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Impact of Intelligent Automation and Digitalization on Human Labour

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***Abstract*—**The revolution in Industry 4.0 is to make manufacturing industries more faster and efficient for more customer satisfaction, and this is a special challenge for business in general and Smes particular and create more business opportunities and models introduction. Industry 4.0 is actually trend of automation and development process of data exchange in manufacturing technology and chain production management. The term also refers to the industrial revolution 4.0. Industry 4.0 is referred as a age of modern technologies. So the rapid increase in digitalization, robotization, and intelligent automation has great impact on digital markets even including labour market as well.

Keywords*—Jobs, Cyber physical system, technology, employments, digitalization*

I. INTRODUCTION

Industry revolution 4.0 is a global revolution in today's industries regarding to business, technology, production, manufacturing etc. The physical world and the virtual world merge into cyber-physical systems"(Bundesverband Informationswirtschaft, Telekommunikation und neue Medien e.V., 2015). Previous studies has shown us, how industries has kept on advancing. Industrial revolution started in 1760 and stated as industrial revolution 1.0, then the 2nd period of revolution starts from 1870 till 1914 (1st world war started). After the second revolution, different scientist and researchers led to new inventions and discoveries which changed the history of human technology on a different scale. Then the 3rd industrial revolution (which is generally stated as the revolution of digital world) started in 1969 with the invention of digital and electronic technology.

The industrial revolution 4.0 started in 2011, in which machine can think by itself involving artificial intelligence, IoT, Cps (Cyber physical system) and other technologies. This new technology led to a lot of benefits like creating many high skillful jobs as well as different threats and disadvantages. But this time the biggest threat appeared to the humans itself. Thus human creating a technology for a better life but it also had a dark world on its back. This revolution threaten the human jobs in industry and society. The most danger of this is to the human jobs required low skills. And also, this revolution also polarized the high skilled jobs and low skilled jobs which is a bigger problem in the world. Germany and Turkey were the 1st victims of this revolution. Indeed, new technology is enhanced and beneficial but this problem cannot be ignored.

In Japan, this problem haven't appeared at public level or any news but in Japan, people having jobs feels very lucky and don't want to resign the jobs at any cost. They try their best to do that job and to show their sincerity with the company so that they can keep engaged with that job.

So if robotics will enter in Malaysian industries then robotics will take place in industry and thus might result in mass unemployment .In next level it will take root of evil.

This revolution is much better if applied to special areas of industries where they can help humans as a tool. They shouldn't be fully replaced by the new technology. For example the security cameras are now taking place of security guards for monitoring the areas. Research has shown that this change reduced the jobs of security guards on a large scale as like where industrial revolution involves there many peoples are losing job and growing up unemployment in society. Actually this paper main motives to rising awareness about the upcoming issue of industrial revolution such as threat to unemployment in Malaysia.

II. REVIEW

This section provides summary of related topic publication regarding on Industry 4.0 and cyber physical systems and impact of latest technology such as robotic on the human factor, with specific reference to labor content and work organization. In a study based on the situation in turkey and Germany. After analyzed the situation Martin ford discuss about the threat of unemployment in society which already occurred in Germany and Turkey. He already gives few quotes about the name of technologies how they

will impact on human labor and work organization. According to his analysis on technologies such as artificial intelligence and cyber physical system will not only impact on low skilled worker but also require enough sufficient training and education for fresh grade from university who will going to look for highly skilled jobs would find themselves threatened by job competition, and who will get the high skilled job they also would find themselves threated by machine and software algorithm which need to perform advanced analysis and decision making . So because of this most graduates will fall down in their early age and it will create unemployment in society. In the end this would ultimately lead to the fact of the business model of market industries would be threatened (Ford, 2009).And it might be relegated to the camp of doubt who are genuinely preservationist overall future job chances against the foundation of outcomes will be coming from industry 4.0 (Bowles, 2014).Another research found that the outcomes of Industry 4.0 on operational, indirect and management tasks and the executives undertakings and exercises. On the operational working level, he reached the resolution that lower talented employments containing basic and tedious exercises would be replaced to an enormous degree by intelligent and cyber physical systems (HirschKreinsen, 2014). Moreover there is serious economic changes coming from the rapidly developing appearance of cyber physical systems. So because of the latest technologies most of the low skill job like routine jobs will banish from country and it will give great effect on economy and also pattern recognition is defined in high-skilled employment and cognitive non-routine tasks (Bowles, 2014; Brynjolfsson & McAfee, 2014). And the occupations and tasks which cannot be automated, at least for now, are non-routine cognitive/analytical and non-routine manual and interpersonal ones (Fonseca et al., 2013).

Moreover Skill-biased technological change takes to a qualitative change in the occupation by the increase in demand for skills. One of the studies which says According to the study of Golder and Katz (2007) that technological change increases demand for skilled and educated workers. But another research studied that jobs need more complex skills today and changes in skill requirements have more demanded in computerizing jobs (SpitzOener, 2006), and both low or high-skilled workers might be complement or substitute by latest technologies (Acemoglu and Autor, 2011; Behaghel et al., 2011). These occupations are less defenseless to substitution by new technologies due to the demand for problem solving, judgement, creativity, in-person intelligence, adaptability and environmental adaptability (Autor and Dorn, 2009).

Finally, the initial two parts of the article were clearly referenced and the prior research that the article chose were deliberately picked.

III. METHODOLOGY

As for the methodology of the study, the author went through various online analysis on their research topic. That is, the authors carried out an intensive research for assess the impact of industry 4.0 on occupation and employment which is threatened on unemployment. Once the root cause of the problem is analyzed the authors then began another intensive studies to assess the unawareness of new technology to the young generation. Upon completion of those root causes analysis strategies, the authors planned to prepare and hand over questioners for students in order to identify how familiar are individuals with such issues. Based on the result the authors recommended some preventive techniques. Other research techniques like surveys and case study as the sample selected by the authors was small. German master board meetings uncover an increasingly traditionalist view on the time skyline required before the real effect of Industry 4.0 innovations may happen contrasted with their American and Anglo-Saxon friends, whereby this view relates partially with ongoing questions about the availability of critical pieces of German little and medium-sized organizations to confront the difficulties of digitalization and digital physical frameworks and to logically progress towards the incorporation of Industry 4.0 advances into their plans of action

With a particular goal in mind, the decrease of manual and standard sable employments and the comparing shift towards higher qualified occupations could likewise make the rest of the occupations progressively secure (Doll, 2015). Against the foundation of generous statistic changes anticipated to prompt a decrease of the quantity of accessible gifted specialists by around 6,000,000 until the year 2030, evaluated work misfortune possibilities may be less dangerous than as of now suspected (Paul, 2014). In this unique circumstance, talked with German specialists are of the supposition that because of a lift in the straightforwardness of individual execution information administered and controlled through digitalized forms, extra difficulties would be forced on information insurance rights, which has been just somewhat yet not reliably and exhaustively tended to in the present writing. This might be because of the way that such subjects are still not of equivalent significance to the two organizations and open in the US or UK contrasted with Germany or different nations in mainland Europe. Current writing audit results gauge that the developing unpredictability because of digitalization and the related developing interest for higher talented and adaptable authorities would essentially lead towards an expansion in the significance of ceaseless picking up, preparing and training. This angle would likewise be specifically noteworthy for associations and related working boards, as an incorporated future

activity grasping modern and instructive approaches must be consulted between the organization administrations and their association partners, which could eventually lead towards the guideline ideal to deep rooted ordinary training Future work association would be fundamentally increasingly set apart by close participation among machines and laborers than it is today which would most likely prompt further accentuation on change the executives activities and measures

With a particular goal in mind, there is additionally understanding crosswise over current writing concerning the outcomes of Industry 4.0 regarding a fundamental increase of cross useful collaboration just as cross-organization accomplice organizing. Particularly the last viewpoint has been dubiously talked about in ongoing articles. A few creators are somewhat doubtful in their appraisal on the activities of German mechanical organizations towards participation with contenders. Those modern

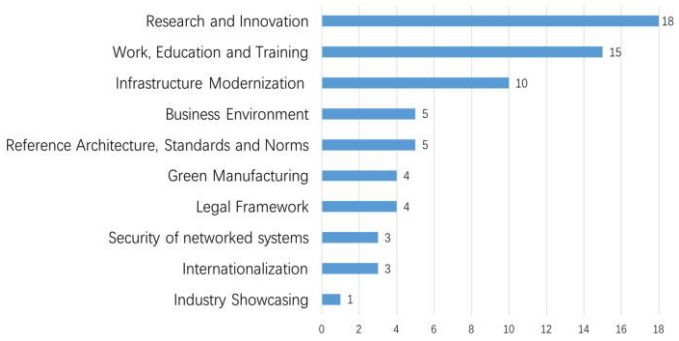
organizations are confronting the danger of losing their upper hand and may thus fall behind American innovative organizations, for example, Google or Apple, who are forcefully attempting to enter conventional enterprises like mechanical designing and car additionally by planning to use on the ability of their system accomplices Finally, noteworthy pieces of the present writing alongside talked with German specialists are in accord as they would see it that so as to adjust off employment redundancies and related duty income misfortunes, charge principles and guidelines would should be improved and changed into a framework less subject to pay from work charges. This topic has only recently been further discussed in the context of the debate on the introduction of an unconditional basic income as a potential consequence of the growing shift towards income from capital gains at the expense of income from human labor.

IV. FINDINGS

To give a progressively target evaluation of gathered papers, six consideration and avoidance criteria were characterized, as can be found in Table 1. After the copies were evacuated (Stage 2 in Figure 1), for each gathered paper, the passages that contain the inquiry terms, from the pursuit string portrayed in Section 2.1, were quickly analyzed. Other than those without full-writings to be gotten to (criteria WF in Table 1, Stage 3 in Figure 1), the first round of survey is led. The second round of survey (Stage 4 in Figure 1) begun by barring the papers that characterized the fourth modern upset out of the extent of this work (NR in Table 1). From that point onward, full-writings were analyzed to avoid those papers without referencing any open approaches and mechanical tasks (LR in Table 1), to gather papers with information of enthusiasm for the examination sub-question Q1 (PR in Table 1), and to distinguish competitor open strategies (Stage 5). During the third round of survey (Stage 6), for each found arrangement, non-open strategies (NPP in Table 1) were rejected and the official report of every open approach that contains its nitty gritty portrayals (CR in Table 1) was gathered. At last, Stages 7 and 8 surveyed those gathered open approach reports and gathered comparing information of enthusiasm for the examination sub-question Q2.

Table 1 Inclusion and exclusion criteria and their explanations.

I/E	Criteria	Criteria Explanations
Exclusion	Without Full-text (**WF**)	The authors have no access to its full text.
	Non-Related (**NR**)	Its definition about "the fourth industrial revolution" is neither related to IoT nor CPS.
	Loosely-Related (**LR**)	It does not contain any description related to a public policy or an industrial project. The search term is only used as loose expression cited in the text without being the main focus.
	Non-Public Policies (**NPP**)	It was proposed and carried out only by industries or just the name of an agency or a cluster.
Inclusion	Partially-Related (**PR**)	It lists one or more public policies but without detailed description.
	Closely Related (**CR**)	An official document that contains the detailed descriptions of public policies within the fourth industrial revolution era.



V DISCUSSION

Industrial revolution 4.0 is leading to different benefits and drawbacks. It is also has impacts on society as well as humanity. Carrying a lot of benefits for human, it also has some drawbacks which leaves bad impacts on the human itself. Thus human is getting something better or worse with its own invention. This revolution directed to a lot of paybacks like creating many high skillful jobs as well as different threats and drawbacks to human. But this time the biggest threat appeared to the humans itself. Thus human creating a technology for a better life but it also had a dark world on its back. This revolution threaten the human jobs

in industry and society. The most danger of this is to the human jobs required low skills. And also, this technology also polarized the high skilled jobs and low skilled jobs which is a bigger problem in the world.
The result obtained from the extensive research made by the author is rather very helpful in raising awareness about the upcoming issue of industrial revolution such as threat to unemployment and unawareness of new technology to the young generation. The writer work should make significant contribution about industrial revolution issues in the job sector. Being such an extensive paper, it clearly states that most people are unaware of upcoming issue of industrial revolution 4.0 which they will be faced in near future. Therefore, the research can undoubtedly alarm individuals to give warning to the people about job loss to low skill people due to new technologies. The research also benefit other researchers who are planning to do their studies on related topic.
When we look at this new technology on its dark side, we should also pay attention to its benefits. Human made technology cannot replace human itself. This cannot be said only that, because of this human losing their jobs. The machine is not a replacement for human. It is just a tool for human to use for its own sake.
There are a lot of areas where this technology cannot be applied like teaching, repairing etc. even if technology is used in industry and instead there are also robots or machines but sill, if a machine needs repairing then there will the man who is going to repair it to make it able to work again. If a driverless car is get some problem with its system, it cannot even repair itself so there be will be again humans to do this task. Thus if we have a look on the situation of Germany due to this new revolution, first we need to focus on the types of jobs that got affected. Also the areas where they applied this revolution. One more thing is counted there, which is, we need to observe the kind of jobs available in Germany mostly.
We hit upon the news of the Turkey about the outcomes of Industrial revolution 4.0. According to the study about this situation, we got the chance to analyze the problem further in detail. The revolution itself is not carrying that much drawbacks, which has pointed out the Turkey government. It is acceptable that there some problems like job loss in some cases regarding to the revolution but the revolution also leading to new employment and offering different kinds of new jobs. As stated earlier that machine cannot never be the replacement of human. When Turkey government were applying this technology they should have estimate the outcomes so first they to do something about that a few number of jobs. Wrong decision taken and bad strategy cannot be simple throw all matter on the revolution itself.

V. Conclusion & Recommendations

Industries has kept on advancing. Industrial revolution 1.0 started in 1760. Industrial Revolution 2.0 started from 1870 till 1914. Industrial revolution 3.0 started in 1969.
The industrial revolution 4.0 started in 2011 (ongoing), in which machine can think by itself involving artificial intelligence, IoT, CPS **(Cyber physical system)** and other technologies. Thus human creating a technology for a better life but it also had a dark world on its back. The most danger of this is to the human jobs required low skills. And also, this revolution also polarized the high skilled jobs and low skilled jobs which is a bigger problem in the world. Germany and Turkey were the 1st victims of this revolution. Indeed, new technology is enhanced and beneficial but this problem cannot be ignored. In Japan, this problem also happened. So if robotics will enter in Malaysian industries then robotics will take place in industry then these circumstances should counted to avoid such problems. Research has shown that this change reduced the jobs of security guards on a large scale as like where industrial revolution involves there many peoples are losing job and growing up unemployment in society. Actually this paper main motives to rising awareness about the upcoming issue of industrial revolution such as threat to unemployment in Malaysia. Education and vocational training needs to be remodelled and upgraded by the efforts of governmental and non-governmental stakeholders.
Universities must consider these trends and changes within the industries while creating contents, so students would gain skills that correspond to the future markets. Creativity will become one of the top three skills while critical thinking and complex problem solving are other two. Turkey urgently needs a comprehensive project for analysing, mapping, and policy designing of jobs and occupations that the Industry 4.0 might have positive and negative effects.
Education and vocational training needs to be remodelled and upgraded by the efforts of governmental and non-governmental stakeholders. Some unique jobs which new technologies and creativity are extensively used (cultural and creative industries) can be promoted.

Acknowledgment

Further research should further develop and confirm the initial findings by the author. The authors examined the developed conceptual framework and also focused mainly on the quantitative approach of data collection and a lot of work can be put to the qualitative approach to improve the data quality in general. The research can also be improved and extended if the authors ensure more discussion about the research data obtained. This allows to clear any ambiguity regarding the research paper. This further helps to have better understanding and extract more findings on the study topic. The solutions and recommendations suggested by the authors can also be more practical. Practicality will help ensure the aim of the research be achieved and the work put into the research not go in vain.

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