Challenges Posed by Information and Communication Technologies to Accounting

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Abstract

Since the middle of the 20th century, we have witnessed profound and continuous shifts in methods of producing, disseminating, and analyzing all kinds of information. Accounting could not stay out of reach of these changes. On the contrary, the preparation and presentation of financial accounting information, suitable for making a wide range of economic decisions by various stakeholders, had to be adapted to global trends not only in the business world and the emergence of new business transactions but also to changes in the world of information and communication technologies. This paper analyses the impacts of ICT on different areas of accounting and the accounting profession in general in terms of its accustoming to new technological and technical solutions, methodologies, and information transfer methods. There are three main spotlights: financial reporting in the context of using main digital solutions, accounting education, and the future of the accounting profession. The bottom line is not straightforward: ITC solutions and automation will speed up routine tasks and activities, but activities that require critical thinking and creativity remain domains where accounting professionals are indispensable. This situation further complicates finding adequate solutions for defining curricula at both high school and university levels.

Keywords: Accounting, information and communication technologies, education, the accounting profession

1. Introductions

Starting from the general definitions of accounting and information and communication technologies, namely bearing in mind that:

- Accounting is a systematic process of recording business transactions and events, organizing and summarizing recorded data, and communicating financial information about a business or organization by creating financial statements. Through such communication, different stakeholders get insights into the organization's financial strength and health, which empowers them to make informed decisions. (Accounting is essential for organizations to track their financial performance, comply with regulations, and make strategic decisions.)
- Information and Communication Technologies (ICT) refers to a broad range of technologies that enable information storage, retrieval, manipulation, transmission, and receipt. Information Technologies include hardware and software for creating, storing, managing, and communicating information. Communication Technologies are tools that facilitate communication between individuals or groups. (ICT is crucial in various sectors, enhancing efficiency, accessibility, and connectivity.)

The above definitions differ, which is a logical consequence of the fact that they relate to two different disciplines. Research in the field of the historical development of accounting confirms that accounting has always followed changes in business, including the method of organization, goal function, types of production, methods of financing and management, and information needs of the owner and all business stakeholders. Therefore, it is unsurprising that different methods were applied for processing and publishing information during the development of

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accounting. Therefore, accounting has continuously adapted to changes in business and developments in information and communication technologies, which has gained full expression from the end of the twentieth century to the present day. Nowadays, the main issue is integrating technology into communication processes and information handling. This encompasses various accounting tools and systems, such as accounting software, Enterprise Resource Planning (ERP) systems, cloud computing, and digital communication platforms. ICT's evolution has reshaped how accountants work by automating routine tasks, improving data processing speeds, and enabling real-time reporting (Miller, 2020). For example, cloud-based software allows accountants to work remotely and access financial data anywhere.

However, while these advancements have certainly improved the efficiency and scope of accounting processes, they have also introduced several challenges that accounting professionals must address.

2. The Positive Impacts of Information and Communication Technologies on Accounting

Many studies prove that ICT has simplified accounting processes and improved efficiency and overall financial management quality, making it easier for companies to continuously improve their performance while operating in a rapidly evolving environment (Chong, Y. and Nizam, I. 2018).

The desk analysis conducted shows that the main positive impacts of ICT implementation in accounting could be:

- process automation – ICTs have automated many routine accounting tasks, thereby reducing the possibility of manual errors and the time required to perform tasks;
- real-time data access – cloud computing and online accounting software allow accountants to access financial data in real-time, and to work remotely with greater flexibility in performing tasks and timely decision-making and reporting;
- improved data security – advanced security measures, such as encryption and secure cloud storage, help protect sensitive financial data from unauthorized access;
- improved accuracy – advanced software reduces the likelihood of human error, ensuring that financial data is more accurate and reliable;
- improved reporting – ICT tools enable the rapid generation of complex financial reports and analytics, helping businesses gain insight into their current financial performance and trends;
- improved communication – online platforms enable easier collaboration between team members, clients, and stakeholders, enabling shared access to financial information and improving communication;
- cost-effectiveness – automated systems can reduce operational costs by reducing the need for extensive paperwork and manual processes;
- regulatory compliance – accounting software often includes features that help ensure compliance with accounting standards and tax regulations, making it easier to maintain accurate records; and
- integration with other systems – ICT enables accounting systems to integrate with other business software (such as inventory management or Customer Relationship Management (CRM) systems), providing a comprehensive overview of business operations.

Overall, ICT can simplify accounting processes, improve efficiency, and enhance the overall quality of financial management, making it easier for businesses to operate in a rapidly evolving environment.

The results of several studies, presented below, prove the previously stated position.

- Research on Robotic Process Automation (RPA) highlights how automation of repetitive tasks in accounting can significantly improve process efficiency. By using RPA, companies reduce manual effort, increase speed, and achieve greater accuracy in accounting processes such as data entry, invoice processing, and reconciliation. This leads to reduced operational costs and improved financial reporting accuracy (Otero and Fink (2020).
- The International Federation of Accountants (IFAC) emphasizes that digital transformation in accounting enables finance professionals to transition from traditional roles to strategic business partners. ICT facilitates real-time financial analysis and decision-making, improves the agility of financial reporting, and enables accountants to focus on higher-value tasks like financial forecasting and advisory services (IFAC, 2022).
- Another two studies show that digitalizing accounting processes enhances business performance by enabling faster decision-making and better resource allocation. Automation reduces errors and increases the transparency of financial data, allowing companies to make data-driven decisions. Companies that embrace ICT in accounting often achieve a competitive advantage due to improved operational efficiency and faster financial reporting (IFAC 2022: Bygren 2016).
- Research published in the Journal of Information Systems identifies Accounting Information Systems (AIS) as a key factor in improving financial transparency and ensuring compliance with regulatory standards, which can enhance stakeholder confidence and boost business performance. Using sophisticated AIS powered by ICT has been linked to improved financial management and internal control (Mungai, and Lee, 2022).

These findings collectively suggest that integrating ICT in accounting processes not only streamlines operations but also strengthens a company's overall financial performance. (To further explore these studies, you can access the reports from DIVA Portal, ISACA, and IFAC.)

Unfortunately, under certain conditions, many of the positive effects of ICT applications in accounting can become obstacles to their implementation.

- Process automation can undermine accounting quality control because automated processes can lead accountants to rely too much on technology and not conduct an adequate review of results, which is an open space for errors.
- Real-time data access, collaboration, and remote access can lead to the emergence and increase of cybersecurity risks. These risks threaten not only individual businesses and organizations but also specialized accounting firms whose core business is providing accounting services. With the increasing reliance on digital systems, accounting firms face increased risks of cyberattacks, data theft, and fraud, which require strong security measures.
- The rapid advancement of accounting technologies requires professional accountants to constantly update their skills, especially in real-time data access, data security, collaboration, and remote access. It is certain that a significant number of professional accountants may have difficulty adapting to new digital tools or may lack the necessary technical skills.
- Technology dependency or heavy reliance on technology in accounting can lead to significant problems in situations where systems break down or experience downtime, as the entire accounting system can be compromised because accounting processes are disrupted.

- **The availability of a vast amount of data can overwhelm accountants, making it difficult for them to focus on information relevant to decision-making.**
- **Implementing new accounting software or systems and upgrading existing ones can be extremely expensive, especially for Small and Medium Enterprises (SMEs), which calls into question the cost-effectiveness of the digitalization process.**
- **Keeping up with changing accounting regulations and ensuring compliance with ICT tools can be challenging, not only due to changes in basic accounting regulations but also because regulations are evolving to regulate how new technologies are implemented in accounting.**
- **Integrating new accounting systems with existing software can be complex and time-consuming, leading to data inconsistency and operational inefficiencies.**

Additionally, concerns about data privacy – handling sensitive financial information – raise questions about data privacy and compliance with regulations such as The EU General Data Protection Regulation (GDPR), which requires accountants to implement strict data protection protocols.

3. Main Challenges Posed by ICTs to Accounting

We have witnessed that Information and Communication Technologies are transforming the accounting landscape. While these technologies offer significant benefits, they also bring about unique challenges related to financial reporting, accounting education, and the future of the accounting profession.

3.1 The Main Challenges in the Process of Financial Reporting

Digital solutions such as Artificial Intelligence (AI), Blockchain, and machine-readable financial reporting (like XBRL) are transforming the financial reporting process (Zhang, 2020). However, these solutions carry specific challenges, such as data quality and labeling issues, cybersecurity and data privacy risks, adoption costs and complexity, and regulatory fragmentation.

Using the IFRS Taxonomy to label financial data is intended to make financial statements machine-readable. However, significant challenges still need to be addressed due to potentially incorrect tagging, scaling errors, and inconsistent presentation of negative and positive values. Variations in global financial reporting standards further exacerbate the problem because some jurisdictions mandate the use of the IFRS Taxonomy while others do not, leading to inconsistencies in the comparability of financial statements across countries. As financial reports become increasingly digitized, they attract cyberattacks. Data breaches can compromise sensitive financial information, resulting in reputational damage and financial losses. Companies need to invest in robust cybersecurity measures to safeguard this information. Implementing digital financial reporting systems can be expensive for SMEs. It requires investments in new software, training, and adjustments to internal processes, posing challenges for firms with limited resources (IFRS, 2024).

The fragmented nature of the global adoption of the IFRS Taxonomy presents a significant challenge. Different jurisdictions have varying requirements for digital reporting, which complicates the establishment of a unified global standard. Consistency is needed to improve the comparability and transparency of financial reports for international investors.

3.2 The Main Challenges in the Process of Accounting Education

The rapid introduction of ICTs in accounting calls for significant changes in accounting education. Key challenges include curriculum overhaul, demand for new skills, and lifelong learning requirements.

The accounting curriculum should be updated to include courses on digital skills such as data analytics, AI, blockchain, and XBRL reporting. This update must happen much more quickly than in the past, as it is essential for preparing future graduates for modern accounting roles. Skills such as data management, data cleansing, and working with AI-driven tools are increasingly becoming essential for accountants. This shift puts pressure on universities and professional bodies to revamp training programs. As ICTs evolve quickly, professional accountants must embrace lifelong learning. Certified professional development courses on new technologies are crucial for accountants who wish to remain relevant in this field (AAA, 2022).

3.3 The Main Challenges for the Future of the Accounting Profession

Information and communication technologies (ICTs) fundamentally reshape the future roles of accountants, presenting both challenges and opportunities. This transformation involves the redefinition of roles, the introduction of new ethical and legal responsibilities, a changing regulatory and compliance landscape, as well as job displacement and workforce disruption.

Tasks such as data entry, bookkeeping, and transaction recording are now automated using AI and robotic process automation (RPA). This shift may render specific accounting roles and positions obsolete, requiring accountants to focus on more analytical, advisory, and strategic roles (AAA, 2022; IFAC, 2022). While ICT can increase efficiency, it can also lead to workforce reallocation or layoffs. To remain relevant, accountants must continually improve their skills. The field of professional ethics for accountants is evolving to encompass artificial intelligence and the ethical implications of decisions driven by algorithms. One of the key challenges in this area is ensuring that the artificial intelligence models used for financial forecasting are unbiased and transparent (IFAC, 2022). Besides that, with the emergence of blockchain and decentralized finance (DeFi), regulators need help to keep pace with new compliance and financial reporting challenges. Accountants must remain informed of these developments to ensure adherence to evolving financial regulations.

5. Conclusion

The challenges ICTs pose in financial reporting, accounting education, and the profession's future are substantial. From regulatory fragmentation to workforce skills gaps, ICTs redefine the accountant's role. Addressing these challenges requires a collaborative effort from regulatory bodies, educational institutions, and accounting professionals. Companies and universities must prioritize training, while accountants must be willing to adapt and embrace continuous learning to remain relevant in the digital age.

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