

SUSTAINABILITY OF BUSINESS AND ACCOUNTING EDUCATION IN A RAPIDLY CHANGING ENVIRONMENT

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ABSTRACT

Sustainability of business and accounting education has been affected by three recent events examined in this paper. First, the world was dramatically impacted in 2020 by what is known as the global COVID-19 pandemic. The COVID-19 pandemic has affected the content and delivery of accounting and business education. Second, advances in technology are forcing additional changes in the day-to-day operations of many businesses and, thus, require changes in accounting and business education. These developments in technology, both hardware and software, are rapidly changing the tasks that accountants and other employees perform for their employers and technological skills demanded of accounting graduates. Third, business sustainability developments and initiatives affect all business activities and thus business and accounting education. In turn, the educational preparation of new employees who enter the current-day business world must be adapted to the current business environment if it is to be relevant and sustainable in the future. This paper examines some of the issues brought on by COVID-19, technological advances, and business sustainability initiatives that business colleges and accounting schools must address in their quest for continued educational relevance and sustainability. The emerging educational requirements are broadly organized in this paper as analytical skills, business sustainability education, COVID-19 pandemic modifications, soft skills, and technical skills.

Keywords: Accounting and business curricula; COVID-19 pandemic; Analytical skills; Technical skills; Soft skills; Business Sustainability

1.0 INTRODUCTION

The world economy has been affected by the 2020 global COVID-19 pandemic as most businesses, universities, churches, and social functions were shut down and are still coping with the aftermath effects of the pandemic. Most organizations have resumed operations but have had to adapt to a changing world environment. The pervasion of COVID-19 and the subsequent need for social distancing caused many universities and colleges worldwide to transform their programs and courses to virtual and online classes for the spring of 2020. With the resurgence of the virus in 2021 and 2022 in different variants, many of those changes are still in place. The offering of virtual courses requires the use of technology. In business, advances in technology have significantly affected operations and the skill sets needed to compete effectively in a global economy. Business sustainability has become a business imperative as investors demand, regulators require, and companies report their sustainability performance in areas of financial economic sustainability performance (ESP) and nonfinancial environmental, social, and governance (ESG) sustainability performance with the ethics component integrated into both ESP and ESG dimensions (Rezaee and Fogarty, 2019).

Future business and accounting students must obtain new skill sets and adapt to the new ways that business education is delivered. We examine the educational sustainability of institutions of higher education considering the COVID-19 pandemic, the ever-changing world of technology, and business sustainability. Our paper is directed at future delivery methods, the content and relevance of accounting and business education, and changes in educational requirements. This changing environment has created challenges for higher education in accounting and business that must be accepted and successfully met if the sustainability and relevance of accounting and business education in future years is to be maintained.

We suggest that business colleges and accounting schools integrate these changes and challenges referred to as "ABCDTS" into their curricula to deliver relevant, sustainable, and affordable business education to current and future business students. The ABCDTS is an abbreviation where "A" stands for artificial intelligence, "B" for blockchain platform, "C" for the COVID-19 pandemic effect, "D" for data analytics and data science, "T" for technical skills, and "S" for soft skills. We suggest that business and accounting schools revise their curricula to provide analytical, technical, sustainability, and soft skills considering significant technological changes in business, recent business sustainability initiatives, and the COVID-19 pandemic. Future research should seek expert insights from academia and practitioners on how best ABCDTS can be integrated into the business and accounting curricula. This study presents the analytical, technical, and soft skill sets expected of business and accounting graduates in the post-COVID 19 pandemic era and recent sustainability development initiatives.

The emerging educational challenges and requirements are analytical skills, business sustainability education, COVID-19 pandemic modifications, soft skills and technical skills and they are examined in detail in the following sections. Specifically, the next section presents institutional foundation of business and accounting education. Section III discusses the COVID-19 pandemic and technology. Section IV describes the educational content and delivery. Section V presents the curriculum design of ABCDTS education, and the last section concludes.

2.0 INSTITUTIONAL FOUNDATION OF BUSINESS AND ACCOUNTING EDUCATION

The global investment community holds public companies accountable for their business activities and financial reporting processes. As business schools are the main providers of professional accountants, business schools worldwide also play important roles in preparing the most ethical and competent future business leaders who understand the business environment. The public, regulators, the accounting profession, and the academic community are all taking a closer look at colleges and universities in the aftermath of the COVID-19 pandemic to find ways to hold these institutions more accountable for achieving their mission of providing sustainable higher education with a relevant curriculum. Therefore, the global community and accreditation bodies have recently addressed business sustainability education and research. For example, the Association to Advance Collegiate Schools of Business (AACSB) International has established a COVID-19 webinar and resources to assist institutions of higher education to a new normal (AACSB, 2020). The AICPA-NASBA report states that "The role of today's CPA has evolved. Newly licensed CPAs need deeper skill sets, more competencies and greater knowledge of emerging technologies." (AICPA-NASBA, 2021:1). The findings, based on 317 responses from 1,200 surveyed accounting programs throughout the United States, suggests there are major gaps in accounting education in several areas (AICPA-NASBA, 2021). For example, the report indicates that about 64 percent of accounting programs are teaching data analytics, whereas less than 50 percent of accounting programs teach emerging topics, such as IT governance and cybersecurity.

Business colleges and accounting schools provide the foundation for quality-driven business and accounting education. This education, in turn, is the cornerstone of professions in business and accounting and, thus, contributes massively to economic growth and prosperity in the United States. However, the COVID-19 pandemic brought on many challenges and has forced changes that must be addressed to maintain the sustainability of business and accounting education. Many universities worldwide moved their classes online in the spring of 2020 amid COVID-19 concerns and are planning to continue virtual programs in the foreseeable future. Of necessity, colleges and universities developed multi-phase plans for reopening their campuses with different time frames for implementing each phase. Many institutions have mandated COVID-19 vaccinations for students, faculty, and staff and still labor with various types of operating restrictions. The use of virtual and online courses to cope with campus closures in the spring of 2020 is almost certainly a permanent feature on most campuses.

In 2020 the United States Congress enacted the Coronavirus Aid, Relief, and Economic Security Act (CARES), that initially provided an estimated \$2.2 trillion to fight the COVID-19 pandemic (CARES Act, 2020). The intent of this unprecedented federal outlay was to stimulate the US economy and provide financial assistance of \$32 billion to support education at all levels, and \$7 billion of the funds were allocated toward student aid (CARES Act, 2020). Nevertheless, many institutions are facing significant challenges to their financial sustainability. With their campuses essentially closed for the most part of 2020 and 2021, revenues for dorms, parking, and other services are diminished, and to the extent that enrollment has fallen, their tuition revenues are down as well. In addition, many state-supported universities experienced an erosion of state support as state governments decreased their budgets in the face of the virus-induced economic recession. State Boards of Public

Accountancy also recognize that many accounting courses will be offered online and classes will be conducted virtually. In the past, some State Boards of Public Accountancy have had limitations on how much of a degree program could be online. However, they are now considering accepting virtual courses that will meet the education requirements that determine eligibility for the Certified Public Accounting (CPA) Exam. For example, is the Texas State Board of Public Accountancy (TSBPA), has adopted an emergency rule revision that eliminates the requirement for CPA candidates, "To take at least 15 of their 30 semester credit hours of upper division accounting courses from classes held in-person during the Spring 2020 semester" (TSBPA, 2020), and it is expected that other State Boards of Accountancy will follow suit by allowing accounting courses taken online to satisfy requirements for taking the CPA Exam. Both the content and delivery of business and accounting education courses are being modified in response to the COVID-19 pandemic and technological advances as explained in the next section.

3.0 COVID-19 PANDEMIC AND TECHNOLOGY

In the aftermath of the COVID-19 pandemic, university administrators, staff, faculty and students should be both reactive and proactive in establishing and enforcing cost-effective policies, procedures and educational strategies to address many emerging challenges. With the development of COVID-19, the operations of most governments, businesses, universities, churches, and social functions were either completely shut down or severely limited, and as they have resumed operations, they have encountered a resurgence of the virus and a resumption of many limitations on their daily operational activities. There are still problems delaying what the medical community refers to as "herd immunity" and a return to normalcy (McKinsey & Company, 2021). The delivery adaptations made by universities to continue their education programs remotely have no definite end in sight. In addition, some universities have found that shifting the delivery of their classes to virtual or online methodology is being well received by students and faculty, and they find that these new delivery methods have a life of their own even after COVID is no longer a factor, and enrollments have returned to normal levels (McKinsey & Company, 2020).

Technology advances have impacted the operations of most industries. Accounting firms, for example, have had an elevated interest in hiring accounting graduates with analytical, technical, and soft skills that the firms consider necessary for new hires if they are to advance in their careers successfully. Dohrer and Mayes (2020) present several areas of audit focus for auditors in conducting financial audits in the post-COVID era. These include performing audit procedures remotely with the use of technology, COVID risk assessment and management, critical audit matters stemming from COVID-19, and identification of subsequent COVID-19 events. Accounting firms collaborate with business schools to tailor their curricula to skill sets demanded by employers in an attempt to narrow "the lag that often exists between business-school curricula and the fast-evolving technological and data-analytical skills that they and their corporate clients require." (Thomas, 2021). The Accounting Program Curriculum Gap Analysis Report suggests that accounting programs teach topics of data analytics, IT audit, and cybersecurity (AICPA/NASBA, 2021). In most industries, operating methodologies that were developed over time and used pervasively by businesses are becoming, or have become, obsolete and of limited usefulness due to advances in technological capability.

Conceptually, technology advances can cause some operating methodologies to be left behind as new data analysis capabilities can improve efficiency and response time for many internal business activities. With some of the new software programs now available, employees can easily collect and analyze data that previously was either not feasible, or more likely, not economically feasible and thus provide new insights into the efficiency and effectiveness of corporate processes and methodologies. Whatever the industry and whatever the business functions, technology advances have created rapid environmental changes. If business college graduates are to be adequately prepared for this new environment and possess the necessary skill sets, business colleges must adapt their educational programs to meet the demands of these new conditions.

The pandemic has proven that these institutions simultaneously possess financial and operational vulnerabilities. As the world continues to change in adapting to what is almost certain to be a new normal in the post-COVID-19 era, business colleges and accounting schools should mirror these changes in adopting new educational programs in a virtual, in-person, or hybrid format. Challenges to the educational system and changes/adaptations that business colleges and accounting schools will need to make are expected to be in three areas: (1) delivery methodology; (2) the content of sustainable and affordable high-quality education; and (3) a reconsideration of educational requirements that determine eligibility for professional exams (Sangster, Stoner and Flood (2020)). This study examines these three education challenges to the maintenance of sustainable business and accounting education.

4.0 EDUCATIONAL CONTENT AND DELIVERY

Business sustainability, both financial ESP and nonfinancial ESG, is gaining the attention of investors, regulators, and businesses worldwide and thus sustainability education should be integrated into business and accounting education. Although COVID-19 has forced changes to educational programs, colleges of business and schools of accountancy are still expected to provide sustainable and affordable educational programs that are effective and efficient yet have the flexibility of virtual and hybrid courses while maintaining the quality of in-person classes. Meeting these additional expectations brings new challenges for business and accounting programs and adaptations will be needed to meet the educational need of current and future students in their programs. In addition to the challenges brought on by the COVID-19 pandemic, today's business environment has changed substantially in step with the development of technological capabilities and business sustainability that are employed in the modern corporation (Ng and Harrison, 2021). Business students need a foundational knowledge of many different components of the modern business environment as described in the following subsections.

4.1 Analytical Skills

Technological advances in computer science have been massive in recent decades, and each step forward, whether it be processing speed and capability, storage technology, software advances, world-wide connectivity through the internet or other developments, fosters even further and more rapid advances (Wang, 2021). Consumers of technology have been offered expansive new application possibilities that demand adaptation and user skill development to reap the full benefits of available technology. Terminology commonly used in the world of information technology (IT) includes Big Data, data analytics, and data science education.

Business students and accountants need to possess analytical and research methodology skills if they are to function effectively in an environment replete with the massive amounts of data available in the current business world. Zhang et al. (2020) examined the current state of technological advances in accounting (AI, blockchain) and their impacts on accounting education and suggest that understanding the technology changes in the industry can help adapt accounting education to prepare students for their future careers. Three letters (ABD) of the six-letter ABCDTS, relate to analytical skill sets. These are artificial intelligence, blockchain and data analytics and are explained in the following sections.

4.1.1 Artificial Intelligence

Artificial Intelligence (AI) is also known as machine learning, computer vision, natural language processing, and deep learning and can be defined as the use of machines (computers) to perform tasks that would otherwise require human intelligence. AI offers many benefits of consistency, speed, uniformity, reduced labor costs, and global competitive advantage. AI has become indispensable to organizations of all sizes and types, and a quality business education includes knowledge of applications, benefits, and challenges presented by AI. However, there are several other challenges associated with AI including data risks, unintended consequences of merging AI into the organization's values and mission, and the focus on improving efficiency that needs to be addressed. Artificial intelligence enables businesses to decide on activities and actions that could have the greatest effect on achieving desired goals and to begin a transformative phase that will improve productivity and efficiency while decreasing costs (Rao and Verweij, 2019), through automation of labor-intensive tasks (Kokina and Davenport, 2017).

Artificial Intelligence can assist accountants and auditors in using, "AI-enabled technology to locate relevant information in large data sets, extract it from documents and make it usable for the human auditor" (Kokina and Davenport, 2017). PricewaterhouseCoopers plans to spend \$12 billion and hire 100,000 new people in areas such as artificial intelligence and cybersecurity by 2026 (PwC, 2021). Many businesses are using AI in major parts of their value chain to deliver a competitive edge while eliminating manual activities such as promotions and supply chain. AI can substantially reduce the processing and execution time in supply chain management by enhancing the accuracy of projections and forecasts. Supply chain leaders use AI-powered technologies to: (a) make efficient designs and eliminate waste; (b) apply real-time monitoring and error-free production; and (c) facilitate lower process cycle times (Dash, McMurtrey, Rebman, and Kar, 2019). Processes are critical to bringing innovation and advancement to the market. AI can aid by optimizing R&D, increasing manufacturing quality and quantity while simultaneously cutting costs. The result is a better experience for the end customer. E-commerce businesses are using AI to predict trends that will allow them to optimize warehousing and logistics, set prices, and even personalize promotions (Dash et al., 2019). August Wilhelm Scheer, Managing Director of the Scheer Group, stated already in 2015: "Everything that can be digitized will be digitized. Each process, product and business model become digital, so the revolution lies in the processes." This quote underlines the opportunity for optimized process management through digitalization and the execution of AI-supported automated processes. Therefore, targeted, and consistent process automation is a critical success factor for both now and in the future. It is becoming increasingly important for

companies to use their data's power and make intelligent and profitable decisions (Paschek, Luminosu, and Draghici, 2017).

Bakarich and O'Brien (2021) conducted a survey to gather insight from professionals regarding the extent that AI is used in accounting firms and conclude that accounting firms are currently using AI on a limited basis and suggest that AI has potential for future research and integration into accounting and business education. Machine learning as an integral component of AI focuses on the use of algorithms to identify patterns and associations in Big Data and make proper decisions and predictions based on data analyses. Machine learning and AI enable business schools and accounting programs to educate students better, more effectively, and sustainably by understanding students' educational needs and then developing robust, tailored, and relevant curricula to meet those educational needs. AI can also be used to administer and implement educational programs. Many universities have started to offer AI courses and even AI master's programs to teach machine learning, natural language processing, deep learning, and reinforcement learning and computer vision skills. One such example is the Penn State AI Online Master's Degree, which is designed "to provide technical education that empowers graduates to drive the design, development, and deployment of AI and ML products and services across a broad array of applications." (Penn State, 2021). It is expected that universities worldwide will follow suit by offering either graduate courses and/or graduate programs in AI.

Several recent studies examine the demand for and interest in AI education as AI becomes more prominent in the world of business and finance and the need for incorporation of AI elements into higher-education curricula grows. For example, Andrzejewski and Dunal (2021), using the Importance-Performance Analysis (IPA) survey method, find that there is a demand for post-graduate studies to incorporate AI elements into curricula as 81% of participants said they would be willing to see these topics covered in post-graduate curricula. The top three AI tools were automatic programming, neural networks, and logical reasoning. Mintz (2021) suggests two ways of incorporating AI topics into curriculum either through integration into business courses or teaching a standalone course on artificial intelligence.

4.1.2 Blockchain

Blockchain is another area where managers and accountants can add significant value to their work. Blockchain was initially identified with the introduction of Bitcoin, which allows for a mutually agreed upon recordkeeping process (Anderson, 2016). The blockchain platform enables businesses to keep "separate records based on transaction receipts," which would permit them to "write their transactions directly into a joint register" (Anderson, 2016). Business and accounting students need a working knowledge of blockchain technology platforms because transactions can be generated, updated, and verified electronically with a high level of data security and a low risk of unauthorized access or alteration of the data files. Blockchain technology will advance but not replace the traditional accounting and auditing jobs because blockchain "cannot provide enough appropriate audit evidence related to the nature of a transaction," and there is still a need to audit for fraudulent transactions, related party transactions, and any transactions that are not accounted for in the blockchain (Mahbod and Hinton, 2019).

The growing use of information technology (IT) has enabled business organizations to design and implement blockchain platforms. By using blockchain technology, a single platform can

be created where business transactions are recorded and shared by the consensus of associated parties, but once recorded, transactions cannot be altered. This platform enables all parties to trace and verify transactions from the original initiation to the final disposition. Blockchain is a digital decentralized public ledger designed to change and advance the way organizations conduct their business. Blockchain uses a sophisticated system of strong cryptography, consensus, and validation to store records while permitting access permanently and securely to such records across all authorized users. Appelbaum and Smith (2018) describe blockchain as a decentralized database that enables real-time verification and communication of information, where block nodes in the verification process have volunteered to be verifiers and confirm via consensus algorithm that the hash IDs and information referenced through those hash IDs are authentic. International Standardization Organization (ISO) 22739 (2020) define blockchain and distributed ledger technologies as the technology uses cryptographic hashes and Merkle trees.

Blocks are added to the blockchain in chronological order in which each block is linked to one and only one predecessor using a uniquely generated hash-key. A new block only gets added to the blockchain after it is validated by all participants of the blockchain network. Then, a new copy of the entire blockchain is distributed again to all participants. When a block gets altered, it automatically receives a new hash-key, causing it to become an orphaned block and rejected by the rest of the participants. This makes it difficult for hackers to tamper with records stored on a blockchain platform. Because blockchain records are distributed to all its intended users on a network, there is less demand for accountants, banks, clearing houses, and lawyers to maintain the ledger. Using blockchain makes it possible to streamline business processes and improve integration between businesses across the supply chain. Considering the expansion of global markets and the rapid advances in information technology, blockchain clearly has the potential to unleash a whole new level of possibilities for many businesses.

Blockchain platforms can be either public, private or hybrid, and they function in a manner very similar to an electronic data interchange (Maslova, 2018). Records, which are better known as blocks, that are stored on a public blockchain are visible to all participants of the blockchain network. A private blockchain network can also be established between two or more entities where records are encrypted and are only visible to certain intended users. Anonymity in a public blockchain system is an important attribute as all information and transactions are available to any interested party anywhere. These characteristics of public blockchains have led to scaling problems, difficulty in controlling information, and visibility, as well as compliance with privacy regulations. In contrast, private blockchain systems only allow access to data files by certain people who are authorized by current users of the system. Information sharing and security can be controlled more easily, and performance and scalability is far better (Mohan, 2019). Private blockchain technology has been used to tabulate votes in elections because it can provide reliability and data integrity, while preventing administrator bias, forgery, or points of failure in the digital system. Roh and Lee (2020) propose a system using private blockchain algorithms to encrypt voting data so that it cannot be negated when generating the blocks or when collecting the transactions at the management server. Such a system would add integrity and transparency for voting results and thus increase public confidence in the outcome of elections. The use of blockchain technologies can be developed and commercialized in this way to reduce the cost of voting and increase the turnout rate (Roh and Lee, 2020).

As the functionality of blockchain has evolved it has successfully been employed in many and varied applications. Industries such as insurance, financial markets, banking, and leasing have found it beneficial, and it can also improve the efficiency, effectiveness, and economy of government programs like education and voting systems. Additionally, blockchain technology has the potential to transform current auditing practices by creating an automatic assurance system that is both more precise and timelier (Dai and Vasarhelyi, 2017). Blockchain technology can have two opposing effects on the accounting profession. On one hand, routine accounting functions such as collecting, classifying, recognizing, and reconciling financial transactions data will most likely be replaced by blockchain capabilities. These tasks will be performed automatically in real-time as the actual transactions take place. On the other hand, blockchain platforms can provide an opportunity for accountants to focus on non-routine financial reporting processes that require judgement and expert interpretation (e.g., valuation and fair value estimation). Using blockchain technology would also enable accountants to perform transaction-level accounting and, thus, provide a greater level of accuracy and transparency while substantially reducing the risk of fraud and corruption. Blockchain platforms permit transactions and records to be traced, validated, and independently verified throughout the process. The Smart Contract feature of blockchain enables smart audits to be performed. Algorithms stored on blockchain platforms can be automatically executed in real-time to provide instant validation of the financial reporting process.

Blockchain has been used in practice as a distributed ledger with huge databases that can be securely transferred. While much research has been conducted relative to the implications of blockchain for business and industry, there is a lack of attention devoted to modernizing the accounting curriculum in colleges and universities. The pace at which information technology evolves and develops in business exceeds the pace of its incorporation into accounting curriculums and the result is an expanding technological gap between what happens in the classroom and what happens in corporate America. The curriculum in accounting degree programs should be redesigned to incorporate blockchain technology and, thus, better prepare graduates for the business environment they will find as they enter the accounting profession in either public accounting or industry. Qasim and Kharbat (2020) call for radical changes in the accounting curriculum to reach a balance between existing accounting knowledge and information technology skills relevant inside the profession.

Blockchain platforms require proper cybersecurity to ensure the integrity of transactions, events and data. The large amount of data processed by blockchain platforms demands that measures be taken to ensure that data is protected and unavailable to those not authorized to access it. Accountants can assist their organizations with the design and implementation of adequate and effective internal controls that will prevent cyberattacks in addition to performing cybersecurity risk assessment and management (Eaton et al., 2019). Accounting firms have the skills and capabilities to offer “knowledge of internal controls, external reporting, and assurance,” which adds value to their clients in protecting their computerized systems from cyber-hacking (Eaton et al., 2019). Recent fraud and misappropriation incidents at the crypto exchange FTX prior to the declaration of bankruptcy on November 11, 2022, have caused investors to lose the FTX digital asset exchange of about 10 billion USD (Schickler 2022).

Blockchain education and training is being promoted and provided in many universities worldwide. Examples are Cornell and MIT online blockchain courses and other universities

are expected to follow suit (MIT, 2021). These courses are designed to provide business education relevant to the capabilities, challenges, opportunities, and limitations of blockchain technology, as well as a framework for a blockchain strategy and the use of blockchain in promoting bitcoin and other token-based initiatives. English (2019) states that blockchain platforms and AI capabilities can help accountants understand their businesses in ways they could not before. Technological changes are inevitable in the future of the professional accountants thus accountants should evolve their skills to include knowledge of these topics. Kaden, Lingwall, and Shonhiwa (2021) argue that business students entering the job-market should have knowledge and skills related to blockchain technologies and business colleges and accounting schools should develop a method to teach blockchain code to students by improving students' understanding of blockchain coding and theory. In recent years, several universities including Blockchain at Berkeley, Stanford's Center for Blockchain Research, and Kingsland University Blockchain Programming have provided educational programs and courses in blockchain and cryptocurrency. However, there is more interest in and demand for the integration of blockchain and cryptocurrency topics into business and accounting education.

4.1.3 Data Analytics and Data Science

The last element of analytical skill sets is data analytics and data science in relation to Big Data. The term "Big Data" refers to any type of raw collection of information that is not pre-processed or filtered in any way. Sun and Chen (2015) define Big Data (BD) as the datasets collected from a variety of resources with diverse attributes and dimensions that require sophisticated processes to gather, store, analyze, manage, and use. Rezaee, Dorestani and Aliabadi (2018) define Big Data as huge-volume, high-velocity, and high-variety" data that is captured from autonomous and heterogeneous resources that is processed electronically to enable effective and robust decision making. Data mining and data analytics include the task of analyzing raw data collected and converting it into useful information. There has been an increase in the use of data analytics and data science in the twenty-first century. Data analytics is defined as the "Process of gathering, modeling and transforming data to highlight useful information, suggesting conclusions and supporting decision-making." (AICPA-NASBA, 2021:3). Data analytics is a process of data gathering, data analyses, and information modeling. Effective use of data analytics has significant potential benefits for organizations in terms of identifying organizational challenges, threats, and opportunities, while simultaneously improving technologies and skills in using data to improve decision making. Data analysts assist organizations in probing large data sets to identify trends and transform data to information for decision making, whereas data scientists create new processes for data by using algorithms, predictive models, prototypes, and other innovations.

The ever-increasing use of information technology (IT) has occasioned the greatest changes ever in the way business is conducted, the way financial reports are prepared, and how audits are performed. Information technology (IT) skill sets, including data science and data analytics skills, have become increasingly important for business and accounting majors entering the job market. IT advances have spawned block chain platforms, cloud computing, and electronic social media. IT governance is the process of ensuring that an organization's data and information are secured, safe, and used as intended by intended users. These technologies have made an unprecedented amount of data and information available to businesses. However, Schmidt, Riley, and Swanson (2020) argue that accountants are reluctant to transition from

Microsoft Excel to more advanced data analytics technology and recommend that the accounting profession attempt to minimize the cost of switching to data analytics and improve the technical education of accountants to minimize the resistance to change.

Managers and accountants typically have access to huge amounts of both structured (e.g., financial reports) and unstructured data (e.g., email, voice recordings, etc.) as they perform their duties. They also have available semi-structured data (e.g., nontraditional data sources of information on social and environmental matters) that further complicate their responsibilities. Grepp et.al. (2018) conducted a comprehensive review of research on Big Data in accounting and finance and concluded that the use of Big Data in auditing is not as widespread as it is in other related fields of accounting and finance. This suggests that coverage of Big Data in business and accounting education, particularly the auditing field should be further promoted. Managers and accountants use Big Data and data analytics to integrate non-traditional sources of both financial and non-financial information into their decision-making processes. These techniques improve the quality of their work, while reducing costs and enhancing productivity. As an example, accountants use automatic data collection and analysis to identify errors, irregularities, and fraud. Also, Big Data can change how accountants and auditors do their work. When sampling databases, for example, because data relative to transactions is digitized, population-level examinations are possible instead of relying on a “representative sample” that is used in traditional sampling tests.

The use of data analytics reduces costs and improves the quality of data analysis. In addition, with the emergence of Big Data, the role of accountants and managers has moved from statement-level examination and opinions to data-driven examination and reports. Managers and accountants can also use text analytics to manage unstructured or semi-structured data as well as structured data. Finally, managers and accountants are aided in asserting the existence of tangible assets where records are complemented with pertinent video, audio, and textual information. Technological advances can modify and even make some jobs obsolete while creating new jobs to replace the ones being lost. With the integration of technology into all facets of business, managers and accountants must be technologically savvy.

Prior studies (e.g., Schneider et al., 2015; Garmaki, Bughzala, and Wamba, 2016) examine the effects of Big Data and data analytics on firm performance and capabilities. Firms are now relying on Big Data analytics for the dynamic capability to continuously reconfigure their resources and make strategic business decisions, particularly at the operating level. This dynamic process can enable firms to align their financial and market performance with their operational performance. At the executive level data analytics can be used to mitigate business risks and disaster management. Research aimed at exploring disruptions in the manufacturing supply chain caused by social and environmental issues shows that Big Data analytics could aid in mitigating these risks (Mani, Delgado, Hazen, and Patel, 2016). Furthermore, Big Data analytics can be used to uncover hidden patterns and associations for disaster management situations to enhance the effectiveness of rescue activities for a business. Research trends for disaster management tend to focus on both the content and spatial points of view of the data for analysis and results (Wang, Wu, Yen, Guo, and Cheng, 2016). One of the main advantages of using data analytics is that it enables professionals to analyze colossal amounts of data involving different data sources and tools to deliver useful and timely information to the end user.

Business organizations have recently used Big Data and data analytics tools to achieve both internal and external goals ranging from internal decision supports to integrated external marketing and production decisions. Big Data is often referred to as electronic data, and data analytics tools have the capability of accessing, analyzing, and assessing a huge amount of data and transforming them to information in a timely manner for decision making (Rezaee et al., 2018). The use of Big Data and data analytics by businesses has encouraged business schools to place more attention on Big Data and data analytics education and many colleges and universities are embedding data analytics into intermediate accounting and accounting information systems courses. Public, regulators, accounting professionals, and the academic community are also taking a closer look at colleges and universities to find ways to hold these institutions more accountable for achieving their mission of providing higher education and a relevant curriculum.

The global community is also expecting business schools worldwide to achieve their mission of delivering higher education capable of preparing the most competent and ethical future business leaders. Three education areas that have recently received long-awaited attention are ABD (artificial intelligence, blockchain, and Big Data and data analytics). Business schools play an increasingly important role in preparing the next generation of business leaders. If done well, this next generation of business leaders will perform their role with integrity, while upholding the highest level of ethical conduct and satisfying the heavy burden of public trust. In addition, they must understand the importance of ABD education. Several studies (e.g., Chen, Chiang, and Storey, 2012; Miller, 2012; Cao, Chychyla, and Stewart, 2015) provide an overview of Big Data and its implications in accounting and audit analytics. Brown-Libur, Issa, and Lombardi (2015) discuss the challenges of incorporating Big Data and audit analytics in audit strategies and present the behavioral implications of Big Data for audit judgment that affect audit quality. However, there is a gap in the literature on the educational implications of Big Data.

In the past three decades, there have been substantial changes in the business environment, and most of this change is in technological advances and globalization. ABD education is a fast-developing business area that is especially important given the prevalence of e-commerce strategies and online activities and transactions. ABD courses and programs have emerged in the same fashion as e-commerce courses and programs in the 1990s. Many business schools and accounting programs are designing ABD courses to satisfy the demand for artificial intelligence, blockchain, Big Data and data analytics and data science education. The integration of ABD education in the business and accounting curricula enables business students to become competent future leaders and effectively complete the transition from students to professionals. As more companies begin including blockchain technologies, data analytics, and artificial intelligence into their accounting and business processes, business colleges and accounting schools are observing and learning how these ABD advances in technology will affect their business education. With accounting technologies evolving, business and accounting students need ABD skills to be successful in their future endeavors. Students must: (1) be able to quickly adapt to technological tools used in accounting; (2) determine which tool is best for specific problems; (3) have knowledge and skill sets necessary for performing accounting tasks; (4) be prepared to communicate with IT specialists; and (5) be more creative thinkers (Polimeni and Burke, 2021). As the accounting and business curricula evolve to incorporate emerging ABD technologies, students will be better equipped to enter

the professional world of accounting and business and meet the demands of employers utilizing these ABD technologies.

4.2 Technical Skill Sets

Business and accounting students need to be familiar with broad business and accounting knowledge in their basic disciplines. The common concentrations and disciplines in a typical college of business are accounting, economics, and finance, management, marketing, and information systems. It is expected that business and accounting majors understand and obtain core business knowledge by taking business courses. For example, accountants performing financial, managerial, auditing, and business sustainability services should understand accounting standards, managerial policies and practices, accounting information systems, auditing standards, management and supply chain procedures and practices, use of research methodology and computer technology, and business sustainability factors of performance, risk, and reporting.

Business sustainability is gaining attention of investors, regulators, and businesses worldwide (Rezaee and Fogarty, 2019). An emerging move toward business sustainability is present in all disciplines in business, and graduates should have knowledge of the focus on sustainability that is present in the business world. Business programs that focus on business sustainability are designed for undergraduate and graduate students who desire to obtain knowledge in sustainability education, research and practice and they are a distinctive and relevant interdisciplinary education intended to equip future business leaders with adequate knowledge in sustainability.

Business sustainability is both an opportunity and an imperative as sustainability information is demanded by investors, required by regulators, and disclosed by public companies worldwide. A business program having a concentration in business sustainability should focus on economic, governance, social, ethical, and environmental sustainability (Rezaee and Fogarty, 2019). Business sustainability has advanced from greenwashing and branding to the strategic imperative of focusing on stakeholder primacy and creating shared value for all stakeholders. Relevant stakeholders include shareholders, employees, customers, creditors, suppliers, government, society, and the environment. A quality business and accounting education must also include and acknowledge significant trends in society, including ESP and ESG sustainability noted and described previously in this study.

Business organizations worldwide are moving away from short-term planning to long-term strategic planning and focusing on roles and responsibilities of the board of directors and executives in achieving ESP sustainability performance to obtain desired rates of return for shareholders while obtaining ESG sustainability performance in protecting interests of all other stakeholders. Several initiatives have recently been taken that promote the move toward integrated sustainability reporting by public companies. For example, the Sustainability Accounting Standards Board (SASB) and the International Integrated Reporting Council (IIRC) have emerged in creating the Value Reporting Foundation (VRF) that will promote the relevance of sustainability disclosures to investors and focus on producing material and useful sustainability information by business organizations in all industries. The Global Reporting Initiative (GRI) and the SASB have joined in issuing a Practical Guide to sustainability reporting from market participant's perspective. The international Sustainability Standards

Board (ISSB) is a sustainability standard-setting body created by the International Financial Reporting Standards (IFRS) foundation in November 2021. The ISSB mission is to establish sustainability-related financial reporting standards to satisfy information demands and needs of investors for sustainability reporting (ISSB, 2022). The ISSB is responsible for setting up and recommending international sustainability standards for diverse industries and sectors and managing the related certification process and has already established two standards based on input from many stakeholders, including enterprises, governments, academia, and civil society.

The United Nations Sustainability Development Goals are expected to be implemented by 2030 and thus should be integrated into business and accounting education. The Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) are working on accounting standards for sustainability to enable effective and relevant corporate reporting. The American Institute of Certified Public Accountants (AICPA), the Public Company Accounting Oversight Board (PCAOB) and the International Accounting and Auditing Standards Board (IAASB) are working on the development of assurance standards for sustainability reports. Regulators worldwide, including the Securities and Exchange Commission (SEC), are requiring more robust and relevant disclosures of sustainability related disclosure issues including climate change and human capital. These initiatives collectively will extend sustainability reporting beyond metrics, disclosures, and ratings to assigning monetary values to an organization's ESG issues and their integration to ESP and financial statements that should be integrated into business and accounting education (Rezaee, Fogarty, 2019)

Business and accounting programs that include a focus on sustainability will provide students with a foundation in sustainability principles, theories, practice, education, and research. The program should also meet the educational needs of graduate students who pursue sustainability skill sets in their traditional business disciplines (accounting, BIT, economics, finance, marketing, and management). A concentration in business sustainability with an appropriate knowledge base is important and relevant to future job opportunities and success of business majors for several reasons listed below (Rezaee and Fogarty, 2019; Cho and Mäkelä, 2019):

1. The Association of Advanced Collegiate School of Business (AACSB) International standards now require "Business Sustainability, Corporate Governance, and Organizational Ethics" education for business schools starting January 2019.
2. Business colleges can that proactively implement AACSB standards and show commitment to life-learning business education in training the most competent and ethical future business leaders.
3. Business sustainability is now being integrated into business environment, corporate culture, and strategic decisions because sustainability performance information is demanded by investors, required by global regulators, and produced by public companies.
4. Sustainability is also integrated into all disciplines in business colleges.

5. Corporate governance has been the main theme of the twenty-first century, and business sustainability is transforming from branding and greenwashing to a business strategic imperative.
6. Organizational ethics has been promoted as a way to improve the integrity, competency, and accountability of corporate cultures and thus, hopefully, prevent future financial scandals and crises.
7. Teaching materials and textbooks including a book entitled “Business Sustainability, Corporate Governance, and Organization Ethics” are now available for teaching this course (Rezaee and Fogarty, 2019).
8. The Business Roundtable (BRT), on August 19, 2019, announced the adoption of a new Statement on the Purpose of a Corporation, signed by 181 well-known, high-powered CEOs. The Statement “moves away from shareholder primacy” as a guiding principle and outlines in its place a “modern standard for corporate responsibility” that makes a commitment to all stakeholders under stakeholder primacy and advocates the concept of profit-with-purpose mission for public companies (BRT, 2019). This suggests the move toward business sustainability in the United States and worldwide and thus integration of sustainability into business education.
9. The primary theme of sustainability education should be on the examination of business sustainability strategic planning, performance, reporting, and assurance and their integration into corporate culture. Sustainability education should highlight how people, business, and business resources collaborate in a business sustainability and accountability model to address why to disclose ESG, what ESG to disclose, and where to disclose ESG.
10. Many of the UNSDGs 17 goals should be integrated into business and accounting education. Included in these goals are quality education, gender equality, quality of life on land, clean water, and sanitation. In addition, environmental attributes include, responsible consumption and production, social and ethical attributes and peace and justice as a proxy for the legal system (UNSDGs, 2015). UNSDGs goals are based on the core values of human rights, equality, and sustainability for the entire world’s present and future generations. Four key dimensions of the UN integrated framework are inclusive social development, economic development, environmental sustainability, and peace and security.
11. Academic organizations including the American Accounting Association (AAA) have recently promoted the integration of sustainability education into the accounting and business curricula. For example, the AAA organized a two-day conference to be held on February 17 and 18, 2023, entitled “Sustainability, ESG, and Accounting: Implications for the Academy and the Profession Conference” (AAA, 2022). The goals of this conference are to bring regulators, investors and academics together to share best practices in integrating sustainability education into the accounting curriculum, learn about the existing ESG sustainability-related courses and how to make these courses more relevant and useful to accounting students.

Businesses worldwide have adopted the concept of profit-with-purpose to create long-term shared value for their stakeholders from shareholders to customers, employees, suppliers, society, and the environment. Business sustainability dimensions of financial economic sustainability (ESP) and non-financial environmental, social, and governance (ESG) sustainability performance are taking center stage in the global business environment (Rezaee, Fogarty, 2019). Business sustainability factors of performance, risks and disclosures are demanded by investors, required by regulators, and reported by businesses worldwide. Business colleges and accounting schools respond to the emerging ESG sustainability initiatives by integrating these important educational topics into their curricula. Bento, Mertins and White (2019) examine the importance of sustainability performance measures in managerial appraisal and bonus decisions and find that sustainability performance effects both management performance appraisal and bonus decisions.

Given the importance of integrating sustainability into business and accounting curricula, academics are trying to infuse sustainability in higher education, including studies focused on sustainability business, management, and accounting education. Sustainability education must be taught in a holistic manner and different aspect of sustainability must be covered and linked effectively to the entire business and accounting education (Ng and Rezaee, 2015). Rezaee and Homayoun (2014) investigate the coverage of sustainability education and find that as interest in and demand for sustainability education has increased in recent years, more business colleges and accounting schools are planning to provide sustainability education. The coverage of sustainability education topics in a separate course or their integration into existing accounting and business courses requires the classification of related topics into teaching modules covering both financial ESP and nonfinancial ESG dimensions of sustainability performance. The main theme and goal of sustainability education is to provide cutting-edge sustainability education in all aspects of sustainability from theories to standards, risk assessment, and best practices sustainability performance, reporting, and assurance. To achieve the sustainability education goal of integrating sustainability into accounting and business curricula, business colleges and accounting schools should consider their limitations and constraints. Critical factors include the availability of teaching resources, technical and educational skills of their faculty, technology and innovation, regulatory compliance, cost and benefit feasibility, accreditation issues, commitment from administrators and faculty and demand by students.

4.3 Soft Skill Sets

The last letter in the ABCDTS is "S" that stands for soft skills, which are arguably one of the most important skills business majors and accountants can have to aid them in advancing their career. Soft skill sets include both verbal and written communication skills, interviewing skills, presentation skills, and problem-solving skills. Good communication and interviewing skills are essential for managers and accountants. Business majors and accountants must be well organized and be able to communicate the results of their work in an efficient and effective manner. Soft skill sets are important because being too technical with others can often lead to a lack of understanding and can produce undesired results. Soft skills are especially important for accountants working in public accounting and auditing firms because they must have the ability to establish a positive and beneficial relationship with their clients (Eisensraedt, 2019). Furthermore, many business and accounting jobs require employees to work in teams, interact

with others, or even mentor and manage other employees. In these cases, having good communication skills, being courteous, having a positive attitude and a high level of professionalism are very necessary in contributing to their organization and making career advances.

4.4 COVID-19 Effects on Sustainability of Accounting and Business Education

The letter “C” in the ABCDTS of business and accounting education stands for the COVID-19 effect. As previously mentioned, there are three educational challenges in the post-COVID era. The three educational challenges and opportunities in the post-COVID-19 era are: (1) the future and sustainability of business education as many universities worldwide have moved their classes online in the spring of 2020 amid COVID-19 concerns and are planning to continue virtual programs in the foreseeable future; (2) the content of future accounting and business education, and (3) the changes in education requirements for taking professional accounting and business exams as States Boards of Public Accountancy recognize that many accounting courses will be offered online and classes will be conducted virtually. Modifications to prior requirements are possible as some Boards are considering allowing virtual courses to meet education requirements for taking the Certified Public Accounting (CPA) exam.

After examining the importance of analytical skills, technical skills, and soft skills to the sustainability of business and accounting education, it is also important to examine how business colleges and accounting schools are delivering the knowledge base for these skills in the aftermath of the COVID-19 pandemic. It is obvious that accounting and business education has evolved in the past several decades through numerous technological developments (Al-Htaybat et al., 2018). For example, a KPMG survey indicates that 53 percent of financial executives believe that data analytics skill sets will become a “must have” in financial reporting and auditing in the near future (Zhan et al., 2018). It is expected that the AACSB will require accredited schools to place a “higher priority of integrating data analytics contents into the accounting curriculum” (Zhan et al., 2018). The survey suggests that the big four accounting firms are more interested in hiring graduates that have a combination of accounting technical knowledge and analytical skills, coding experience, and computer programming (Zhang et al., 2018).

Many business colleges and accounting schools may find it difficult and challenging to provide analytical, technical, and soft skill sets, either virtual or in-person, in the aftermath of the COVID-19 pandemic for a variety of reasons. First, given the evolving nature of information technology, business colleges and accounting schools often face administrative, resource, faculty, and scope challenges when making the needed changes to their curriculums. Second, many universities are facing challenges of delivering sustainable and affordable education during and in the aftermath of the COVID-19 pandemic. Third, the financial and educational sustainability of many universities has been affected by substantial budget shortfalls caused by the COVID-19 pandemic. Finally, a significant challenge for business colleges and accounting programs is the availability of faculty expertise to deliver the new technologies in their programs. Special efforts in many programs will be needed to upgrade the skills of existing faculty and/or acquire new faculty with the requisite knowledge.

5.0 CURRICULUM DESIGN OF ABCDTS EDUCATION

Business colleges and accounting schools can develop an education committee comprised of faculty from all business disciplines (accounting, economics, finance, information systems, management, and marketing), to advise ABCDTS curriculum changes in accounting and business programs. The goal of the committee should be to identify emerging ABCDTS educational skills and incorporate them into accounting and business curricula. There are several questions pertain to the curriculum design and development of ABCDTS education. The first question is “Should business colleges and accounting schools integrate ABCDTS education into their curricula?” The obvious answer is yes because technological advances and sustainability issues are being considered by policymakers, regulators, businesses, and academics and are becoming an integral component of business practices. Thus, the future generation of business and accounting students can better fulfil their responsibilities and contribute to the business and accounting profession by having a good understanding of the ABCDTS education. The move toward integrated sustainability reporting and assurance and advances in technology provide strong support for and interest in the ABCDTS education in business and accounting curricula.

The second question is “How should ABCDTS education be integrated into business and accounting curricula?”. Given the demand for and interest in ABCDTS education, two different approaches to coverage of such education can be considered. These approaches are integration of ABCDTS education through business and accounting courses or offering a stand-alone ABCDTS course. All components of the ABCDTS except for the COVID-19 pandemic are relevant to all aspects of today’s business environment and practices, which suggest these educational components should be integrated into all existing business and accounting courses to ensure proper education for all business majors. Educational ABCDTS topics can be infused into existing upper-level accounting and business courses to ensure coverage of all critical aspects of ABCDTS education without having to add a new course into an already saturated business and accounting curricula. The second approach is to offer a distinct course(s) for different components of the ABCDTS education including artificial intelligence, blockchain, data analytics, communication, and business sustainability at either the undergraduate or graduate level. The rationale for this approach is that the ABCDTS education is very broad, covering distinct topics relevant to business and accounting education, and coverage of these topics in separate courses can be desirable. Overall, there is a real opportunity to address the issue of integration of ABCDTS topics across the curriculum. When the topics of e-commerce, international accounting and ethics education were first introduced into the curriculum it was done by way of a standalone course, but over the years these topics were integrated across the program of study on the basis that this was just business as usual. Thus, the ABCDTS education integration is more than just adding the topics to the curriculum but should focus attention on how we integrate it with another technical knowledge covered across the curriculum.

The third question is “What are the important and relevant ABCDTS topics that should be covered in business and accounting education?” The review of the literature pertaining to different components of the ABCDTS education, except the COVID-19 pandemic, suggest many topics presented in Table 1. These suggested topics are organized for each component of “A”, “B”, “D”, “T” and “S”. The committee should suggest a list of resources relevant to the integration of emerging technologies and related topics into the curricula. Examples of these topics are Excel, Data Analytics, Blockchain and Cryptocurrencies, Robotic Process Automation, and Artificial Intelligence.

The final question is regarding the method(s) of delivery of the “ABCDTS” education in the era of the COVID-19 pandemic, the “C” component of ABDCTS. The pandemic forced universities to adopt new education delivery methods to accommodate the new ways students were learning during and are learning post pandemic. Moving forward, colleges and universities need to continue to innovate and embrace hybrid learning as a way of empowering their faculty to be drivers of transformative change. Many universities are examining their educational sustainability in delivering affordable, relevant, sustainable, and marketable education for students by redesigning academic programs to ensure educational sustainability in all components of ABDTS.

6.0 CONCLUSION

Regulators, the public, business organizations, and the academic community are taking a closer look at colleges and universities to find ways to hold these institutions more accountable for achieving their mission. Colleges and universities are expected to provide a quality higher education that is affordable, has a relevant curriculum, and prepares students for leadership roles in a technology-driven competitive marketplace. The 2020 COVID-19 pandemic has significantly altered the conventional business and education operations for colleges and universities. Institutions of higher education have been forced to switch from primarily in-class learning to an inclusion of virtual learning. In addition, they are challenged to deliver their programs in the most efficient and effective way possible because of the imposed financial challenges and the necessary restructuring of operations to ensure continuity and sustainability. Nonetheless, long-term sustainability of colleges and universities is vital to the economic growth and prosperity of our nation in preparing the next generation of human capital.

This study addresses (1) the future delivery methodology of accounting and business education considering that many universities worldwide moved their classes to the online environment in the spring semester of 2020 amid COVID-19 concerns and are planning to continue virtual programs into the foreseeable future; (2) the content of future accounting and business education in offering more relevant and affordable education; and (3) changes in education requirements for taking professional accounting and business exams. Business colleges and accounting schools should revisit their curricula to ensure that their students possess knowledge of the ABCDTS presented in this paper. These ABCDTS education areas are further classified to the three broad categories of analytical, technical, and soft skill sets with the post-COVID-19 delivery. Analytical skills consist of understanding artificial intelligence, blockchain, and data analytics (ABD) which constitute an educational foundation for business and accounting students. Technical skills are relevant to the basic knowledge of accounting and business as a core education necessary to have a successful accounting or business career. Soft skills are very important if business and accounting majors are to communicate effectively and help their organizations in the preparation of financial and nonfinancial reports for internal and external uses. COVID-19 has significantly influenced financial and educational sustainability of colleges and universities worldwide as they are expected to provide high-quality, affordable, and sustainable education while securing sufficient resources to ensure financial sustainability.

Overall, the proposed ABCDTS education model in this paper should be applied in accounting programs. The suggested ABCDTS education model is based on four challenges that the accounting education is facing: (1) the COVID-19 pandemic affects the delivery method of

accounting education (COVID-19. "C" effect); (2) advances in technology in accounting and business practices, (ABD effect) that should be integrated into accounting education including ("A": Artificial intelligence; "B": Blockchain; "D": Data analytics and data science); (3) sustainability concerns of regulators and business practitioners demand the incorporation of the sustainability concepts and related regulations in accounting education ("T": Technical skill sets); and (4) soft skills including communication and interpersonal skills ("S" effect). This paper presents topics relevant to the ABCDTS education and how to integrate the ABCDTS education into business and accounting curricula.

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Table 1 Suggested ABDTS Educational Topics

Artificial Intelligence	Blockchain Technologies	Data Analytics	Technical Skills	Soft Skills	Sustainability
Machine Learning	Smart contracts	Excel and other analytic tools	Business discipline education Research methodology	Written and Oral communication	Resource usage, reduction, and management
Natural Language Processing	Blockchain Networks	Database management tools	Financial, Managerial, Audit, and Tax Accounting, Finance, Economics, Information systems, Marketing, management	Critical thinking, problem solving, and analysis	Corporate governance and labor safety, Climate change
Robotic Process Automation	Environmental effects Security risk	Predictive analytics	Decision making and management Performance evaluation	Time management and organization	Business sustainability factors of performance, risk, and disclosure

Basic Programming Languages	Blockchain application in accounting/finance processes	Ethical, Nonbiased Data Collection	Business/Accounting Information Systems	Leadership and collaboration	Employee rights and community involvement Sustainability reporting and assurance
Deep Learning	Implementation of blockchain technologies	Decision making from data analytics	Supply-chain procedures	Computer and technology proficiency	Laws and regulations, diversity, equity, and inclusion.