

ICT SKILLS DEVELOPMENT: THE DIGITAL AGE AND OPPORTUNITIES FOR ACCOUNTANTS¹

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The business world has changed considerably in recent decades and the next decade will see further industry disruption and transformation via technological advancements (Doraisamy and Stalley 2016). The emerging FinTech industry is characterized by companies that use new technology and innovation to compete in the marketplace. Global FinTech growth was 75% in 2015—to US\$22.3 billion (Accenture 2015). Globally, FinTech companies cover the broad spectrum of finance: borrowing money; foreign currency; international money transfer; multifactor authentication and payment security solutions for mobile applications; e-commerce; and financial advice (ACCA 2016).

The FinTech industry impacts systems and processes in various business sectors, including accounting (ACCA 2016). For example, new FinTech start-up companies provide services in areas that includes asset management, fraud protection, and retail banking. Companies are “reformulating service design and delivery through technological developments and advances in software, user experience, and data mining” (ACCA 2016). Accounting software can provide direct links between lending platforms to streamline credit applications (KPMG 2015).

This article discusses various technological advancements: big data, blockchain and bitcoin, cloud computing, eXtensible business reporting language, mobile phone technology, artificial intelligence, drone technology, new software applications, and social media. These advancements and the importance of behavioral competencies—such as acting ethically and legally, exercising professional judgment, and emotional intelligence—will bring many challenges and opportunities for new and existing members of the profession.

Big Data and Data Analytics

“Big data” has emerged in the business world in a significant way in recent years, as has data analytics—the quantitative and qualitative techniques used to analyze the “big data” that inundates a business daily. Data analytics involves extracting, categorizing, and interrogating data to uncover hidden patterns, unknown correlations, market trends, customer preferences, and other useful information for businesses (Galletto 2017). Data analytics creates vast opportunities for the accounting profession, including

¹ This article is an edited extract from the International Accounting Education Standards Board literature review on ICT skills development. The [full literature review](#) covers the digital age and opportunities for accountants, issues for the accounting profession, education and ICT development, and developing countries and ICT skills. The literature review is part of the IAESB’s examination of megatrends to help inform the direction of accounting education in the digital era consultation process (see [IAESB strategy and work plan for additional details](#)).

identifying bad and doubtful debts, responding to fraud risks, increasing audit efficiency and effectiveness, and adding value to clients' business processes. Accountants and auditors need to change the way they think from looking backward to looking forward—calculating and forecasting the future (Pan and Seow 2016).

Bitcoin and Blockchain

There is much hype around the cryptocurrency bitcoin—the first decentralized digital currency. Bitcoin allows online payments to be made from one party to the other without going through a financial institution (Raymaekers 2014). There are many advantages of using bitcoin currency, such as the speed and security of transactions and cost and convenience (Raymaekers 2014).

Start-ups focused on blockchain, the technology that supports Bitcoin, have already seen more than US\$1.2 billion in investments (Shin 2017). Blockchain technology increases the efficiency and transparency of governance, financial and security settlements, and financial clearing processes. Hence, blockchain is of great interest to businesses legitimately involved in the Bitcoin ecospace (Perdana, Robb, and Birt 2016). With its origins in distributed databases, blockchain's data is partitioned into blocks, continuously adding new sequential blocks of data (Swan 2015). The blocks are linked together using cryptographic signatures that results in transactions being time-stamped—and tamperproof. A recent study estimates that within five years blockchain could allow for US\$16 billion of cost savings by simplifying accounting and audit processes (ACCA 2016).

Blockchain technology has the potential to upend entire industries (ACCA 2016) and, in doing so, will create both challenges and opportunities for the accounting profession. Some accounting and audit roles will no longer be required, as there will be no need to verify each transaction. "Accountants do a lot of transaction processing, reconciliation, and control, and that could change significantly if the technology is adopted on a widespread basis. The role of audit could move further up the value chain and become more of a governance role" (Irvine 2016).

There are also exciting opportunities for forensic accountants: the technology can provide a comprehensive review of all transactions and assist in the collection, preservation, and validation of evidence. This would lead to significant time reductions in forensic investigations.

Cloud Computing

Cloud computing—using a network of remote servers hosted on the internet to store, manage, and process data instead of using a local server or a computer—has had major consequences on how companies do business (Dunbar 2017). The big advantage for companies is that cloud computing provides the functionality of existing IT services (Marston et al. 2011) without the need for dedicated computer desktops, software, infrastructure costs, and local area networks. It also provides businesses an opportunity to access additional functionalities that would otherwise be unfeasible for the business. Cloud computing is transforming all businesses and having huge ramifications in the accounting sector (Riddell 2016).

eXtensible Business Reporting Language (XBRL)

XBRL, the open international standard for digital business reporting, is currently mandated in several jurisdictions—Denmark, Japan, Singapore, South Korea, and the US—and voluntary in others—Australia, Germany, and the Netherlands. The information presented in XBRL reports is computer-readable and easily accessible for analysis. It facilitates electronic exchange of financial data between entities and allows users to conduct a variety of tasks, from viewing to analyzing data (Harris and Morsfield 2012; Efendi, Park, and Smith 2014).

XBRL has unique tags that define labels and provide relevant information to each line item in a financial report, allowing users to understand each line item of a financial report (Ghani, Laswad, and Tooley 2011; Vasarhelyi, Chan, and Krahel 2012). This feature also allows users to easily compare a firm's performance over time, allowing better decision making (Baldwin and Trinkle 2011). As XBRL is used to support clients' reporting requirements, XBRL knowledge is becoming increasingly important for accountants. Accountants associated with the preparation of XBRL financial reports must understand the XBRL filing process in order to learn its impact on accounting and audit procedures (Pan and Seow 2016).

Mobile Phone Technology and Websites

Mobile phones are no longer used merely as a communication tool; some reports indicate that 79% of internet use will soon be on smartphones and tablets (Bullock 2017a). Businesses are increasingly using the technology for day-to-day activities, such as paying bills, invoicing clients, and accessing exchange rates. As a result, many businesses are investing in mobile phone technology instead of desktop computers. Many small businesses now solely use mobile phone technology to run their businesses (Bullock 2017b).

To remain competitive in the market, accounting firms need to ensure that their websites are responsive to mobile devices. "If an accounting firm website is not mobile-compliant, Google will penalize its website by not showing it as high in ratings" (Bullock 2017a).

AI and Drone Technologies

Artificial intelligence (AI) has already been implemented in a broad cross-section of industries, from healthcare to mining. The accounting and finance sectors have also been impacted by automation offered by machine learning systems. Many businesses are leveraging robot and bot-technologies to perform roles such as calculations and data analysis. Drones are also being incorporated into accounting and auditing by enhancing routine audits or asset assessments in industries such as mining and agriculture. Drones are also being used to conduct stocktakes, providing a cheaper and safer solution to carry out these activities in dangerous areas (Ovaska-Few 2017).

New Software

In the digital age, software companies offer businesses many opportunities to simplify tasks and enhance business productivity (Savilla 2014). As such, there are many applications developed specifically for accounting use, including Arithmo, MYOB, NetSuite, QuickBooks, Sage 50, Wave, and Xero. Recently,

there has been an advent of new software enabling conversion of different data from different software sources. For example, a New Zealand company has produced software that allows an accountant to obtain a client's data from multiple sources (such as MYOB, QuickBooks, and Xero); translate the data into a single form of data; and export it into different software. This should result in significant time-savings for accountants, thereby providing more time for more value-added client services (Black 2014).

Social Media

Over the past decade, social media—Twitter, Facebook, LinkedIn, YouTube, blogs, discussion groups, and more—has emerged as one of the most important marketing tools for businesses. It has many benefits to businesses, including increased brand recognition, improved brand loyalty, and high sales conversion rates. Accounting firms are using social media to increase their profile and assist in networking opportunities (Alter 2013).

The technological advances described have important ramifications for the accounting profession. In addition to considering how the technologies are being incorporated into accounting functions, more far reaching considerations include:

- How do accountants account for creative economies? (e.g., non-traditional resources)
- What is the role of accounting in a crypto-economy?
- How do accountants embrace new forms of human behavior and contribute to new ways of organizing and governing?

Addressing these types of questions are both a challenge and opportunity for the accounting profession.

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