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THE SUITABLE LEADERSHIP FOR INDUSTRY 4.0

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Abstract

Leadership has vital role in the success of the organisation. However, many factors are always negatively or positively influencing their success actively. Developments in the industry is one of the most critical factors on the effectiveness of the leadership. Many researchers noted that leaders should have UpToDate information and communication skills to improve the relationship between leadership and employees in the organisation for further improved performance. In this regard, industry 4.0 brought many opportunities for the organisations. Especially, during the pandemic lock down, leaders had to provide slight adaptation to new market as giving proper trainings to their staff. Based on our perceptions, characteristics of the transformational leaders might be correct leadership styles that provides proper adaptation to the changes in their environment and improves the employee and organisational success in the long term.

Keywords: *Industrial Developments, Transformational Leadership, Leader Characteristics, Industry 4.0.*

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1. Introduction

Businesses are facing with many changes in their environment. To survive in the long term, they must always cope with these challenges or opportunities. Accordingly, since centuries there have been major shifts in the processes of manufacturing and production which have given rise to four distinct Industrial Revolutions. Each of the revolutions has occurred as a result of change in the lifestyle, a new discovery, or an invention that has managed to totally change the way industries manufacture their goods. All the four industrial revolutions have taken advantage of the technology. However, the last evolution, Industry 4.0 is fully promoted from the technological and communication advances that the people have in their hands. Along with the discussion of Industry 4.0 firms could follow systems and updates in the environment along with a suitable leadership style that determine the fate of an organisation.

The study of leadership in the current era of Industry 4.0 is a complex process and requires different methods of approach and definitions. The leadership model that has significant influence on the performance of an organisation in the Industry 4.0 could be defined as digital leadership. As noted, digital leadership affects the firm's capabilities and strengths in the market, provides new innovative ideas, and sets the firm's strategies in a direction towards the digital business transformation (Mihardjo et al., 2019).

According to this theory, a digital leadership model is one where the leader or the manager uses the organisation's digital assets to improve business performance and achieve organisational goals (Awa et al., 2011). In this respect, the aim of any organisation is to reach its objectives by using people and its resources (Budur and Demir, 2019). Therefore, suitable management and leadership are some of the predictors of organisations achievements in the market (Top et al., 2020). Currently, there are different leadership theories and models that are applied in different areas of work (Budur, 2018) such as; spiritual leadership, transformational leadership and ethical leadership.

Accordingly, spiritual leadership refers to leader's communication with the followers on a spiritual level, while transformational model comprises leaders' actions in follower motivation and performance, whereas transformational leaders provide a positive environment and encourages subordinates to express innovation and creativeness in the workplace (Budur and Poturak, 2021a,b). Consequently, ethical leadership is based on the idea of respect and morality that foster ethical atmosphere at organisation (Demir and Budur, 2019; Zaim et al., 2020).

Further, the concept of new age, which is called as digital leadership is a mixture of other types of leadership styles that helps effective transformation of organisations in digital age (Narbona, 2016). Digitisation is believed to become one of the strong drivers of the economy in next years and provides convergence of the virtual world with the real world (Narbona, 2016). Furthermore, digitalisation changes the basic infrastructures in different fields such as healthcare, manufacturing, and mobility (Zeike et al., 2019). In this concept, nowadays business owners are under a great pressure of transforming their systems into the digital environment. The necessity of digitalisation comes from its easiness and helpfulness in integrating vast amount of valuable data such as facilitating communication chains, better decision-making process based on faster information, providing customer service anywhere at any time, in reducing cost of manufacturing and eliminating mass production, in eliminating human-made errors, in increasing discoverability, and finally in improving exchange of information between different parties (Kamalaldin et al., 2020; Parida et al., 2019; Mohammed et al., 2020). Besides, Parida et al., (2019) summarised the profits of digitalisation in three main categories: more efficient date through lower level of human intervention, more efficient data sharing among units, and more opportunities through knowledge storage and value generation.

Furthermore, leaders' effect on those beneficial processes are inevitable and significant. Therefore, leadership needs to serve the requirements of digitalisation to improve the business sustainable performance (Torlak et al., 2021). Larjovuori et al., (2016) noted that the process of digitalisation can become a hard task for leader and requires extensive supervision and work. So far, leaders have to set up a strategy of how the firm is represented in this virtual world and how it communicates with people of interest.

Currently, the world is facing the COVID-19 pandemic, whereas the normal manufacturing processes in the factories have been interrupted and the market activities towards customers, investors, and business owners have changed its direction (Demir et al., 2020; Liguori and Pittz, 2020). Therefore, the need for digitalisation or changing structure of the organisation to internet-based activities in various sectors and businesses are required to be mandatory issue to survive in the long term (Budur et al., 2021; Rashid et al., 2020). In addition, digitalisation and the digital market has become the only place of communication between organisations and customers in this time period (Durmaz, 2017; Mohamed et al., 2020). Many corporate companies such as Google and Facebook have sent their employees home to prevent the spread

of infection. Working from home through the use of digital networks have replaced the traditional workplace, online meetings and professional email writing systems have replaced actual meetings and traveling. Consequently, those companies that managed to successfully digitalise their system during this pandemic have managed to reduce their losses. However, other companies that have been late to adapt to new environment and demands of their customers will face difficulties or will not be able to survive respectively.

Lately, in the Kurdistan Region of Iraq many business owners are giving more attention to their digital performance. Although many companies have not yet been digitalised, the newly made and startup businesses are increasing their social media presence and realise how easy it is to communicate with people over there. It can be estimated that the easiness of digital commerce and world has encouraged many entrepreneurs especially younger generation to open home based offices to act in the online platforms. Like the rest of the world, the Kurdistan Region of Iraq locked down the large markets in the big cities. This caused important damage to many business owners whose only market was the real market, and they had no interest in digitalisation, which led to protests against the government. However, many other businesses who proceeded to digitalise their system reduced their losses drastically, some of them even increased their profits.

2. Literature Review

2.1. The Four Industrial Revolutions

The First Industrial Revolution began with the mechanisation of industries, which included massive extraction of coal in the mines that lead to discovering steam engines. Taking the advantage of steam energy was a major help in speeding up manufacturing and growing the economy (Nuvolari, 2006). Following the first revolution, at the end of the 19th century, the Second Industrial Revolution began with the implementation of new sources of energy which were electricity, oil, and gas. Later on, many inventions followed including communication methods such as the telephone and automobiles (Hamid and Durmaz, 2021; Lamoreaux et al., 2004).

After a century, the Third Industrial Revolution began with the first discovery of nuclear energy. This revolution opened doors to many inventions and the rise of different electronics

such as computers and telecommunications (Rifkin, 2012). Furthermore, the invention of Programmable Logic Controllers (PLCs) marked a great invention of the time. The necessity to build a system where energy and time are saved have been the purpose of these revolutions and as a result the latest Industry 4.0 emerged as a new Industrial Revolution that involves attributes from all the previous revolutions including improvements in technological implementations, aiming to exclude manpower in manufacturing through automatisation, and changes in logistics and manufactured goods from mass production to more customised ones.

2.2. The Effects of the Revolutions

In the First Industrial Revolution taking advantage of steam energy was a major help in speeding up manufacturing and growing the economy. The first revolution changes the life of people in almost every aspect. For instance, the average income of individuals and quality of life improves, populations began to grow, and the GDP per capita was broadly increased in big countries along with economic growth (Crafts, 2011). In the Second Industrial Revolution globalisation and the widely use of electricity was the main characteristic of this period. Other than these, the use of machines supplied by petroleum and gas increased, new materials and chemical substances were found and used in manufacturing along with increased manufacturing of steel-based products. This period improved the life of people, although it was shorter than the first one, but it powered big countries that fought in the World War I (Crafts, 2011). Furthermore, in the Third Industrial Revolution, the invention of Programmable Logic Controllers (PLCs) marked a great invention of the time. the entire system of the Third Industrial Revolution was smart, interactive, and seamless for its time and it created a new economic paradigm (Idris, 2019). The last revolution, Industry 4.0, open doors of a new world were reaching out to customers is very easy and vice versa. Many job opportunities and new areas of study are provided with digital transformation (Idris, 2019).

2.3. Industry 4.0 and its Developments

The new Industry (4.0) uses cyber-physical systems and communications technology in the production process and is a smart factory that is partially autonomous and is based on new innovations, greater customisation, and brilliant customer management system. The system consists of four major elements as stated by Sterev (2017) to be “internet of data; internet of people; internet of service; and internet of things”. It takes advantage of the Internet and other improvements in communications to provide a new marketplace and new communication

methods with customers where business owners can work with the greatest efficiency and be able to increase their profits. In other words, the system focuses on end-to end digital transformation inside a digital ecosystem which is relatively based on trust that built between customers and firms in their data security, communication reliability, and intellectual property security (Prince, 2017). This industry is shaping the economy of the world and everyone is influenced by those updates.

The Industry 4.0 revolution is a radically transforming industry, where firms are required to quickly adopt new business models and stay up to date with the latest changes in technology. Therefore, due to the needs of Industry 4.0 to reinvention, it becomes a big task for firms and organisations to achieve (Rogers, 2016). The result of Industry 4.0 is a highly innovative firm or business based on the advanced mechanisms and methods of approach to customers through technology (Mihardjo et al., 2019). Due to the fact that it has access to different pillars such as the Internet of Things, augmented reality, cybersecurity, cloud computing, artificial intelligence, etc. it also reduces production costs by up to 10-30% and lowers quality costs by 10-20%.

2.4. The Role of the Leadership in the New Technological Age (Industry 4.0)

For the organisations digital transformation of Industry 4.0 is a kind of forward-thinking that leaders are required to have UpToDate and innovative ideas on all levels of the companies as a digital leader (Rogers, 2016). Among the different leadership styles, transformational leadership is thought to be the most suitable model for the digital transformation process, whereas transformational leaders are new models who are characterised as “the four dimensions: idealised influence, inspirational motivation, intellectual stimulation and individualised consideration.” and providing excellent strategies for the followers which make it suitable for the Industry 4.0 (Yusof and Othman, 2016; Zhu, 2015). Further, it has been argued that digital leadership study in Industry 4.0 is a part of the study about transformational leadership according to the Upper Echelon Theory (Hambrick and Mason, 1984).

Furthermore, transformational leaders aim to make strategic decisions and work to provide a shape to changes withing the company; hence, they reinforce the strength of the firm in the marketplace and ensure they stay competitive. A transformational leader is one of the requirements of digitation of systems, because conservative leaders are not very helpful with the advances in technology and has lack knowledge on the importance of digital technology in

the business performance. Besides the transformational leadership style serves most of the major purposes of Industry 4.0, especially in reducing mass production and raising number and quality of customised products and reducing the wastes in the company (Bongomin et al., 2020; Vaidya, Ambad, and Bhosle, 2018). The available literature state that transformational leadership influences innovation within a corporate including developing new digital business models that live up to the advances in technology (Budur and Poturak, 2021a). Furthermore, a transformational leader has a better understanding of the fact that information technology and the internet have big influence on business provided with an in-depth knowledge on mechanisms of approach to customers through the digital system; hence, they tend to improve quality of communication and customer satisfaction (Akcay Kasapoglu, 2018).

2.5. Recommendation for Managers in the Digitalization Processes

The role of manager in the digitalisation process is of great importance. Their role is more important than what machines, manufacturers, and what technology offers. If technological advances are not used for their ultimate goals, then they are useless. A manager can increase work efficiency through digitalisation by integrating the work or tasks performed by the employees. For instance, they can use virtual departments to divide the employees into different sections which provide more organisation and integration. Furthermore, a manager can improve communication between the employees and the managing staff. Better communication and awareness increase work efficiency and results in increased performance.

Moreover, managers are responsible for setting up an interface and strategy of how people discover them and communicate with them. The more user-friendly the system is provided for people the more satisfaction. Lastly, managers have to understand that the world is going through a hard time. However, it has made reaching out to people easier for managers and they should take advantage of the use of technology during this pandemic. As they also need to show empathy to their customers through their digital world presence, to make trust and reliability.

3. Conclusion

To sum it up, Industry 4.0 is the fourth Industrial Revolution that is purely based on advances in technology and communication. It provides new tools, resources, and methods of communication to business owners through the use of digitalised data and the Internet. Advances and changes in technology happen very fast and corporations need to adapt the new

environment by changing their mechanism of work and business strategies. Due to this, the system required a good leadership model that understands the importance of technology.

The transformational leadership is a near perfect model due to its innovative and re-inventive character. Accordingly, the technology is growing faster than we know. Firms and corporations should take advantage of the technology to reinforce their position in the market, build good customer relationships, and gain a positive reputation.

However, the digital marketplace is more competitive and customised. Corporations are required to build strategies that satisfies most of the employees, investors, and customers in order to stay in the tough competition and that required implementing a good leadership style. And I believe that digital leadership is emerged from the transformational theory.

REFERENCES

Akçay Kasapoglu, Ö. (2018). Leadership and Organization for the Companies in the Process of Industry 4.0 Transformation. International Journal of Organizational Leadership, 7(3), 300–308. https://doi.org/10.33844/ijol.2018.60217

Awa, H. O., Eze, S. C., Urieto, J. E., & Inyang, B. J. (2011). Upper echelon theory (UET): A major determinant of information technology (IT) adoption by SMEs in Nigeria. Journal of Systems and Information Technology, 13(2), 144-162.

Bass, B. M., & Riggio, R. E. (2005). Transformational Leadership (2nd ed.). Psychology Press.

Bongomin, O., Nganyi, E. O., Abswaidi, M. R., Hitiyise, E., & Tumusiime, G. (2020). Sustainable and Dynamic Competitiveness towards Technological Leadership of Industry 4.0: Implications for East African Community. Journal of Engineering, 2020, 1–22. https://doi.org/10.1155/2020/8545281

Budur, T. (2018). The impact of Al-Ghazali's virtues on organisational commitment and performance: A case Study at private education institutions in Kurdistan Region of Iraq. Icabep, Erbil-Iraq, 2, p21.

Budur, T., & Demir, A. (2019). Leadership effects on employee perception about CSR in Kurdistan Region of Iraq. International Journal of Social Sciences & Educational Studies, 5(4), 184-192.

Budur, T., & Poturak, M. (2021a). Transformational leadership and its impact on customer satisfaction. Measuring mediating effects of organisational citizenship behaviours. Middle East Journal of Management, 8(1), 67-91.

Budur, T., & Poturak, M. (2021b). Employee Performance and Customer Loyalty: Mediation effect of Customer Satisfaction. Middle East Journal of Management.

Budur, T., Demir, A., & Cura, F. (2021). University Readiness to Online Education during Covid-19 Pandemic. International Journal of Social Sciences and Educational Studies, 8(1), 180-200.

Budur, T., Rashid, C. A., & Poturak, M. (2018). Students perceptions on university selection, decision making process: A case study in Kurdistan Region of Iraq. International Journal of Social Sciences & Educational Studies, 5(1), 133–144.

Crafts, N. (2011). Explaining the first Industrial Revolution: two views. European Review of Economic History, 15(1), 153-168.

Demir, A., & Budur, T. (2019). Roles of leadership styles in corporate social responsibility to non-governmental organisations (NGOs). International Journal of Social Sciences & Educational Studies, 5(4), 174-183.

Demir, A., Budur, T., Hiwa, M., & Heshmati, A. (2021). Links between Knowledge Management and Organizational Sustainability: Does the ISO 9001 certification have an effect? Knowledge Management Research & Practice (TKMR), Doi: 10.1080/14778238.2020.1860663

Durmaz, O. (2017). Investigation of the motivation parameters in health care establishments. International Journal of Social Sciences & Educational Studies, 3(4), 44-53.

Hambrick, D. C., & Mason, P. A. (1984). Echelons: of the reflection its organisation as top management. Academy of Management Review Management, 9(2), 193–206.

Hamid, D., & Durmaz, O. (2021). Organisational culture impact on employee innovative behaviors in Kurdistan. Black Sea Journal of Management and Marketing, 2(1), 63-72.

Idris, R. (2019). Industrial revolution 4.0: An overview of readiness and potential economic effects in Malaysia from millennial's perspective. World Scientific News, 118, 273-280.

Kamalaldin, A., Linde, L., Sjödin, D., & Parida, V. (2020). Transforming provider-customer relationships in digital servitisation: A relational view on digitalisation. Industrial Marketing Management.

Lamoreaux, N. R., Levenstein, M., & Sokoloff, K. L. (2004). Financing invention during the second industrial revolution: Cleveland, Ohio, 1870-1920 (No. w10923). National Bureau of Economic Research.

Larjovuori, R. L., Bordi, L., Mäkiniemi, J. P., & Heikkilä-Tammi, K. (2016). The role of leadership and employee well-being in organisational digitalisation. Tiziana Russo-Spenaand Cristina Mele, 1159.

Liguori, E. W., & Pittz, T. G. (2020). Strategies for small business: Surviving and thriving in the era of COVID-19. Journal of the International Council for Small Business, 1(2), 106-110.

Mihardjo, L. W. W., Sasmoko, S., Alamsjah, F., & Elidjen, E. (2019). Digital leadership role in developing business model innovation and customer experience orientation in industry 4.0. Management Science Letters, 1749–1762. https://doi.org/10.5267/j.msl.2019.6.015

Mihardjo, L., Sasmoko, S., Alamsjah, F., & Elidjen, E. (2019). Digital leadership role in developing business model innovation and customer experience orientation in industry 4.0. Management Science Letters, 9(11), 1749-1762.

Mohammed, S. S., Suleyman, C., & Taylan, B. (2020). Burnout Determinants and Consequences Among University Lecturers. Amazonia Investiga, 9(27), 13-24.

Narbona, J. (2016). Digital leadership, twitter and Pope Francis. Church, Communication and Culture, 1(1), 90-109.

Nuvolari, A. (2006). The making of steam power technology: a study of technical change during the British Industrial Revolution. The Journal of Economic History, 66(2), 472-476.

Parida, V., Sjödin, D., & Reim, W. (2019). Reviewing literature on digitalisation, business model innovation, and sustainable industry: Past achievements and future promises.

Poturak, M., Mekić, E., Hadžiahmetović, N., & Budur, T. (2020). Effectiveness of Transformational Leadership among Different Cultures. International Journal of Social Sciences & Educational Studies, 7(3), 119–129.

Prince, K.A. (2017). Industrie 4.0 and leadership. In Proceedings of the 17th International Conference on Electronic Business (pp. 132-139). ICEB, Dubai, UAE, December 4-8.

Rashid, C. A., Salih, H. A., & Budur, T. (2020). The Role of Online Teaching Tools on the Perception of the Students during the Lockdown of Covid-19. International Journal of Social Sciences & Educational Studies, 7(3), 178–190.

Rifkin, J. (2012). The third industrial revolution: How the internet, green electricity, and 3-d printing are ushering in a sustainable era of distributed capitalism. World Financial Review, 1(1), 4052-4057.

Sterev, N. (2017). Marketing leadership: the industry 4.0 need of next generation marketing. Trakia Journal of Science, 15(Suppl.1), 99–103. https://doi.org/10.15547/tjs.2017.s.01.018

Top, C., Abdullah, B. M. S., & Faraj, A. H. M. (2020). Transformational Leadership Impact on Employees Performance. Eurasian Journal of Management & Social Sciences. 1(1), 49-59

Torlak, N. G., Demir, A., & Budur, T. (2021). Decision-making, leadership and performance links in private education institutes. Rajagiri Management Journal. Doi:10.1108/RAMJ-10-2020-0061.

Vaidya, S., Ambad, P., & Bhosle, S. (2018). Industry 4.0- A glimpse. Procedia Manufacturing, 20, 233–238.

Wasono, L. W., Sasmoko, S., Alamsjah, F., & Elidjen, E. (2018). Business Model Innovation and Customer Experience Orientation: The role of Digital Leadership. Asia Proceedings of Social Sciences, 2(3), 214–218. https://doi.org/10.31580/apss.v2i3.413

Yusof, S., Othman, R. (2016). Leadership for Creativity and Innovation: Is Japan Unique?. Journal of Advanced Management Science, 4 (2), P. 176 – 180.

Zaim, H., Demir, A., & Budur, T. (2020). Ethical leadership, effectiveness and team performance: An Islamic perspective. Middle East Journal of Management, 8(1), 42-66.

Zeike, S., Bradbury, K., Lindert, L., & Pfaff, H. (2019). Digital leadership skills and associations with psychological well-being. International journal of environmental research and public health, 16(14), 2628.

Zhu, P. (2015). Digital Master: Debunk the Myths of Enterprise Digital Maturity. Lulu Press, Inc.