PERSPECTIVES OF TECHNOLOGY COMPETENCY IN BUSINESS INSTRUCTION

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ABSTRACT

The thesis revolves around business students' competency with technology. Business schools are passively adapting to a new strategy of instruction. The business school curriculum has remained for the most part stagnant because of traditionalism in education. Innovating the curriculum can satisfy the market's need for professionals with combined business and technology skills. Jobs in technology are no longer just for computer science students. Machine-human interaction requires competency in a hybrid between technology and business instruction. There are greater professional opportunities for students acquainted with Artificial Intelligence (AI). AI, cryptocurrency, blockchain, and data analysis have to be more than just a topic in a business course textbook. There is not a robust selection of academic literature regarding technology competency in business instruction. Business curriculum and instruction has to be developed with technology as a medium. Technology is a main component of business in modern times.

INTRODUCTION

The study of technology has been concentrated mostly to what is referred to as Information Technology (IT). New terms emerge and Information Technology Competency (ITC) is yet another terminology for issues related to IT. The Oxford Dictionary defines IT as the use or learning of systems, for storing and sending information, particularly in reference to telecommunications. Interestingly, more recent academic articles have a slightly different definition of IT. Lopez (2013) indicates that IT has yet broader, functions, such as an impact on careers, creativity, and entertainment, to complement the usual telecommunication aspect. Fernandez-Mesa et al. (2013) propose that IT is a tool to enable access to critical knowledge expeditiously, enabling efficient management with elaborate information.

Most institutions of higher education in the United States and possibly abroad, offer courses in the use of a spreadsheet, a presentation program such as PowerPoint or Keynote, and Word processing document. Nevertheless, the use of technology has become such a major tool for business, that the aforementioned skills no longer suffice for graduate students to succeed professionally. In this perspective, colleges and universities must offer courses that provide the students with a medium to connect technology to all aspects of business instruction.

Beaudry et al. (2013) concluded that the higher cognitive skills offered by higher education have reached its peak and that students earning a bachelor's degree were, essentially, taking jobs from high school students. In fact, the authors make reference to individuals holding bachelor's degrees

and working as baristas in coffee shops, thus taking the usual jobs of high school students. This paper refutes the idea that the demand for jobs requiring higher education have been exhausted. Conversely, there is indeed a higher demand for jobs requiring skills in technology that bypass the common ability to use a spreadsheet and Word processing (King, 2015).

Because the requirements for workforce skills have changed, colleges and universities must work more proactively in embedding skills related to technology in business instruction (King, 2015). In fact, it would be ideal to implement technology in all offered courses, as needed for the optimization of the workforce in contrast with the jobs currently being offered. Furthermore, schools must instill the idea of using technology as a tool to solve problems that continue to change (Cuff, 2015). In other words, learning continues to change, and sharpening ones' skills is a never-ending state to remain employed using cognitive skills. In sum, the demand in cognitive tasks did not necessarily decline, as proposed by Beaudry et al. (2013), but the nature of the employment opportunities has changed.

Colleges and universities must adapt to offering business courses with greater infusion of technology competency. Technology competency is a broad term that allows more aspects of technology to be embedded in the fabric of instruction. For instance, Mortenson et al. (2014) argue that what is today Artificial Intelligence (AI) is the consolidation of technologies, such as electrical engineering, and quantitative methods, such as mathematics, statistics, and econometrics. Information systems is the association of decision making and computer science (Mortenson et al., 2014). Technology is moving faster than our ability to include these skills into instruction, thereby releasing graduate students into the market lacking the proper skills to embrace jobs that require a different set of cognitive skills.

THE IMPORTANCE OF UPDATING THE BUSINESS CURRICULUM

According to Mamonov et al. (2015), the expeditious convergence of technologic trends has surged the amount of data to which business managers need to analyze. The global communication systems, miniaturization of the computer, greater storage technology, and the sheer volume of available data have empowered businesses to approach commerce in creative ways (Mamonov et al., 2015). For instance, reviews of products and services over the internet have become empowering tools to consumers and also to businesses. A high school student can create an app, or start a blog, that becomes an overnight sensation. The creativity in using technology competently to create new products and services is the essence of the new academic curriculum.

In this perspective, topics such as Artificial Intelligence, blockchain, cryptocurrency, creating an app, and datamining should become more permanent part of the business curriculum. According to research, 71% of interviewed recruiters indicated difficulty in finding suitable candidates because recent graduates lack the ability to analyze and problem-solve, collaborate in teams, understand business-context communication, aside from lacking in flexibility, adaptability, and agility (King, 2015). Furthermore, IBM Institute for Business Value surveyed industry leaders regarding the state of higher education and 51% of the interviewed stated that higher education

failed to meet the needs of the students, and 60% affirmed that it fails to meet the needs of the industry (King, 2015).

TRADITIONALISM IN HIGHER EDUCATION

Quintana et al. (2016) remark about what prevents a match between higher education and employment needs. The inability to match what the market needs and students' abilities, the time gap to adjust to new job requirements, and the dynamics of the quantitative development of occupations, are some of the reasons to the mismatch between incoming graduates and job availability (Quintana et al., 2016). Burke-Smalley (2014) offers critique on terms of passive teaching which is simply based on lecturing and use of textbooks which many students do not read. Furthermore, authors discuss the use of a textbook as a framework for guiding learning; however, the renewal of modes for learning is imperative such as: collaborative learning, work-based learning, solving of real-life problems, professional mentoring, experiential learning, and so on (Burke-Smalley, 2014; Quintana et al., 2016).

Mulkey (2017) highly criticize colleges and universities as conservative institutions that avoid fundamental change at all cost. John (2015) remarks that faculty attitude toward technology is rooted in a plethora of factors; for instance: age, highest education earned, teaching experience, computer competency, relative advantage, and self-efficacy. These factors significantly influence faculty acceptance or resistance to technology (John, 2015). Coleman and Blankenship (2017) also criticize the disparity between what the market looks for in terms of the skills of graduates and the subjects being taught in academia. The authors state that some instructors are out of their field for long periods of time, or courses are taught by adjuncts who do not have sufficient power of bargain within the school (Coleman & Blankenship, 2017).

ACT, a nonprofit organization working to improve student readiness to ingress college, and the Business-Higher Education Forum (BHEF) offer recommendations for higher education (Business-Higher Education Forum, 2014). One of the recommendations from the leadership of the ACT and the BHEF is to promote access and effort to STEM majors, particularly for women and minority groups. Conversely, the Business-Higher Education Forum's membership is composed of affluent universities and might not necessarily offer a realistic picture of the population of minorities and women enrolled in small colleges and universities. The BHEC's website states that what sets them apart from other member-induced organizations is the fact that the members are CEOs and the nation's leading colleges and universities (https://www.bhef.com/about). The perpetuation of the have and have-nots in higher education is not a precursor for greater equality in STEM jobs. Actually, the Equal Employment Opportunity Commission (EEOC) reported in 2014 that, compared with the private sector, the tech industry employed more White males than Hispanics, or African Americans. It also employed less women to the rate of 36% in tech versus 48% for the private sector (www.techrepublic.com). Furthermore, White individuals are represented at a higher rate in the technology sector in the executive category, than in the private sector, at 83% (www.techrepublic.com). Apple's diversity report in 2017 presented a workforce of 21% Asian employees, 9% are black, and 13% are Hispanic; and 3% are multiracial. There were 54% white employees working at Apple in 2017. Only 32% were

female workers and only 23% of the female workers were actually working in tech roles (www.techrepublic.com).

In this perspective, the traditional system that corrodes higher education, also corrodes tech businesses. A system where a few schools have incredibly large endowment and several schools have no endowment at all simply perpetuates the current state of higher education. Small schools are usually populated by minorities and first generation college students, who will have difficulties fitting into a society with so many jobs in technology, mainly because these small colleges and universities cannot afford to invest in tech labs, professional development for the professors, or hire professors with top notch tech credentials. At most, small colleges and universities will have to find creative and alternative ways to bring technology competency into business instruction.

INNOVATING THE CURRICULUM FOR JOBS IN INNOVATION

The inclusion of technology competency in business instruction has become more prominent in the academic field. Researchers from around the world are emphasizing the importance of technology enhanced learning and the importance of innovation in universities, while encouraging taking risks (Nurutdinova et al., 2018). Some authors suggest that faculty should embrace instead of banning technology to enfranchise students and improve the outcome of the learning experience (Crittenden et al., 2019). In a study by He and Guo (2015), the authors interviewed key business recruiters in regard to 103 open job positions in the Midwestern United States. Among the findings, the authors note that recruiters were more interested in hiring individuals with skills in information technology, even when the position was not IT related. In other words, technology competency is showing a spillover effect in areas that commonly were not experienced. Sevillano-Garcia and Vasquez-Cano (2015) propose the use of Digital Mobile Devices (DMD), also known as tablets and smart phones, to enhance education. The authors suggest that improvements in instruction using DMDs will increase the possibilities for students to become the creators of digital-content, improving upon it, and spreading the knowledge (Sevillano-Garcia & Vaques-Cano, 2015).

Crisan et al. (2014) address the need for adequate entrepreneurship education, with proper competency in Information and Communication Technologies (ICT) to conform with a 21st century digital economy. Zhang (2014) postulate that successful internet entrepreneurs do not necessarily need to be college dropouts (in reference to Bill Gates and Mark Zuckerberg). The author discusses a model for nurturing college students to become successful internet business entrepreneurs. The model combines technology, business, and the environment (Zhang, 2014). Zhang's (2014) model for a course in Internet Entrepreneurship include fundamental technologies, current technologies, business-driven technologies, and emerging technologies under the umbrella of Technology. It also includes product opportunity discover and evaluation, product development and management, marketing and sales strategies, finance and legal issues, and leadership under the umbrella of Business Management. Finally, the course includes internal and external environment under Environment.

TABLE I. ZHANG'S PROPOSED INTERNET ENTREPRENEURSHIP COURSE

Internet Entrepreneurship		
Technology	Business	Environment
• Fundamental Technologies • Current Technologies • Business-Driven Technologies • Emerging Technologies	• Product Opportunity Discover and Evaluation • Product Development and Management • Marketing and Sales Strategies • Finance and Legal Issues • Leadership	• Internal Environment • External Environment

Note. The table includes the contents to Zhang's proposed Internet Entrepreneurship course. Adapted from Zhang (2014).

Colleges and universities with limited funding will have to be creative and mindful about the need to embed technology competency in the curriculum. All students, regardless of the size of college endowment, show favorable attitudes toward technology (Sapkota & Putten, 2018). According to Zhang's (2014) research, students perceive the importance of technology embedded in the business curriculum as *moderately to extremely important* 96% of the time. Sapkota and Putten (2018), discuss the fact that the students are very engaged with technology, but they need guidance to use technology in meaningful ways for academics. Furthermore, the authors emphasize that learning how to use word processing, spreadsheet, and database software is not enough (Sapkota & Putten, 2018). Students need to use social media as a communication tool for business, but the business curriculum has not evolved sufficiently fast to offer courses that require the use of social media as a major form of communication with customers (Sapkota & Puttin, 2018).

Benson and Filippaios (2015) substantiate the fact that there is a gap in academic literature, in regard to the instruction of technological competencies in business schools. Zhang (2014) names several business courses with focus on technology, which are offered by MIT and Stanford University. The reality of schools with low endowment is rather different from affluent schools of higher education. Ellahi et al. (2019) state that academia must do its job in preparing young people to the reality of the future. The authors suggest the introduction of subjects such as Artificial Intelligence, Big Data, the Internet of Things (IoT), Augmented Reality, and Cloud Computing to higher education curriculum (Ellahi et al., 2019).

THE MARKET ENVIRONMENT THE STUDENT AWAITS

There are, indeed, students with a bachelor's degree in business who are working in coffee shops, throughout the United States; thereby, seizing the ability of an individual with a high school diploma from having a job. Nevertheless, there are also thousands of available jobs which require some level of tech expertise and these positions are not being filled. According to Fenlon and McEneaney (2018), the United States has an average of 500,000 tech jobs unfilled and this number is predicted to double by 2020. The applications of technology to business are moving at a faster

pace, to which academia is suffering to adapt, still focusing on exams and lectures (King, 2015). In a research with corporate recruiters, 71% pointed that finding applicants with practical experience was the greatest challenge when looking for recent graduates (King, 2015). In this perspective, the data suggests that there are jobs for labor force graduating each year. What seems to be lacking is a focus on the skills the employers are searching for.

THE COLLABORATION BETWEEN HUMAN AND MACHINE

Although there is a gap in literature in regard to the application of technology competency in the business curriculum, there are many academic references focused of issues of related to ethics and sustainability. To be more specific, these authors discuss the use of technology and the responsible use of data, as well as technology as a tool to sustain the environment and improve economic sustainability. So, the connection between technology and social responsibility is a trendier topic in academic papers (Faham et al., 2017; Mora et al., 2018; Walker & Moran, 2019). Research by Mora et al. (2018) identified technology-based courses from the most recognized online education platforms, namely EdX with approximately 14 million students and Coursera with approximately 30 million students. The findings suggest a plethora of courses with main concept that is well known to a business curriculum (i.e., economy, ecommerce, sustainability, business). The authors point out a lack of courses related to social business, social commerce, collaborative economy, and cryptocurrency (Moran et al., 2018).

The human-machine collaboration is a necessary amalgamation if humanity wishes to continue to prosper and move on to the new frontier (looking for resources in space, including inhabiting different planets). In any circumstance, some authors focus efforts on more earthly themes, such as the use of technology for sustainable development (Mora et al., 2018). The authors state that infusing technology and sustainability in education is the key to both, economic and environmental sustainability. Nowadays, many people understand the need to reduce one's own carbon footprint and technology is a versatile tool to for that purpose. Some applications (apps) and online tools can help anyone with a smartphone to calculate, and by extension, decrease carbon footprint. Some of the apps are the United Nations Environmental, Zero Carbon, Oroeco, GoGreen: Carbon Tracker, LiveGreen Daily Carbon Tracker, Skeptical Science, DropCountr, Seafood Watch, Good Guide, The Extra Mile, and My Planet. Some online tools are Carbon Footprint and WWF Carbon Footprint Calculator.

Mora et al. (2018) also discuss the use of technology to boost economic sustainability. One of the tools to economic sustainability could be the use of cryptocurrency, as JP Morgan is already studying the viability of using it as legal tender for international payments. Undoubtedly, the use of cryptocurrency would facilitate international business transactions and, by extension, support economic sustainability. Another interesting concept connected to idea of technology and economic sustainability is Uber. There are, however, its pros and cons to the thousands of employment opportunities afforded by the company. Uber has given women and minorities an opportunity to work without the fear of discrimination. It gave women with children the ability to make money during the time their children are at school, or the grandparents' house. Conversely, it has been reported that the earnings afforded by Uber are not always compatible with the expenses

provided by such an expensive a tool as a vehicle. One also ought to wonder about the carbon footprint associated with so many cars running around.

Faham et al. (2017) emphasize the need for colleges and universities to take the lead in instruction regarding global issues such as food insecurity, water management, climate change, biodiversity, non-renewable energy management, social inequality, and the health care system. Undoubtedly, technology can help us calculate the chances to improve human condition. The authors proposed the development of sustainability competencies characterized by inter and trans-disciplinary teaching techniques, problem-oriented teaching, and linking formal and informal learning (Faham et al., 2017). In this perspective, building a strong connection between the technology the students enjoy so much with the processes established to create that technology in the first place. Introducing some of these concepts to all business subjects seem like a reasonable call, but ultimately, some form of technology instruction should be embedded to all disciplines. Field trips to places where individuals are currently working alongside technologies is another idea the students could appreciate. Furthermore, the creation of labs would reinforce the acquired knowledge even further, since the student can already practice what she or he learned with the support of the instructor. Experiential learning is an important tool for recent graduates looking for employment.

Walker and Moran (2019) have an approach of social responsibility that emphasizes marketing in the digital age. The authors emphasize that, as much as technology is a tool to improve record keeping, it has also shown issues related to social responsibility and the misuse of data (Walker & Moran, 2019). Most colleges and universities do not address the responsible use of data in the curriculum albeit knowing the student will be manipulating someone's personal data in the near future. According to research, a majority of firms plan to increase marketing budgets by 50% not only because of the low cost of online channels but because of the value of obtaining consumer information (Walker & Moran, 2019). To illustrate this shift, the authors highlight Direct Marketing Association's CEO decision to change the business' name to Data and Marketing Association (Walker & Moran, 2019). The increased use of data is directly related to its profitability, thereby increasing the chances for people's personal information to be misused due to managerial oversight. That is yet another job opportunity afforded by technology. The data privacy officer, perhaps.

Luckily, some entrepreneurs are working hard in demonstrating the possibilities of the collaborative work between humans and machines. One example is that of Tom Szaky, the CEO of TerraCycle. He has been working tirelessly trying to convince big brands, such as Procter and Gamble, Danone, Unilever, PepsiCo, and others to bring back the milk man. In other words, to reutilize the containers consumers throw in the trash every day. Some of these products are deodorant, ice cream, toothpaste, yogurt, mouthwash, laundry detergent, shampoo, conditioner, and a multitude of other products. Szaky wishes consumers to order products online (just like it has been done), however, the consumer will return the container when making the next purchase. In this perspective, the same container can be reutilized several times and the consumers have the convenience to receive products at home and participate in an impactful recycle initiative (Wiener-Bronner, 2019).

Another example of new technology applied to environmental protection is a design by Boyan Slat from The Ocean Clean Up. Slat developed a machine that is a buoyant barrier to capture trash from the oceans (Scott, 2019). It is reported that about 91% of all produced plastic in the world has never been recycled and that, on average, people eat a credit card worth of plastic every week as microplastic has become part of the diet of the food people consume (Wiener-Bronner, 2019). Clearly, the use of technology to aid humans in cleaning the mess produced by ourselves and our ancestors is imperative at this point in time. Opening the doors of creativity to young people in college to pursue such endeavors is precisely what is expected of institutions of higher education.

TECH JOBS ARE NO LONGER JUST FOR COMPUTER SCIENCE STUDENTS

Although there is a gap in literature in terms of discussing the adjustments needed to adapt the business curriculum to technology competency, there is a considerable number of sources calling for the reform of higher education. Some of the literature is focused on social responsibility (either in terms of the environment, or the privacy of individual information), other scholars will emphasize accounting practices, or social media. The matter of fact is that technology competency has entered most aspects of life and, likewise, should enter all aspect instruction. Students usually know how to post on their personal social media platform, but they are not always instructed on how to use social media for business. Nearly all organizations (public, nonprofit, or for-profit) use social media to connect with costumers and therefore, need workers with skills to manage specific aspects of social media (Freberg & Kim, 2018). Freberg and Kim (2018) discuss the adaptation of the business curriculum to social media instruction covering the following aspects: content creation, principles of public relations, writing, analytics, and handling crisis. Most teenagers today can learn how to handle a social media platform and such skills are no longer expected solely from a computer science student. In this perspective, the evidence suggests that greater focus on social media content is important in business instruction.

Research by PwC and the Business-Higher Education Forum (BHEF) revealed that 31% of executives surveyed have concerns about their firm's ability to hire individuals with the skills needed to run the firm's AI technology (Fenlon & Fitzgerald, 2019). Furthermore, the research found 54% of the interviewed CEOs worried about the lack of people with the skills to analytically use the tremendous amount of data collected (Fenlon & Fitzgerald, 2019). Finally, the study pointed to 55% of CEOs stating that the gap in skills related to technology would stifle the company's growth. In this perspective, business leaders refer to the need of reskilling or training employees in order to remain competitive (Cardenas-Navia & Fitzgerald, 2019; Fenlon & Fitzgerald, 2019).

The leadership of major telecommunications company AT&T took reskilling in its own hands. It initiated a partnership with Georgia Tech to properly train its workforce (Donovan & Benko, 2016). According to Donovan and Benko (2016), AT&T has approximately 280,000 employees who were, for the most part, trained in a different era. In other words, individuals received their degrees at a time in which technology was not changing so rapidly and its reach was not as prevalent. As AT&T continue to expand operations and acquire new companies, such as DirecTV; the leadership found no other way but to concede to customer demand. Between 2005 and 2015

data traffic increased more than 150,000% through its network, and the company's forecast indicate 75% of its network will be controlled by software-defined framework by the year 2020 (Donovan & Benko, 2016). Because of the increase in competition for workforce with technical skills, the leadership of the company decided to invest in reskilling and consolidation of roles. In other words, programmers are no longer just writing code, they have greater job mobility (Donovan & Benko, 2016). Furthermore, AT&T also changed the compensation system for the employees, emphasizing skills, as opposed to seniority.

THE OPPORTUNITIES AVAILABLE WITH ARTIFICIAL INTELLIGENCE

Artificial Intelligence (AI) is a technology that support human activity, just like the internal combustion gave rise to chainsaws, lawn mowers, cars, trucks; consequently, industry as a whole developed (Brynjolfsson & McAfee, 2018). Although some may find the concept of AI intimidating, many of us use this technology in a daily basis. For instance, customer reviews on a website (such as Amazon) would trigger a suggestion of a product one might want to purchase. Facial recognition will allow someone to unlock a smart phone. Historical market data might influence a customer in purchasing certain types of stocks. Store transaction details might trigger a system to detect fraud (Brynjolfsson & McAfee, 2018). There are so many other applications to AI and this technology is becoming each day more within reach of businesses. AI is no longer just for the tech guy who went to school to learn Computer Science. In this light, employees will increasingly find themselves dealing with AI in business transactions.

ARTIFICIAL INTELLIGENCE WITHIN REACH

Even though the advances in technology might result in job loss, people do not refrain from using it. Banks and grocery stores, for instance, have been using ATM and self-assistance scanning for many years, replacing human labor. Artificial Intelligence (AI) goes a step further as computers use data to make predictions regarding consumer taste. Walmart and Regal Cinemas took a direct hit from Amazon and Netflix, which rely heavily on AI technology (Davenport et al., 2018). Big companies, such as General Electric (GE), use AI to predict when a part of a machine will need replacement; and Danske Bank improved its fraud detection by 50% due to AI (Wilson & Daugherty, 2018a). Mercedes-Benz was able to increase customization of its vehicles using AI. Unilever, with a workforce of approximately 170,000, uses AI to screen potential candidates. The company's Human Resource managers only meet with the candidates after they play an online game and submit a video of themselves (to observe body language and tone). According to company officials, the easy access to smartphones allowed for greater diversity among the pool of applicants (Wilson & Daugherty, 2018a). The entertainment industry is also making great use of AI, as previously noted with the example of Netflix. Walt Disney World resorts use AI to boost the experience of its guests. Disney's guests wear a wrist band to make purchases inside the parks and the resorts, open the door of their rooms, and interact with the attractions. When a guest is standing in line, their name might just pop up on a screen, as the machines read the guest's wrist

band. Apple's virtual assistant Siri and Microsoft's virtual assistant, Cortana; are also examples of AI within reach.

The fact is that AI and other technologies can greatly improve human condition and, despite of the fear for job security, these trends will not fade away. AI can assist with problems that society demand to solve. Robots in factories can carry parts that are too heavy for humans, thereby reducing the risk of accidents and potential lawsuits. Cancer treatment can be accelerated with a plethora of data and drug combinations assessed by scientists throughout the world. The access to massive numbers of financial data can trigger the alarm to fraud, or another financial meltdown. The ability to read genetic information and accumulate data, allows for the prediction of a patient's predisposition to certain diseases (Wilson & Daugherty, 2018a). Conversely, people have also taken to technology for enjoyment. Spotify allows customers to choose the songs they want to listen, without having to purchase an entire album. The application even uses AI to make recommendations of songs you might like, given your input. Netflix and Amazon Prime also recommend movies, based on what you have previously watched. Many customers have decided to completely give up on cable TV and only use streaming as a preference. This is a perfect example of industry changes reflected upon the progress in the field of technology. Failure to adapt to these changes is equivalent to a football team playing always the same strategy, without taking into consideration the strengths and weaknesses of the opponent.

The financial investment in technology cannot be underestimated and, because of that, institutions of higher education that want to remain relevant must change. The students need the skills to proficiently understand and manipulate technology they already use in a daily basis. Wilson and Daugherty (2018b) state that employees need to have fusion skills; meaning, the ability to juggle the human-machine interface. Students need to get acclimated to work with AI-enhanced processes, just like radiologists use X-rays and MRI (Wilson & Daugherty, 2018b). The idea is that businesses and technology should interact in a collaborative way, without the sole purpose of displacing workers and just saving money on labor. Such dynamic is not sustainable as businesses won't last without the worker's income to support the system in the first place. In any case, the workforce must be properly trained to adapt to an ever-changing business environment.

DEVELOPING BUSINESS CURRICULUM

Considering the speed to which technology develops, it is not completely out of place to view each generation as a bit outdated from its successor. For instance, for an individual born in Brazil in 1976, growing up surrounded by cell phones and laptop computers is an alien scenario. For an individual born in 2011 basically in any place in the world, however, being surrounded by cell phone and laptop computers is commonplace. Most professors in academia today, have attended school at time in which technology was very different from what it is today. Aside of a change in perspective, there is also the traditionalism that is well known in academia. Tradition is not a bad concept. Tradition is the backbone of civilization. In any case, to send students into an ever-changing market, we need ever-changing instruction. Textbook-based teaching and exams are not necessarily the main tools to engage the next generation of businesspeople. In dealing with technology, a hands-on approach is imperative. Not all available textbooks focus on the importance

of technology and how the students can use to effectively run a business. The separation between business instruction and computer science is no longer valid; rather, a hybrid is in order.

According to Pan and Seow (2016), "the pervasiveness of information technology (IT) in business has altered the nature and economies of accounting activities" (p. 166). The authors include cloud computing, eXtensible Business Reporting Language, and business analytics as some of the technologies that has impacted accounting as a profession. In 2016, businesses such as Microsoft, Facebook, and Google spent approximately $20 to $30 billion dollars in AI (Davenport, Libert, & Beck, 2018). Even though these businesses are big players of the tech industry, such businesses still need managers to guide the companies.

Even schools with lower endowment can work creatively teaching useful skills. For instance, business schools could include website creation and maintenance in their curriculum. There are ways in which students can create a free webpage. Wix is an example of such free resource. Students need to understand with better clarity how cryptocurrency works as major banks are already studying the implementation of this new financial tool. Students should be able to learn how to create their own app. They also need to learn how to analyze the massive amounts of data processed by computers and make decisions based on the data collected. In this perspective, a mix of lab work and lecturing can be an effective combination.

Furthermore, the experiential learning can go even further with field trips, as students could visit businesses using some, or all of the technologies covered through the semester. These are just some examples as to how technology can be added to the curriculum and expanded upon for richer delivery. Clearly, each subject has its own particularities, for instance, marketing is big with data analytics as the consumer has such easy access to compatible products and products' review. Google Analytics is a great tool to analyze a marketing campaign, so an instructor teaching Marketing should focus on such available tools. In sum, just teaching from the textbook will no longer satisfy the job opportunities being offered.

CONCLUSION

Making the Case for Change in Business Instruction

Beaudry, Green, and Sand (2013) have made a strong case in regard to the number of cognitive tasks, or jobs, offered and the number of graduates joining the workforce each year. The authors suggested that the number of high cognitive tasks have been exhausted and individuals with bachelor's degrees have started to take away the jobs of students with a high school diploma. As previously stated in this paper, the United States has an average of 500,000 tech jobs unfilled and the number is expected to increase by 2020 (Fenlon and McEneaney, 2018). This fairly invokes the question: do we not have sufficient jobs that require high cognition, or are we not properly training the workforce to the future of jobs?

There has to be a logical reason as to why the United States government is investing so much in Science, Technology, Engineering, and Mathematics (STEM) within the country's public schools. According to the US Department of Education, the government spent $540 million dollars with STEM in the 2019 fiscal-year (US Department of Education, 2019). The demand for skills related to technology will continue to increase, as consumers continue to trade high tech products for even higher tech products. Big corporations such as Apple, Amazon, and Samsung, already strategize upcoming products and services, with the customer's tech demands in perspective. When beating the competition translates into smarter products and services, it is not unreasonable to imply that the jobs will remain in that area. Zhang (2014) states that the majority of internet entrepreneurs who dropped out of school felt that college was not leading them were they wanted to go. The students were more entrepreneurial than the courses they were taking. Unfortunately, the school system in general, is outdated and traditionalist by nature. For more than 100 years people have been seating orderly in classrooms, taking exams that usually measure the ability to memorize more so than to solve problems. The lack of congruity between the jobs being offered right now and instruction in higher education could be a reason why graduate students are lacking the proper skills to claim jobs that requires higher cognition.

Moreover, with prices of building a mobile app falling from around $200,000 in 2010 to around $10,000 in 2017, it is likely that many business students will take an interest in building their own online business (Hosanagar & Saxena, 2017). Online businesses are less taxing to start than brick and mortar businesses. In this perspective, training the business student to the future of business will require greater periods of discovery and lab-involved assignments and less lecturing and textbook exercises. Jonathan Bush, the co-founder and former CEO of athenahealth, stated that his team was able to eliminate 3 million hours of work from the healthcare system just by using machine-learning and automation and categorization of faxes (Bush, 2018).

There are many ways in which AI can assist in making business practices less bureaucratic, but we still need people to tell the machines what to do. The fact is that there are infinite ways in which students can become successful business professionals. It does, however, take tinkering and creativity working alongside with technology. If the students do not practice tinkering and creativity in college, how are they to be successful in a time that requires such traits? How are the students to learn how to open their online business using an app, if they don't know how to make an app? How are they to work with AI if they don't understand it? There is no future of business without technology. Business schools must adapt to it or risk obsolescence as students are unable to find jobs.

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