

THE LATE PREPARATION OF IR 4.0 AND SOCIETY 5.0: PORTRAYS ON THE ACCOUNTING STUDENTS' CONCERNS

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ABSTRACT

Previous study has revealed that students nowadays should not be at peace as the Industrial Revolution 4.0 and Society 5.0 eras are rising. Therefore, this paper's objective is to portrays their views and concerns in order to answered out about the following questions: are we really ready to face the revolution in Society 5.0, not only on industrial aspects? Moreover, are we really living our digital life professionally? We use the qualitative method with two steps data obtaining ways: firstly, by conducting some mini-dialogs over 90 accounting students about their personal knowings on industrial revolutions (include the 4.0 era) as the snowball step to specify the participants of our next further data collection, and secondly by holding focus group discussions. We succeeded in dealing with some facts, students' opinions, suggestions, and concerns that should be considered as something important, such as their views about their own role in digital eras' preparation, the eras' impact on accounting profession, their institution's supports to deal with digital eras, the subjects/courses they have to learn and the difficulties in learning them, the learning methods/systems at class, lecturers/teachers capability, and some facilities supporting their learning process. Overall, this study shows us that there are some communities consist of students that still unready, not living their digital life professionally and therefore considered late to be prepared to face the new eras. To this extent, we believe that this study will contributes to the academicians and practitioners to be more aware on indicating, re-evaluate or re-observe the best way to equalize the digital and all-smart eras from time to time on any generations including the students, as they hold the world's future.

Keywords: Industrial Revolution 4.0, Society 5.0, Human Resource, Accounting Education

INTRODUCTION

The emergence of the Industrial Revolution 4.0 as an all digitalized industrial era has been a highlight since 2018. There is no doubt that the history of the development on the industrial revolution is considered very influential on the development of economic sector progress throughout the world. This encourages academics and practitioners from the social, economic and industrial spheres to hold various forums, discussions, to research and studies on the preparation, application and impact on them.

If previously discussed a lot of the industrial revolution from the use of steam engines in the first industrial revolution, the use of mass production machines, electricity and fuel oil in the second industrial revolution, followed by the optimization of information technology and automatic machines in the third industrial revolution, to digitalization, artificial intelligence and the internet of things in the fourth industrial revolution, this time academics and practitioners have also begun discussing the era of Society until the fifth era. Basicly, Society 5.0 represents the 5th form of society in our human history, chronologically following hunting, farming, industry, and information (Public Relations Office of Government of Japan, 2019). At Society 5.0, all aspects of human social life will be facilitated by technology, so it can be said that the fourth industrial revolution is part of Society 5.0. This is due to the rise in values and services in all aspects of daily human life, not only industrial life.

While some academicians and practitioners are mostly preparing for the Society 5.0 era, we were questioning ourselves back; "are we really ready to face the revolution on Society 5.0, not only on industrial aspect?", "are we really living our digital life professionally?" So, when the Society 5.0 is being the hot topic, we are contrarily found interesting idea and motivation to look back and still doing a study about the human resource unreadiness of industrial revolution 4.0.

As the closest near future human resource, high school and university diplomas/graduates should not be at peace because of the digital eras are coming (Mařovčiková, 2017). We then conducted some mini-dialogs over 90 accounting students about their personal knowings on industrial revolution (include the 4.0 era) as the snowball step to specify the participants of our further data collection by focus group discussion. We found and listed some missing things about the readiness on facing the digitalization living. The focus group discussion itself was attended by 20 students. We picked accounting as a discipline that affected by industrial revolution 4.0 (Frey & Osborne, 2013; Burritt & Christ, 2016; Treanor & Kollewe, 2017; Mařovčiková, 2017; Akhter & Sultana, 2018; Ghani & Muhammad, 2019; Kruskopf, et. al., 2019). Therefore, we believe that this study will contributes to the academicians and practitioners to be more aware on indicating, re-evaluate or re-observe the best way to equalize the digital and all-smart eras from time to time on any generations including the students, as they hold the world's future.

LITERATURE REVIEW

Industrial Revolution 4.0 vs Society 5.0

The term "Industrie 4.0" in German is an indication of the application of technological concepts to the national economy in 2011 (Jurina, 2017). It becomes the beginning of the emergence of the fourth industrial era. Maar (2016) mentioned

that it is expected that Industry 4.0 will lead to establishment of a cyber–physical system, or an intelligent factory. Things that affected by this era are the rise of interoperability (through machines, devices, sensors and connected and communicated people), information transparency (the system that creates a virtual copy of the physical world through sensor data in order to contextualize information), technical assistance (both the ability of the systems to support humans in decisions making, problem solving, and task assisting), and the form of decentralized decision-making (the cyber-physical systems’ ability to make simple decisions on their own and become as autonomous as possible).

The Industrial Revolution 4.0 is creating new values and services one after another, bringing a richer life to all. But in a wider perspective, Society 5.0 represents the 5th form of society in our human history, chronologically following hunting, farming, industry, and information. (Public Relations Office of Government of Japan, 2019). Shortly, if Industry 4.0 focuses on technology development, Society 5.0 provides a more human-focused approach. Both in industry 4.0 and society 5.0 mostly affect public relations work activities, because there are several same complementary elements. Picture 1 provides the visual explanation over Society 5.0, retrieved directly from Public Relations Office of Government of Japan website.



Picture 1. Society Era Timeline

As in Arief & Saputra’s research in 2019, illustrated that the similarity of the two eras. In Society 5.0, there is a term regarding big data analysis by Artificial Intelligence (AI). The results of the analysis are then returned to humans as users in various forms. Then, for Industry 4.0, a lot of information is collected through networks and will be analyzed by humans. These processes then bring new values, both in industrial and society contexts, including in the accounting profession.

Accountant As Deminishing Job in Digital Era

Frey & Osborne (2013) previously found that slightly less than half of the jobs in the US are exposed to the risk of becoming redundant due to Industry 4.0 as robots can perform not only routine tasks but also sophisticated tasks beyond the routine. Their findings implied that although Industry 4.0 provides opportunities for those who are prepared to embrace it, this era also poses great challenges to any kind of profession, includes accountant. Treanor & Kollwe (2017) also stated that automation might lead to improvement in jobs—it takes an accountant from three to four weeks to produce an account. If a machine could do it faster, then accountants could focus on analysis of results instead.

Obviously, those with high school diplomas and university degrees have to be in a getting-ready-state. The trend to move forward and come with new software, machines and technologies will flourish further, and the incoming job losses must be approached seriously. It is clear that people without jobs cannot produce spending power, and what is more, they put higher pressure on the social system (Mařovčiková, 2017). The accounting and auditing profession will be predicted that this profession will face extinction (Frey & Osborne’s, 2013).

Another study by Akhter & Sultana (2018) resulted that the advancement in machine learning, robotics and artificial intelligence (AI) are also contributing to the overall development of the accountants. They need to be more adaptive and improve their skills to keep in pace with machine. Both AI, robotics and machine learning are less causing problem, and have higher processing power, causes erosion in any traditional job like accountant. But, even though technological platforms are replacing accounting jobs, demand for skilled and high-quality accountants are still exist. That is because the AI helps professionals to learn, think and perform better—technology can’t replace emotional intelligence and critical thinking abilities of a human in near future.

As for accountants, the auditing professions are also impacted by these eras, and thus the future of new job descriptions and skills in these fields are fully required. These fields are moving full force into the digital age, where many predict that in five to ten years humans will become obsolete in many areas in accounting and audit (Kruskopf, et. al., 2019).

The job redundancies and the degree of replacement of human activities by electronic devices and machines are certainly happening. Ghani & Muhammad (2019) stated that the replacement of physical human activities by machines is therefore expected. In addition, accounting practitioners see the need for accounting graduates to focus on continuous learning and education, particularly in acquiring knowledge and skills in IT. Hence, there is a need for academics and universities to

incorporate various accounting technologies and simulations that are applicable to the Industry 4.0 environment, in their teaching and learning activities.

METHODS

In order to achieve the goal of portrays the reality of readiness of students as prospective professional workers in the field of accounting who will face the digital and all-super smart era in Industrial Revolution 4.0 and Society 5.0, we use the qualitative method with two steps data obtaining ways: firstly, by conducting some mini-dialogs over 90 accounting students about their personal knowings on industrial revolutions (include the 4.0 era) as the snowball step to specify the participants of our next further data collection, secondly by holding focus group discussions. We picked accounting as a discipline that affected by industrial revolution 4.0 (Frey & Osborne, 2013; Burritt & Christ, 2016; Treanor & Kollwe, 2017; Mařovčiková, 2017; Akhter & Sultana, 2018; Ghani & Muhammad, 2019; Kruskopf, et. al., 2019)

The focus group discussion itself was attended by 20 accounting students, as accounting becomes one of the disciplines affected much by industrial revolution 4.0 (Frey & Osborne, 2013; Burritt & Christ, 2016; Treanor & Kollwe, 2017; Mařovčiková, 2017; Akhter & Sultana, 2018; Ghani & Muhammad, 2019; Kruskopf, et. al., 2019). We invite them to give more opinions and by asking crucial questions to assess their readiness, while at the same time raising their concerns and needs to prepare for the digital age. In addition, we also accommodate a number of important suggestions related to the issues we discussed together. The results of the focus group discussion data were then processed using taxonomic analysis, and we mapped into several important points to describe the reality on facing the digital era.

RESULTS & DISCUSSION

Students—both in highschool or university—being the closest near future human resource facing these digital eras in Industrial Revolution 4.0 and Society 5.0 as well. Considering this fact, their opinions, suggestions, and concerns should be something important.

Of course as a student in particular we start from the preparation in advance ee at least we know what the industrial revolution is. After we get to know what selective things are brought from the development of the industrial revolution. When we are selective we must adapt one of the uses of the industrial revolution 4.0 that we use is Grab. Friends here even using grab is one of the developments of the industrial revolution even friends are also easy to enjoy these facilities. Then, the existence of e-commerce is also one of the developments of the industrial revolution 4.0 so as students we first prepare ourselves in addition to us adapting to the existence of the development of the industrial revolution.

Through this study, we were able to gather the fact that accounting students still felt they had not played a role even preparing for the arrival of Industrial Revolution 4.0. Students also feel the need to have the ability to operate the software as well as interpret it, and understand the details that can / need to be prepared to face Industrial Revolution 4.0.

I'm still awkward, ma'am, with the those technologies, like MYOB or maybe... (another) applications about accounting and so on. In fact, I even look at my cellphone or laptop is still confused like that, I still don't have enough preparation like that, so it's still lacking.

This opinion confirmed the lack of accounting students' understanding of the use of technology, namely MYOB software or other accounting programs. This is an indication of crucial unreadiness and unprepared human resources, given the demands of them to become capable workers in technology in the digital age.

Besides that, the students also gave their views on the impact of Industrial Revolution 4.0 on the profession in accounting. One such profession is for example the entrepreneurs. According to them, the entrepreneurs need to act creatively because they need to understand the recency of products preferred by the community and the use of applications/technologies that support their businesses.

In my opinion, the entrepreneur clearly has an impact on the development of industry 4.0 because there are more and more start-ups, for example, like e-commerce, entrepreneurs are increasingly spreading in the competition. Therefore, as entrepreneurs, they have to think creatively because there are many industries 4.0 who hold creative youth skills to form what they want so that the goods are liked by people and make it easier for people to get things like that.

Another view from students comes from the impact of Industrial Revolution 4.0 on the teaching profession accounting teacher. According to them, educators are clearly a profession affected by the digital era. These impacts, for example, come from the learning system and curriculum as their basis for carrying out teaching and learning activities. Mengingat adanya dampak tersebut, sudah dapat dipastikan bahwa tenaga pendidik perlu untuk mengenalkan Industrial Revolution 4.0 kepada anak didiknya. Hal ini dapat disisipkan langsung melalui pembelajaran di kelas, hingga metode pemberian wawasan lainnya, yaitu melalui seminar maupun kuliah tamu dengan menghadirkan para pakar, akademisi serta praktisi yang memahami permasalahan yang mungkin timbul di terkait era digital ini. Para mahasiswa menyadari betul bahwa para akuntan sekarang bekerja dengan lebih tersistem (terdigitalisasi), sehingga tidak terlalu perlu untuk melakukan pencatatan secara manual.

Not only lecturers but all educators both formal and informal must have been affected by the development of the industry, especially in how the system provides learning that learning now must follow the development of the current curriculum in high school curriculum 13 that has also been affected by the industrial revolution

4.0 Previously we used KTSP 2006 or 2008, which has changed... like... traditional, now that students have to look for ideas or students have to look for ideas or literaries. Well, my friends looked for it... from the internet... then learn to use applications or software... that are the result of the industrial revolution. Then, for the education... instead of being anti-industrial, we have the duty as educators to also introduce the industrial revolution 4.0 to what our students will be... because our students will be 4 generations of Indonesia so that they are not too... what is the term... that is not competitive with the development of industry in several countries.

In my opinion, it is certainly has an impact because... for example we had a transaction that was recorded. Now we just need to enter it into the system, ma'am. We know now it's like MYOB, right, ma'am, and there are more in Alfamart... like if there are purchases, we don't need to take notes, just showing the barcode.

When asked about the 'ideal criteria' of educational institutions that are considered mature in preparing students for the digital era in Industrial Revolution 4.0 and Society 5.0, they argue that the institution is said to be mature if the core activities of teaching and learning activities are already utilizing technology. The use of technology to support learning activities, such as wifi, fingerprints, academic information systems, learning and integrated, as well as the use of programs from third parties such as Google Classroom and Edmodo, can train students to be more capable in dealing with the digital era.

Moving to different topic, we were then asking about accounting subjects or courses that may support their Industrial Revolution 4.0 preparation. They mentioned several subjects such as Information Technology and Communication, Computerized Accounting (although it must be emphasized that the provision of material must follow the latest accounting software developments or be of public interest), Investment Management (as long as there is a lecturer's order to go into the field to meet investors and make the best use of technology, and with a note that such an assignment must be discussed in class).

The students also mentioned several accounting courses that they felt needed to be given by using more technology to prepare for this era. Some of them are Auditing courses, which they expect to be taught through audit software and utilize other programs that actually support the audit process. Besides that in the course that discusses trading securities investment, students really expect to be given the opportunity to carry out some investment activities online.

They then also revealed some difficulties in studying the course. The main problems they face include:

- Students find it difficult because they are unable to understand how IT systems work.
- Students feel less able to think critically if there are such learning outcomes
- Students find it difficult if the lecturer also looks less skilled in explaining learning material when utilizing technology in teaching and learning activities.

Related to the learning system in the classroom, the students actually want a Problem Based Learning system and learning that is accompanied by direct practice, and not only digesting theoretical material from lecturers, because some theories in the literature are sometimes not used in the real world of work. In addition, they also want the specialization / formation of concentration in one sub-area in the field of accounting, because this is felt to help them to formulate their ideals and desires to choose a career in the future.

The students were also concerned about some issues related to education personnel, so they gave suggestions that they felt were quite implementative. Some of these suggestions are also accompanied by their concerns, such as:

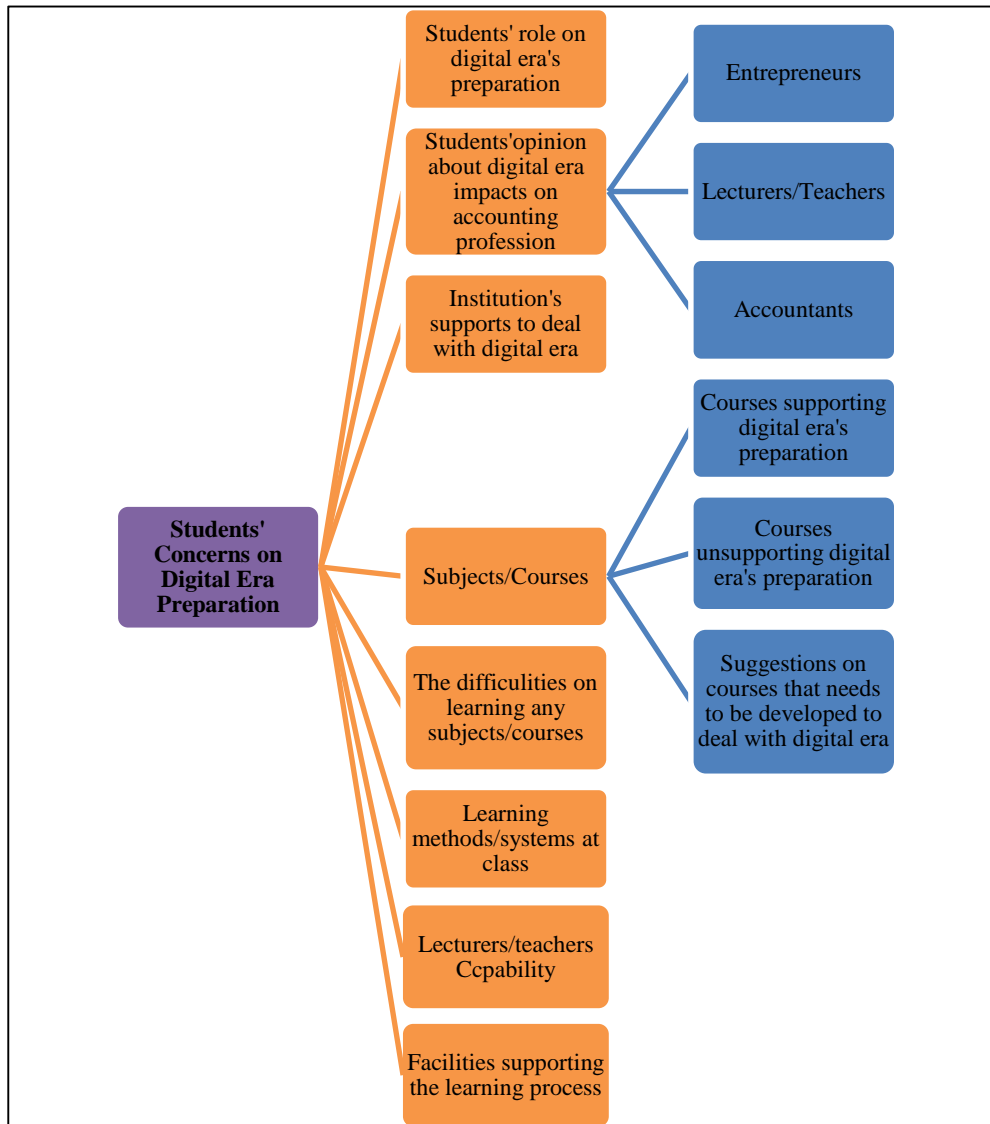
- According to some students, overall the teaching staff have done the learning process optimally. However, it is constrained by variations in the ability of students to capture the material presented.
- Students feel less knowledgeable if the lecturer does not pay more attention and explanation / exposure to additional material in the learning and presentation system
- Students want field practice based learning
- Some lecturers with accounting basis are seen as:
 - Scary
 - Not periodically discussing exam results and
 - Not transparent regarding students' grades

So students cannot follow the learning patterns of the lecturer. Although they also want to be guided in preparing for the Industrial Revolution 4.0 era.

- The number of lecturers is hoped to be equal enough to accommodate all of the students
- The capability of lecturers is enriched in terms of the practice of the field of science being taught
- Addition of lecturers coming from practitioners' backgrounds

Lastly, they added some other physical facilities and infrastructure from an educational institution which they felt were vital in receiving lecture materials in preparation for the digital age. Some of them are the availability of sufficient wi-fi facilities, the existence of all learning aids in a complete and adequate classroom, the existence of computer laboratories (or the merging of laboratory use, for example from the initial allocation per department to become a faculty), increased holding and fostering of student associations that interested in research and scientific work, to the inclusion of students in lecturer research activities that really need to be improved.

All of these are matters that are covered by student's concern on digital era preparation, especially at these latest Industrial Revolution and Society eras. Picture 2 contains a mapping of all the results of this data set.



Picture 2. Mapping of Students' Concerns on Digital Era Preparation

CONCLUSION

As the focus of Society 5.0 is on four main areas namely healthcare, mobility, infrastructure, and fintech, people tend to start to warmly discuss this era as preparation for facing a digital and smart life in all aspects and elements. Previous study has revealed that students nowadays should not be at peace as the Industrial Revolution 4.0 and Society 5.0 eras are rising.

We have collected some facts, students' opinions, suggestions, and concerns that should be considered as something important, such as their views about their own role in digital era's preparation, the era's impact on accounting profession, their institution's supports to deal with digital era, the subjects/courses they have to learn and the difficulties in learning them, the learning methods/systems at class, lecturers/teachers capability, and some facilities supporting their learning process. Overall, this study shows us that there are some communities consist of students that still unready, not living their digital life professionally and therefore considered late to be prepared to face the new eras. To this extent, we believe that this study will contribute to the academicians and practitioners to be more aware on indicating, re-evaluate or re-observe the best way to equalize the digital and all-smart eras from time to time on any generations including the students, as they hold the world's future.

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