Knowledge Management for Fourth Industrial Revolution

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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. 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.

fourth industrial revolution knowledge management ethical challenges

1. Introduction

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 [1]. 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 [2]. 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 [3]. 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 [4]. Despite a 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 [4]. 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 [5]. An organizational employee is required to share and apply knowledge in practice to develop a sustainable and competitive advantage [6][7].

2. 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 [8][9].

Based on an Oxford University study predicted that up to 47% of all U.S. jobs could be automated within the next twenty years [10]. 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 [11]. 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 [11]. However, Ford (2009 as cited in [12]) 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 [11].

3. 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 [13], 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 [14]. 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.

4. Ethical Perspective

The importance of ethics within an organization is because ethical behaviour reflects the organization's performance, adds value, and strengthens the brand's assets and reputation [15]. An ethical organization is more likely to develop a positive reputation, which can result in financial rewards over time [16]. On the other side, unethical activity results in a market share loss for the firm [15]. Thus, it is critical for public organizations to consider ethics as they will be able to make sound judgments with an ethical mindset [16]. 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) [17] 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 [18], 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 [19]. 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 [20].

Additionally, Roberts et al. (2002) [21] 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 [21]. As Bromley (2002) [22] 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) [23] 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 [24].

A more positive point of view, however, is that an organization's ethical practices have a positive effect on the organization's profits [25]. They asserted that ethical behaviour can have a significant positive impact on competitive advantage. Velasquez (1998), as referenced in Graafland (2002) [26], 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 [25].

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