of affecting accounting services sector through the adoption of AI technologies. Additionally, the changes in their respective importance over time are analyzed, while the diffusing pattern of such topics is examined as well. The main intention and expected outcome of the present work is to define important elements that influence the potential establishment of the diffusion of AI technologies while illustrating the major fields these technologies are expected to affect, with the question of organizational operation strategies lying in the epicenter (Antoaneta Vărzaru, 2022).

2 Literature Review

The historical evolution of accounting has experienced an ever-changing landscape within its general and more operational elements. The effects of financial globalization and the emergence of various business models create a quickened pace of business transactions and government regulation. Not confined to this sector, a massive shift transitioning from labour-intensive delivery to digital service is also palpable. Under the above context, Disruptive technologies, Data, and Intelligent platform, have shown a great potential to generate valuable accounts and accelerate the transformation within accounting. Background Enterprises record their investments, revenues and costs, which are all classified and summarized in the accounting system. After that, financial reports are generated to offer both internal and external an understandable and assessable look of an enterprise's operations and performanc (Omar, 2023)e. With the arrival of globalization and the ubiquitous computing environment, however, accounting practices have evolved strikingly, which were namely the financial accounting, management accounting and the auditing. Although the basic theory of double entry bookkeeping has existed for centuries, the profession of accounting has rapidly displayed a increasing trend of complexity in light of both describing and appraising the ever-changing transactions. Rather than simply focusing on the computation of economic accounts, numerous standards, legislations and reporting requirements involving accounting practices have evolved to disclose the firms' financial status and integrity (Antoaneta Vărzaru, 2022). Meanwhile, waning are the days when accountants operate with ink, paper, and ledger books. The development of computerised accounting system has vastly simplified the book-recording work. Instead of

hand-operated cash or processing statements manually, fragmented and repetitively working, personal computer programs have took the weight off the accountants in tedious and mechanizing procedures.

2.1. Historical Evolution of Accounting

Accounting has seen continuous evolution from historical mensuration in ancient Mesopotamia to today's blockchain implementations in financial statement assurance. This evolution reflected both the development and regulation of business and the changing social and cultural environment. It has also been influenced by wars, the Industrial Revolution, and the passage of regulation. The 1870s also saw the first instances of accountancy ventures of professional certification boards. The paper compare multilingual education in liberal arts colleges before and after certification. The historical development of accounting has had a reflecting-in-action effect on both the growth and regulation of business after WWII. (Heidari et al., 2022)

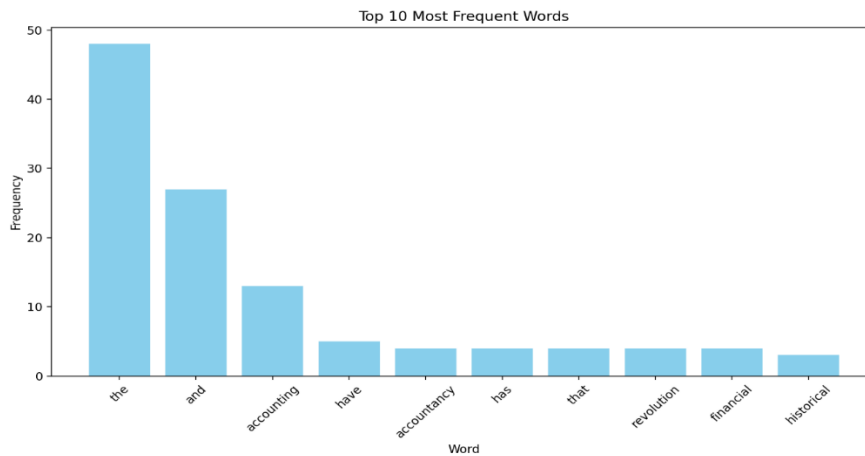
Until the World Wars, single-entry accounting informed individuals in early society while Venetian double-entry accounting inspired businessmen starting from the start of the capitalist era in the West. The Industrial Revolution in the 18th and 19th century informed technicians, prompting the 19th century construction of national accountancy frameworks and the transformation of accountancy into a separate degree-led profession. The 20th century saw computerization and global trade, resulting in the development of International Financial Reporting Standards. With the recent rise of fintech and cryptocurrencies, some the Big 4 auditor firms have also seen the need to reconsider the underlying assumptions of financial statement assurance (Andersen, 2019).

2.2. Artificial Intelligence in Accounting

The last few years have seen the engagement of AI as a distinct and innovative progression covering a wide range of new systems in all aspects of the industry. In the context of digital transformation revolution as a broader phenomenon impacting firms in general, various emerging technologies are investigated likewise artificial intelligence, Business Intelligence, Blockchain, Robotic Processing Automation and Internet-of-Things. Including its tools and software, in industry that have been utilized to improve accounting automation, processing and workflow efficiency it is argued that a broad based innovative explosion in the array of applications within accounting is already having or will have in the short- to medium-term a transformative impact on the shape of the profession. (Alao et al.2024)

Given the prevailing digitization revolution in data handling within accountancy and the broader economy with the rapid recent convergence of historically discrete sectors including banking, insurance, audit and consulting, the contribution attempts to cut through the hype surrounding it and instead unpack what is really going on including various implementation and operational challenges arising for practitioners and consideration of the resulting new uncertainties in respect of ethical matters (Antoaneta Vărzaru, 2022). In turn, a number of real world examples of such digital transformation in terms of AI utilization in the context of recent developments within accounting firms are discussed. What is the wider evidence of investigative journalism and empirical research uncovering the dark side of AI technologies' potential for misuse and whether an already disreputable industry such as accounting as a gatekeeper can even be expected to safe-guard adequate standards given the excellent fit of profit motive and technical expertise?

Until around the early 2010s it was possible to argue that the literature on AI in relation to accounting was relatively sparse in comparison to AI applications in economics, finance and management more widely, and that the specific technology speak of accounting implications was limited to expert audiences (Jaslove, 2017). Since then, however, there has been a measurable increase in the salience of these issues in connection to progressing technological changes and with a growing presence in the mainstream media these matters are practically ubiquitous, if often limited to somewhat sensationalized accounts of robots and algorithms ‘taking over’ (financial) work. An accounting software providing data insights since it is an AI system. The data is displayed on dashboards using KPIs, key performance indicators, and using these KPIs managers have the ability to make smarter decisions about, for example, sales.



2.3. Digital Transformation in Accounting

This subsection of the review is dedicated to the digital transformation in accounting, which is understood as a fundamental process that leads to widespread changes in accounting practices through the adoption and exploitation of digital technologies. The digital transformation of accounting is seen as a key development and a new market. Although relevant studies are limited regarding this specific issue, the already available reports, market research, and press releases suggest that the accounting industry is at a tipping point, that is, on the verge of deep transformation driven by digitalization.

Following the broad changes that digital transformation is making to the world, the accounting industry is also modernising its way of operating. The accounting sector in the USA has evidenced a rapid shift from traditional processes to digital practices. For instance, 2022 is anticipated to witness a 90% increase in the employment of accountants, bookkeepers, and auditors specializing in digital processes. Parallel to these developments, factors like the constant advancement of cloud-computing technology transforming the way financial transactions are processed, as well as the ever-increasing role of data analytics, are shaping the future of the accounting industry.

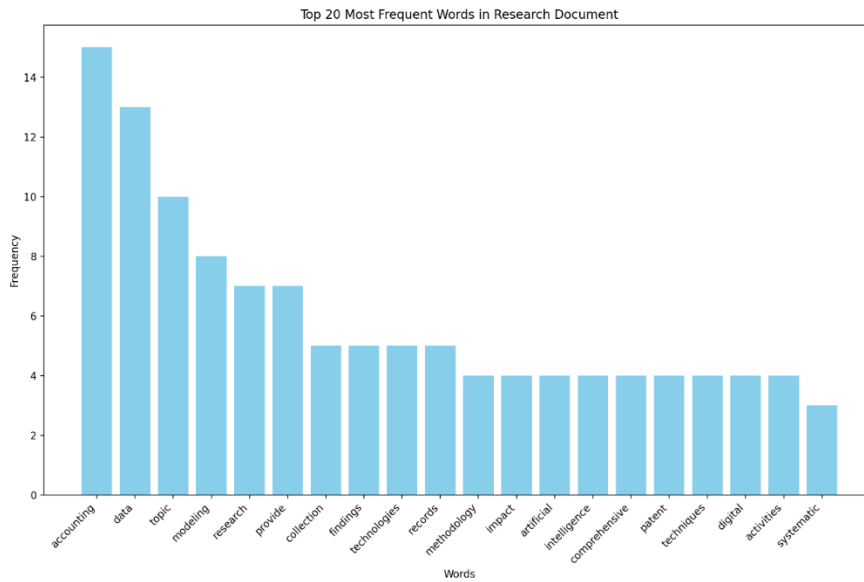
This shift from manual to digital practices is echoed by the experience of accountants. Firm owners feel that client interactions, as well as the delivery of services, are becoming

increasingly digitalised. Also, factors like the automation of certain tasks and the availability of more data (and the means to manipulate data) installed a more data-driven decision-making process in firms (Antoaneta Vărzaru, 2022). In this environment, it is seen as paramount that accountants embrace technologies and acquire a new set of competencies in the digital domain. However, the plethora of digital solutions available is almost overwhelming. Aiming to delimit this issue, the odasee Lighthouse proposes that discussions on digital transformation are limited to research automation, data analytics, and the online bookkeeping application.

3 Methodology

This section describes the methodology adopted for the investigation of the impact of artificial intelligence on accounting. First, the research design is outlined, together with the systematic approach employed. A description of data collection methods is then provided. To achieve reliability of the findings, it details the way raw data are systematically collected for one year, between July 2018 and July 2019. To ensure the validity of the findings, a comprehensive explanation of data preprocessing is offered. This includes the tabulation of patent documents into texts, stemming and the removal of stop words, infrequent terms and non-words. Second, to prepare the raw data for analysis, the Latent Dirichlet Allocation algorithm, the Latent Semantic Indexing method and the Non-negative Matrix Factorization approach are employed to generate several topic models for each data collection exercise. Comprehensive data logging is described to provide transparency regarding data processing. Third, different topic models provide an avenue to investigate the robustness of patterns and themes identified from the patent data.

This section represents a methodological explanation of the methodology to explore the impact of artificial intelligence on accounting using topic modeling. The research enquiry hinges on the systematic exploration of digitization and three specific areas of technology as embodied in patent documents. Topic modeling techniques, which can provide a way to identify patterns and themes latent within quantitative data, are hence applied. Given the increasing popularity, numerous researchers have devised and disseminated a range of topic modeling techniques. There is thus a need for a discussion of the metrics devised for the evaluation of the outcomes produced in the process of examining patent documents (Hannigan (Tim) et al., 2019). Through the detailed explanation of the methodology, transparency and reproducibility of the results and findings are enhanced. This provision also serves as a validation of the scientific rigor underpinning the findings emerging from the outputs and outcomes of the topic modeling studies.

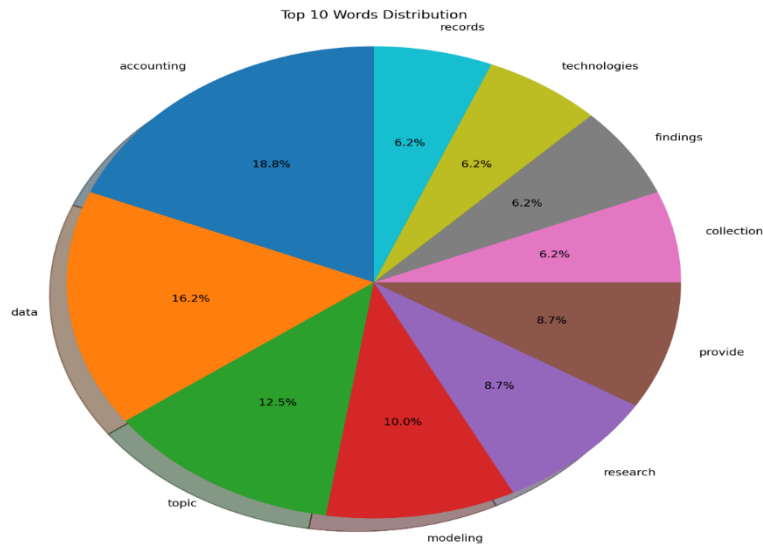


3.1. Data Collection and Preprocessing

Amidst the popular discourses on artificial intelligence (AI) related to financial markets, healthcare, and climate change, the influence of AI on accounting is relatively less-discussed. This gap is particularly critical given that more and more standardized and routine accounting tasks are taken over by emerging technologies. Thus, this study leverages topic modeling to provide a comprehensive overview of current debates and investigations of AI’s impact on accounting. This paper clarifies this theme by collecting academic literature on “AI and accounting” or “accounting digitalization”, with the purpose of systematically reviewing the research landscape. A total of 64 academic journal articles are included, and the preparation process requires data collection and pre-processing, topic modeling, and assignment and naming of the topics. The findings reveal that accounting firms pay more attention to the protection of business secrets, accounting students focus on getting well-educated, and accounting regulators are facing a coherent digital era.

The digital transformation is turning records and archives into data. In consequence, automation in the form of AI techniques is increasingly applied to scale traditional archival activities and to experiment with novel ways to capture, organize, and provide access to records (Colavizza et al., 2021). Though years of high-level conferences, workshops, and, increasingly, joint research projects, the archival community has started an intense debate with respect to the opportunities and challenges brought about by AI in archives and recordkeeping. On the one hand, worldwide large-scale digitization efforts have transformed almost all collection materials of notebooks and index cards into digital data. As a result, more governments and business activities have gradually worked digitally since the mid-1990s. In the best-case scenario, traditional manual appraisal, selection, archiving, and review carefully carried out by the archivists partly ensure that records allow management. On the other hand, existing traditional physical materials, which fill large warehouses, date mainly from the post-war period, and are the sector’s scan volume methods only at the beginning of the bridge, precluding any systematic “comprehensive

review” of the prior written conditions. At the same time, however, more and more records are maintained in dissimilar formats, including emails, databases and cloud storage, and new-born digital records are increasingly submitted to institutions of the archive. As a result, practices that have taken place across the industry and history are becoming more unwieldy and manual processes may break down.



3.2. Topic Modeling Techniques

This subsection outlines the main concepts of various techniques employed in the study. The purpose is to equip accounting researchers with a conceptual understanding of the relevant techniques and to elucidate how text analysis can be employed to extract meaningful patterns from large qualitative datasets. Such an understanding is expected to stimulate the application of text analysis techniques to accounting research. Accounting researchers can apply the techniques in examining qualitative data collected from firms’ disclosures. This is critical because firms increasingly use informative non-financial texts for communications, including in the annual reports .

A great deal of data is generated digitally every day, and this ‘big data’ phenomenon has engulfed the accounting field. Bookkeeping software, point-of-sales machines, and online transactions automatically track and record economic activities in businesses. Furthermore, businesses outsource their accounting systems to the cloud. Cloud accounting systems enable accountants to automate most of the accounting processes. These digital technologies dramatically change both the practice and disciplinary boundaries of accounting. On the one hand, automating accounting allows accounts payable and receivable transactions to be processed automatically by machine learning algorithms. On the other hand, accounting firms have developed Artificial Intelligence (AI) platforms. This

AI platform is capable of not only intelligently reading and understanding natural language but also writing reports. For an innovative discipline like accounting, it is critical to keep abreast of the rapid changes due to digital transformation and emerging technologies. Reflecting that urgency, this study aims to gauge how the mainstream accounting research community perceives digital transformation and emerging technology, employing the topic modeling technique.

3.3. Evaluation Metrics

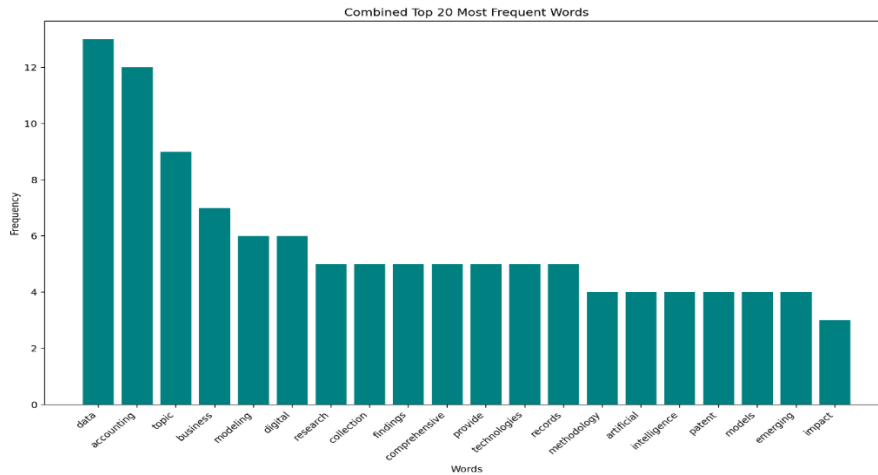
The evaluation of neural topic modeling methods was analyzed (Hoyle et al., 2022) through the critical investigation of 189 topic modeling study conducted on transactional datasets across ten distinct areas of research. The results demonstrate that topic modeling literature predominantly takes a black-box approach to the interpretability of topics and recommends that users of topic modeling methods must exercise an enhanced awareness of the techniques' limitations. The potential consequences for topic modeling validation and implementation are discussed. A well-threaded and intelligent system can help in writing and automating executive summaries for such articles. It may power up the systems that can directly execute suggested changes in accounting software immediately after seeing the audit results. Intelligence can be embedded in such systems as well, so they can read law briefs and simultaneously change the case approach, work on changing the tone of convos with insurance organizations and client companies, and craft approaches in the legal battlefield.

Coherence has been a widely accepted standard for evaluating topics in topic models, which assesses topic-to-topic relationships based on a human-annotated text corpus. Much research on coherence measures is summarized to cover quantitative-based approaches, with a focus on interpretability and user-friendliness. Additionally, network-based metrics and hierarchical topic models are reviewed for comparison. The main goal of this research is to provide individuals with a careful assessment of many different metrics across many topic models. In the wake of this preliminary analysis, labels identifying best practices are created and extended to the application of these techniques in novel environments or use cases.

4 Results and Discussion

Commercial production of the innovative technologies arising from the prevalence of emerging technologies such as blockchain, the Internet of Things (IoT), robotics, and artificial intelligence (AI) is witnessing an unparalleled transformation in contemporary business practices. AI-based systems, in particular, hold the promise of altering business models through promoting “automation, delegation, information processing, parallelism, real-time operation, human-like machine responses and self-organization” (Soni et al., 2019). Indeed, postulating that digital transformation (DT) entails how firms assimilate emerging technologies into their business processes, mechanisms, and models, the article examines how AI technologies shape accounting practices as well as industry dynamics. To this end, a dataset of 2601 articles published between 2016 and 2019 is exposed to topic modelling analysis, revealing and interpreting eight DT and AI topics. Various perceptions and contexts on the adoption or development of digital and AI-based accounting systems are discussed. Moreover, the emergent normative needs to ensure the alignment between

AI assurance services and “clear, comprehensive and understandable” business rules are critically reviewed. It is imperative to break down the rules governing the licensing and conduct of professional accountants in order to amalgamate them with recently proposed AI assurance service standards, enhancing the accessibility and adoption of AI auditing for market users. Finally, through uncovering a significant gap between the various interpretations and extents for AI and business rule compatibility assurance, key insights and paths for future research are outlined.



4.1. Identified Topics

During the analysis, six coherent topics emerged while varying the number of terms per topic and number of topics, using four implementation techniques: Latent Dirichlet Allocation (LDA), stemming, Parts of Speech (POS) filtering, and bigram options. The discussion on the first topic aligns with the implementation of four previously demarcated techniques. The remaining five topics discussed fell into the resulting topic set. Topics were modeled using Latent Dirichlet Allocation (LDA from now on).

First, when accountants are considering new technologies for small businesses, they often explore the tools they currently use. The intent accounting can serve as a supplement for smaller engagements when a single firm’s workflow demands outpace capital resources. By better understanding how AI is likely to be taken up, software providers can design their futures to more deliberately aid the development of public accountancy practices. This can be done with the flexible public-to-public CID funds, which can be earned by clients over time and be dockable by any firm in the platform. Videos to assist have been produced by certified accountancy firms.

Secondly, lenders are interested in financial data analysis. They prefetch accounting data and evaluate its faultiness. Alongside their clients, evaluation performance, business process difficulties, and financial health are evaluated (Hannigan et al., 2019). When preparing to borrow, loans proposed alongside evaluations are given with a health evaluation for targeted improvements. Lenders will come in with specific criterion sets based on evaluations from the AI related to past successful engagements. AI is used to

evaluate the dragged cost of each criterion set, making it easier for a client to quickly recover from a failed loan.

Third, accounting practices work directly with clients on various projects and tasks, some of which include incorporating firms, amending revenue filings, raising revenue, and financial advice. This requires firms to have partially to fully qualified, highly trained professionals. User small-oriented accounting AI competes directly with these practices. Practices often face the choice between discounting the price of a project for the sake of progression or dropping it entirely, as backing out entirely may mean the client will not come back. The cloud public accountancy AI works by firms can earn CID grants by completing a project for a client. As clients pay their accountants on the platform, firms can refund a portion of the fare in the CID form. For completion of tasks, clients also earn discounts for future services. Firms can receive more helpful as they level up.

4.2. Key Findings and Interpretations

The research findings are summarized and interpreted to highlight their potential importance for the professionals and academics. An interpretation is offered to the findings posed in light of the research questions stated at the beginning of the research. The discussion suggests that accountants and accounting educators need to enhance their cognitive adaptability and lifelong learning ability towards the AI technologies, big data, and analytics (Antoaneta Vărzaru, 2022). A critical examination is done on the implications of the findings and their connectedness to relevant literature. Moreover, discussion is extended to the distance between different stakeholders' perceptions and readiness to AI in accounting, laying out potential applications and future trends of AI in accounting practices. A direction is given for further scrutiny into the integration of AI with accounting practices and some suggestions are made as the practical knowledge for preparing the accounting professions prior to the AI implementation.

5 Implications for Practice

This research investigates the digital transformation and the emerging technologies in the accounting domain by analyzing how accountancy has been affected from the rise of the Artificial Intelligence (AI). A natural language processing approach, topic modelling is applied to extract the principal subjects and investigate the relationships behind 47 academic & consultative articles, reports & white papers. The main theme, supervisors can further advise on this piece of research about the inquiring tasks to be approached, and what literature is well-matched or faulty. On the subject matter, falsely theoretical or hands-on, it provides a valuable background, and can steer to the significant focus for a prospective scholar. On the way the research has been designed and theorized and the research methodology applied, it unbosoms the way this investigation is built, and how original ideas, assumptions, and analyses are followed.

The implications of this study can also be valuable for professional bodies and accounting firms. They can steer on the real-world actions of professional accountants, and especially about understanding and managing this fast-evolving domain. More tech-savvy ACCA members realize that AI has already entered the accountancy work to lend professional support for repetitive & cognitive tasks. Manual labour, human capital, are being resorted and continued efforts have been made to innovate & economise the daily

workflow. AI is a supreme method to enhance workflow performance, reinforcing accuracy, operative ability, and efficiency (Jaslove, 2017). Hyper-competition has been escalating. To be forefront, leading firms have pioneered to implant AI. For practitioners, starting by upskilling is an inconsiderable plan. It is recommended to explore this area: the innovative technology, modest evaluation, feasibility, the established effects, the laudable cooperation. Cursory cooperation with suppliers of AI can be considerably beneficial. Traditional practices may be challenged why AI had better be adopted. It is proposed to alter a traditional mindset, grab insights into this emerging tech, and confront the forthcoming change with readiness.

5.1. Technology Adoption in Accounting Firms

Artificial intelligence (AI) is having an increasingly significant impact on accounting as an emerging technology. Accounting firms are rapidly taking up AI technologies to remain relevant in the business environment. Embracing AI, however, is not straightforward. This topic models prevailing issues and identifies future directions. It leads to knowledge on a collective level regarding how digital transformation and emerging technologies, such as artificial intelligence (AI), affect the domain of accounting strategically and as a set event for the future. The amount of digital information globally doubles every two years, and by 2020, it will double every 72 hours. There are a variety of societal trends, including privacy and security concerns, that are driving stricter regulation and governance around data retention and usage. Big Data goes far beyond just data that's Big or that's even data. It encompasses information intermittently structured and unstructured that can be used for competitive analysis. From any reasonable amount of data, one can easily get millions of models (Jaslove, 2017).

But the importance of artificial intelligence adoption to today's businesses still cannot be over-emphasized. The accounting industry is taking full advantage of this technology. This topic discusses AI's impending impact on these accounting topics and how it might relate to possible responses. Consulting clients on this matter may help them be prepared for the inevitable utilization this technology will have on the field and perhaps initiate their continuous training initiatives sooner to remain competitive (Chen, 2019). AI chatbots are now mature around the world as seen with case studies demonstrated in various regions, as well as in national firms of international associates. On the other hand, it cannot be denied that a profession adopting this technology at a late stage also inherited the expertise to mitigate the threats. At least until today, it strategically applied to slow down the AI-Machine profitability loss. However, since a declared "war" from the tech-driven accounting software and system provider, specialized consulting in the field could add substantial value to any company experiencing major difficulties.

5.2. Skills and Training for Accountants

The 21st Century will be marked by how AI (artificial intelligence) is used in all aspects of our lives. Accounting, in contrast to STEM (science, technology, engineering, and mathematics) fields, is not known for incorporating AI into their professional lives. However, AI can be used to automate routine tasks, improve performance, and reduce costs. In an AI work environment interaction between auditors and software robots are predicted. This study investigates themes around auditors and AI by analyzing 195 post-doc papers from accounting, auditing, and interdisciplinary science. Using a topic modeling approach,

eleven key topics are identified including most viewed topics such as data analytics, big data, and accounting. In the analysis of accountants and AI, four main themes are outlined including theme evolution, geographical distribution, key topics, and frontier topics. Informing a discussion of the practical impacts of these trends on accountants, this research forms the basis for further inquiries into the impact of AI on the accounting workforce (Griffin, 2018).

6 Future Research Directions

A detailed investigation on the impact of artificial intelligence (AI) on accounting is still in demand due to the continuous evolvement of AI and its applications in recent years. Although the rise of AI and the Fourth Industrial Revolution (4th IR) does not guarantee future success, business failures are most critical for firms that do not respond to changing technological conditions. It is undeniable that applications of AI have significant transformative effects on accounting and financial reporting practices, firms, regulators, and academics. Indeed, artificial intelligence has been listed as one of the top 10 issues along with 4th IR; and the impact of technological changes on economic, social, and educational structure. As suggests, AI, as a disrupting tool, could enforce business model adaption and changes in tasks, skills, employment, regulations, and ethical considerations. The discussion of AI applications, transformative effects, and implications for accounting practices and research directions may motivate accounting academics, professionals, software developers, consultants, business sector companies, investment and funding organizations, and management representatives to seek decision-relevant tactics and understandings of competitive peers, with the intention of improving decision-making and strategic planning, or avoiding negative situations. In doing so, there is a discussion of both the potential benefits and the expected challenges regarding the adoption of AI by firms in the accounting sector. It remains to be seen if, how fast, and to what extent firms will adopt AI generically or just some specific novel. It is also possible that firm-adoption patterns will inherently differ across peer groups of companies focused on other services such as auditing, taxation, or financial consulting and companies acting as business service users of such companies specialized in external advice or consulting or internal users of their own accounting departments (Jaslove, 2017). This study aims to trace AI adoption by firms in both types of peer groups through online job postings since the onset of the AI hype.

7 Conclusion and Recommendations

Future technology advancements remain unknown; yet, the intelligent question is not resistance, but adaption. Particularly for those professionals in the accountancy field, majority of day-to-day tasks can be assumed as process orientated, fitting a rule or checklist. Technological improvements can aid these tasks. Improved accuracy and efficiency is a given, but with the rate of machine-learning development that is emerging, soon, there will be a new wave of artificial intelligence accountancy.

The purpose of this paper is to explore the transformative impact that AI technologies pose to modern accountancy. By utilizing the secondary analysis of topic modeling and textual analysis, it is identified what the emerging changes will entail. Nine years' worth of peer-reviewed literature on the subject has been computationally analyzed. However, it is

made clear that the full extent of the impact is difficult to measure. It is idne find that there are implications that AI will have on the accountancy profession, the major one being that it will automate the industry. On top of that, there will also be challenges that arise, primarily the need for new regulations, and concerns regarding the ethical use of AI technology. Ultimately, it is entire industry will be reformed and regulatory bodies must take a proactive approach to these changes, rather than reactive. This research significantly contributes rich insights into the implications that AI technologies have on the accounting profession, which has been neglected in the prior literature (Jaslove, 2017). Furthermore, this research employs a wide range of data sources and analytical tools in order to identify topics and trace the evolution of them over time.

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