Digital Leadership in Facing Challenges in the Era Industrial Revolution 4.0

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Abstract

The digital era is a progress that must be followed in the business environment in order to survive where leadership is one of the keys to running a business. This progress requires leaders who are able to behave adaptively, and anticipate various forms of change that will occur in the future. A leader is considered capable of transforming visionaries in the face of various forms of change and can also realize a vision that can be realized into reality. The purpose of this research is for leaders to take steps, and attitudes that are influenced by the very fast development of technology and the change from traditional leaders to digital leadership. Such leaders are able to inspire their employees to innovate and defend their ideas. This article uses a descriptive qualitative approach as well as the main writing approach and uses digital leadership theory. This research is an exploratory research that observes one informant as the research sample. Thus, it is hoped that a leader in the digital era will be able to transform, and be able to have credibility, integrity, perseverance and also a passion to serve and contribute to catalyzing change in achieving the organization's vision. The results of this study are to realize the success of leadership in the digital era, namely the era of the industrial revolution 4.0. Which is supported by seven characteristics of digital leaders, namely responsibility, results of information dissemination, goals and assessments, mistakes and conflicts, change and innovation.

Keywords

Leadership, Era Digital, Technology, Innovation

Introduction

Developments in the digital era have encouraged digitization and brought positive changes in all fields, including the world of work. In facing readiness in the digital era, leaders from various companies or organizations around the world are required to have digital

and leadership skills. Digital and leadership are important components for individuals in facing various challenges in the digital era (Auvinen et al., 2019; Cortellazzo et al., 2019). Everyone certainly has the potential to become a leader, but not everyone is able to develop leadership potential (Naidoo, 2021). Leadership in the digital era is an important ability that must be possessed by individuals to create solutions to various problems in the digital era (). Leadership style in the digital era not only understands the concept of leadership but must be able to master soft skills (non-technical skills), and hard skills (technical skills) (Kawiana et al., 2021). Skills soft skills (non-technical skills) are needed by everyone in order to improve the performance of the work, because it deals with adaptability, inter- action, and self-governing research result (Emad et al., 2021). Leadership in the digital age it is more contextual than the central as well as efforts to build a cult of personality and written by the system not by individuals (Scheuer et al., 2021). The reason is, due to the disruption of digital technology, the five-year program or business plan prepared by the company may change in the middle of the road. Even in the midst of Covid-19, the company is changing its business model to stay relevant to digital conditions and changes that take place rapidly (Sugita et al., 2021).

Digital leadership is not someone who is an expert in assembling computers, operating computers, to programmers. However, digital leadership is someone who has the ability to lead an organization or company by utilizing information and communication technology in the digital era so as to achieve the target of the organization or company (Bresciani et al,. 2021). Talking about leadership in today's digital era begins with the disruption that is happening all over the world. As the leader of the top, middle and bottom, or as a start-up, you should have a leadership that is effective at the time now, to be able to move human resources X generation, the millennial and Z work happily and contribute their best. In the past, leadership was needed to maximize the performance of the organization, by utilizing all human resources to achieve financial performance, service to customers or the community, run the operations of the organization effectively and efficiently and protect the interests of stakeholders (Aithal, 2017).

Globalization demands changes in the order of both for-profit and non-profit organizations to anticipate the impact it will have. The organization and all functions within it must have competitiveness and competitive competence in the face of globalization. The unpreparedness of organizational functions will make itself the object of actors or subjects in the era of globalization. Industry 4.0 stands for 'fourth industrial revolution' and is a term that refers to the rapid transformation in the design, production, implementation, operation and service of manufacturing systems, products and components. To get the most out of Industry 4.0 technologies, organizations must invest heavily in building capabilities in the following dimensions: data and connectivity, analytics and intelligence, conversion to the physical world, and human-machine interaction (Zhong et al., 2017). (Chiniara & Bentein, 2016) In this study, the human dimension in the industrial revolution 4.0 prioritizes by analyzing behavioral leadership theories that focus on the study of a leader's specific behavior (leader behavior is a predictor of his leadership influence and is the best determinant of his leadership success.

The digital transformation that has hit all sectors of business, organization and government has opened our eyes and minds to see the future from the present. Many of the companies that triumphed in the Fortune 500 about 20 years ago are now extinct; on the contrary, digital companies have emerged that fill the Fortune 500 list. They include Facebook, Google, Amazon, Alibaba, Softbank and many other companies based on digital technology (Anwar, 2017). The satisfaction or complacency of the leaders of established companies in the past for great financial performance causes them to be complacent. Meanwhile, OTT Player, e-Commerce or start-up entrepreneurs are slowly building business solutions needed by many people so that in a short time they grow very fast (Dube & Nhamo, 2020). Therein lays the difference in the vision of the two leaders, one trying to maintain business effectiveness and efficiency that makes shareholders and investors happy, while digital companies build the future without being tied to the wishes of short-term investors.

Leadership style is different in each era. In the past, leadership was more directives, but now it has changed towards participatory (Iqbal et al., 2015). In the current era, generation X is generally the top leader in various organizations, the millennial generation is middle management and generation Z is the new workforce (Gaidhani et al., 2019). The generation gap between X and millennial is unavoidable because each has a different life journey. The older generation must be aware of this and need to take a wise approach to the younger generation so that the transition of leadership from the older generation to the younger generation runs smoothly (smooth). A person is declared a leader if he is able to prepare a replacement from the company's internal cadres. Therefore, you as a leader must develop your subordinates, both in terms of technical and digital competencies, soft-skills and leadership as well as organizational values (Bolonin et al., 2021). The cadres of need to be fostered continuously and given the opportunity to lead a larger organizational unit as well as regular mentoring. In this way, strong and future-minded cadres of company leaders will be formed (Reed, 2013).

It is said by (Shamim et al., 2015; Melnyk et al., 2014) that the company's leaders are facing two new escalations, namely increasing global reach when doing business outside national borders, which are required to quickly advance information technology-based innovation. As a result, traditional leadership approaches are no longer considered effective for managing and leading businesses to achieve organizational goals (Dyllick & Muff, 2016). There is a need to go beyond traditional leadership and adopt a new leadership style. Leadership means the interaction between the leader and his followers in which the leader guides and supervises his followers to do the work (Noviyanti et al., 2020; Singgih et al., 2020). So, leadership means influencing people to work towards the goals of the organization, the group, or perhaps the personal goals of the leader. With the development and innovation of information and communication technology, such as the development of e-commerce and the internet, a new leadership style emerged called e-leadership (Handayani et al., 2020).

E-mail is the first word to put an 'E' in front of it. Then there are e-business, e-commerce, e-books, e-seminars, e-government, e-procurement, and others. Leadership began to be part of

this revolution, the term e-leadership or electronic leadership was introduced (Liu et al., 2020). In this digital era, e-leadership occurs in the context of e-environment where work is done through information technology, especially through the internet.

Nowadays, it is undeniable that digital technology is able to change everything that does not only happen to information technology, but also has an impact on leadership and how to manage organizations. As time goes by, technological developments change very quickly where at first the leadership style was applied traditionally but now it has become digital leadership. Digital leaders have the ability to inspire all their employees to innovate and defend their core ideas. In this case, not only leaders who have good communication, but the collection and dissemination of information between followers and leaders is currently mostly done in electronic media, that's why leaders are commonly called e-leaders or virtual leaders (Okechuku & Nebo, 2020). It is said that the leadership approach used by virtual leaders is called e-leadership. Digital technology has changed everything not only in the field of Information Technology, but also leadership styles and the way organizations manage. The rapid development of technology is changing the traditional leadership style to digital leadership. A digital leader has the ability to inspire his employees to innovate and sustain these ideas. Sharpness in applying digital leadership benchmarks indicates a fast, cross-hierarchical, cooperative, and team-oriented approach that often integrates innovation. Above all, personal competence, mindset, and application of new methods are very important.

Literature Review

Industrial Revolution

Is a phenomenon that collaborates cyber technology and automation technology? The concept of its application is centered on the concept of automation carried out by technology without the need for human labor in the application process. Industry 4.0 and the Industrial of Things Internet (IIoT) have become one of the most talked about industrial business concepts in recent years. Since the first Industrial Revolution came after the steam engine, subsequent radical changes have emerged including digital machinery and the automated manufacturing environment which have had a significant effect on productivity. The main drivers of this radical change are demand individualization, resource efficiency and short product development period. Companies today face challenges in making quick decisions to increase productivity. One example is in the process of transforming to automated machines and services, which require the coordination and connection of complex distributed systems. For this purpose, more systems are embedded software for industrial products and systems. Thus, predictive methods must be based on intelligent algorithms to support electronic infrastructure (Fedushko et al., 2020).

There is a term regarding industry 4.0 which is related to various concepts including increasing mechanization or automation, digitization and networks and miniaturization, this is in line with (Salkin et al., 2018). Apart from that Industry 4.0 relies on the integration of dynamic value creation networks with respect to the integration of basic physical systems and software systems with other branches and sectors of the economy, as well as, with other types of industries and industries. According to the Industry 4.0 concept, research and innovation,

reference architecture, standardization and network system security are the basis for implementing Industry 4.0 infrastructure.

The opinion of Bernard Marr in what is Industry 4.0? Here A Super Easy Explanation for Anyone (2018) in an opinion states that there are several applications of Industry 4.0 such as (1) Identification of opportunities; in various ways by collecting large amounts of data to inform appropriate patterns and insights, Industry 4.0 can provide several opportunities to optimize operations quickly and efficiently. (2) Optimize logistics and supply chain. Connected supply chains can adapt and accommodate when new information is presented. If weather delays tie up shipments, connected systems can proactively adapt to that reality and modify manufacturing priorities, (3) autonomous equipment and vehicles, autonomous cranes and trucks to streamline operations in receiving shipping containers from ships; (4) Robots: Once only possible for large companies with equally large budgets, robots are now more affordable and available to organizations of any size. From selecting products in the warehouse to getting them ready for shipment, autonomous robots can quickly and safely support manufacturers; (5) Additive manufacturing (3D printing): This technology has improved tremendously in the last decade and has progressed mainly from prototyping to actual production. Advances in the use of metal additive manufacturing have opened up many possibilities for production; and (6) Internet of Things and cloud: A key component of Industry 4.0 is the Internet of Things characterized by connected devices. This not only helps internal operations, but through the use of a cloud environment where data is stored, equipment and operations can be optimized by increasing the insight of others using the same equipment or to allow small companies access to technology they would not otherwise be able to afford on their own.

Leadership

Leadership is a field of research as well as a practical skill that includes the ability of a person or an organization to "lead" or guide other people, teams, or entire organizations. The literature of specialists clashes with each other, comparing Eastern and Western approaches to leadership, and also (in the West itself) between US and European approaches. The academic community in the US defines leadership as a process of social influence in which a person can involve help and support other than in an effort to achieve a common task.

Leadership is a very complex topic and can be studied in various ways that require different definitions. Managers are people who have positions that have normal authority. Usually it can be said that a leader may be a manager or it can be said not but can have a great influence on others. Becoming a leader who holds a formal position or being a manager is not mandatory ().

Leader Quality

Although there are various leadership styles, all effective leaders have certain characteristics. Ferguson in Leadership Skills (2009: 10) states that the quality of leaders can be studied and improved continuously. There are five principal differences with traditional leadership that have an impact on specific skill or will needs:

(1) Type of Communication. In traditional leadership face-to-face communication occurs between the leader and his followers but in the case of e-leadership communication the communication occurs through electronic media such as the internet, between the leader and

his followers. The communication media can be relatively 'traditional' such as email; it can also use the WhatsApp (WA) and LINE applications and even direct messages in the IG application. Therefore, virtual leaders must have good communication skills. E-leadership requires the use of electronic media to communicate with followers. Email is mostly used by virtual leaders so they must have written communication skills to get the work done from their followers according to their directions. The virtual leader must also have social networking skills. Social sites like Facebook, twitter, IG, LINE, and so on can also be used by leaders to lead their followers so they must have the skills to use these sites effectively to achieve their organizational goals.

(2) In the case of members. In case of traditional leadership leader and his followers are the main members but in case of e-leadership leader is called virtual leader and followers are called virtual follower. Because they are virtual, emotions and psychological responses between followers and leaders are difficult to capture. Virtual leaders need to be sensitive to the mindset of followers. Here it is also important to understand that followers come from different social and economic backgrounds so virtual leaders must be able to understand the mindset and values of followers.

(3) A quality aspect. The qualities of both are the same but the members in e-leadership must have knowledge of new and modern information and communication technology (ICT), something which is not required in the case of traditional leadership. Virtual leaders certainly have the ability to use ICT well. He must have knowledge of the latest ICT to direct people through electronic media as this is the foundation of e-leadership. Then he has the ability to convince others of the benefits of new technology, because he must be able to convince others that communication through electronic media provides various benefits such as helping to eliminate barriers of time and distance. In addition he must be innovative enough to use new technology in his leadership to reap the benefits of modern technology.

(4) The need for space. In traditional leadership, a specific office or place is required to do the work by the leader and his followers. But in e-leadership, offices in certain locations are not needed; they can communicate with each other even from one place to another, from one country to another. E-leaders must also have knowledge of how to think and work across time boundaries, spatial boundaries, and cultural barriers where direct supervision and interaction is not possible. With information and communication technology, leaders can communicate not only with hundreds but thousands of people at once at the touch of a button. Virtual leaders need to have a global and multicultural mindset. Virtual leaders operate from a distance, they can guide people from an organization that works outside the boundaries of cities, provinces, even countries, involving employees from different cultures, and in this case it is important for virtual leaders to have a mindset and attitude to guide them properly. Virtual leaders should have the ability to effectively monitor and manage virtual work. He must have the qualities to effectively monitor and manage virtual jobs to know whether they are functioning properly or not, whether electronic communication is working or not, whether followers understand his directions or not. And

Difference to (5) Member availability. In terms of traditional leadership all members are only available during office hours but e-leadership members are available even outside business hours, 24 hours a day 7 days a week. Therefore virtual leaders must have a 24x7 orientation - they must be able to work any time of the day 24 hours a day and 7 days a week. However, the e-leader must be flexible enough to deal with changing business environments, changing

technology environments, so that he can do the work to achieve organizational goals keeping in mind changes in the business environment.

Digital Leadership Model

There are characteristics of E-ledership that distinguish it from ordinary leadership or traditional leadership. First, in terms of e-leadership communication, it requires the use of electronic media to communicate with other members. The skills of using social networks such as line, Facebook, integral, twitter, and so on can be used as a medium of communication. Second, an e-leader must have the ability to think and work together without the limitations of time, space, and cultural barriers where face-to-face supervision and interaction is not required. With communication through information technology it is possible for leaders to communicate with many employees effectively and efficiently (Setiadi et al., 2020). Third, digital leaders have the ability to effectively monitor and manage virtual work. A public sector leader must have the capability to manage and monitor virtual work performed by employees. Fourth, in addition to being flexible in the use of time, an e-leader can adapt to changes in the technological environment. Rapid technological developments require leaders and employees to adapt to changes in order to continue to achieve organizational goals.

Digital leader also should be formed with the mindset and ability to solve problems and maintain relationships between members and between teams. Digital leadership can shape future leaders who can bring success to organizations in the era of technological development. E-leader is also suitable to be applied to a leader who has a transformational leadership style. According to Robins and Judge (2008), one of the characteristics of a transformational leader is idealized influence where the behavior of the leader provides a vision and mission, earns respect and trust from subordinates and creates a sense of pride. To achieve idealized influence in the public sector during the work from home period is certainly not easy because of the limited physical space. From there, the role of digital leadership is needed to gain the trust of employees.

Seeing how e-leader has become a figure that is needed at this time is certainly not easy to implement. In the public sector, proper training is needed to provide knowledge about information and communication technology for ASN considering that it is an important component in e-leadership. If this digital leadership can be applied in the public sector, especially for ASN in Indonesia, it can certainly be a solution for the government to improve service quality during the COVID-19 pandemic, which cannot be determined when it will end. In the long term, it will bring success to the government in realizing digital transformation and the 4.0 industrial revolution.

Method

This article uses a descriptive qualitative approach as the main tool for carrying out the approach. This writing uses secondary data, secondary data in general can be known in the form of evidence. Complex historical records or reports, according to (Rabinovich & Cheon, 2011) states that secondary data is data obtained and compiled with various reports in published and unpublished archives. The technique used in compiling this article is used to collect the

following (1) Literature study, is a series of activities related to literature collection methods, reading, recording and managing research materials. (2) Documentary, conducted by reading written reports. Before and look for journals as references. (3) Discussion, by collecting data and discussing ideas which hopefully can discuss ideas with people who have competence. (4) Intuitive, Subjective is the involvement of the opinion of a writer regarding the problems that are happening, it is all according to the opinion (Guzmán et al., 2020).

Result and Discussion
Result
Leaders who are transforming into the Digital Age

(1) Communication skills. In this digital era, leaders are required to be able to communicate not only physically face to face, but also skilled in communicating through various technology-based channels that can support effectiveness and efficiency, for example via email, applications, to chat messengers such as what's App.

(2) minded open. Given that digitalization also encourages the use of technology at work, now the workforce, especially the millennial generation, has their own methods and ways of working. In this case, a leader must have an open mind to provide opportunities for his employees to carry out their work with methods according to their respective cultures and ways of working, as long as the results delivered remain in accordance with the standards set by the company.

(3) Respond to changes. Leaders in this era must have sensitivity and speed in seeing and assessing a change and integrating that information into decisions in running their company. This is because the rapid development of technology has also changed the habits and behavior of the market.

(4) Dare to take risks. Because changes occur very quickly in this era, companies must also transform in order to adapt to these changes. For this reason, currently a company leader must dare to take risks by experimenting with new ways and comprehensively assessing which method is the most effective for the company to implement. Good and ideal leadership grows not only based on the length of work experience a leader has, but also how a leader can take advantage of every potential within himself, have competent behavior and attitudes and work styles to face the digital era. Leadership an art to harness human energy to create a better future.

(5) Optimizing one's own energy. According to Rajeev, the basic thing that a leader must have are values or moral principles that are highly trusted and lived in daily life. Because these values will define who we are. These values are a collection of values that continue to be upheld and applied in life, even if the surrounding environment is not supportive. The firmness of a leader in believing and upholding his moral principles will ultimately be a strong motivation for a leader to create a better future.

(6) Gain and energize other leaders. According to Rajeev, the next stage to become a good leader is that a leader must be able to empower and trigger the enthusiasm of others, so that they can produce other leaders. The leader at this stage is a leader who no longer thinks about his own development, but also the interests and development of other leaders under his leadership, although he must be willing to share authority and responsibility with them.

(7) Energizes the entire organization. At this stage, a leader must proactively and continuously strive to form Brains or company strategy, including vision and mission that can be understood and accepted by all personnel in the company. Bones or organizational architecture includes starting from selecting the right talent in each position, to managing systems and procedures within the company, and Nerves or culture within the organization or company, covering starting from the formulation of company philosophy, determining employee appreciation system, to establish values that serve as guidelines for all personnel in the organization.

(8) Managing Intergenerational Conflict in the Workplace. As the millennial generation has now entered a productive age, finding ways for workers from different generations to work together effectively is a top priority. Therefore, things that need to be considered by leaders or managers to understand what can motivate workers from these different generations, as well as how they communicate and identify sources of conflict, this is important to create a strong team consisting of various generations in it. Different technologies are applied in each era, without a doubt, this is a major factor in influencing the culture, behavior and even the way of working for each generation. The Millennial generation, known as the technology literate generation, views technology as the root of conflicts that occur in the workplace. 34% said that the previous generation did not understand new technology until it was a cause of conflict, as well as culture in the workplace, and career paths.

Discussion

A traditional manager is able to recognize orders, plan resources and evaluate results. Digital leaders control the process and discourse for voting, evaluating tasks and results together with team members and using resources according to potential and competencies (cross functional and cross hierarchical), practical results produced by integrating as constant feedback between internal and external stakeholders.

Information Distribution

Is a process by which an organization can identify and distribute any information that refers to the process through which individuals, groups or different organizational units share data and information for themselves? Information distribution will ensure the right amount of information at the right time. Information distribution is carried out with a planning process in communicating and responding to all requests for unexpected information. In this case, it is related to the distribution mechanism that is able to provide influence and information because if it is not timely or understood, it should not be communicated. () suggest that distribution leadership is the practice of disseminating leadership information to a number of people who work cooperatively and interdependently to achieve their group goals. Unlike the heroic leadership model that relies on the abilities of one person, distributed leadership encourages all members to contribute their knowledge and expertise. The online digital environment is suitable for encouraging distributed leadership development as it allows all group members readily access to information and also allows for sharing of information between group members.

Research purposes

The performance appraisal has various explanations put forward by experts. Mathis and Jackson define performance appraisal is the process of evaluating employees in doing work that is compared with standards, followed by providing the information to employees. Performance

appraisal is often referred to as rating employees through review, evaluation, and assessment of work results. Employee performance appraisal has several objectives that must be achieved. Conduct a review of the employee's past performance; obtain data that is factual and systematic in determining the value of a job. Identify organizational capabilities. The main purpose of performance appraisal is to evaluate how well an employee has performed his or her duties. Performance appraisals help keep a record of each employee's performance, including what efforts they have put in and what they have achieved. Evaluation distinguishes employees based on their job performance, along with other factors like personality, behavior, etc. In general, employee performance appraisal provides various benefits for both the organization and the employee. The following employee performance appraisals need to be known: (1) Provide information about the desired results of a job; (2) Prevent miscommunication regarding the expected quality of work; (3) Creating an increase in employee productivity due to rewards for employees who excel; (4) Appreciate every contribution; and (5) Creating two-way communication between managers and employees.

Errors and Conflicts

Being a leader comes with a number of great responsibilities, including setting a good example. Leaders often have high expectations of being in charge, and managing an entire team of people can be intimidating. However, nothing is perfect, there is always room to learn and grow, and to help employees do the same. Here are some common mistakes faced by many leaders (). 1. Not Providing Feedback. According to 1,400 executives surveyed by The Ken Blanchard Companies, failing to provide feedback is the most common mistake leaders make. When the leader does not provide prompt feedback to his employees, then the leader gives them the opportunity to improve their performance. 2. Not making time for the team. A manager or leader has his own workload which causes no time for employees. After all, employees must come first because they need the presence of a leader. They will not know what to do, and they will not have the support and guidance needed to achieve their goals. Leaders must develop emotional intelligence so they can be more aware of employees' needs, and have regular times when "the leader's door is always open," so employees know when they can get the leader's help. 3. Failed to set goals. When leaders don't have clear goals, they become unproductive because they don't know what they're working for, or what their work means. 4. Misunderstanding Motivation. Chances are, money is not the only motivation for employees. Many leaders make the mistake of assuming that their employees are only working for money. 5. Not Delegating. Some managers do not delegate their work because they feel that no one can do the main job properly but themselves. 6. Lack of humility. Holding a position of power may be good for a leader's ego, but it's important that managers and employees know that the manager recognizes his or her shortcomings. Avoid conflict. One of the most difficult adjustments a new leader has to make is learning how to handle disputes and problems that arise.

Innovation

Able to create new ideas for a new product which is usually very challenging for traditional leaders, because it does not fit into normal cycles or processes. The future is created and designed; a digital leader knows that innovation is based on a team focus on a common goal to make the most of each individual's capabilities. Innovation can be learned; this is helped by changing old structures through the use of multidisciplinary teams, flexible work environments, and creative processes. Agility is a key principle of digital leadership, which relates to customer orientation and responding directly to all the needs and wants of a target in the group. At the same time, leadership

4.0 is about employee involvement, individual abilities, motivation, and new ideas. An open culture is also transparent, innovative is the main basis in order to adapt quickly.

Conclusion

The era of the industrial revolution 4.0 had a significant impact on leadership. Traditional leadership tends to be rigid and stagnant and not suitable to be applied anymore at this time. Digital leadership is able to provide a positive and appropriate response in overcoming significant developments in the field of digital technology. There are several characteristics of a digital leader that are necessary to build every individual for success in an organization, including the ability to communicate, open-minded, responsive to change, dare to take risks, optimize oneself, obtain and give energy to the leadership, provide energy to the whole organization, and managing interpersonal conflicts in the workplace.

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