

Future of Business and Finance

Sean Stein Smith

Blockchain, Artificial Intelligence and Financial Services

Implications and Applications for
Finance and Accounting Professionals

 Springer

Future of Business and Finance

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This book is dedicated to my family, who continuously support and encourage me in all of my professional and academic endeavors.

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About the Author

Sean Stein Smith is an assistant professor of Accounting in the Economics and Business Department at Lehman College. His research includes blockchain applications, cryptoassets – including but not limited to decentralized cryptocurrencies, stablecoins, and other blockchain related applications. Additional areas of focus include robotic process automation and its impact on accounting, as well as how integrated financial reporting can change disclosure and reporting at various organizations. He has presented his work at dozens of national and international conferences, both practitioner and scholarly in nature, including the Annual Conference of the American Accounting Association on multiple occasions. Sean also serves on the Advisory Board of the Wall Street Blockchain Alliance, where he also leads the Accounting Working Group, focusing on the creation and dissemination of thought leadership connected to the blockchain and financial services space. He is also the chairperson on the New Jersey Society of CPAs Emerging Technology Interest Group, spearheading efforts and initiatives to more effectively integrate emerging technology tools into practice. Bringing this expertise to Lehman, and in addition to serving as a faculty liaison to the Freshman Year Initiative, Sean is in the process of developing a blockchain certificate project in conjunction with the School of Continuing Education and Professional Studies. Sean will be serving as the E.C. Harwood Visiting Research Fellow at the American Institute for Economic Research during 2019, and has had books published, or that are in the publication process, at Taylor and Francis, Springer, and Palgrave-MacMillan.

Part I

Definitions, Overview & Information for Practitioners



Foreword & Introductory Information

1

There has been a large amount written and spoken about artificial intelligence, blockchain technology, and the implications that these technology tools will have on the accounting profession in both the near and long term. One just has to look at the frothy and volatile nature of the cryptocurrency, on top of the introduction of hundreds of new coins, for potential evidence of market conditions overheating. Such a large amount of analysis and speculation may appear to some as the symptoms and stages of a bubble or over excitement in the marketplace, but upon further review this does not appear to be the case. While technology has played an important role in the accounting and finance profession since the beginning of the computer age, there are several fundamental characteristics that differentiate these technologies from earlier iterations. What this book attempts to do, however, is to not only breakdown these sometimes amorphous technology concepts, but also analyze the implications of these technology tools and platforms, and to finally project possible implications of these tools on the financial services profession.

Finance and accounting may seem like they are only subsets of the economy, and depending on where you are reading this book from, might not even seem like worthy of an entire book in the context of blockchain technology. The majority of blockchain and artificial intelligence analyses have, instead, focused on the broad based implications of how these technologies will revolutionize not only business, but also society. Accounting and finance, despite the fact that they are only pieces of the broader economic and society, have an outsized impact on the economy and marketplace. The transmission of credit, safeguarding of information, and accurate reporting of financial information and data form the basis for how business decisions are made, both in local and global situations. Communicating this information, and doing so in an encrypted manner appears to be more important than ever in a world buffeted by data breaches and hacking; both technologies appear to have potential to facilitate this process.

Lastly, one of the core purposes of putting this text together was to not only discuss these wide ranging implications and technologies, but to provide readers suggestions and guidelines moving forward. Put simply, blockchain and artificial

intelligence have the potential, and to a certain extent already are, transforming how the financial services industry engages with the business and stakeholder community. Taking a broader view of the accounting and finance industry, however, and the implications for improved communication, data management, and data encryption become clearer. Suggestions, recommendations, and insights connecting these technological forces with the current status of the accounting and finance fields form some of the key takeaways of this book. Regardless of what niche of finance or accounting readers you find yourself employed within, there are going to be applications and suggestions you will find helpful contained herein.

Technology is coming for the profession, will have a tremendous impact, and it lies with us to be ready. Consider this book a great way to not only keep yourself informed, but to help you get started addressing these important topics.

A Splash of Cold Water

This book focuses on blockchain, artificial intelligence, and the applications that these technologies will have for the financial services profession and the individuals employed therein. With billions invested, and thousands of very smart and motivated people working on these solutions there will invariably be products and services that succeed in the marketplace, but there will also – without a doubt – have many false starts. As of the writing and editing of the book during 2018 and 2019 there was already some speculation that perhaps the hype and excitement around cryptocurrencies and blockchain may have very well outpaced the functionality of the technology at this time. For example, an August and September 2018 issue of the Economist focused on the let downs and perhaps over excitement that has embraced the cryptocurrency and broader blockchain space. At the core of the idea, cryptocurrencies, including the headline generating Bitcoin, were started as an attempt to address what were perceived to be fundamental and core failings of the existing financial system. Namely, the centralized nature of transaction processing and data verification creates a scenario in which hackers and other nefarious market actors do not even have to search for where valuable data is stored. Rather, the very centralized nature of data storage and processing creates a scenario in which organizations are consistently put on the defensive, with a track record of consistent hacks and data breaches.

Framed in this context, the cryptocurrency movement has failed in its initial ambition – to displace traditional fiat currencies such as the USD and Euro, due to price volatility, lack of efficiency with regards to transactions processing, and a lack of merchants willing to accept cryptocurrencies as a medium of payment. That said, and even acknowledging the lack of applicability for currency purposes in the cryptocurrency marketplace, there is an appetite for investment in this space on the side of clients. Especially during the runup in price during the end of 2017, investor interest seemed to rise alongside the prices of Bitcoin and other various cryptocurrencies; financial professionals have a fiduciary duty to explain what exactly this means for investing and investment options. Put simply, accounting and financial

services professionals must be able to offer objective and realistic advice in terms of both investing in these options as well as realizing just how much work is left to build out the technology in these spaces. Even as the cryptocurrency buzz and excitement has faded from the headlines alongside the drop in price of Bitcoin and other cryptocurrencies, blockchain has superseded many of the conversation in terms of excitement and investment.

Blockchain, however, does not represent a magic solution or investment either, and that is the fact that does appear to be slowly entering the market conversation. Following the interest, investment, and dozens of conferences focused on blockchain applications across industry lines, the technology does appear to be entering the trough of disillusionment that often accompanies emerging technology forces. Numerous projects have been launched and funded, with IBM taking a leading role in assisting other organizations, but based on recent market evidence, the vast majority of these projects remain in pilot or beta phases. That said, there does remain a large amount of interest in this area which will invariably drive increased interest in the blockchain space at large. Understanding these emerging technologies, acknowledging the reality that many of these technologies are still in pilot or beta phases, and connecting these technologies to the financial services landscape are responsibilities every practitioner must understand and be aware of.

From Hype to Proof

Blockchain may have burst into the mainstream consciousness as a result of the dramatic increase in the price per bitcoin of 2017, but 2018 could be categorized as the trough of blockchain enthusiasm. Many of the programs that had been launched during the heyday of bitcoin euphoria during 2017 or during the initial part of 2018 either remained in the pilot phase of production or had been cancelled altogether. Be it a result of the costs associated with implementing and maintaining blockchain systems, the complexity of integrating blockchain platforms with current ERP technology, or the fact that many blockchain based options are not as appropriate or efficient, many of the initiatives were cancelled or shelved during the year. This decline in interest and project progress was compounded by the dramatic collapse of cryptocurrency prices during the year, further fueling doubts of the validity or appropriateness of blockchain for enterprise based solutions. These are the facts on the ground, and as of this writing the price via cryptocurrencies seems to have stabilized, albeit at lower levels than those achieved during 2018 and 2019. Even though blockchain projects and programs continue to be launched, the focus of different blockchain projects and initiatives have diverted some exclusively cryptocurrency projects to those more enterprise based. Possibly not as scintillating as projects that are based around or connected exclusively to different types of cryptocurrencies these projects are increasingly connected to enterprise and industrial applications.

Taking a step back and observing the blockchain space from a higher level and broader perspective this transition and development tends to make sense from a financial and nonfinancial perspective. First introduced with collaborations and

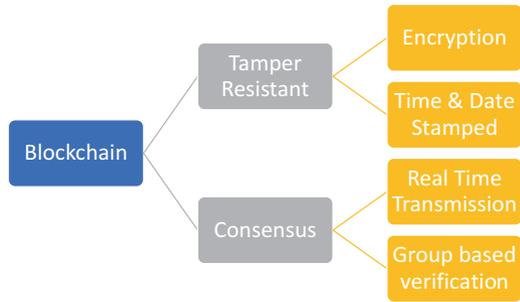
partnerships between international shipping organizations with spearheaded by IBM and Maersk, this coordination and associated efficiency gains created a possible paradox for the blockchain ecosystem. On one hand, the spectacular rise in the price of bitcoin and other cryptocurrencies did attract substantial investments and interest from individual and institutional players, including large amounts of coverage in mainstream media. Of course, and as usually occurs in the marketplace, and especially one such as nascent and emerging as blockchain itself, the dramatic rise in price of cryptocurrencies was only exceeded by the collapse of different cryptocurrency prices in 2018. Mirroring the price action of different cryptoassets, the drop in price did lead to the cancellation, shelving, and postponement of numerous projects. Price targets and forecasts that had been made during the enthusiastic increase in prices were quickly revealed to have been made with incomplete information, or at the very least in the heat of the proverbial moment. Even as institutional fund flows continued to enter the space, including the establishment and refinement of, there was a sentiment that dominated the airwaves that perhaps blockchain was not all it was initially cracked up to be.

Such a perspective is incomplete, and not to mention inaccurate, especially when objectively analyzed and viewed in the face of just what is going on the blockchain ecosystem. Be it represented by advances in smart contracts, the rise of decentralized exchanges and other business models running on blockchain based solutions or applications, or the establishment of different payment options allowing cryptocurrency to be used. Additionally, the continued development and building out of non-bitcoin blockchains such as the Ethereum has allows the investment and development of a number of different options to enter the broader marketplace. For example, blockchain can be used as an infrastructure system and platform to either replace or substantially augment current enterprise systems, but that is only the proverbial tip of the iceberg. Healthcare, transportation and logistics, education, food safety and treatment, retail, intellectual property and intellectual assets all represent prime candidates for improvement via utilizing blockchain based solutions.

Cryptocurrency may have launched the initial interest and enthusiasm for blockchain technology itself, but the price declines that have impacted the marketplace during 2018 should not dissuade either individuals or institutions from investing in more robust solutions. This book mentions and discusses cryptocurrencies, obviously, as they are (and will continue to have) an impact on the financial services space. That said, an appropriate way to think about the complicated relationship between cryptocurrencies, blockchain, and other enterprise applications is to imagine cryptocurrencies as one tool in the proverbial toolkit used by practitioners. Instead of focusing on the price action linked to different cryptocurrencies, the focus has continued to shift toward the enterprise applications for the technology itself. Interest and investment into differentiated blockchain technology solutions are already entering the marketplace, so it appears to merely be a matter of time before broad based enterprise adoption is fully underway.

Figure 1.1 breaks down and summarizes some of the core concepts related to blockchain, without focusing too much on the technical side of things, and instead highlighting the practical components that professionals need to be aware of going forward.

Fig. 1.1 Blockchain basics



Being Future Ready

Now, right after that splash of cold water that hopefully dampened any unreasonable enthusiasm or buzz that may have been generated due to the numerous headlines lets take a look at some underlying themes that are holding true. That said, there is another fact that must be acknowledged before we dive headfirst into this rapidly moving and changing technology landscape. In order for financial services professionals to evolve and develop into the strategic advisor and business partner so often cited as the end goal for the profession the current level of technological integration is simply not enough. As the broader business landscape continues to evolve and shift at an accelerating pace, it is increasingly obvious a bifurcation is occurring. Within the financial services landscape, which includes everyone from CPAs to investment bankers, there are practitioners and firms who appear to be proactively moving toward where the landscape is shifting, and there appear to be practitioners who are not doing so. Although the transition may be challenging and difficult for some organizations and individuals, becoming future ready, or future proof is not something that can be perceived or evaluated as an optional task, or something that can be delegated to a chief technology officer.

Rather, the shift toward being future ready or future proof is one that may have been initiated by technology, but is much broader in scope. From Amazon to Tesla, customers and consumers are increasingly comfortable with technology, customized data, and real time analytics based on this information. Financial data, by contrast, especially the types of information that is reported to investors and the marketplace, has not changed with the rest of the business landscape. This would be a problem in any event, but is compounded by the following reality that has been enabled by the rapid technological integration of business at large. In many situations, especially as software and platforms become easier to use and more readily accessible in terms of cost, the necessity of employing a traditionally certified financial professional may be dropping. Of course, there are specific legal, reporting, and compliance based work that only a certified professional can perform (such as a CPA signing off on an audit), but analytics and forecasting can, and increasingly is, done by non-CPA, non-CFP, and non-CFA holding practitioners and firms.

Blockchain and artificial intelligence represent powerful technologies that have the potential to launch a paradigm shift in the financial services professional landscape, but they are merely symptoms of a much more radical and comprehensive change. Financial services professionals are, almost without exception, going to have become more adept, forward thinking, and able to use technology in the course of doing business and serving clients. Pushed to the forefront by the rollout of blockchain and artificial intelligence, the financial services landscape, including both the individuals and practitioners therein must evolve and keep pace with the rest of the changes in the broader business landscape.

The Technology Landscape

While it may seem like technology has emerged rather recently as a disruptive and powerful technology force the reality is that technology has, over the history of the accounting profession, played an integral role. Put simply, the modern accounting function and marketplace as it currently exists would not exist as it currently is constituted without the integration and implementation of various technology tools. That said, the integration and implementation of tools and platforms such as blockchain options and artificial intelligence represent a fundamental change in how accounting practitioners interact with the broader business landscape. While technology has been a part of the business environment since the development of computer options, the actual implementation of these tools has primarily been focused on automating and increasing efficiency of current processes. Process improvement, achieving increased efficiencies through technological augmentation of existing methods, and driving increased profitability as result are recognized as standard business practices across industry lines. That said, even as technology becomes increasingly integrated into how businesses operate and are evaluated by the marketplace, accounting firms and professionals appear to be playing the proverbial catch up game with regards to technology.

Artificial intelligence, for example, is evident throughout the marketplace and consumer applications such as Alexa, Siri, and Cortana, and other numerous tools that individuals use everyday but are not necessarily aware that AI is a component of. The speed and process improvements associated with technology tools are also evident across different industry lines and geographic regions. Market leading organizations, including but not limited to Amazon, Google, Tesla, Tencent, Alibaba, and Netflix have implemented AI tools and platforms to assist with increasing both customer satisfaction and operational performance. Gathering information, making effective utilization of different sources of information, and being able to leverage this data to make better business decisions form the basis for possibly a sustainable competitive advantage. Information has been cited, in both practitioner and academic publications, as a potential source of competitive advantage moving forward in terms of both profitability and operational effectiveness. Simply making use of information, however, appears to be insufficient to successfully complete and thrive in an increasingly global and digital business landscape.

Blockchain, regardless of the accounting specific implications of this technology platform, is already being adopted and implemented across different industry lines, including some of the largest multinational organizations across the globe. Examples of organizations that have already implemented blockchain technology include, but are not limited to FedEx, British Airways, UPS, and other organizations with supply chains that span different geographic and industrial lines. While this text will be diving into the specific characteristics of blockchain technology, including differentiating factors distinguishing this technology, the overarching theme of decentralized and encrypted information is essential to understand the impact blockchain may very well have on the business landscape at large. The underlying theme, however, is not related to anyone technology, however, but the growing importance of data as a strategic asset and piece of information.

Data as an Asset

Since the digitization of technology across industry lines, the information produced, analyzed, and communicated by different organizations has been extremely valuable both to management professionals and the external users of said information. That said, the importance of effective data collection, reporting, and analysis appears to only have increased in value as increasing percentages of organizational value are tied up in intangible assets. Going by many names and iterations, including but not limited to intellectual property, intangible assets, and other data driven assets, it appears clear that the information produced by organizations can and should be leveraged to achieve business objectives. Drilling down, and reflecting on just how leading organizations operate and sustain leadership positions in the marketplace, the intersection between data and emerging technologies becomes clearer. Information, both quantitative and qualitative in nature at the inception of data generation, is coordinated, analyzed, and reported as a matter of business practice in any case. Extending this relationship, and focusing on the importance of using information to make decisions, both blockchain and artificial intelligence can assist management in more efficiently making use of organizational information.

That said, it is not enough to simply harness to technology to make better use of existing information and data; management teams must also be able to protect, filter, and report these varieties of data flows to the marketplace. In a business environment and landscape that increasingly depends on information, both quantitative and qualitative in nature, it is also important that management professionals safeguard and protect these different sources of data. At this point, and prior to diving directly into both an in-depth analysis of technology options and a review of applications for the financial services industry as a whole, a brief overview and introduction of the different technology tools in marketplace appear to be appropriate. While it is true that each technology or trend introduced and listed here will be examined in much more depth throughout this text, a preliminary introduction makes sense for several reasons.

First, an introduction of various ideas, concepts, and applications at an early stage in the text allows the creation and establishment of a working definition to be used not only within this specific text but also in general marketplace conversation. Working off a common set of terminology and concepts is important, but especially important when discussing and examining relatively advanced and amorphous technology trends that include ideas like blockchain, cryptocurrencies, artificial intelligence, and the increased digitization of the accounting function. Second, laying the groundwork for the more advanced and in-depth conversation and analysis that will be a component of this text will help in reducing the hype, buzz, and subsequent confusion present all too often within the discussion surrounding rapid technological advancement. Drilling down, and understanding both the components of technology tools and the ramifications of these tools in a logical manner allows for a more substantive conversation focused on real world applications versus speculation.

Third, and arguably the most important part of performing an introductory summary and overview of what will be discussed in this book is that, by doing so, readers and users of this text will have a roadmap and framework through which to absorb the content contained therein. While ideally, every reader of this text would focus equally on every chapter and piece of information within this book, if you are more interested in one section over another section of this text, establishing working definitions and guidelines up front provides an opportunity to focus on which areas are most specifically interesting. With that said, and not meaning to represent a comprehensive review of either the topics to covered nor a final definition, the following information can be provided.

Topics & Themes

Technology as a Tool the theme of this book is not to speculate nor offer wild predictions as to the future of the profession, nor to launch the discussion of the future of the profession in some other direction toward a future in which practitioners are disrupted out of primary roles and responsibilities. Like many other truths and facts, however, the reality on the ground is far more complicated than either one of those scenarios. Some practitioners and commentators speculate that the future is one of virtually unlimited opportunity and growth for the financial services profession, spurred on and driven by technology tools and adoptions. Anyone who has dealt with financial services practitioners or institutions in real life will be aware of just how many obstacles remain on the path toward full technology integration. Paperwork, in either physical or electronic form, is one of the most prominent pain points between clients, institutions, and brokers.

On the other end of the perspective is the opposite perspective and point of view that is put forth by some in the financial services space. Automation, disruption of current roles and responsibilities are forces already underway in the marketplace, and have both created new jobs and roles as well as already eliminating other ones during the process. Even as some roles and tasks are automated, however, it is important to weigh the learning curve and obstacles that can hamstring and prevent

the full on implementation and adoption of different emerging technologies. Budgets, the complexity of technology tools itself, and the difficulty of mapping and connecting new technology systems to current enterprise platforms all represent possible stumbling blocks that might slow the adoption and integration of technology overall. That said, and what this book attempts to cover and discuss, are both the technology tools themselves as well as the implications these tools will have on different aspects of the financial infrastructure.

Blockchain Perhaps one of the most discussed and analyzed technology trends, especially among accounting professionals, of the last several decades, the potential and ramifications of blockchain technology still appears to be in early stages. At the core of the idea, blockchain is **not** a financial services tool, platform or application. Rather, blockchain, no matter if it is operated as a public blockchain model or a private blockchain, is a decentralized database that allows users access to encrypted information in real time. Individual components of blockchain technology, such as public/private keys, encryption, and inclusion in a cloud based network may not represent innovative ideas on a standalone basis, but when combined are a potential game changer for the profession.

Artificial Intelligence In the past, the applications of AI that most individuals may have been the most familiar with took the form of whatever had been communicated or featured in movies and other sources of entertainment. This, along with large amounts of debate and discussion of the topic, has tended to create an ominous air around this topic for sure, but that does not have to be the case. At the core of the idea, and ignoring the often breathless commentary in the marketplace, AI represents a program or suite of programs that can augment, replicate, or eventually replace human oversight and interaction with business issues. At this time, and especially appropriate for accounting and finance professionals, is that AI has not yet progressed to the point where it can entirely replace human interaction. What it can do, however, is certainly worthy of additional analysis, specifically in the context of accounting and finance work.

Robotics Process Automation The phrase and concepts that underpin RPA are not necessarily new or innovative in nature. Rather, they have been around in the technology marketplace for several decades, as various different types of automation, efficiency oriented projects, and streamlining enabling tools have entered into the marketplace. What RPA does is a two fold change from prior activities and initiatives in this area. First, RPA enables the development and implementation of bots to enter the workforce, and more importantly, for bots and other automaton software to engage in financial and accounting activities. Second, and a core focus of the analysis conducted as a part of this book is the reality that, for all intents and purposes, RPA can and often is viewed as a realistic stepping stone toward full blown artificial intelligence. A good analogy is to present RPA as a bridge or midpoint between current systems and technology and full blown artificial intelligence platforms.

Cryptocurrencies Arguably the most high profile example of rapid technological change and adoption by market participants, cryptocurrencies attracted large amounts of coverage for several reasons. First, some believe that they represent an eventual alternative to traditional fiat currency and an option for those not wishing to remain a part of the current financial infrastructure. Second, as a decentralized application, especially in the case of Bitcoin which operates on a completely decentralized model, there is no single entity in charge of regulation, oversight, or enforcement. Put another way, there is no one or nothing in charge of resolving Bitcoin based disputes. Third, and lastly, the uncertainty surrounding both the implementation and taxation of Bitcoin and other cryptocurrencies continues to create anxiety and feelings of stress within the professional landscape.

Automation Automation and the improved productivity that often comes along with increased efficiency and technological integration can be viewed as both a positive and negative trend for the profession. Viewed from a negative perspective, the increase in automation can, and most likely will, lead to job losses, displacement of some professionals in the workforce, and lead to a redefining of how accounting professionals are educated in the future. Examined from a more positive point of view, however, automation and the increases in efficiency that will be generated will most likely unlock opportunities for the profession associated with both current and future revenue opportunities.

Continuous Reporting One of the most common complaints and issues associated with financial reporting and accounting processes in the current marketplace is that, despite improvements in technology throughout the process, the information reported to the marketplace can easily be between 3–6 months out of date. Compounding this time delay factor is the reality that, in virtually every situation, the current status of financial reporting is only of interest of applicable to a rather narrow set of end users. Regardless of whether the organization is publicly traded/owned, or privately managed, most traditional financial reporting is only applicable or of interest to creditors of equity shareholders. As stakeholders increasingly expect and require a broader array of information, including both financial and non-financial information, current accounting processes will have to be automated with technology and transitioned to a more continuous process.

What This Means for Financial Services This entire text is dedicated to an in depth review and analysis of these technological forces, and just what these forces may mean for the financial services landscape moving forward, but it appears logical to frame the analysis upfront to focus the conversation and attention of the users of this text. Put simply, and regardless of what subset an individual practitioner finds themselves within, it is increasingly clear that current practices and processes will be insufficient moving forward. Automation, technological integration, and increasing competition from non-traditional areas are combining to create an environment in which financial services must adapt to keep pace and thrive moving forward. Financial services, including but not limited to accounting, financial analysis, and banking related activities will need to evolve and change in the face of technological disruption.

While these core areas form the foundation of this book, they are by no means the only subjects to be discussed nor do they represent the totality of forces driving change within the profession. That said, and important to acknowledge at the beginning of this conversation, is that technology tools and platforms are enabling disruption and change at a pace unlike other disruptive trends that have previously occurred within the profession. Change, of course, is an inevitable part of business and of sector specific development, but the pace of change appears to be accelerating at a rate difficult contend with using traditional tools and processes.

Chapter 1 Summary

Chapter 1 forms the introduction and overview of the terminology and topics that lie at the center of this text, including not only the terminology and technical concepts, but also how these topics will connect to the financial services profession. Specifically, this chapter breaks down the technical topics and concepts – ranging from robotic process automation, to artificial intelligence, to blockchain and cryptocurrencies. Reinforcing the appropriate definitions and terminologies associated with emerging technology is especially important for practitioners seeking to have intelligent conversations and debates around these topics moving forward. Bad information can cause even the most promising project to fail, and professionals must be able to objectively assess the viability and legitimacy of projects from both an operational and financial basis. On top of introducing the topics themselves, Chap. 1 also analyzes the topics and content in ways that are understandable and applicable for corporate practitioners. Instead of just focusing on technical, or jargon fueled definitions that focus on too much detail, this chapter lays the groundwork for the rest of the text by presenting these concepts in a manner that is understandable and useful for readers of this text. Technology will, and already is, changing the face of the financial services professional landscape, and are topics that every professional must understand and apply in order to service clients effectively.

Reflection Questions – Chapter 1

1. What is your current comfort level, at an organizational and individual level, with these emerging technology tools?
2. Do clients seem to be knowledgeable or interested in emerging technologies such as blockchain, artificial intelligence, robotic process automation, and cryptocurrencies.
3. Have you or your firm dealt with any regulatory or legal issues associated with these technology tools.

Supplemental Readings

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It should come as no small surprise, especially to those of you reading this book, that the business landscape at large is in the midst of a technological paradigm shift. That phrase may appear to be to be excessive or perhaps a little buzzworthy, but it is difficult to think of a word or phrase that would be equally appropriate. In addition to the underlying trends that are redefining society and business at large, namely demographic changes, the machinations of global trade, and the increased digitization of information, there are who new areas of business and science being developed as we speak. Even the new technology tools that are the focus of this text, however, it is important to note that the evolution, iterations, and developments of accounting and financial services is not necessarily new; the tools have continued to change rather than the goal of the tools themselves (Winsen and Ng 1976). With every new development, however, comes the proverbial push and pull of innovation and regulation; blockchain and artificial intelligence are not exempt from this market reality. These dynamics, specifically as the relate to the accounting profession, represent forces and changes that must acknowledged and addressed in a proactive manner. Accounting professionals seem to be aware of, from the number of articles and discussions focused around the emerging technology space itself, but action steps still seem to be a work in progress. Specifically, as of this writing, there is no authoritative or definitive guidance issued by any accounting institutions or bodies that have entered into the marketplace. To kick things off and to help frame the conversation, Fig. 2.1 presents a summary and highlight of trends that are changing the accounting profession from its current position to where many experts predict it will end up.

Regulation

Put simply, accounting and financial services are a highly regulated set of industries, with regulations and oversight vying other tightly regulated fields such as healthcare and regulated power transmission and distribution. Taking the political winds out of

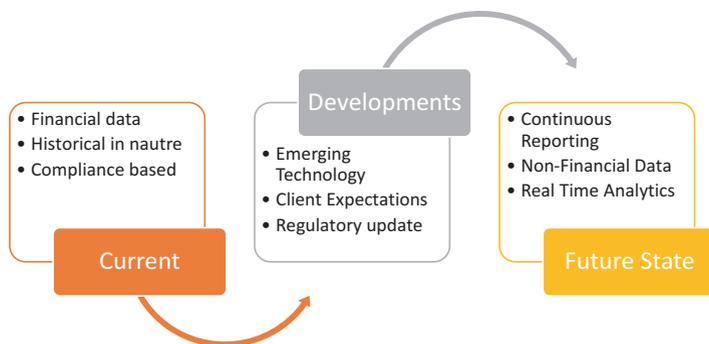


Fig. 2.1 The changing accounting landscape

the equation for the purposes of this conversation, it is reasonable to conclude that regulation has, continues to, and will be a powerful force in the fields of financial services. Traditionally the scope of regulation has been limited to the reporting and communication of financial information to a relatively narrow set of stakeholder groups – creditors and equity owners. Additionally, the guidance and frameworks promulgated by the FASB and IASB form the guidelines and standards by which much of financial information is compiled and distributed. In addition to all of these existing guidelines, however, the rise of the both blockchain and artificial intelligence leads to the following question. As financial services become increasingly integrated with technology tools, will technology style regulation begin to intrude on the profession?

This is not an academic or theoretical question with the passing into law the General Data Protection Regulation (GDPR) on May 25, 2018. Although this regulation originated in the European Union and was primarily originated at technology firms who had access customers social information, the connection between this regulation and financial services is relatively clear. This regulation originated within the E.U., but if an organization has any information on any E.U. citizen that organization falls under the guise of this fairly sweeping regulation. Without diving into too much detail as to the specifics of this regulation, if an organization has any information that could be used to identify an individual, extra precautions and safety standards must be taken. Taking a step back, and observing the language of the GDPR legislation from a market based perspective, the following conclusion begins to materialize. Payment and purchase information, investment information, trading history, accounting records, income tax payments and filings, and assorted other financial information can, and is, considered to be identifying data. In addition to the obvious compliance implications of this regulation there also appear to be opportunities aligned with the increased regulatory oversight of the profession linked changing regulation.

In addition to the looming implementation, and waiting for the proverbial hammer to drop on the first offending organization, financial professionals need to be aware of other regulatory changes that are coming for the profession. In addition to

international regulations and standards, standards in the United States – considered to be the most liquid and robust marketplace by many individuals – are also potentially going to impact the profession at large. In an almost contradictory manner, especially when viewed in the context of emerging technology and efficiency, technology may actually increase the importance of regulation. Details affiliated with these changes will be outlined in more detail throughout this book, but it is fair to say that technology and regulation need not be only seen as a hinderance or regulation, but rather an opportunity as well.

State by State Regulations

Further muddying the waters connected to blockchain and cryptocurrencies is the fact that, despite the confusion and debate connected to blockchain and other blockchain based applications at the federal level there is progress and developments occurring at the state level. In such a fast moving space like the ones connected to cryptocurrencies and blockchain at large, it is important for every practitioner to remain abreast of changing topics and changes occurring at every level. This sounds nice, clearly, but also has implications from a practical level as well, especially for how different types of information are treated and classified. No single analysis is going to encompass all of the regulatory changes in such a fast moving and evolving space, but there are some examples that are occurring that should be of interest to anyone in the financial services space.

Toward the end of 2018, Ohio attracted numerous headlines and attention for a variety of reasons, least of all the \$100 million invested in Columbus by approximately half a dozen blockchain and cryptocurrency firms. These firms have attracted significant attention and the focus of other investment funds across the country, but are only one of the drivers of innovation in the state. In addition to this financial investment, Ohio – at the end of the year – became the first state to allow residents to pay local and state taxes via Bitcoin; this represents a significant change in how cryptocurrencies are utilized. Prior to this announcement and legal change, the only guidance – as will be discussed throughout this text – was the memo issued by the IRS in 2014 classifying cryptocurrencies as property for accounting, tax, and reporting purposes. Such a change, allowing residents and consumers to pay bills and debts is a clear shift in the development and evolution of cryptocurrencies from investments to full fledged currency equivalents.

New Hampshire, in the early days of 2019, also announced that residents and individuals would be able to pay tax bills and other issues with bitcoin and other cryptocurrencies. While a final decision has yet to be made, this also represents progress toward bitcoin and other cryptocurrencies shifting away from investment and opportunities to being able to be used for the payment of debts and other bills. Even as the prices of individual cryptoassets have declined in 2018 and stabilized at these lower levels in 2019 these developments continue to point to greater increased institutional interest and development across different state and functional lines. These changes and developments, however, do pale in comparison to the potentially

ground breaking work that is underway in the legislature in the state of Wyoming. Although cryptocurrencies may be accepting broader acceptance in terms of how they are used and treated for different purposes, there does remain confusion and murkiness connected to how blockchain is treated overall.

Wyoming, beginning in 2018 and continuing in 2019, has taken a rather progressive and forward looking approach to the regulation and fields connected to cryptocurrency and blockchain overall. Mirroring a previously successful attempt to lead financial technologies like those utilized by Dakotas and Utah with the credit card processing industries in the 1970s and 1980s this may not as unusual as it may appear. Wyoming may not be the first place that comes to mind when the idea of a financial technology hub or center of excellence, but it is important to keep track of developments regardless of where they geographically occur. Spearheaded by a Wall Street veteran with decades of experience, and with bipartisan support across the legislative political lines it seems that these concepts have received an enthusiastic reception. While legislation and the ripple impact of these legislative actions may still have effects that are difficult to understand at this point in time the ramifications for financial services professionals can be forecasted with some degree of certainty. Drilling down into some of the changes and actions undertaken, there are a few items and pieces of information that should be taken into account.

First, and perhaps most importantly for the treatment of cryptocurrencies and other cryptoassets, a bill, SF0125, has put forth several different classifications for these assets. This may seem like a minor development or change, but is significant in ways that are – as of yet – ultimately unable to be forecasted. Drilling down, this legislation breaks out different cryptoassets into three separate categories, and also grants cryptocurrencies the same legal status as currencies such as the dollars used to pay and settle other obligations within the state. Again, this legislation is sponsored and supported at a state level, but represents the most significant development and progress on these issues to date. In addition to granting bitcoin and other cryptocurrencies the same legal status as cash within the state, this legislation also seeks to grant banks the ability to manage cryptoassets and cryptocurrencies as assets under administration.

Second, and building on that last sentence, the ability of banks to manage cryptocurrencies marks a departure and differentiation from the previously dominant legislation in the space – the New York BitLicense. Currently the only financial institutions that are able to offer trust and custody services around different classes of cryptocurrencies, which complicates matters from a financial services and legislative perspective. Trust companies, or organizations that are offering services via a trust vehicle must register with the individual 50 states in order to do business across state lines. From a compliance and cost perspective this also means that the complexity and cost associated with offering these services is such that only the largest and most well established players – to date – have been able to do so. In addition, the S.E.C. has come publicly and stated that the trust business model is not the preferred model of offering cryptocurrency services. Banks offer two distinct benefits versus trust organizations that are important for a financial services perspective. The ability to (1) operate across state lines with an operating model that does