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The Manufacturing Revolution and the Quest for an Individuality

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ABSTRACT
The Fourth Industrial Revolution (industry 4.0) promises a connected and smart production system in which the Internet, the machines (physical systems) and humans are all joined together. Unlike previous economic booms, current industrialisation primarily relies on Information Technology (IT). Private information is generated and shared often via interactions between the device and the device and the machine. Personal information is already a new commodity, and is now known as a "newoil" or a "new arena of battle." The more information is generated and collected, the more complete and risky the personal data is. Although privacy and security are frequently combined, they are different concepts. This study aims to investigate different vectors of the privacy hazard of Industry 4.0. This study examines data breach incidents, the problems of privacy, legal obligations as well as the need for knowledge of contextual privacy. This research ends with the explanation of the dangers connected with the divulgation of PIIs in the era of Industry 4.0. Scientific advancement will in future lead to an inventory miracle with long-term efficiencies and productivity benefits. Transport and communications will decrease, logistics and global distributors will improve and price levels will fall, new markets will be created and economic development promoted.

Keywords
Communication, Fourth Industrial Revolution, Industry 4.0, Privacy, Security.

1. INTRODUCTION
The German manufacturing industry formally declared Industry 4.0, commonly known as the "Fourth Industrial Revolution," or simply as "Industry 4.0." In 2016, Schwab presented the Fourth Industrial Revolution concept. The annual World Economic Forum in Geneva officially announced the Fourth Industrial Revolution (Industry 4.0). Industry 4.0 is a phrase used to characterise the 4th industrial revolution, also known as the Smart Industry Industrial Internet and the Integrated Industry. This revolution is still ongoing and faces a broad variety of challenges. Several researchers have previously raised the security aspect. Due to past security issues, this industry will also inherit worries about data protection. Therefore, in the era of Industry 4.0, the privacy of personal data has to be investigated more closely. The Fourth Industrial Revolution requires three key features: the discovery through decentralisation necessary to develop insolent products; compatibility for the maintenance of the equilibrium between devices and technologies; and the need for efficiency to improve efficiency. A closer study of Industry 4.0 shows the collection and usage of a large number of personal data. Data privacy is thus a significant source of concern, especially in the context of big data, for future industrial revolutions[1].

The Fourth Industrial Revolution will expose the world's most intimate information. Although many individuals view it as a benefit, a number of recent information leaks have raised worry about the privacy of data worldwide, leading to an examination of the privacy of personal data. Only the final five digits of a person's zip code, gender and birthdate may be used in the United States to establish their identity. In an enquiry, individuals indicated significant concerns about the privacy of data, with unwanted and dumb data collection (PII), that is, 33.3% and unlawful use of PII, i.e. 27.6%, the most frequent among them. Ten million PII parts are disclosed daily, 74 percent of which are exploited for identity fraud. In order to minimise the loss of personal information, many organisations have proposed laws and regulations addressing privacy and security issues. Approximately US$ 200 billion is exchanged annually for the exchange of personal information. In certain situations, individuals give over their personal data with the required consent as well as other circumstances[2].

In addition to threatening the ongoing existence of management education, the Fourth Industrial Revolution threatens the furtherance of superior learning in the future. With the Fourth Industrial Revolution, managers have to be aware that they must educate psychologically qualified graduates in the framework of the Fourth Industrial Revolution, in order to create knowledge-based and character-based jobs. They need new skills, adaptation to new settings, change management, and benefit from the development as key thinkers, problem solvers, innovators, communicators and value-based leadership providers. All these needs are linked to and cannot be separated from character education. The study into the technique of character education is growing at an alarming pace.

Another approach includes the categorization of students into three categories, i.e. those who employ pre-conventional thinking, conventional reasoning and post-conventional thinking. A technique split into four stages, i.e. the initial, formal, transition and meaning phases, is provided. The teaching of character in Indonesia focuses on a classroom approach as well as school culture and community as resources. The techniques of character education in schools emphasise the development of the whole personalities of the students. The whole personality has harmony in mind or intellect, honesty or responsibility, sport or health and cleanliness, initiative or expertise and creativity.

Many studies have revealed that the approach to character education in the nation has not been widely accepted. Over time, its performance cannot rely on the hold pattern, which considers teachers the exclusive source of knowledge and the final authority over pupils, while learners are simply seen as spectators. Learning instructors and highly productive students must be open to the students' access to knowledge because of the openness of access to information. Teachers have to be friends with their students, act as value filters and even serve them as live role models. The use of a comprehensive and practical approach is the characteristic aspect of this study in comparison with other approaches. Character education should thus not only be conceptualised but should also be comprehensively executed, involving all stakeholders, backed by infrastructure and facilities and designed to achieve measurable results[3].

1.1 Industrial Revolution

The move to a larger production process started in England towards the end of the 18th century and extended throughout Europe. The phrase "industrial revolution" refers to a period characterised by considerable technological advancements and a series of achievements. The introduction of automation not only boosted production and economic benefits, but also improved the quality of life of English people, while technological progress also led to a rise in the cognitive inventively of the population. The process has resulted in a series of industrial revolutions after the victory of the first industrial revolution that spread to other areas of the globe and that have resulted in worldwide recognition of the phenomenon. The second industrial revolution took place towards the end of the 19th century and was characterised by electricity which enabled the mass manufacturing of products. The third industrial revolution, which brought computer technology and electrical gadgets, enabled factory automation, was carried forward until the late 20th century[4].

There is presently a fourth industrial revolution, known as Industry 4.0, including the use of the IoT, sensor technology, RFID (Radio Frequency Identification), cloud computing, artificial intelligence (AI), big data, and 3D printing technology. These technologies enable the sending of real-time data and the creation of cyber physical systems (CPS). The primary objectives of CPS are, according to the organisation, to achieve production capacity, dynamic needs and to increase efficiency and efficiency of the whole industry. In addition, Sector 4.0 facilitates the integration of connection and computerization into the traditional industrial sector. Manufacturers may supply the mass personalization of the products produced in the form of information and communication technology (ICT), automated and flexible manufacturing chain adjustments, product tracking, easy communication between parts, products and machines, application of paradigms in human-machine interaction (HMI), internet of smart facto manufacturing optimization. Industry 4.0 has a number of objectives and there would also be disruptive changes to supplier networks, business models and operational processes.

1.2 The Fourth Industrial Revolution and Technologies

A research shows that Japan and Germany will be the countries with the greatest digitalization levels in the globe. In addition, expenditure is expected to decrease by 3.6 per cent and productivity to 15 percent over the following five years. Technologies and digitalization may be used reasonably in industrial applications, because they can cut costs while offering excellent reliability. The technologies employed in intelligent production, CPS, IoT, robotics or automation, big data analysis, and cloud computing are only a few of the technologies for the achievement of the aim of a connected 5G network supply network powered by data. A smart factory is a manufacturing facility that employs few or no people in its work.

With the development of technology IoT has developed in conjunction with many technologies, including embedded systems, wireless connectivity and machine learning. The sensors gather information in real time to improve the operating efficiency of production. The IoT is defined as a worldwide network for communication between items, human beings and things, by giving each item a unique identity. Everything and everything may be interconnected. It produces huge quantities of data from the connected network and is subsequently transmitted to a processing machine. Via many instances, IoT material was created utilising RFID tags and IP addresses linked together in the Electronic Product Code (EPC) network. In order to improve Industry 4.0, the IoT is essential since IoT generates a lot of data[5].

Big data is generally defined to mean "huge quantities of information, fast rates of change and a broad variety of features requiring cost-effective, innovative data processing solutions to improve comprehension, strategic decision-making, and process automation." A broad variety of sectors, especially commercial operations, may benefit from the use of big data. However, the financial sector is one area. Using advanced big data analytics in the workplace successfully may help businesses to increase efficiency, improve marketing strategies, and make better real-time predictions and choices.

Moreover, Industry 4.0 has the assistance of a 5G connection that enables hidden, long-term, reliable and safe communication and meets, among other things, the complex needs of new business models. Although still in its infancy, the development of 5G technology is still important for machine-to-machine (M2M) communication with Industry 4.0 and the Internet of Things (IoT). As industries grow more complicated and knowledge-intensive, huge data volumes are produced as part of Industry 4.0, and this data is more valuable with time.

A smart networking strategy using Cloud Computing, cloud manufacturing is designed to meet the growing demand for more product customization and cooperation throughout the globe. Cloud manufacturing also allows sophisticated, intelligent factories to be created that provide access to data from anywhere at any time. Cloud computing technologies and cloud manufacturing have the ability to play an important role in achieving the idea of "Design Anywhere, Manufacture Anywhere." Expert systems, digital assistants and autonomous devices change industrial processes, among other smart equipment[6].

Advances in robotics and artificial intelligence in previously considered to be resistant to automation industries have already caused upheaval. As robots become more autonomous and flexible and more cooperative. Autonomous robots may be used to perform autonomous manufacturing methods more precisely and to work in locations where staff are not allowed to work. Autonomous robots must also provide safety, flexibility, versatility and the capacity to cooperate with other robots in addition to performing jobs correctly and intelligently within time limits.

1.3 Fourth Industrial Revolution Applications

An integrated, adaptable, optimised, operational and extendable production process, coupled with analytics, Big-Data and advanced technology, may also be characterised as the Fourth Industrial Revolution. Other examples include autonomous vehicles, delivery drones and 3D printers that use a personal template and are able to produce very difficult items without any changes to the production process or human involvement whatsoever. As a consequence of these developments, manufacturing processes are fully automated with people functioning in some cases as a production component only.

The Fourth Industrial Revolution has the ability to optimise social work, leading to more jobs. For example, local Malawians use a drone to support the humanitarian effort. To promote the use of drones to address logistical problems in remote areas such as medicines and food supply. In order for people to become aware of their assumptions about these humanitarian drones, key players must seek to interact with the communities in order to accept the drones completely.

One of the major players is UNICEF, its local workers and those engaged in the humanitarian drone activities. For example, it is a good idea for the local people to look at the drone and watch the drone completely hovering by the operators. As humanitarian aid providers, organisations should focus not only on providing better operations via supplies and medical care, but also take social responsibility to reduce local fear and guarantee that drones are not used as a weapon for people hurting[7].

1.4 Fourth Industrial Revolution Creativity

There is a significant link between robotics and machine learning, and the capacity to resolve complex problems will have a big impact on the decision-making process. Reports indicate that experts and highly skilled employees (for example, software specialists, mechatronics and data analysts) are becoming more and more needed. With technologies from AI. The Fourth Industrial Revolution has provided enormous possibilities for transcending temporal and geographical boundaries and generating new values, particularly through the internet or applications, which enable businesses to connect digital worlds by using technology and electronic commerce[8].

Big data analytics and data scientists' skills, visual analysis, cognitive computing are highly demanded. Because every sector knows how big data is truly an important asset for its companies, public or private. Since these talents are in high demand, it is harder to find someone with sufficient qualifications. In addition, technology and machines cannot duplicate some human characteristics, such as originality, inventiveness, compassion, curiosity, emotion, etc. Machines and their technology cannot replicate these abilities. In addition, the negative impacts of new technology integration may have to be included in the priority list. In the light of that excessive Internet use may affect the establishment in people's everyday lives of a condition known as an Internet fixation[9].

Online reliance is a kind of behavioural reliance caused by overused Internet use that may be recognised as a psychological health problem. The growing usage of the Internet has indirectly impacted people's ability to connect, since individuals may now talk with one other electronically. These issues emerged due to the widespread use of technology that calls for human-to-human interaction and improved human and societal capacity to protect human identity. As a result, not all occupations and labour are done by the Fourth Industrial Revolution; they require new tasks and their realisation in the human sciences to preserve human identity[10].

2. DISCUSSION

When it comes to the Fourth Industrial Revolution, the vast bulk of current literature on the subject is concerned with the technological innovation aspect of the revolution. The fast rise in technological advancement and digitalization has sparked some concern about whether this rapid expansion is having a positive effect on individuals and society as a consequence of its rapid growth. As a result, while considering how technological progress may be applied to social problems, it is necessary to consider technological advancements both from a social and from a technical standpoint. Fourth industrial revolution has disrupted conventional industrial frameworks and developed new procedures for consumers to consume products in new and innovative ways by combining production and consumption.

Furthermore, it controls the manner in which people work and spend their money, alters the nature of resources, and has an effect on the manner in which data is collected and used, among other things. Furthermore, it lowers the barriers that prohibit people and businesses from investing and generating money, which has a cascading impact on the surrounding personal and professional environments. This new phrase has been associated with rapid technological advancements that are resulting in changes in many aspects of our socioeconomic lives in recent years.

The fourth industrial revolution has been identified as a global issue on the international agenda in recent years. An important question from this perspective is how nations can re-create the conditions for the Fourth Industrial Revolution, which includes developing technologies that offer individuals and society new opportunities and benefits. This would help to repair the social damage caused by the previous three revolutions, as well as enable a sustainable Fourth Industrial Revolution in the future.

As a result of the present economic climate, the internet may actually be used to generate value for individuals and communities, rather than just serving as a means of communication. The Fourth Industrial Revolution has really transformed the world into one that is digital, networked, adaptable, and sensitive. Even well-known personal networks are undergoing dramatic transformations; we are shifting away from company-to-customer contacts and toward peer-to-peer connections in increasing numbers.

The World Economic Forum in Davos, Switzerland, in 2016 heard Klaus Schwab, an engineer and economist who founded the World Economic Forum and currently serves as its Executive Chairman, say that the world must have a broad and complete understanding of how technology has profoundly changed our social, financial, ecological, and cultural lives. It serves as an example of how to bring together technical and social innovation in order to have a positive effect on the future of our communities and to enhance our society.

The fourth industrial revolution has resulted in a better knowledge of the social consequences of technological advancements on economic sectors, the labour market, production, and innovation than previous industrial revolutions

have brought about. In response to the rapid evolution of the Industry 4.0 landscape, governments and policymakers must adapt and react quickly in order to lead the future for appropriate economic and social growth and to make use of the potential of technologies derived from Industry 4.0 to represent for people and society. This will need them to create a sustainable economic and social development framework, as well as safeguards and laws that will enable them to lead the future while harnessing the promise of Industry 4.0 technology to benefit individuals and society. It is necessary to understand the potential, as well as the effect of the Fourth Industrial Revolution on all aspects of society, in order to make the most of them. We must thus study social innovation in the context of the technological revolution as well as in its own right. As a result, we must consider the alignment between technical developments on the one hand and the creative practises needed to deal with the social issues that people and organisations are facing on the other hand, as well as the alignment between them.

Technological innovation and rapid technological development may benefit the expansion and diffusion of digital entrepreneurship, and technical innovation combined with social innovation may sometimes achieve its full potential. The impact of social innovations on a system-wide scale is significant, indicating that there is still a mutual link between technological as well as social development. It is likely that the digitised character of Industry 4.0 new products will result in both economic and social benefits provided they are managed in accordance with the principles of long-term sustainability.

The Fourth Industrial Revolution has tremendous potential to have a positive impact on our economy and society if it is properly implemented. When the exponential growth in the quantity of data available via web-connected gadgets is combined with more sophisticated artificial intelligence, the way society functions will be dramatically altered, resulting in entirely new solutions to existing problems, including catastrophic system failures. Industry 4.0 presents new possibilities or chances for medical advancement, the potential to empower more people across the globe to become entrepreneurs, and greater access to educational opportunities. As a first step toward addressing the environmental and social problems that civilizations are facing, as well as mitigating or minimising unintended consequences of rapid technological innovation, as well as maximising social benefits and protecting public interests, a comprehensive strategy or method for the Fourth Industrial Revolution must be implemented in order to achieve these goals.

The discussion of community innovation in the context of Industry 4.0 must begin at an early stage in order to concentrate on the growing concern about the possible negative externalities on society and the general public. As a result of technological advances like as robots, drones, artificial intelligence, the Internet of Things, and virtual reality, this is seen as significant since they have the potential to replace human function in an increasing variety of circumstances. As a result of the automation and digitization of the production process, certain professions may become redundant or obsolete, and the qualification requirements for new roles will become more rigorous, requiring the acquisition of knowledge as well as the development of new skills. In response to threats to human identity, social stability, and economic security, the Fourth Industrial Revolution may usher in an unprecedented flurry of technological, industrial, and social innovations, raising concerns about the ability of individuals and institutions to adapt in the face of these threats, as well as about the ability of governments to protect their citizens in the future.

3. CONCLUSION

The sole reason to keep personal data safe is to make a distinction between security and privacy in order to avoid confusion. The inventions that have enabled the Fourth Industrial Revolution have, up until recently, shown to be sufficiently resilient against long-term hazards in the future. As a consequence of the fact that existing legislation, regulations, and public awareness are all still in their infancy, personal information cannot be safeguarded to the extent that it should be. It should come as no surprise that the future industrialization would have established a standards organisation specifically for the purpose of protecting personal information in the first place. However, the personal information generated by the Fourth Industrial Revolution will spark an ethical battle between the concepts of analysis and data privacy, which will be battled out in the courts of public opinion. A better user experience is needed by the Industrial Revolution, on the one hand, while greater data gathering and possibly a better user experience are required by the Industrial Revolution, on the other hand, the Industrial Revolution is required by the Industrial Revolution. It will not be compromised in any way with regard to the security of personal information, on the other hand. We looked at current technologies and discovered that privacy by architecture and context-aware information de-identification are required in order to successfully enhance personal data privacy for the purposes of law enforcement and other government functions.

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