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Review

Fourth Industrial Revolution between Knowledge Management and Digital Humanities

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Abstract: The Fourth Industrial Revolution (4IR) offers optimum productivity and efficiency via automation, expert systems, and artificial intelligence. The Fourth Industrial Revolution deploys smart sensors, Cyber-Physical Systems (CPS), Internet of Things (IoT), Internet of Services (IoS), big data and analytics, Augmented Reality (AR), autonomous robots, additive manufacturing (3D Printing), and cloud computing for optimization purposes. However, the impact of 4IR has brought various changes to digital humanities, mainly in the occupations of people, but also in ethical compliance. It still requires the redefining of the roles of knowledge management (KM) as one of the tools to assist in organization growth, especially in negotiating tasks between machines and people in an organization. Knowledge management is crucial in the development of new digital skills that are governed by the ethical obligations that are necessary in the Fourth Industrial Revolution. The purpose of the study is to examine the role of KM strategies in responding to the emergence of 4IR, its impact on and challenges to the labor market, and employment. This paper also analyzes and further discusses how 4IR and employment issues are being viewed in the context of ethical dilemmas.

Keywords: fourth industrial revolution; knowledge management; ethical challenges; digital transformation; digital humanities

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1. Introduction

The sustainable advantage of organizations is widely affected by the recent transformation and development of the market and industry environment, and thus, it is very important for them to keep up with the progress [1]. One of the widely recognized approaches that organizations implement is knowledge management as they put emphasis on the significance of knowledge in their business process. Knowledge management (KM) is an important part of organizational development, which includes organizational culture and structure. It focuses on the effective handling, management, storage, and transfer of knowledge as being the primary resource of organizations, particularly in the Fourth Industrial Revolution [1]. In addition to the growing importance of KM in organizations, it is consequently recognized that the dissemination, accessibility, and usability of knowledge must be one of its main components. This process is commonly known as knowledge sharing (KS), which is also used synonymously with knowledge transfer [1]. Knowledge transfer is one of the fundamental elements for endurance in 4IR [2].

Despite the positive impact of 4IR in employment, it causes disruption that negatively affects employment and future work [3]. With the demographic changing in terms of technical skill within 4IR, it challenges the work and the employees themselves in accordance with the transformation of the social process. It comes with a smaller number of employees and the loss of individual knowledge and is threatened by the lack of skilled workers. The current workers, mainly aged workers, though they have high process knowledge and work experience, are lacking in the skills needed for using highly advanced information

and communication technology (ICT) and data science [4]. This is because, nowadays, organizations depend on their employees' knowledge, and they have to act and stay flexible to adapt and tolerate disruptive processes with fast and rapid changes. Moreover, they need to attract, recruit, and retain qualified employees and employees with a high potential for future work.

As business processes in 4IR's production systems are constantly changing, the role of knowledge management is crucial. The changing business processes and demands will place a strain on the organizations and manufacturing enterprises that rely on entire technology generations, intelligent data services, and computer-based products [5,6]. Organizations can adjust to unexpected and ongoing changes in a sensitive manner and respond more quickly as a result of them.

Additionally, these emergent technologies have resulted in significant benefits; however, this is dependent upon, among other things, the capacity of human beings to adjust. Technological change is a significant element affecting human beings, the demand and supply of skills, and even the changing structure of employment. According to Brynjolfsson and McAfee (2011) [7], as referenced by Kergroach (2017) [8], advancements in machine learning, robotics, and even artificial intelligence will increase automation and hence alter labor demand, resulting in job displacement [9].

The automated machine or technology will not be limited to physical or manual duties; it may also be problematic for intellectual, cognitive, or even analytical functions in white-collar industries, such as transportation, office assistance, or even customer service. In exchange, new occupations will arise as a result of new goods, processes, or even business models. For example, the digital revolution and big data are driving an increase in the demand for data professionals and data analysis abilities that exceeds both the existing supply and the capacity of the education and training systems [8,10]. Whilst occupational structure has evolved in the majority of countries, job creation has shifted away from low-skill routine occupations and toward higher-skill routine occupations; the areas, scope, and scale of the "creative destruction" associated with 4IR remain unclear.

New professions may vary from the traditional full-time employment model by incorporating non-traditional part-time, temporary, or even on-call work. In this context, developing technologies enable employees to be de-bundled into smaller activities in support of digital manufacturing or globalization [11]. Non-standard occupations are inextricably linked to low-quality jobs, lower-income, and even a lack of skills. As a result, certain groups may encounter unusual job arrangements, fewer opportunities for training, and an absence of a social safety net. In this regard, Kenney and Zysman (2016) [12], as referenced by Kergroach (2017) [8], stated that the development of the digital platform enables the restructuring of the structure of human resources and work arrangements.

It is important to highlight that new technologies bring both benefits and challenges to organizations. For instance, many countries supervise technology in a highly positive or neutral manner. While some countries view the speed of automation and employment as neutral, others view the pace as more detrimental than beneficial. This could be because some countries view new technologies as the engine of human economic growth. It is possible that some advanced economies are concerned about the impact on competition if other countries adopt the new technologies. Whether new technology creates more or fewer jobs depends on the country. Some of new emerging online jobs are search engine evaluator, social media manager, freelance web designer, online recruiter, online tutor, online influencer, etc.

The purpose of this research is to identify the impact of 4IR on the rapid digital transformation that creates digital humanities where dependence and expertise on digital technology are considered necessary; a knowledge management strategy is required in this digital transformation process that may be found by analyzing the factors identified above. The findings of this study can be used by organizations to develop knowledge management practices in the context of Industry 4.0, while complying with ethical standards. The next

section presents the literature review on 4IR, KM, and its implications for digital humanities, particularly from an ethical perspective.

2. Literature Review

Knowledge management (KM) is the process of acquiring, constructing, managing, and disseminating knowledge throughout an organization in order to improve project efficiency and effectiveness. In times of crisis, knowledge management has been shown to be a critical tool in healthcare, allowing people all over the world to cope with and manage massive amounts of data in the event of a pandemic. Previous outbreaks, such as the Zika virus, have benefited from the usage of knowledge management systems in terms of disseminating response strategies and ensuring that coordinating entities or authorities disseminate the same and the correct messages based on previous experiences and information. KM has contributed during this pandemic by providing the correct information at the right time, using a knowledge management base to refer to case scenarios and to how they should be managed by knowledgeable health workers and doctors, as a method of prevention by spreading awareness about symptoms and precautions, and finally, as an efficient way for healthcare front-line workers or any authoritative bodies to find information digitally. For example, the World Health Organization (WHO) updates governments, health organizations, and the general public about new knowledge and key findings on a regular basis.

Similarly, knowledge management is imperative for preparing human resources for 4IR readiness, and one of the primary activities of KM is developing knowledge-sharing strategies. Knowledge sharing is basically the act of exchanging and making knowledge available to others within the organization and between individuals. Knowledge sharing among employees significantly impacts the performance of both public- and private-sector organizations [13]. The transfer and the exchange of knowledge between group members of an organization facilitate the development of new skills and the refinement of existing individual skills [14]. On the other hand, knowledge sharing between individuals is the process by which knowledge held by an individual is converted into a form that can be understood, absorbed, and used by other individuals [15]. However, facilitating knowledge sharing is a difficult task due to reasons such as the willingness of individuals to share and integrate their knowledge, which is one of the central barriers [16]. Despite the large amount of literature on organizational learning and knowledge management, the nature of the relationship between individual motivation and knowledge sharing in organizations remains mostly unexplored and poorly understood [16]. In terms of the knowledge transfer between organizations, there are factors that can prevent or facilitate this process, and understanding these factors can lead to better management and can facilitate the flow of knowledge [2]. An organizational employee is required to share and apply knowledge in practice to develop a sustainable and competitive advantage [17,18].

In this context, the aims of the present study are to analyze and understand knowledge sharing through a literature review; to identify the factors that are relevant in influencing this process, including the problems and the providing of solutions to the challenges that arise; to review the role of knowledge sharing in the knowledge management process and address how organizations enhance experiences and improvement their efficiency; to focus on the research question of how knowledge sharing can impact organizations in preparing for 4IR; and to understand what the ethical challenges are in the context of 4IR.

2.1. Opportunities and Challenges

With the digitization of work processes, the fourth industrial revolution enables organizations to optimize their production operations and increase their competitiveness and productivity as manufacturing becomes more automated, more flexible, and cheaper. The availability of smart factories with increased automation and the self-monitoring ability of machines that allow analysis and communication with each other without the presence of a human, pose both opportunities and risks to the job market [19,20].

Based on an Oxford University study which predicted that up to 47% of all U.S. jobs could be automated within the next twenty years [21]. The Future of Jobs report was published by the World Economic Forum (2016); the report predicts that with the Fourth Industrial Revolution, 7.1 million jobs will be lost in 15 economic areas from 2015 to 2020, and the most at-risk jobs are white-collar office jobs and administration-related jobs [22]. The report is based on a survey covering 15 of the world's largest economies. These are Australia, Brazil, China, France, Germany, India, Italy, Japan, Mexico, South Africa, Turkey, the United Kingdom, and the United States, plus the ASEAN and GCC groups [22]. However, Ford (2009 as cited in [23]) stated that highly skilled jobs would also be affected by machines and artificial intelligence, threatening graduates in the job market as they may lose out to machines that are able to perform more sophisticated analysis and to make decisions. Nonetheless, at the same time, there is an expected demand for jobs in business and financial operations, management, and computer and mathematical roles; these areas are expected to create 2.1 million additional jobs in the same time period [22].

2.2. Productivity and Employment

In the quest to achieve productivity and profitability by embracing the new wave of technology brought by the Fourth Industrial Revolution, organizations must prepare their workforces, who will undeniably be affected by the digitization of industries. With the threat of low-skilled workers being at risk of losing out to automation, existing tasks undergoing evolution, and new jobs being created [24], organizations need to act on these technologically driven changes in order to prevent employee retention and talent shortages. Business organizations need to support their current and future workers through retraining so that they are prepared and have the skillsets and competencies to match those of Industry 4.0. Furthermore, increasing productivity and advancing technology may pose threats to the workforce's working conditions. In the case Foxconn, one of Apple's subcontractors and suppliers located in China, the advanced automation and technology and the quest to increase production and efficiency have caused the working condition of the low-skilled workforce at the production line to deteriorate. In order to achieve high efficiency and self-sufficiency, production optimization may result in physical and psychological challenges for workers [25]. Many businesses struggle to codify knowledge transfer processes before they leave the ground. However, even if no employees are leaving, there are multiple reasons to design a knowledge-transfer strategy, particularly for reproducing the new knowledge required for 4IR. The following section discusses the responsibility of organizations.

2.3. Ethical Perspective

The importance of ethics within an organization is because ethical behavior reflects the organization's performance, adds value, and strengthens the brand's assets and reputation [26]. An ethical organization is more likely to develop a positive reputation, which can result in financial rewards over time [27]. On the other side, unethical activity results in a market share loss for the firm [26]. Thus, it is critical for public organizations to consider ethics as they will be able to make sound judgments with an ethical mindset [27]. At least three of the following four components of the function of ethics in organizational performance are as follows: (a) ethics contribute to employee commitment and trust; (b) ethics contribute to investor loyalty; (c) ethics contribute to public satisfaction and trust; and (d) ethics contribute to public value (PV) or profit.

The study conducted by Jacinto and Carvalho (2009) [28] indicates that a corporation with a positive reputation affects employees' willingness to value their association with the organization, hence increasing their attachment and loyalty to the organization. The function of supporting the growth of an organization's healthy internal environment is critical [29], and one of the many factors that can boost employee engagement in the organization is the presence of an ethical leader who guides the group in ethical business practices [30]. An ethical leader is a critical predictor of an employee's desire and motivation

to stay committed and work well in order to accomplish the organization's goals and objectives [31].

Additionally, Roberts et al. (2002) [32] imply that a positive corporate reputation is essential due to its potential to generate additional value for the organization. Not only that, but the research also asserted that if the organization maintains a positive reputation, it will be able to maximize profits and ensure long-term viability [32]. As Bromley (2002) [33] points out, reputation is a critical indicator for determining the extent to which a corporation would respond, behave, and take action in the event of a crisis. Additionally, Saeidi and colleagues (2015) [34] noted that organizations that demonstrate their credibility through business practices such as corporate social responsibility (CSR) undoubtedly have a positive effect on competitive advantage, reputation, and customer satisfaction, which in turn attracts investor loyalty with regard to remaining committed to the organization and contributing to the successful organization's overall performance [35].

A more positive point of view, however, is that an organization's ethical practices have a positive effect on the organization's profits [36]. They asserted that ethical behavior can have a significant positive impact on competitive advantage. Velasquez (1998), as referenced in Graafland (2002) [37], acknowledged the remark in which he declared that ethical practice is the guiding principle for long-term organizational success. A high level of organizational ethics can help to increase an organization's profitability by lowering transaction costs, establishing trust with stakeholders, fostering exceptional teamwork, and sustaining social capital, which is an integral part of an organization's market identity [36].

3. Methodology

This study provides a new framework that builds upon high-quality literature as its basis. To ensure the validity of the study and the dependability of the results, quality literature offers validation of the proposed original hypothesis. It is critical to have high-quality literature to ensure that the research's theory and principles are well-established and that they are compatible with the planned research methods. The research proposes a three-stage process for conducting a thorough and comprehensive literature assessment in preparation for providing a basis. The proposed literature review process consists of three stages: (1) inputs, (2) processing, and (3) outputs. The inputs step of the process deals with the challenge of locating pertinent literature. The input to this process is the identification of knowledge gaps concerning the role of knowledge management in the context of 4IR and the co-creation of employment. The inputs relate to how to find the relevant literature. The input for this process is the collection of pertinent material, such as literature on Industry 4.0, new job creation, employment, and ethics. Processing involves simultaneously validating the literature (i.e., certifying its quality—peer-reviewed vs. reviewed work, the various peer-reviewed work-quality levels, etc.) and understanding how to analyze the research literature. The outputs stage of the process deals with topics such as drafting the actual literature review and describing the body of knowledge's impact on the proposed framework. This is an emerging issue that would benefit from exposure to potential theoretical foundations [38]. A comprehensive search was undertaken to compile a list of the majority of articles from reliable databases. All of the publications were selected from between 2010 and 2020. As data-gathering databases, Springer, ScienceDirect, Wiley, Scopus, NCBI, IEEE, and ACM were chosen. This search pattern generates a substantial number of articles that must be filtered to obtain more specific extractions. One hundred and fifty-two articles were then located by using the keywords Fourth Industrial Revolution, ethical challenges, and KM. After reviewing the abstract, keywords, title, and content of the piece, a new list was produced. Following that is a list of 63 articles. Following that, samples with information related to the prototype conceptualization case scenario are supplied, allowing for a complete understanding of the topic. In the final step, 52 publications that follow the conceptual understanding of 4IR, ethics, and KM were collected. The final step is to conduct a content analysis based on the material collected and deemed to be highly relevant to the study.

4. Analysis and Discussion

The Fourth Industrial Revolution (4IR) affects the nature of work. Some jobs are replaced by machines and automation, and there are some jobs that cannot be replaced by machines and automation. Figure 1 highlights a job matrix format. This job matrix can be seen to be divided by two axes (horizontal and vertical), which would further categorize the jobs into four clusters (1, 2, 3, and 4). The horizontal axis relates to the level of job complexity, ranging from routine to complex. Complex jobs are jobs that require extensive decision-making processes by workers with high expertise because the problems that exist in this job are frequently unstructured (i.e., problems that require non-traditional solutions that cannot be replicated to solve all other problems). On the other hand, routine jobs are those that can be performed without the need for expertise and complex decision-making processes; they can be performed repetitively because the problems that exist in these jobs are frequently structured problems (i.e., problems that require traditional solutions, a "one-size-fits-all" solution to all problems). The vertical axis explains the nature of the job based on how much compassion is playing its role in executing the jobs. It has two components that are human-centric and machine-centric. Human-centric jobs are those that require interactions with other human beings and compassion to execute the given jobs, i.e., motivations. Furthermore, machine-centric jobs have a high level of interaction with machines (i.e., extensive use of digitalized works).

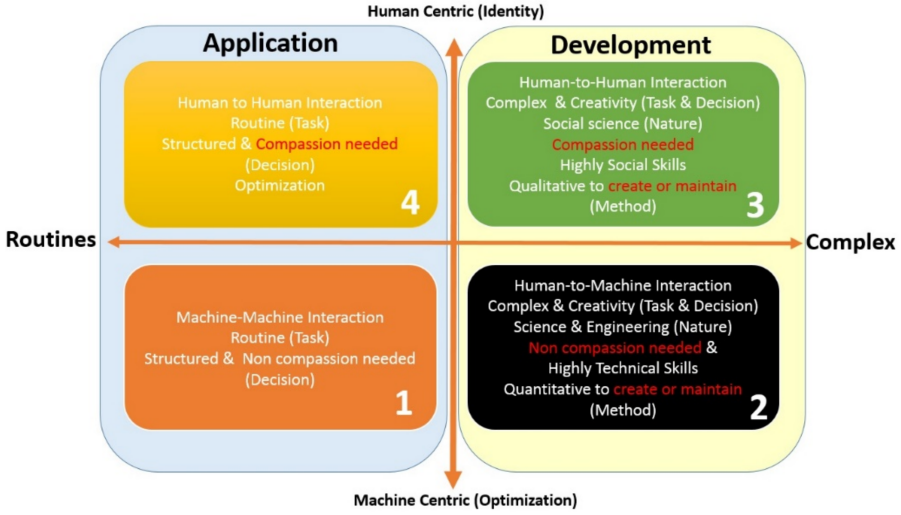

Figure 1. Job Matrix Format Fourth Industrial Revolution.

Thus, human intervention is limited in order to execute the jobs optimally, and thus, low compassion is needed. Moreover, the vertical axis is classified into two sub-categories: "Application" and "Development". Application here means that the nature of the job is to apply knowledge that was learnt prior to taking the job, and "Development" means that the job requires its workers to not only apply their prior knowledge, but to also be creative and innovative, to push their knowledge boundaries to another level.

It can be observed from Figure 1 that the Fourth Industrial Revolution brings digital transformation by enabling everything to be connected by cyber-physical systems that are smart enough to communicate with one another using common internet-based protocols, to analyze data to detect failure, to configure themselves, and to adapt to changes. Without a doubt, embracing 4IR will result in considerable productivity improvements as processes become faster and more effective, resulting in higher-quality products at lower costs. However, this raises concerns about the impact of this innovation on the human workforce. Will the job market undergo significant changes, particularly for existing employees whose jobs may be challenged by altering industrial production? What are the ethical implications of adopting Industry 4.0 for employees, and how can knowledge management (KM) strategies help organizations ensure their employees are prepared to face 4IR?

4.1. Jobs Displacements vs. Creations

While the Fourth Industrial Revolution is now impacting manufacturing industries, its major aim is to bring about digital transformation through the collaboration of actors in ecosystems across value chains and businesses [39]. Employees across multiple industries will be affected by this industrial revolution, as growing digitalization automates previously manual processes [18]. Job displacement is the involuntary loss of employment affected by market factors such as downturns or structural change [40].

In 4IR, job displacement is most likely to occur in data collection and processing activities, as well as occupations that rely heavily on physical labor performed in a structured environment, such as that of production workers and building and grounds cleaners, as well as office support positions such as clerks (Figure 2). Additionally, a McKinsey Global Institute (2017) analysis shows a correlation between the possibility of labor tasks being automated and the current degree of educational requirements for these professions. Additionally, the analysis estimated that about 400 million to 800 million people could be displaced by technology and would need to find new occupations by 2030 [8].

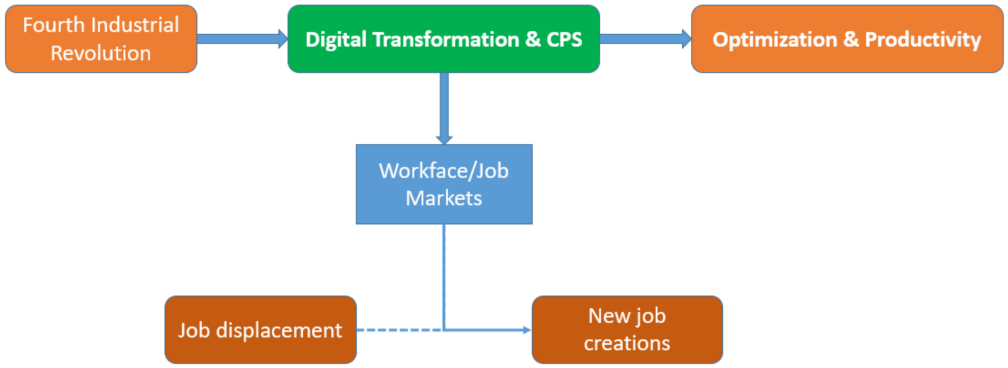

Figure 2. Fourth Industrial Revolution and Workforce.

With any technological advancement, there is always a trade-off. For example, the Internet of Things (IoT) is the cornerstone of 4IR, as it enables the monitoring and management of non-digital objects/devices over the internet. According to Patterson (2017) [41], the Internet of Things is a network of connected machines, devices, and other industrial gadgets that will result in the automation of the majority of industrial tasks, hence increasing production efficiency. When technology has an effect on production processes, simple and routine duties will be abolished, but new employment will be created in their place. The new professions will demand a distinct set of abilities, which many members of today's workforce lack. More manufacturing jobs in Industry 4.0 are projected to be less physically demanding and repetitious than manufacturing occupations of today, requiring workers to participate in more problem-solving, critical-thinking, and adaptable work environments [42].

According to research conducted by the Boston Consulting Group, Industry 4.0 will generate approximately 390,000 new jobs in Germany alone by 2025 [43]. Industry 4.0 is a knowledge-intensive work environment in which manual jobs are being phased out in favor of high-skilled jobs. Additionally, with the Internet of Things, job opportunities for hard skills occupations, such as data analytics or maintenance, circuit design, AutoCAD, microcontroller programming, machine learning, and algorithm development will become available [44]. Additionally, as a result of the IoT, activities that were formerly performed manually are transforming, with workers performing the same tasks but in an augmented or virtual reality environment [41]. There would also be an increase in freelance jobs as a result of the platform economy's emergence, such as driving cars for Uber or performing microwork, such as taking on a project, breaking it down into tiny components, and distributing each component to a number of people to complete via crowdsourcing websites [21].

4.2. Ethical Dilemma

The Fourth Industrial Revolution has the potential to disrupt the global job market by creating inequality as automation occurs and replaces labor across the economy. A global job market could increasingly become segregated into low-skill/low-pay and high-skill/high-pay segments, which in turn will lead to an increase in social tensions [45].

Organizations need to consider the ethical ramifications of adopting 4IR into their workforce because the employee's position as a stakeholder in the business is important and needs to be taken into account. As suggested by the Stakeholder Theory "managing for stakeholders" involves attending to the interests and wellbeing of these stakeholders (Harrison, Bosse & Phillips, 2010, as cited in [46]). It is an organization's obligation to treat its employees as an end in their own right and to bear the consequences of its behavior towards employees [47]. The following are the two key ethical theories that have been used to gain a better understanding of 4IR and its ethical dilemma.

A consequentialist perspective—utilitarianism is a consequentialist moral theory centered on maximizing the aggregate good, which essentially refers to the correct actions and policies in terms of maximizing the aggregate best outcome [48]. Automation and computerization improve or have a beneficial effect on the production unit and other operations in 4IR by making them faster, more efficient, and reducing human error. Nevertheless, it is difficult to quantify the ethical standards applicable to autonomous machines and artificial intelligence. The more freedom a machine has, the more moral norms it will require. While automation results in increased efficiency and production, the aim does not always justify the means, and in this context, it is difficult to determine whether the moral standard is being used ethically or only as a method to expedite and maximize profit.

Industry 4.0 will result in a reduction in manual labor in manufacturing. It will alter the manufacturing environment by requiring workers to exert less physical effort because the majority, if not all, of the routine tasks will be performed by machines. As an example, a robot coordinator role may be created to supervise robots on the floor and to respond to any malfunctions or machine failures. Automation will be particularly advantageous in assisting employees. Machines will make workers' jobs easier while greatly reducing the likelihood of workplace errors and accidents. This adaptive process will be assisted by smart machines and other intelligent items that communicate with one another and make autonomous decisions.

A deontological perspective—deontology is a concept which refers to the notion of a duty, in which activities are evaluated according to their compliance with specific norms or principles [48]. According to the theory, employees have the responsibility and obligation to accomplish their employment according to the job specifications and standards assigned to them. They may, however, have reservations about following these and being committed to the corporation if the company engages in an immoral act that jeopardizes an individual's virtue and moral integrity. For instance, take Industry 4.0, which involves the integration of industrial robotics with the human workforce. According to the notion, a corporation or organization cannot compel anybody to work in a system (i.e., robotics/automation) they do not trust or that may cause them distress and contribute to illness, even if workers must follow and adhere to appropriate organizational policies and procedures [49].

Additionally, there is a worry of a conflict between robotics and humans, as future intelligent systems and robotics will surely have increased levels of autonomy, as well as greater capacities for self-learning and adaptation [48]. Because these systems are adaptive to humans, humans may feel frightened that they must also adapt their own behavior in return or, in other words, adapt the level of acceptability of the workforce toward collaboration.

4.3. Knowledge Management for 4IR

Skill development for 4IR—it is critical for organizations to prepare their current workforce and not simply to wait for the next generation's workforce to become better prepared. Failure to close the skill gap can adversely affect the current workforce, lead-

ing to job displacement and unemployment. To secure and maintain their competitive positioning, it is crucial for businesses to have a skilful and knowledgeable workforce to successfully utilize the technology in Industry 4.0. Organizations need to take an active role in supporting their existing workforce by re-training them in the skills required for 4IR adoption and building a culture of continuous learning. Totterdill (n.d) argued that traditional skills such as fluency of ideas and active learning, as well as system thinking, judgment, and decision-making skills are essential in managing technological systems and promoting the creativity required by the culture of innovation [50].

Competency model for 4IR—4IR would not only transform production and technology but also affect the work environment. As discussed earlier, job displacements and the creation of new jobs would require the workforce to be equipped with new skills, to polish old skills, and to possess a wide range of competencies to adhere to the new job environment. In order to prepare the workforce for 4IR readiness, organizations may develop a competency model for their workforce to follow and understand their competencies. A competency model is developed through the universal competency framework (UCF). The UCF is a framework for the basis of understanding people's work behavior and their probability of success in certain job roles and certain work environments [51]. A competency model is a model consisting of desired competencies for a task, which include the description and their indicators in measuring performance and outcomes [52]. An example of a 4.0 competency model was the universal competency framework, a frequently used and practiced model in many companies when describing their competency model for a specific job position in their organization. The model was developed based on a behavior-oriented approach and concerned three areas, namely information systems, information technology, and engineering; it was made for the workforce with a higher education [52]. By developing this competency model, it would allow an organization to use it in defining the job profiles for future 4IR vacancies.

Robust KM for 4IR—as Industry 4.0 introduces and integrates artificial intelligence, automation, and industrial robotics, there is a possibility for a collaboration of human and robotics in the industry. Organizations need to prepare their workforce with leadership skills that require adaptation to new thinking and behavior. With Industry 4.0, decentralization and decision making are automated, thus creating blurred boundaries between humans and technology. As a result, the workforce needs to become the forefront leaders in adapting to these changes. The skills required include digital and industrial skills and also soft skills, such as communication, which are equally important. Herold (n.d) identifies four characteristics required for future network leaders i.e., diversity, traditional leadership, agile leadership, and ethical responsibility [53].

With the new revolution constantly evolving and transforming, major changes and transformations in the work environment are emerging, requiring the workforce to be prepared to embrace the digital world's developments. Thus, organizations must implement effective change management practices throughout their workforce to ensure a seamless transition to the workplace of the future, which requires a champion. Erker (2018) defines champions as individuals who have the ability to persuade others in their network to embrace transformation and innovation, as well as being technologically adept, empathic, and possessing strong communication skills [54].

Finally, institutions of higher learning should create a roadmap for Education 4.0. Education 4.0 is frequently associated with smart learning. Smart learning environments are built on information and communication technology (ICT) and are oriented to learners who can utilize the ecosystem and adapt their learning styles and capacities [55]. Additionally, smart learning settings are high-tech environments that are convenient, engaging, and conducive to good learning. At its core, it is a learning platform that can be used whenever and wherever it is convenient. Smart learning and the use of digital technology are intended to facilitate the streamlining of processes and services to make them more accessible to all. To achieve Education 4.0, technologies must first be made available and accessible to everybody in order to meet students' demands. For example, information must be

more accessible, and the internet plays a critical role in ensuring connectedness. There are a variety of user-friendly modes of education. To enhance the learning experience, all students must have access to a low-cost internet access. In essence, the roadmap for Education 4.0 is not always about the accessibility and affordability of ICT, but also about usability.

5. Conclusions

With any new technology, there is always the concern that it will eventually substitute human workers. In any case, the organization will require individuals with 4IR because the skills are identical, but in a completely different medium. Rather than manually molding an engine component, a worker will soon be able to do so in an augmented or virtual reality environment. There will never be complete automation in the company or organization, even if an organization invests a lot in technology; without the proper people maximizing the technology, the investment will take a very long time to pay off. Thus, it is critical to prepare the current workforce by upgrading and expanding existing skill sets to meet the requirements of 4IR, building a competence model, and establishing change agents within the business to ensure a smooth transition to the embracing of the digital revolution.

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