

Accounting Education Challenges in the New Millennium Era *Impact of Advanced of Technology and Dynamic Business Environment*

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Abstract: The new Millennium era is closely associated with turbulence business environment along with advanced of Information and technology. Job market demands university graduates to concern not only technical skills but also beyond that. Accounting education institutions must respond the changes by providing education systems that comply with market expectations. This paper described critical thinking related new orientation of accounting education institutions in responding currently advanced of technology, dynamic business environment along with millennial generation characteristics. This paper explored using literature review perspective to understand the implications of advanced of technology, changing business environment and special character of millennial generation on accounting education in higher institutions. The paper is expected to give a new perspective for accounting education institutions in terms of handling education process in the era with full of technologically advanced, dynamic business environment and the different character of a student of the millennial generation. Accounting academicians need to make an adaptation in terms of teaching method to fulfill market expectation towards accounting graduates. Accounting Education institutions must be aware of their system education, curriculum, and learning outcomes. This paper explores some ways in which this might be achieved and some of the challenges to effecting change in accounting education that will have to be overcome.

1 INTRODUCTION

The world is dynamically changing around us and fast and every activity is feeling the unprecedented impact of rapid demographic changes, economic shifts, increasing resource scarcity, urbanization, and technology breakthroughs (PwC, 2015). The practice in a business organization is also constantly changing and evolving, resulting in significant change in the nature of the accountants work in practice (Gorman, 2006). Therefore, challenges from the changing business environment for the accountant are more and more complex compared to past period of time (Gorman, 2006). Changes in the business environment, emanating from technological developments, globalization and market and regulatory pressures, have led to the reconceptualization and repositioning of the role of professional accountants (Byrne and Flood, 2003). Changes in business practice and technology advanced have implication on new requirement of accountant skills and have transformed accountants into knowledge workers (Dellaportas and Hassall,

2013). Accounting is a changing phenomenon, where both management accounting (MA) and financial accounting (FA) activities, technologies and concepts are continuously evolving and redefining themselves (Taipaleenmäki and Ikäheimo, 2013). In fact, accounting education must stay relevant if it does not want to become extinct (Topandasani and Sanchalit, 2005)

New technological advances affect the way information is handled in education institutions, libraries and information centers. The impacts of new technologies are felt by every actor in schools and universities because computing, communication, and mass storage technologies reshape the way that learners, teachers, and education staff access, retrieve, store, manipulate and disseminate information to each other (Bouarab-Dahmani and Tah, 2015). The way of learning has changed and will change since Information Communication Technology (ICT) is in all ways a part of our lives (Bouarab-Dahmani and Tah, 2015). The role of technology in education is so important, that it will force the issue of didactic versus constructivist

teaching (Bouarab-Dahmani and Tahi, 2015). Teachers will no longer have a choice but will be compelled to use a constructivist approach in a technology-rich environment (Bouarab-Dahmani and Tahi, 2015). Modern technology has the potential to create authentic and innovative learning experiences for the student (Adukaite, Van Zyl, and Cantoni, 2016). ICT usage is shifting toward interactive instructional platforms and tools and it facilitates more self-regulated learning and engagement (Adukaite et al., 2016). The arrival of a new century and millennium is a time for 'taking stock' and reflection. In the field of accounting education, this desire for introspection is given greater urgency by the significant changes that technology is already imposing on business practices and the need to reconsider the role of accounting practitioners as business changes (Howieson, 2003).

Challenges in accounting education are also associated with the changes of the character of generation X to generation Y or widely known as a millennial generation. The millennial generation has garnered a tremendous amount of attention for their unique characteristics compared with previous generations. (Phillips and Trainor, 2014). One of the main differences is that Millennials were born into the world where technology is ubiquitous. The literature on Millennials uniformly suggests that, as educators, we must understand this new generation of learners in order to educate them effectively (Phillips and Trainor, 2014). There is a growing body of research on the millennial generation and how their distinctive characteristics and learning styles are forcing institutions of higher education to rethink the traditional, lecture-type approach to education (Phillips and Trainor, 2014). Unique characteristics of Millennials "are challenging the traditional classroom teaching structure, and faculty is realizing that traditional classroom teaching is no longer effective with these students (Phillips and Trainor, 2014). Therefore, there is need and urgency to introduce a new approach for teaching method and curriculum in accounting education adjusted to millennial generation characteristics.

This paper aims to explore based on literature review the implication of millennium generation, advanced information technology, dynamics business environment on accounting education. The discussion is expected to give a proposal of a potential solution to accounting education in terms of teaching method and curriculum. Advanced technology that will be discussed in this paper is more focusing on the implication of high-speed internet access, cloud computing, mobile technology, and big data on

accounting education. The implication of dynamic business environment on accounting education, this paper will be focusing on the changing business platform from offline into online business and extension of skills required for professional accountant demanded by today's business practice. Furthermore, this paper will also explore the implication of millennial generation characteristics on changing the orientation of teaching method in accounting education. By developing a contextualized understanding of present-day student's characteristics, technology, and business environment, this review provides a foundation for addressing the education challenges of the new millennium.

2 LITERATURE REVIEW

2.1 Advanced of Information Technology and Accounting Education

In recent years the impact of technology and globalization has changed significantly the context within which the accountancy profession works. Accounting graduates should now have a very different education from that of earlier generations, who had entered the job market in a world characterized by simple computerized systems and manual processes (Kotb, Roberts, and Stoner, 2013). Individuals entering the accounting profession must acquire the necessary skills to use technology tools effectively and efficient (Willis, 2016). There is mounting evidence that the deployment of digital technologies by organizations not only affects the economics of operational and managerial processes but also mobilizes extensive social and organizational effects including education institutions (Bhimani, 2003). Starting from 2000, ICT has been placed on the education reform agenda both as an object of education and as an important pedagogical tool for innovating teaching methodology (Peeraer and Petegem, 2015). The AACSB standard A7 requires that "accounting programs include learning experiences that develop skills and knowledge related to the integration of information technology in accounting and business (Willis, 2016)

In a higher education environment where technological innovation is having a transformational impact on teaching and learning, the increased technological literacy among faculty is of central importance (Watty, Mckay, and Ngo, 2016). The

information technology infrastructure is being perceived as an “enabling” resource that can help in developing leaner and more flexible structures that can respond quickly to the dynamics of a fast-changing market scenario (Topandasani and Sanchalit, 2005). It is important for both educators and students to understand the role of accounting information systems, as well as the available technology tools, in making the practice of accounting more efficient (Scarpati and Johnson, 2012). Technology is certainly not an uncontested or uncontroversial area of education and many of the issues that surround education and technology are the fundamentally political questions that are always asked of education and society (Peeraer and Petegem, 2015). ICT is one of the most visible symbols of globalization and educational innovation and is often presented as both a cause and a consequent driver for educational innovation and change (Peeraer and Petegem, 2015).

The integration of ICT is moving beyond getting personal computers into the hands of learners and towards mobile technology, virtual world, and cloud computing amongst other (Peeraer and Petegem, 2015). Advances are happening in every technological area at never-before-seen speeds: in computing power, software, artificial intelligence, data analytics, cloud computing, networking capabilities, and the proliferation of mobile devices (PwC, 2015). Tools such as the Internet have overcome problems such as trade barriers and have introduced all businesses to increasing competition due to the globalization of business. In the accounting system, the Internet (as well as E-commerce) has the greatest impact on financial planning corporate taxation, audit procedures, testing audit planning, and training, capital project planning (Topandasani and Sanchalit, 2005). The improvement of technology made possible access internet in high speed. High-speed internet access is not only benefiting business enterprises but also education institution. American Institute of Certified Public Accountants (AICPA) and the American Accounting Association (AAA) to examine the future of higher accounting education, suggests that educators “transform learning experiences to reflect current and emerging technologies and global trends in business (Janvrin and Weidenmier Watson, 2017). Information and Communication Technology (ICT) services are now used with various types of tools to aid the different learning tasks (Bouarab-Dahmani and Tah, 2015). High-speed internet facilitates potential application of education process through the internet such as online class or video conference platform.

Furthermore, with high-speed internet, transfer data of material course is more convenience.

One challenge in our increasingly connected society is the proliferation of data. Every company, regardless of size, is bursting with information—often more than it knows what to do with. This includes operational data (e.g. from sales figures, transactional information, delivery records, and revenue numbers), mechanical data (e.g. from medical devices, smartphones, cash registers, airplanes), and social data (e.g. from Facebook, Twitter, or blogs) (PwC, 2015). In the last few years, the term Big Data has emerged as the new buzz word. Provides a more official definition of Big Data as, “high- volume, high-velocity and/or high-variety information assets that demand cost-effective, innovative forms of information processing that enable enhanced insight, decision-making, and process automation (Janvrin and Weidenmier Watson, 2017). Volume, velocity, and variety are known as the three-Vs and imply that vast amounts of transactions are quickly created from a wide variety of sources (Janvrin and Weidenmier Watson, 2017). Other sources frequently suggest two additional Big Data Vs – veracity and value. Veracity refers to the data accuracy and reliability of data while value examines the cost-benefit of collecting data. Accountants tend to focus on the veracity and value/cost-benefit of data collection.

The AACSB emphasized the importance of integrating Big Data and business analytics into the accounting curriculum (Sledgianowski, Goma, and Tan, 2017). The AACSB wants an interdisciplinary, integrated accounting curriculum that exposes students not only to the concepts of statistics, data management, and analytics but also to the hands-on use of appropriate tools for Big Data (Janvrin and Weidenmier Watson, 2017). The AACSB Accounting Standard 7 mentions that Accounting degree programs include learning experiences that develop skills and knowledge related to the integration of information technology in accounting and business. Included in these learning experiences are the development of skills and knowledge related to data creation, data sharing, data analytics, data mining, data reporting, and storage within and across organizations (Janvrin and Weidenmier Watson, 2017). Given that these technologies are transforming the accounting profession, the Pathways Commission recommends that accounting programs integrate business and accounting information technology throughout the curriculum (Janvrin and Weidenmier Watson, 2017).

There is a new impetus for the accounting profession to understand Big Data and business analytics, creating a growing opportunity for accounting educators to integrate these topics into the curriculum (Sledgianowski et al., 2017). A subject such data Analytics in Managerial Accounting can integrate analytical thinking and technology skills, introduces a critical thinking framework that provides a sound structure for data analytics inquiry (Janvrin and Weidenmier Watson, 2017). Accounting firms and professional associations recommend that Big Data, technology, and information systems be integrated into accounting coursework to provide students with the necessary skills and knowledge to adapt to the data-centric environment (Sledgianowski et al., 2017). Competency Integration for Accounting Education framework for educators to integrate information systems and technology competencies relevant to Big Data and business analytics into the accounting curriculum (Sledgianowski et al., 2017)

The use of computers has accelerated the pace of business, globalization has increased competition, EDI has facilitated the speedy, secure and accurate transfer of documents across the globe and the emergence of E-commerce has blurred the boundary lines of sovereign states (Topandasani and Sanchalit, 2005). The adoption of enterprise resource planning (ERP) systems have improved the quality, accessibility, and timing of accounting information for managers as well as improving transaction processes and allowing firms to have more flexibility in earnings management and the timing of earnings releases (Taipaleenmäki and Ikäheimo, 2013). Changes in corporate management are driven by an integrated information platform facilitated through information technology innovations, such as tightly integrated ERP systems with shared database and Internet solutions (Taipaleenmäki and Ikäheimo, 2013). IT innovations, such as ERP systems, support and integrate both internal and external business processes, thus opening a broader basis for management control (Taipaleenmäki and Ikäheimo, 2013)

University accounting education change, especially incorporating information technology, against the threat of market obsolescence and more recently (Kotb et al., 2013). Accountants and accounting students are increasingly needing improved awareness of and skills in using more advanced IT systems. Therefore, by delivering effective up-to-date education accounting educators within the university systems may also need to develop e-business content in their accounting curriculum as a tool to help them capture or retain

their superiority as a source of well-educated recruits into the profession. With the increasing body of knowledge in accounting, developing the curriculum for any accounting course can be both exciting and challenging (Willis, 2016). In the last decade, academics have been encouraged to implement new and innovative technologies in their classrooms and curriculum (Watty et al., 2016). One implication of this rapidly changing business environment is clear today's accounting curriculum should be updated to equip students with new skills, especially in technology and data analytics (PwC, 2015).

2.2 Dynamics Business Environment and Accounting Education

A number of recent studies have been conducted by accountancy bodies to examine the changing environment of the global accounting profession. Electronic commerce, Internationalization of business, increased competitive pressures, broader scope accountability, pressures and information technology, new work patterns, and attitude, the nature of accountants work, change in accountants work, structural changes, emerging areas of work, changing skills are characteristics in today's business environment related accountant profession (Gorman, 2006). The dynamics changing business environment has a consequence on how accounting profession should prepare the qualification. More importantly, Accounting education institutions has a responsibility to facilitate education system that fulfills today's' job market demand. Beyond carrying out the fundamental tasks of their work many accountants are now required to possess a wide range of skills, including excellent basic technical ability and knowledge of the general business environment. (Gorman, 2006)

E-commerce and the Internet and accounting education have a cause and effect relationship, which should be harmonious and an ideal one (Topandasani and Sanchalit, 2005). Commerce is becoming more and more electronic. The real issue is the impact of these connected computers on every sphere of business. One factor which has taken place on this account is the accumulation of huge data on the various cross-breaks of business. This data can very well be used by accountancy professionals to pinpoint their actions as well as serve as best information managers for decisions. E-commerce has also helped in integrating the supply-side management into accountancy having its specific role. Given the increasing role of e-business in the real world and accounting students need to understand the world in which their discipline operates, it is, therefore,

arguably that it is becoming increasingly important for students to be similarly exposed to the study of e-business (Kotb et al., 2013). Possible implications of developments in e-business audit for financial audit professionals. They found that the traditional authority enjoyed by external financial auditors is being, and will be, increasingly challenged by IT audit specialists. They argue that if the existing knowledge and skills base of financial auditors is not realigned to the business needs IT specialists are set to dominate in the e-business audit jurisdiction (Kotb et al., 2013)

The emerging business challenges from the changing business environment for the accountant are complex. One of the prime roles of the accountant is to help the business to be profitable and competitive, then this will inevitably mean that accountants will need to be far more involved than their traditional bean counter role within the firm. The 'audit is dead' that the future services offered by accounting firms will include strategic planning, financial services, banking consultancy marketing consultancy cost reduction consultancy, human resources and benchmarking to name a few. As the accountant's work and role are expected to continually change within the business environment it operates, it has been suggested that the accountant will now need a variety of new skills in order to survive. An increased demand for broader accountability, with corporate governance, is becoming a subject of increasing concern to stakeholders. Recent accounting scandals such as Enron, Parmalat and WorldCom have tarnished the reputation of the profession, however it has brought about a wave of new legislation which has seen increase costs for accounting firms, one of the main market concerns is the impact of over-regulation and increasing risk on the audit function with onerous requirements pushing up responsibilities and costs (Gorman, 2006)

The basic value of work has shifted from that of physical assets of the firm to that of social capital. The emergence of the knowledge age and knowledge-intensive organizations in the form of professional service firms has seen intellectual capital replace land, labor and physical or financial capital as the main factor of production. Professional service firms (PSF) are knowledge-intensive organizations that provide expert advice and services to clients; they include accountants under the umbrella of PSF's. The new economic model has created a need for a new type of information professional. In an era where the importance of information and intellectual capital seems to be in many cases invaluable especially when this is related to a knowledge-based profession such

as accounting (Gorman, 2006). Historically the primary role of the accountant was to carry out routine bookkeeping and the preparation and auditing of business accounts. Accountants now offer a range of services to their clients such as tax planning, budget analysis, financial and investment planning.

The 20th Century definition of the accountant it is important now to consider how the role and work of the accountant have varied from this definition (Gorman, 2006). Accountants need to capitalize on traditional values such as independence and concern for the public interest, through migrating to higher value-added activities, developing broader skills and being committed to lifelong learning. More recent research emphasizes that the large accountant practice will have to implement a new structure and business plan in order to compete in the changing environment. The model of the multidisciplinary business services firm until recently was the dominant business plan, but that now most large accounting firms are reversing course and returning to act as financial auditors.

In order to cope in such a dynamic and changing the environment, the accountant will need to develop new skills. The presentation of information as of key importance and accountants need to know how to present the best quality with the least quantity, 'doing this needs a skilled blending of content, presentation, and numeric details. As more and more diverse roles are emerging for the accountant, the core skills required involve communications, team participation, and interaction, information technology, decision-making and strategy, and planning. The accountant will need a more versatile skills base, enabling him or her to become a premier 'business advisor' and the successful accountant of the future will be a strong communicator, be well versed in information technology, be able to combine technical skills with strategic vision, seen himself as a professional advisor and learn from the profession's past mistakes. They must continue to develop and maintain expert competence in relevant technical accountancy areas and link this expertise with other relevant and generic business skills. Future accounting graduates should be trained on in years to come, these include communication skills, general business knowledge, accounting knowledge, problem-solving skills, information technology, personal attitudes and capabilities and computer skills. Accounting information is continually changing and the accountant needs to develop the skills to continuously acquire new information. The above skills would suggest that the accountant of the today and the accounting graduate of the future will along with their

core accounting skills also need to be able to reflect and show expertise in a management advisory and analyst role (Gorman, 2006)

Despite numerous calls for accounting curriculum to reflect changes in the business world, university accounting education has repeatedly been declared out-of-date and failing to prepare graduates adequately for the changing business world (Kotb et al., 2013). There has been a range of studies calling for the revitalization of accounting education through the integration of emerging features of the business world, such as technological developments, into undergraduate accounting curriculum (Kotb et al., 2013). The importance of university curriculum content that reflects the knowledge and skills sets required for an increasingly sophisticated and changing business environment (Kotb et al., 2013). accounting curriculum reflect the changes occurring in the wider economy, particularly because accounting graduates have to compete with the best graduates from all disciplines, making it arguably even more important that they have the knowledge and skills that allow them to compete as effectively as possible in such a challenging job marketplace (Kotb et al., 2013). The need for accounting education to change to reflect, *inter alia*, the implications of changing technological demands of business has been recognized, and lamented, for a long time. University accounting education curriculum should include subjects designed to provide students with a firm understanding of global issues affecting society and the business environment (Kotb et al., 2013).

2.3 The Millennial Generation and its Implication on Accounting Education

According to the Pew Research Center, Millennials are those individuals born between 1981 and 2000 and are coming of age in the new millennium (Leemann, 2011). Millennials are significantly different than their predecessors, namely Baby Boomers (born between 1946 and 1964) and Generation X-ers (born between 1965 and 1980). Millennials, also referred to as Generation Y, generally, is considered hopeful and idealistic. These individuals come from an environment where the parents typically doted on them incessantly, structured their activities continuously, and rewarded them for participation rather than for success (Glennon and Otr, 2016). The way Millennials were raised has created a generation of workers not limited by the constraints of practicality therefore, they can be more creative and expansive in their possibilities

(Glennon and Otr, 2016). Millennials generally were overly protected from failure by parents who viewed building self-esteem as a priority (Glennon and Otr, 2016). Millennials are part of the network age, which is different from the information age of Generation X, who were able to obtain information more readily and earlier than previous generations because of the internet (Glennon and Otr, 2016).

Millennials truly are connected in every sense of the word. Not only are their professional lives connected through the Internet, cell phones, and text messaging, influencing both local and global perspectives, but they also are socially networked through Internet sites such as MySpace and Facebook (Glennon and Otr, 2016). Millennials can search blogs and listservs easily for common clinical dilemmas and the strategies used at other sites to address these issues; investigate what clinical situations and practices are occurring in other countries; review the literature quickly for recent evidence-based practice information communicates with other sites to coordinate research efforts (Glennon and Otr, 2016).

As part of an electronic network, Millennials have their own communication style and jargon, which, unfortunately, they may not realize is unprofessional or, at times, inappropriate to use in a work situation. It is important for the previous generations to guide Millennials inappropriate communication. Millennial students have a preference for interactive and experiential learning approach (Phillips and Trainor, 2014). The millennial generation is considered to be unique in many ways, not the least of which is their reliance on technology. (Phillips and Trainor, 2014). Never knowing the world without computers and the Internet, millennials don't see them as tools, but rather as integral parts of their lives. Millennial students will change the landscape of higher education in permanent and irreversible ways (Phillips and Trainor, 2014). Seven core traits that define the millennial generation are special, sheltered, confident, team-oriented, conventional, pressured, and achieving (Phillips and Trainor, 2014). The following lessons can be incorporated into accounting classes related millennial generation, More "hands-on" learning, Further engagement of students, when possible, Creating a sense of personal involvement and interaction in the classroom (Scarpati and Johnson, 2012)

Where Generation X values control over work, development opportunities and pay satisfaction, Millennials are driven by the more social needs of flexibility, appreciation, and team collaboration (PwC, 2014). Many Millennials are unconvinced that

excessive work demands are worth the sacrifices to their personal life and if they come into an organization and find they're not getting the full life they want, they will look elsewhere (PwC, 2014). Millennials are accustomed to exchanging information via social media and other forms of technology (PwC, 2014). Millennials, enjoying their work and finding meaning and purpose in their work is more important. As a result, our focus has shifted to how we reward the quality and value of work and recognize the needs of every person (PwC, 2014). Millennials well understand the value of a team and are just as committed to their units and to the firm as previous generations (PwC, 2014).

Millennials do place more importance on being part of cohesive teams and less on pay, so we need to encourage them to connect, collaborate, and build their networks (PwC, 2014). Millennials are much more globally aware and oriented. They are much more likely to say they would like global career opportunities and they don't expect to wait to earn that option (PwC, 2014). Unlike previous generations, Millennials are less likely to work at one place for nine years or more (PwC, 2014). Millennials are quick to react negatively to any perceived disconnect between an organization's words and its actions and they want to know what decisions are being made at the leadership levels. If they don't receive the information they're looking for, they'll go out and get it anyway, rather than waiting to be told (PwC, 2014).

Generation Y, they want learning to be creative, interactive, and fun; and they enjoy thinking outside the box (Eckleberry-Hunt and Tucciarone, 2011). Generation Y is technology savvy and advanced in readiness to use new educational technologies (Eckleberry-Hunt and Tucciarone, 2011). Millennials do not look at an organization to see how they will fit into it; rather, they look at how that organization will fit into their lives flexibility and adaptability are required to successfully work with Generation Y (Eckleberry-Hunt and Tucciarone, 2011). Core workplace values include online social connectedness, teamwork, free expression, close relationships with authority figures (as they had with parents), creativity, work-life flexibility, and use of technology (Eckleberry-Hunt and Tucciarone, 2011).

Learning, Millennials have been raised to believe education is the path to success. Collaborative approaches to learning and incorporate graphically are best teaching method for the millennial generation. Millennials have ideas and opinions they are not afraid to express and they don't like being ignored. Multitasking, Millennials are excellent

multitasks, flourish in a team setting, solving problems collaboratively. Millennials are the most tech-savvy generation in history, therefore, the use and develop apps that suit the needs of the business practice is potential in the future of accounting education (Leemann, 2011). Contextual teaching using multimedia formats, case presentations, audience participation, hands-on teaching, group discussions and role model provides opportunities to learn interactively. Involving the students in developing and using new technologies are interesting for the millennial generation. Discussion defensiveness openly, the use 360-degree evaluations, written feedback, accept honest and open feedback without becoming defensive, giving concrete and immediate feedback is among teaching method that fits with millennial generation (Eckleberry-Hunt and Tucciarone, 2011).

3 CONCLUSIONS

Millennium era has contrast different compared to the previous era in terms of the way people communicate, industry and business practice and how to run the organization. One of the fundamental characteristics in Millennium era is advanced technology, dynamic business environment, and special character of millennium generation. Education institution, especially accounting education has to respond the phenomena and adjusting education system in line with the need of current era. Technology advanced must be incorporated with education process to get benefits of sophisticated technology in terms of teaching method and media. Furthermore, accounting education should also take care curriculum to be adjusted with the need of industry and current business practice. Adjustment of the curriculum must consider the development of Information and communication technology. In terms of the special characteristics of the millennial generation, accounting education must also adjust teaching method fit with the expectation of generation millennial. The traditional learning process is considered no longer interesting among the millennial generation. Therefore, accounting education institution must do innovation the way process transfer of knowledge conducted. By adjusting education process with the character of the millennial generation, accounting education process is believed more interesting.

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