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RESEARCH ARTICLE

Influence of Technological Acceleration on Accounting Standard Development

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Abstract

Rapid technological change is affecting the context in which accounting standards are created, applied and interpreted. This paper aims to address: • how does rapid technological advancement impacts the development and future of accounting standards. • what are the major disruptive technologies and; • how are accounting standard setters responding to technological disruption, the impact for professional judgment, disclosure, regulation and reporting quality. • are there implications for global accounting standards. The study is an expository narrative review, drawing from literature, books and the publications of accounting standard setting bodies and other relevant authorities. Key transformative technologies include artificial intelligence, blockchain, big data analytics, cloud computing, digital assets and automated financial systems. The review concludes that technology and innovation frequently leapfrog accounting regulatory frameworks and have several implications for regulatory development, classification issues, financial reporting cycles and the increasing call for both disclosure and technical ability. Ultimately, accounting standards will need to be more flexible without sacrificing relevance, faithful representation, comparability and reliability. The research also suggests that new emerging digital transaction guidance, continuous technological monitoring, increased consultation with technology experts, coordination among international regulators, and increased "digital skills of accountants and auditors".

Keywords: Accounting Standards, Technological Acceleration, Digital Transformation, Regulatory Evolution, Accounting Innovation

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1 | Introduction

Historically, accounting developed as a function and reflection of changes in commerce, industry organization, and regulation. Once accounting practices relied on manual bookkeeping entries and periodic reconciliations; but gradually they transformed to be paperless, automated, real-time, and processing great volumes of transactions and create new opportunities and challenges in standard development. Technological change continues to outpace institutional response in regulation. 'Accounting standards' represents the formal framework guiding the recognition, measurement, presentation and disclosure of financial information. This consistency, comparability and verifiability across entities and jurisdictions is important for users of financial reports. But rapid advancements in technology have increased the need to reevaluate if traditional regulatory models still work. Technological acceleration refers to continued and sustained development of digital technologies and infrastructure that reshapes the way businesses process accounting information. Advances like AI, blockchain, and robotics automation have greatly altered accounting information's collection, process and dissemination (Brynjolfsson & McAfee, 2014) making it imperative for standard setters to establish flexible frameworks that do not compromise accounting credibility.

Standard setting generally proceeds through formal institutional processes, involving research, consultation, exposure drafts and discussion with stakeholders. This requires months and years to process through bodies like IASB and FASB in developing and revising new standards and this due process in standard setting generates legitimacy and stability but has resulted in a growing gap between emerging business practices and required standards. The evolution of new financial instruments, digital assets, and automated reporting mechanisms can influence business activity significantly prior to the application of regulation or guidance, as in the case of digital assets and blockchain technology where no standard or specific tax treatment applies to them at present as they cannot 'fit neatly into existing classification like intangibles' and can range from tax to non-tax treatments (Tan & Low, 2019). The influence of AI and data analytics on accounting reporting continues to rise, affecting data governance and the use of algorithmic decision-making as an automated process performing traditional human judgments such as transactions categorization and detecting anomalies (Kokina & Davenport, 2017) with implications for auditing which undergoes similar transformative shifts

through continuous auditing, data extraction and full population analytics impacting reporting and disclosure standards and disclosure presentation.

Meanwhile, the cloud-based accounting system can centralize accounting information to bridge dispersed businesses, yet bring additional challenges of cyber security and data integrity-and therefore reporting integrity largely hinges upon sophisticated data management and IT systems (Appelbaum et al., 2017) rather than rule formulation in addition to accounting standards themselves. The development of large-scale big data analytics involves enormous quantities of both structured and unstructured information thereby questioning how to incorporate data with new characteristics into formal reporting without diluting reliability. The increase in digital connectivity and speed of information exchange further enhances the international dimensions of accounting regulation to increase the comparability of information internationally, although this could affect the ability of companies to respond efficiently as different accounting standards in different countries might still produce reporting inconsistencies even when IFRS contributes to comparability (Ball, 2016). Greater need for accounting expertise and professional competency is now required in terms of analytical, computational, Information technology systems and data governance rather than the traditional accounting knowledge required for account preparation and analysis.

Still, standard setters are urged to find a balance between adaptability and stability, as excessive frequent changes in accounting standards could erode comparability, while slow changes tend to reduce their relevance and connection to current economic substance. Ultimately, developing a standard-setting framework with suitable responsiveness to technology, while maintaining reliable financial reporting remains a primary task.

Objectives of the Study

Broad Objective

The broad objective of this study is to examine the influence of technological acceleration on the development and evolution of accounting standards.

Specific Objectives

The Study Specifically Seeks to

1. Review the key technological changes impacting accounting practice and financial reporting;
2. Review how accounting standard-setters are responding to technological innovation;
3. Explore how such increasing technological speed is shaping accounting practice, professional skepticism, financial reporting quality and regulation; and
4. Explore what such changes mean for the flexibility, resilience and world-wide consistency of accounting standards.

Conceptual Foundations of Accounting Standards and Technological Acceleration

The purpose of accounting standards has always been to communicate the economic reality within financial reports using the frameworks and institutional process that evolved over decades in a relatively stable business context. However, the rapid pace of technological advancement has changed this context of stability by bringing in to the picture digital technologies which can communicate and report tremendous amounts of accounting information with in very less time, to every possible stakeholders. The IASB Conceptual Framework for Financial Reporting describes itself as "a coherent set of principles governing the recognition, measurement and disclosure of information in financial reports, which have the attributes of relevance, faithful representation, comparability, verifiability, timeliness and understandability" (IASB, 2018) none of which would render the principle of conceptual framework invalid under technological advancements, but these are new circumstances under which those principles would need to be applied.

This leads to one of the main questions, namely the question related to traditional nature of financial reports being based on periods like quarters, years, which evolved due to the labour-intensive nature of manual accounting processing as opposed to new modern systems that produce accounting information more efficiently, perhaps even in real time. Vasarhelyi and Halper (1991) had envisioned Continuous Auditing (in which data would be continually monitored for assurance), technological advancements make it more realistic today. But real time reporting brings in regulatory considerations because technical feasibility of information doesn't justify its continuous disclosure without considering the verification aspect and the issue of comparable accounting.

This problem of apply qualitative characteristic with a transformed technology, where AI and big data can easily generate highly relevant data, but highly dependent on modeling aspects of data which are hard to audit by conventional audit means, makes us question the interpretations of relevance and verifiability regarding such implicitly and algorithmically derived accounting information. Similar to the issue of measurement, where technology enables sophisticated estimation of values more due to increase access of real time market data, and such improvement in information technology also has correlation with the development of fair value accounting over last two decades (Barth, 2008).

Finally, intangible assets like data, algorithms, and platforms have a tremendous impact on the economics of the modern business world but there is generally limited recognition in conventional accounting information given to internally generated intangibles. Lev and Gu (2016) are concerned over the widening gap between reported financial figures and the actual value and economics within the knowledge-based businesses that will need standard-setters to further review and account for internal intangibles, and

this makes the debate between principle-based vs rules-based approach. Principle-based standards give more leeway, rules-based standards are very specific and can be antiquated as the use and significance of specific technology becomes outdated.

Overall, the body of literature seems to argue that technology strengthens accuracy, speed and relevance of accounting information but at the same time, in certain cases, the verify ability, classification, and regulatory adaptation processes would likely challenge existing accounting models.

It appears the entire question revolves around the effective adaptation rather than challenge posed.

Technological Drivers Transforming Accounting Standard Development

Accounting standard-setting is no longer just about refining traditional accounting. Technological breakthroughs-the rise of AI, blockchain, big data, cloud computing, digital assets, and structured digital reporting-have changed and continue to change how transactions occur, how organizational assets are classified, and how reports are made. These changes has implications for traditional recognition, measurement and verification principles.

AI applications can classify journal entries, detect anomalies, forecast cash flows and analyze transactions, while the use of artificial intelligence across finance functions, is a growing practice that's improving decision making (Davenport & Ronanki, 2018).

Challenges arise in the areas of accountability and oversight, especially when complex algorithms operate as 'black box' systems which is making it hard to understand the decision-making process. There are suggestions that as cognitive technologies become more widely used, then advancements are also needed in both governance and assurance mechanisms, and standard-setting needs to decide how principles of verifiability and faithfully representation is now to be applied when algorithm decisions are widely involved (Sutton et al., 2016). In blockchain and other distributed ledgers transactions is recorded and kept up to date on decentralized databases and this is secured by using 'cryptography and relies on a consensus mechanism to maintain consistency' (Yermack, 2017). Suggestions have been made that blockchain could alter the procedures of traditional audit and governance and reporting could be made more transparent (Yermack, 2017).

There is increased complication as when a network contains such things as cryptocurrencies there are different interpretations, as there are no direct equivalents with traditional financial assets.

Most guidance treats and classifies cryptocurrencies as a part of a number of traditional categories, such as cash and intangible assets, although there have been calls to develop 'Accounting guidance is still primarily framed within existing definitions of intangible assets.' (IASB, 2019), as although they have an appearance of being intangible, they possess economic characteristics that appear different from those of other intangibles.' (Baur et al., 2018).

'Bitcoin has many characteristics that differentiate it from other traditional assets' (Baur et al., 2018), and the way it is recognized, classified and reported are still in debate. Big Data Analytics 'is the analysis of collection, integration and analysis of very large amounts of data including, but not limited to traditional financial data' (Warren et al., 2015). Using Big Data allows professionals to examine full sets of transactions and discover relationships that are not obvious with use of old methods, but standard setters must decide whether they need to identify relevant non-transactional data that is considered sufficiently reliable to include in financial statements without having 'overwhelming volumes of information' (Warren et al., 2015).

Cloud Computing has had impacts on the way of how transactions are viewed and accounting infra-structure, as it allows 'data sharing and processing capabilities that span geographical locations' (Marston et al., 2011).

Cloud computing offers scalability and accessibility as benefits, but issues over security, unauthorized data access and data integrity need to be solved. This effect is even stronger when technology revolutionizes the reporting of the financial statement in electronic means. As shown by Debreceny et al. (2010), the digital standard format of the Extensible Business Reporting Language (XBRL) allows accounting concepts to be digitally encoded and allow statement elements to be read, aggregated and searched efficiently. It improves the reachability of financial statements and allows a better comparison of companies; it involves an accurate translation from general standards into taxonomies and machine-executable. In sum, we can describe tension created by technology; technology can greatly increase the speed and the ability to analyze financial information, but technology generates challenges and problems in classification, validation, and accountability suggesting the need to verify whether old principles are suitable for capturing economic realities.

Institutional Responses of Accounting Standard Setters to Technological Change

Accounting standards arise as an institutional response to "maintain credibility and comparability" and technological speed imposes a special challenge because the normal regulatory due process is inherently slow while rapid advances in technology occur at an extremely accelerated pace. The IASB acknowledges the impact of technology as the IFRS foundation (2020) notes that technology is one element of changes occurring that could impact the relevance of reporting requirements. Similarly, the FASB has actively sought to become aware of emergent issues through its research and ongoing consultations as well as technological development in areas like mandatory XBRL filing. In fact, standard setters and their endeavors fit into a wider set of interactions involving regulators, professional bodies, and technologists.

The primary institutional responses noted include the undertaking of research and consultation on new and emerging issues: "standards are typically established after a research phase during which any potential characteristics of new transaction types can

be explored and an open consultation with relevant stakeholders undertaken." This is considered particularly important in developing areas such as crypto-assets because, without it, any "standard-setting at too early a stage could be rendered outdated" quickly. It is precisely through this due diligence that the dilemma of the time lag between a new transaction type or business activity and standard setting can arise because as "developments become significant in and of themselves, the only available guidance for preparers are accounting standards not specifically designed for these transactions" and these will also likely vary between jurisdictions. This should not necessarily be characterized as institutional failure, however, "since standard setters have to sift transient technological hype from enduring fundamental change" and institutions must be enabled to monitor emergent trends in order to allow for timely intervention.

International cooperation becomes especially salient as digital assets, cloud infrastructure and global operations are not isolated by jurisdictions. Reducing inconsistent reporting by standard setter's engaging in collaboration throughout the standard-setting process can improve global financial statement comparability, as evidenced in the collaborative efforts between the IASB and the FASB, though full convergence of IFRS and US GAAP did not occur. Professional bodies have also sought to fill the institutional void through a "number of activities that help to reduce uncertainty during the period preceding formal adoption of standard-setting requirements" and through the development of technical guidance as well as professional training courses. As far as technology specifically is concerned, the speed with which exposure drafts and consultation papers could be disseminated and feedback aggregated may broaden public engagement, while also increasing the total volume of response.

Literature points to the overall piecemeal nature of institutional response relying on existing mechanisms (including research projects and minor revisions) over fundamental revamping of a completely new system for each innovation, thus ensuring some continuity but possibly failing when new technologies fundamentally change business transactions' characters in ways unlike existing accounting standards. The key institutional problem is thereby to attain an "adaptive equilibrium" through continuous attention to technological trends, incorporating cross-expertise knowledge, and strengthened cooperation between regulatory bodies.

Implications of Technological Acceleration for Accounting Practice and Financial Reporting Quality

The professional context for standards application is rapidly changing due to technological acceleration that is automating processes and allowing for the faster manipulation of accounting data than traditional manual systems can support; implications of this rise in technological capacity for professional judgement, reporting quality, auditing and governance will now be discussed. Automated techniques, such as robotic process automation and machine-learning solutions are being increasingly adopted to undertake such activities as invoice processing and reconciliations. Kokina and Blanchette (2019) suggest that automation is transforming the accounting professionals' role: the routine transactional processing is decreasing, giving rise to increased time allocation for analytical work; automation may yield accuracy gains from the consistency in the application of rules across vast datasets, yet introduces a new dimension to risk, because even a minor error in an automated rule may affect many thousands of accounts before it is detected and so its reliability depends upon the controls surrounding that automated process. Professional judgement will thus still remain, for a complex business transaction must involve an appreciation of economic substance and the environment in which the organization operates, technology being able to support, but not replace, such an understanding; accountants must now evaluate the results of technologies as sources of evidence and recognize the point at which such evidence must be supported by further evidence to withstand closer examination. The financial disclosure context is also changing. Digital systems increase efficiency of access to and analysis of corporate disclosures, yet this increased volume does not necessarily add to their decision usefulness and could mask fundamental issues. In an equivalent fashion, the audit function has been transformed by technology. Advanced analytics enhance auditors' abilities to test the completeness of transactions rather than just subsets; Appelbaum et al. (2017) argue that audit technology provides more extensive analytical data to identify anomalies in information, while continuously evolving systems provide greater opportunities to monitor the effectiveness of financial controls more frequently. In order for this enhanced ability to be realized, audit competence is expanding to the realm of information systems, not just traditional skills: auditors must become adept with understanding underlying technological infrastructure, be aware of access control mechanisms and possess Cybersecurity awareness and data integrity knowledge, as well as competence in general knowledge requirements. The responsibilities of directors, audit committees and those engaged in governance roles are expanding to incorporate understanding of material technology-dependent risks such as cybersecurity vulnerabilities and over-reliance on automated financial decision support systems that requires co-ordination between accounting, IT, risk management and organizational leadership.

A further potential risk created by the rise of technology lies in comparability. Digital platforms and innovative business models driven by technologies mean the ways in which companies generate their revenues now differ and the comparability of information may diminish further if new models do not translate through the standards adequately. Real-time reporting, another aspect of technological innovation also poses potential challenges: increased transparency does not equate to increased quality and the continuous alteration of reported numbers adds a layer of volatility to information which could distract without proper context.

As digital systems manage high volumes of sensitive, and often private information, the ethical dimensions of accounting also increase and, with any potential data breach, could jeopardize the credibility of financial reporting through compromising data protection and user privacy. These shifts in both the context for and content of financial information, coupled with the rapidly advancing technologies now used in practice, suggest a need for a radical rethinking of accounting education; the core knowledge and skills that accounting graduates need to acquire to succeed in the digital economy will be expanded to encompass expertise in

data analytics, information systems and Cybersecurity awareness and understanding, building on, rather than superseding, traditional standards, ethics and professional judgment expertise. Overall, technological acceleration offers significant promise to deliver improved financial reporting, however, the realization of such gains is conditional upon the establishment and effective governance of controls surrounding the technologies underpinning it, as reliable financial information in a digital world depends on the effective functioning of an ecosystem that combines valid accounting principles, trustworthy systems, astute judgement and robust oversight.

2 | Findings

The literature review provides five outcomes.

First, acceleration of technological use significantly influences the context in which accounting standards are made due to a wide array of new technologies such as artificial intelligence, blockchain, Big Data analysis, cloud computing, digital assets, automation, and structured reporting that impact the nature of transactions and accounting disclosures.

Second, technological development is often quicker than regulation. Such a "regulatory lag" exists with respect to cryptocurrencies and digital assets, algorithms used for decision-making, and on-demand real-time reporting.

Third, standard setters' approach to the acceleration in technological use has historically been incremental, involving the use of existing standards, research projects, and specific standard amendment processes that have contributed to comparability but possibly an undesirable degree of complacency to fundamentally new economic phenomena.

Fourth, acceleration in the development and use of technologies has major implications on reporting quality with opportunities of the new digital technologies for enhanced accuracy and timeliness but risks of cybersecurity, biased algorithms, and information overload.

Fifth, the accelerating use of technology influences but does not replace professional judgment as professional accountants and auditors have increasing roles in assessing and analyzing algorithmic outputs and evaluating risks associated with new technologies.

Last, variation in technological maturity in different regions will be affecting successful application of global standards as differing infrastructures and expertise mean that statutory adherence will not guarantee reporting comparability.

3 | Conclusion

The pace of technological change has revolutionized the environment within which accounting standards are set, interpreted and applied. AI, block chain, big data, cloud computing, digital assets, automation and structured reporting technologies have facilitated the scale, speed and sophistication of financial information while facilitating business models which could test standard assumptions. The review confirms that the most significant challenge for standard setters is less technological change itself and more the inherent gap between innovation pace and the rate of regulatory development and review. However, while due process for standard setting is critical to stability and legitimacy, too much delay can result in preparers and auditors being caught without sufficient guidance for rapidly growing and economically meaningful transactions. In a report of this kind, it is appropriate to note that standard setting bodies' principles based conceptual frameworks still provide a useful benchmark, with the established principles such as relevance, faithful representation, comparability and understandability being relevant even in the digitally focused context of the digital reporting environment. The task will be in interpreting these principles with reference to the new environment and as automated and mediated information grows in importance and volume.

The study concludes that in this fast-changing reporting environment, accounting standard setting cannot cease to evolve while still maintaining conceptual rigor or stability. It will therefore need continuous attention, prompt provision of guidance, multi-disciplinary working, improved international coordination and a higher level of technological competency in professional practice. Overall, the purpose of using technology is to augment financial report quality, not diminished it, and that will require an environment for professional judgement and governance to work synergistically with and to harness technological innovation: This is an ambitious undertaking for both individual professionals and their organizations, standards bodies, rule-makers and the academic world in developing a new paradigm for accounting standard setting.

Recommendations

However, greater foresight in the standard setting process can address some of this through better planned monitoring of developing technologies and its impact on reporting, particularly from the perspective of regulatory lags and due process. For example, the IASB, FASB and similar bodies could offer timely guidance in situations where the emergence of new types of transactions creates reporting uncertainty under existing standards - this could apply particularly to digital assets, decentralized transactions and reports generated via an algorithm. Another step the standard setters could take is to increase cooperation with specialists in other fields - accountants, economists, data scientists and technology developers.

Developing stronger internal knowledge of emerging technologies among these organizations would better inform their standard-setting work.

More coordination is also needed internationally because inconsistent regulation of digital transactions across borders could dilute comparability and the overall global standard setting harmonization. Accounting firms, professional organizations and universities should work more broadly to introduce to their curricula much needed training in areas of data analytics, data science, and artificial intelligence, alongside cyber security and other technically relevant subject matters. Furthermore, companies should also build out governance of technology-enabled systems in line with controls of other business processes – it means those automated decisions need human oversite and periodic re-assessment. Lastly, there should continue to be a greater focus on principles based accounting standards that are also sufficiently adaptable to new technologies while clearly targeting unique economic characteristics that may justify more specific guidance.

Future Research Directions

Artificial intelligence's impact on professional judgment in financial reporting warrant additional investigation, particularly in situations wherein accountants apply algorithmically derived classification and risk identification to decide when human input is needed. Accounting for digital assets and decentralized finance additionally demands extra work, given that cryptocurrencies embody only one area of a growing digital panorama together with tokenized property and smart contracts. Comparative work is required to look at whether differences in know-how infrastructure and regulatory capability influence the international comparability of standards implementation. Lastly, it could further present how programs can nurture abilities in AI, data analytics, and tech governance, without abandoning the field's principled basis, ethic, and skilled judgment.

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