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BOOK CHAPTER ON ARTIFICIAL INTELLIGENCE IN MANAGEMENT AND COMMERCE

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ARTIFICIAL INTELLIGENCE AND ITS ROLES AND EFFECT ON LEADERS AND LEADERSHIP

*Dr. M. Nirmala, Asst. Prof. of Commerce (CA), Nallamuthu Gounder Mahalingam College, Pollachi, Tamilnadu

ABSTRACT

Leadership is evolving with the introduction and inclusion of new technologies such as artificial intelligence. The artificial intelligence (AI) leadership of the future may have a new successor, the AI machine. The continued increase in the number of people of retirement age illustrates the need to replace a traditional workforce with alternatives. With this new position, AI leaders will be involved in processes that focus on guiding the AI machine's programmers, as well as influencing decisions after the AI machines are programmed. Communication standards must be set for both human and machine members. It is not clear whether this new level will be referred to as leadership or management, but there must be standards for proper oversight of these machines. The nature and role of leadership seems to be changing. Artificial intelligence will play a wider role and is expected to grow exponentially in the coming years, requiring business leaders to be more prepared, adaptable, updated and aligned with new technologies. Artificial Intelligence (AI) is gaining importance these days. AI is increasingly used in various enterprise sectors. Yet, no high-quality scientific evidence has been found addressing the use of AI in the field of leadership. We apply artificial intelligence to each of the proposed functions, with examples of how to turn something traditional into intelligent. The following items explain why companies want to use AI in leadership: opportunities for automation, time and cost savings, many important disadvantages and problems prevent companies from using it actively now. Human interactions are minimized as an important aspect of leadership and it is difficult to collect all the necessary data. Beyond that, it aims to identify changes in the field of leadership through the use of AI. This article attempts to examine how the role and nature of leadership will change in the future with the addition of artificial intelligence.

Keywords: Artificial Intelligence – Business – Leaders - Leadership

INTRODUCTION

There is a paradigm shift in the world today due to rapidly changing technologies and economies. Uncertainty takes over stability, unpredictability is the new norm. During this

transition phase companies need to align their processes with new technologies such as artificial intelligence. Leadership is dynamic in fulfilling its role. Data-related decisions such as strategic decision-making, cognitive processing, analyzing team performance, improving production and service-based processes, where AI will play an important role, will simplify the work of leaders along with the difficult elements of decision-making. However AI needs to be integrated with the human aspect / soft elements of leaders such as critical evaluation of any decision, motivation, stability and skills like calmness, humility, reliability, character, values, compassion, vision, creativity, emotional intelligence, spiritual intelligence etc. The current digitization process has a strong impact on the industrial environment, which has already changed significantly. Among other things, the networking of information technology systems and the growing use of cyber-physical systems generate massive amounts of data. Organizations are often using artificial intelligence (AI) methods to systematically evaluate this massive amount of data and draw conclusions. AI can be defined as an extension of earlier digitization. In this context, increasing integration and the use of AI are having a major impact on the working environment of organizations. In addition to employees, the introduction and use of AI has a significant impact on leaders and leadership. This creates new challenges and demands for leaders. Consequently, different aspects must be taken into account within a holistic approach. The purpose of this paper is to generate insights into the challenges and needs for leaders and leadership arising from the integration and application of AI.

ARTIFICIAL INTELLIGENCE

The research field and term of AI cannot be consistently defined. Therefore, a clear definition is not possible at this stage. This is due to various influences of technology. AI combines aspects of both engineering and cognitive science. This is evident in the broad areas of application of AI. Depending on the application, different scientific disciplines are required. An example is speech recognition systems that require extensive knowledge in the field of neuroscience. However, in general, AI is referred to as a separate field of computer science research. Therefore, an accurate classification is necessary at this stage. AI can be divided into different stages of development. There is a distinction between Artificial Short Intelligence, Artificial General Intelligence and Artificial Super Intelligence. Artificial narrow intelligence is limited to current industrial applications. In this context, artificial short intelligence does not surpass human intelligence. The areas of application of artificial short intelligence are very specific.

It is also important to differentiate the methods of AI. Today's AI systems work with machine learning methods. Accordingly, they are cognitive systems. Machine learning is a separate branch of AI and is used with artificial neural networks. The structures of artificial neural networks can have different levels of complexity. If the complexity of the network structures is very high, the methods are called deep learning. So deep learning is a separate branch of machine learning. There are various approaches such as supervised learning or reinforcement learning for the application of deep learning to the training method of neural networks.

LEADERSHIP

Leadership as a field of research and as a term can be interpreted and described in various ways. In a narrow sense, the words leadership and responsibility are linked. A leader is responsible for different areas. This includes both the company and the employees. For example, information, qualification and contact areas for employees can be specified. Servant leadership can be interpreted in different ways. This can be seen in developed leadership behaviour. Leadership also varies according to the individual management level in the organization. Leadership works differently during the value creation process. It creates, determines and develops clear objectives and strategies. At the same time, leadership creates and organizes. Hence, it creates the supporting environment for achieving goals. Leadership directs and controls through necessary communication. The type and style of leadership in this environment can vary widely. Leaders can be both task-oriented and employee-oriented. The relevant interpretation always depends on the individual situation. Both task orientation and employee orientation can be strong or weak. However, successful leadership always requires both elements. Leadership of employees by leaders is always a process. This process involves four essential components. During the leadership process, the leader acts with a specific leadership behaviour. Its purpose is to influence employees to lead through leadership behaviour. However, leaders always have unique values and personalities. Hence, these influence individual leadership behaviour. The fourth aspect is leadership success. In a leadership situation, leaders pursue a goal. Once this goal is achieved, leadership success is the result.

LEADERS-AI INTERACTION

It has already been shown that AI adds another element to the leadership process. As a result, among other things, the leader's tasks will change. This is especially noticeable in designing interactions. Leaders are tasked with shaping the interactions between employees

and AI. This creates new requirements for leaders. Leaders must decide which activities should be taken over by humans and which by AI. In this environment, leaders need to understand the individual strengths of their respective actors and use them in the right way. The goal should be to strengthen the company's competitiveness through the use of AI. However, the social characteristics of employees should not be forgotten in this process. These increase the innovation capacity of the company. Also, ethical aspects should be considered in the process. When using AI, different ethical values must be considered. These can be divided into three categories. It is important to ensure that AI is used only if the values of (1.) self-determination, (2.) justice, and (3.) privacy and protection of personality are protected. In addition, the design of interactions should be more criteria-oriented. For this, four clusters with individual criteria are suggested: When using AI, it is important to ensure the individual's (1.) safety, (2.) reliability, and (3.) effective division of labour. Also, (4.) working conditions should be optimal, including aspects of communication, collaboration and social inclusion. When it comes to design, leaders and employees must work together. Employees should support the design process with their experience.

STRATEGIC TRANSFORMATION PROCESS

Implementation and use of AI in organizations requires analysis of strategic aspects. Design is a significant element of the transition process for the introduction and use of AI. The starting point should be awareness among leaders that a strategic change process is a long-term task. A common understanding of AI by leaders is essential. It is also important to define a purpose that shows how AI will be used in the future. The identification and formulation of the objective is a relevant factor during the strategic change process. A developed vision can be used as a starting point to support this process. A vision helps provide orientation and serves as a basis for strategic implementation. It also requires proper communication about the planned change. In this context, leaders are tasked with communicating and demonstrating vision and strategy. Participation and transparency of relevant stakeholders during change are further relevant success factors. These complement the factors already mentioned. All relevant stakeholders should be involved in the change process. Shareholders can be employees and employee representatives. Through participation, stakeholders' doubts and concerns can be incorporated into the design already in the early stages. Transparency can be ensured during this process. For stakeholders, the vision and objectives of the change must be clear and visible. Additionally, they need to

understand the purpose of their participation in the change process and how they can participate in it.

QUALIFICATION AND COMPETENCIES

AI with its capabilities will have a major impact on the qualification and development of required skills. This is because the AI generates decisions and makes its own decisions. This will allow AI to take over different tasks from leaders over time. The result is a shift of tasks between the leaders and the AI. The needs for leaders and their skills are increasingly changing. Changes are observed in professional skills and methodological skills as well as interpersonal skills and social skills. When implementing and using AI, leaders don't need extensive technical skills about the technology. A basic knowledge of how it works is sufficient. Instead, leaders must have knowledge about the quality of data and how to act on it. In addition, they must have knowledge of the entire process in order to be able to weigh the risks of their own decisions. Due to the more intensive interrelation of processes, the consequences of their decisions are increasingly increasing. Methodological skills and interpersonal skills are also very important for leaders. Leaders can design the change process in the organization and manage the problem. Interpersonal skills are becoming more relevant in this environment. Effective handling of the change process will be the focus. A fourth related category is the social competence of leaders. With the introduction and use of AI, leaders must increasingly communicate between employees and AI. Both employees and AI have unique characteristics that must be taken into account by leaders. Leaders are becoming architects of communication and relationship. Together with employees, they need to shape their role in relation to AI. Additionally, employees should be aware of their individual importance as part of the process.

CULTURE

Leadership and corporate culture are critical aspects of successful implementation and use of AI. The necessary participation of stakeholders is based on an appropriate corporate culture. Corporate culture is an important prerequisite for building acceptance among stakeholders. It also supports the implementation of change. In this context, the corporate culture must allow for mistakes and failures during change. Corporate culture can be further differentiated in this context. Appropriate leadership, prevention, work and communication culture is required in the organization. AI will have a huge impact on the employee front of an organization. The implementation and use of AI is thus linked to broader changes. Because of its characteristics, AI will position itself as part of the leadership process between

employees and leaders. However, the results may be different. On the one hand, leaders can make decisions based on AI results. On the other hand, AI can also take over administrative tasks. The consequences in this case are obvious.

CONCLUSION

As a further development of earlier digitization, AI will have a major impact on the working environment in organizations. It also includes the functions and leadership of leaders. Leaders face great challenges and must meet many demands at the same time. It is primarily about clusters: strategic change process, competence, culture and human-AI interaction. They must act as architects during the change process, develop goals and visions, and develop a strategic process. Stakeholder participation and creating transparency are very important here. Also, they face the changed needs of their own skills. Hence additional qualification is necessary. In the role of a leader, the focus will be on social skills. A successful introduction of AI increasingly requires a supportive corporate culture. Leaders are responsible for creating this culture. At the same time, leadership as a function will change and be augmented by AI as an additional element. Their activities are increasingly changing. This is primarily seen in the fact that leaders act as designers during interactions between employees and AI. This behavior will be critical to the successful implementation and use of AI. A holistic view of the implementation and use of AI is essential. Changes include both opportunities and risks to reduce leaders' workloads if AI guides employees. However, leaders can also play a role as users of AI. This will give them a double role, which will widen the challenges. Also, leadership can be provided at various levels within an organization. It also means that the resulting challenges and needs of AI are likely to be different. Variations can be assumed to depend on individual leadership style – depending on whether a leader is more task-oriented or employee-oriented.

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