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# Revealing the Digital Leadership Spurs in 4.0 Industrial Revolution

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**Abstract---***This research aims to know better about a leader's understanding of interpreting digital leadership as well as understanding digital leadership spurs in the 4.0 industrial revolution era. This research uses qualitative research with a phenomenological approach. The focus of this research is on the informant's understanding, not on specific institutions, companies, or government agencies. Data collection techniques used in this research are in-depth interviews and documentation. In this research, the author used data validity techniques with triangulation techniques. The era of leadership nowadays is no longer about building something partially but by collaboration. In a traditional village, a leader who has a digital leadership spirit in the customary community must be more open to seeing the changes in paradigm, while maintaining the foundation axis that has been formed or is used as a reference in the village. A leader who is not very fluent or fully understands the digital field, but able to create work related to technology, who manages to move highly competent people in the digital field to realize their goals, it can be considered that the leader has a digital leadership spirit. In digital leadership, openness and collaboration are needed, as well as the ability to go in line with the rules, not just merely from digital capabilities one has.*

**Keywords---***collaboration, digital leadership, industrial revolution, leader, leadership.*

## Introduction

The 4.0 industrial revolution era is better known as the phenomenon of disruption. (Fukuyama, 2002), sees disruption as a shock that can disrupt social order in society. Disruption is interpreted by some experts as a change that occurs due to the presence of the future into the present, where sometimes there will appear some chaos where changes occur. The disruption phenomenon that colored the development of the 4.0 industrial revolution era will bring us to the transition conditions of the technological revolution which will indirectly change the way of life, thinking, the way we work, including our relationships with each other. (Kasali, 2017) in his book, "Disruption" said that disruption is an innovation. Disruption is the potential to replace old players with new players, replacing old physical technology with digital technology that produces something completely new and more efficient, as well as more useful. Organizations, companies, governments, and even countries in this 4.0 industrial revolution era will need leaders who not only have big dreams but also dare to create spectacular work in facing the current era of disruption. In leading, a leader must be profound in seeing even the smallest gaps in all aspects of life. Finding out various phenomena or issues that develop including any possible phenomenon that possibly occurs, where these become homework for a leader to make strategic plans for the future. Leaders need to be able to prepare everything therefore they could continue to adapt in a rapidly changing environment.

The success or the failure of an organization, company, government, and even a country is determined by leadership factors, and in leadership, there are leaders and followers (Lee & Chan, 2015; Contractor *et al.*, 2012; Horner-Long & Schoenberg, 2002). Leadership is not only being leaders who can lead their resources but leaders who can lead in all changes and differences. In 4.0 industrial revolution era, a leader must be able to unite and provide a clear direction, have a vision that is not just a vision for the organization or company but greater, which has influence and is beneficial

for all members/teams, the surrounding environment and even for the world. Leaders must possess speed in making decisions, more leaders just sit in rocking chairs in an air-conditioned comfortable room waiting for reports from subordinates, but leaders who jump right in to observe, evaluate and directly control everything. A real example we can find and could become viral is "*blusukan*" when Mr. Jokowi was the Governor of Jakarta. He put *blusukan* into his work agenda. The word *blusukan* itself comes from the Javanese language, the root word is *blusuk* which means to enter, immerse, and the like. Viewed from the political side, *blusukan* can be interpreted as inspections to certain places to directly monitor the performance of public services, checking conditions on the ground, and improving communication with a diverse community. Hirzan (2019), Mr. Jokowi in his current term as President of Indonesia has brought the name of Indonesia to become internationally respected. For his performance in bringing Indonesia into a positive trend in all fields, President Jokowi received praise from the world's leaders and many influenced world figures. Jokowi is indeed a figure that is often dropped by the opposition, but in the international world, he is well respected. His leadership is recognized worldwide. Even the leading United States magazine, Fortune, put his name as one of the 50 greatest world leaders. Even his performance was included several times in foreign media reports, such as the New York Times which reported Jokowi's "*blusukan*" through an article titled "In Indonesia, a Governor at Home on the Streets".

Like spurs in cockfighting, the spurs are needed to become weapons in fighting in this era of change. This spur is very sharp and poisonous, so caution is needed to install it. As if it is not installed in the right place then the opponent will not fall, but the spur will hurt the user himself. The sharpness or failure of a leader's spurs can be seen from how they realize what they want so their followers have the same desires and move towards the same goals. How leaders can influence, invite and move together to realize their goals as contained in the book "Becoming a Strategic Leader", wherein the Strategic Leader there are Strategic Thinking, Strategic Acting, Strategic Influence, and Strategic Leadership Team (Hughes & Beatty, 2005).

### *Literature review*

#### *4.0 Industrial Revolution*

Ghufron (2018), the 4.0 industrial revolution is called the digital revolution as of the proliferation of computers and the automation of record-keeping in all fields. The existence of this automation and connectivity will move the industrial world and work competition becomes non-linear. This can be seen from the application of the use of robots as human substitutes. Ulfa (2019), explained that many changes emerged due to digitalization and automation in 4.0 industrial revolution era. Napolita & Darma (2020), the industrial revolution 4.0 has disrupted the health care system. Currently, the 4.0 industrial revolution has never been enough to be discussed, and it even became one of the topics in the 2019 Presidential Candidate debate some time ago. The 4.0 industrial revolution became a worldwide trend which was originally a project in the German government's advanced technology strategy which prioritized factory computerization. The 4.0 industrial revolution instilled an intelligent technology that could connect with one another in all fields of life (Lu, 2017; Dilberoglu *et al.*, 2017; Schuh *et al.*, 2014; Tupa *et al.*, 2017).

#### *Leaders*

Rasim (2014), believes that leaders must be able to make meaningful changes in building a more decent people's welfare. It's better not to think 'need to appear as a leader' if you are not able to make changes for the better, especially by forcing yourself without any mental and intellectual abilities and strong leadership. Wahab (2015), states that the leader of an organization can be considered as a key position in dealing with various changes that occur quickly. Fitria (2018), explains that a leader is someone who can influence others to achieve a goal. Leaders must have leadership competence to be successful in carrying out their roles, tasks, functions, and responsibilities as a leader. It can be said that in the 4.0 industrial revolution era, we need leaders who can quickly adapt to the developments that occur. A leader needs to be able to communicate and build team trust, able to quickly make decisions. Leaders who are not able to adapt quickly are no longer in line with the times and they will be replaced or even gone extinct.

#### *Leadership*

Prewitt *et al.* (2011), mentions that leadership is the ability to influence people by setting an example and inspiring. Lim & Daft, (2017), states that leadership is an influential relationship between leaders and followers who want to make changes and real outcomes which reflect common goals. Sutaryo & Purwana (2017), explained that the success

of an organization in achieving its goals is determined by several factors, one of which is leadership. Ramli (2017), said that leadership became the phenomenon which was least understood but the most observed. Leadership is one of the substantial and crucial things in the life of the community, state, and nation, especially in the aspects of government, politics, economics, and society as well as religion. Subagyo (2017), discusses national leadership that is suitable for the millennial generation in the current digital era. The digital age will give birth to demands for national leadership based on information technology, the internet, and social media.

### *Digital Leadership*

*Pendapat Para Ahli Tentang Kunci Sukses* (2017), explained that the key to success could be in the form of activities, strengths, skills, and knowledge that people use to strive for the successor in the form of personal traits, habits, certain inclinations, individual traits, and character traits of a person. James McCay said that the key to success was desire. One must have a passionate desire to develop resources. Wulandari *et al.* (2019), said the ideal leadership was leadership that follows the 4.0 industrial revolution demands. Leaders who follow leadership technology development must have skills in influencing, encouraging, guiding, directing, and moving others in the 4.0 industrial revolution era (Utomo & Darma, 2020). Nowadays we need leaders who could take steps ahead to bring their followers together to run forward by utilizing information technology, this leadership is called Digital Leadership. Sheninger (2014), said digital leadership could be defined as setting up direction, influencing others, and initiating sustainable changes through access to information, and building relationships to anticipate important changes for the success (schooling) in the future. A dynamic combination of mindset, behaviors, and skills is used to change and/or improve culture (schools) through technology assistance. Digital leadership is not about a striking tool, but rather a strategic mindset that utilizes available resources to improve what we do, while anticipating changes needed to foster a culture (school) that focuses on engagement and achievement. This is a changing leadership construction which grows out of the symbiotic relationship of leaders and technology. Sawy *et al.* (2016), defines digital leadership as doing the right thing in the success of digitalization strategies for companies and their business ecosystems. Digital leadership means thinking differently about business strategies, business models, corporate IT platform functions, thought patterns and abilities or skills, and the workplace. Oberer & Erkollar (2018), explained that digital leadership (4.0 leadership) was a fast, cross-hierarchical, team-oriented, and cooperative with a strong focus on innovation. The personal competence of leaders, their mindset, and the ability to apply new methods and instruments such as design thinking are important dimensions for 4.0 leaders (Wire, 2019). Digital leadership which can adapt to the rapid technology development is considered to be the key to facing the 4.0 industrial revolution era, also called the era of disruptive, which has been also proven destructive for companies that are not able to go hand in hand with the changing times (Syam & Sharma, 2018; Berman, 2012; Jovane *et al.*, 2008). Four key attitudes represent digital leadership, namely: Navigate - able to direct the company to always adapt to changing times; Connectable to connect people with openwork ecosystems; Relate - able to balance human and technological involvement into the work; and Think - innovative and able to think holistically. Sultan *et al.* (2019), mentioned that digital leadership was a new concept in the corporate world where management functions are achieved through digital platforms. For a leader to achieve what will be described as digital leadership must involve digital aspects of internet computing, communication, and have to have relevant content.

## **Research Method**

This research uses qualitative research with the phenomenological approach. The author researches by approaching information sources (informants), therefore hopefully data obtained will be more leverage. This research is not limited to certain places. As the author's focus is on the informant personally, not a particular institution, company, or government agency. The research location will be based on the agreement with the informants. Because the author conducted interviews not only with one informant, but more than one informants with different backgrounds.

Data collection techniques used in this research are in-depth interviews and documentation. Informants are the subjects who understand the research object information as the actors, as well as other people who understand the research object. In selecting informants the author chooses its own informants following the research objectives. The author will conduct interviews with leaders who certainly meet certain criteria. In selecting informants, the author generally has criteria following the 5W1H principles, namely:

- What: the informant is someone who has an understanding related to the phenomenon examined by the author. Therefore it is not directed at large numbers, but rather specifically according to the research problem.
- Who: the informant is a leader in a company, organization, or government and is a person who is directly involved with the problem examined in this research.

- Why: because the author will discuss the leadership of a leader, therefore the author does not determine rigidly from the start, but can change in the middle of the research. Following the situation and conditions that occur.
- When: the research will be conducted for one day by carrying out direct interviews with informants, but if the author and informant need time to return to sharpen the desired results, the author will add interview time based upon an agreement with the informants.
- Where: the interview will be conducted based upon an agreement with the informant, bearing in mind the informant is a leader who has limited time due to the workload and schedule.
- How: the interview will be conducted based upon an agreement with the informant, considering that the informant is a leader who has limited time for interviews. Also, the author carried out documentation to complete this research.

The data analysis process includes data collection, data reduction, data presentation, and finally conclusions. In this research, the author used data validity techniques with triangulation techniques, which use different data collection techniques to get data from the same source. The intended data collection technique is in the form of interviews and documentation for the same data source simultaneously.

## Result and Discussion

### *Digital leadership in a smart city*

In recent years in Indonesia, big cities seem to compete with each other to adopt a concept that is widely known as "Smart City". The digital world development in the 4.0 Industrial Revolution era made everybody became more eager to make breakthroughs in advancing their region or city. As if it was the answer to the global challenges, the role of the Internet of Things (IoT) in building the concept of a smart city is huge. A smart city cannot be built by just one person, but it requires the cooperation of all society components. [Widana & Darma \(2017\)](#), said the role of stakeholders is essential to support, promote, and campaign the branding of Denpasar Smart City. Those stakeholders are the government, the academicians, the businessmen in the tourism industry, the developers of smart city technology and application, communities or citizens, press, and tourists. It will only be a dream if only the leader who understands the desired changes. The top leader who has a big dream needs people around him to make it happen. To be able to touch the hearts of his people, he will need hands that are competent in their fields. These hands will create changes for the better. Denpasar city government under the leadership of Rai Mantra and Jaya Negara was able to attract the attention of the United Nations in the development of Smart City based on Tri Hita Karana so that Denpasar was considered capable to establish harmonious and synergistic relations while still holding on to local culture, welcoming the presence of technology in 4.0 Industrial Revolution era.

One of those important hands that played a big role in the development of Smart City was Mr. Dewa Ngakan Ketut Rama Sanjaya, Head of Smart Application Development of Smart City Management for Information and Communication Technology in Denpasar. For Mr. Dewa Rama, the 4.0 digital industry is actually in the government body can be termed as revitalization, bureaucracy, bureaucratic reform which in 2016 was named Smart City. From the government side, in theory, the point is how to create a smart government. This 4.0 industrial revolution, in general, could be taken as everything is digital, but, it is a change of mindset. In this era of leadership, there is no longer building something partially but doing things collaboratively, in other words, orchestration. The current government is no longer building new, but gathering from existing potentials. Leaders, in this case, must have openness, as in the present era leadership the work culture has changed which is more oriented towards results. [Dewi & Darma \(2019\)](#), very important to understand what become the pain points, and understanding customer needs so that we know how to be a problem solver. The selection of the right partners, the right talents, and supported by the technology, will help us to accelerate faster. Grab has succeeded in applying the principles of marketing 4.0 through a human-centric Brand Image by combining technology, talent, and marketing 4.0 patterns using online-offline channels (known as omnichannel marketing).

To run digital leadership, it does not have to be a leader who knows digital. As the top-level leader, not a "digital person". Digital people are technical people, while people at the top level are people who can manage everything. The Mayor of Denpasar is a leader who is conceptually mature, also digitally in control. If both can be combined, it would be better. But if we have to choose, it would be better to have a leader who is master in management, which means he knows the mechanism flow, so it is more on the concept of business processes. As this 4.0 industry or which is now known as Smart City, it's not just a matter of technology. But more on how government services can be faster, easier,

it can already be considered as Smart City, able to evolve, with bureaucratic reform. But if supported by technology that could help to simplify the process, it will be more effective. It is easier to serve the community through digital, however in Bali especially, service digitalization is still rather difficult. This is because the Balinese are mostly *priyayi*, wanting to be served. Whereas in the digital era, there are no meetings in person which means that everything has been done on a digital platform. For this reason, in building applications, there are 2 versions, the online version and the version that still requires interaction. Therefore the implementation still requires human touch in conducting services, as not all fields can be applied by full technology. For example in the health sector, digital service innovations implemented by Prodia have been responded positively by customers. Not all digital services are used by the customer and have a different index of interest for services that are already available (Narolita & Darma, 2020).

In charge of 20 contract workers and one civil servant who is mostly from digital education backgrounds who have unlimited working hours, Mr. Dewa Rama leads his team following applicable regulations but uses a young youth approach, family approach. To create an open relationship, it means that if you don't like it, it's better to be honest, if there are mistakes, you will be notified, and stay target-oriented. Despite having a close relationship with his staff, Mr. Dewa Rama still distinguishes between work and personal matters. This applies also in the use of digital things in his daily life. Mr. Dewa Rama said that in using digital media we must have principles. So keep using or active in social media, but in the direction that can provide positive content for others. Having a big responsibility, especially in developing digital applications that make him use smartphones 24 hours, does not make his character rigid. He still makes time for family even he still has to be on the online mode for his work. But its dependence on smartphones is merely due to the needs and interests of his work.

### *Digital leadership in the traditional village*

Other than Denpasar, the area that is currently being improved is the city of Singaraja. Especially with the construction of a shortcut infrastructure in Singaraja-Mengwitani which was inaugurated by the Governor of Bali, Wayan Koster. The existence of this shortcut to shorten the distance along 13.46 km by reducing the number of turns. The existence of this road is very important to create equal development growth in North and South Bali, especially Buleleng which is extraordinarily potential. Along with the shortcut, there will also be Rest Areas with a panoramic view of beautiful natural paintings at several points such as at Beratan Lake area and Bedugul Tourism Area. The very famous tourist attraction in North Bali is the dolphin tour at Lovina Beach, besides, there are other attractions such as waterfalls and lakes. The access to Singaraja is wide open, opportunities to develop tourism and investment will be also wide open, and especially nowadays that everything can be facilitated by technology. It needs a concept of village development by utilizing digital technology both in public services and regional development such as infrastructure, information technology, communication, transportation, and others. Today is the industrial revolution era 4.0 that allows a village to use more technology applied to the system intending to facilitate work, communication or activities of the business unit's activities towards the economic progress of its people and to restrain the urbanization of its young generation to get out of their village or to lose interest in agricultural, plantation, animal husbandry, sculpting arts and salt industry sectors, so that village officials need to manage such as managing a company based on the function of the company, namely Human Resources Management functions, Marketing, Technology, Operations/production and finance accompanied by the application of Good Corporate Governance (Bali & Darma, 2019).

A young man who has been trying to advance his home village is I Ketut Wiryadana. Every day I Ketut Wiryadana or commonly called Pak Wirya is assigned at Cultural Department in the Customary Sub-Sector as a *manggala nayaka* or guiding team, as the coach and appraiser when there is village competition in Buleleng Regency. He is also trusted by Bali Provincial Village Council as a team member in the Division of Indigenous Economy in Bali, Sub Division of Investment in Indigenous Villages. Pak Wirya also works for a private company located outside of Bali. Related to the understanding of digital leadership, according to Pak Wirya, digital leadership is not identical to digital but identical to the changing management patterns of a leader in dealing with, using, and managing resources owned by human resources, technology, culture, and so on. In the scope of traditional villages, leaders must know the direction of the development of traditional villages in the era or digital scope. According to Pak Wirya, digital is synonymous with innovation, efficiency, and things that are faster and smarter. A leader who has a soul of digital leadership in the era of 4.0 in the indigenous community must continue to maintain the axis of the foundation that has been formed or the reference used in the village.

Digitalization is something that must be undergone in a time process that might be hard to ascertain and determine until when it is going to happen. Therefore the process of digitalization is not as easy as talking or as statements, as if you change everything to be digital, it could be for that time but whether it is or not following existing rules or ethics. There is a different feel if everything is changed to be digital, especially in terms of art. Digitalization does not necessarily change to digital processes and not all need to be changed, but rather what we are going to change.

Digitalization for us Balinese, especially for the younger generation, does not always give us access to the widest, but there must be guidance from parents and respected figures who have a good understanding of this matter. In the village development efforts towards digitalization, small things are done, for example when conducting socialization in traditional villages. Pak Wirya socializes things related to the traditional village administration in Buleleng Regency which must start to be effective, efficient, transparent, accountable, and responsive.

Regarding the leadership in the 4.0 Industrial Revolution era, according to Pak Wirya, it is ideally leadership that continues to hold the axis or joints of the leadership of Sima, Dresta in the village. It is very good to have leaders who have the ability in the digital field. But a good and wise leader, even though he does not master in the digital field, but he is capable in traditional village management structure, choosing or managing the right people who are qualified in their respective fields, especially related to digital, will have their values. The basic ability that must be possessed is more in future thinking, open mindset. So according to Pak Wirya, leaders in traditional villages must be more open in seeing the paradigm of change that is happening at the moment and certainly without reducing the standard of cultural traditions that have existed in the villages.

For Mr. Wirya's daily activities related to smartphone usage, Mr. Wirya is very effective in utilizing the development of existing technology as his work is related to IT. Technology facilities such as smartphones, computers and so on are supporting his work, therefore, they have pretty good time efficiency. Including to continuously communicate with his work team outside of Bali. Regarding the application used, everything is related to his work. In a day Pak Wirya can open 20 applications to support his work, but there are times when one day does not open anything because he wants to spend more time with his children and family.

## Conclusion

Based on the above discussion, it is said that digital leadership is the type of leadership that can adapt to rapid technology development which is considered to be the key to face the coming of 4.0 industrial revolution era. In the 4.0 industrial revolution era, the most striking thing is the development of technology in all fields, but in reality, this is a change in mindset for leaders in seeing, facing, using, and managing their resources. It needs creative people with high imagination to produce something that will benefit many people. A leader in carrying out his leadership has his art, including digital leadership. Digital leadership is not always synonymous with digital, meaning that in digital leadership a leader does not have to know digital. Leaders who are not very fluent or understand digital but can create work related to technology, able to manage, to move highly competent people in the digital field to realize their goals, can be considered as the leader who has digital leadership spirit especially if he can balance the involvement between human resources and technology. As whatever it is, the element of "human touch" still has a different "feel" when compared to machines or robots.

A leader will not be able to stand alone, therefore collaboration is needed to yield an unlimited innovation. But if the leader understands both, it will be far more perfect. In 4.0 industrial revolution era, the most important thing in carrying out digital leadership is openness and collaboration, and being able to harmonize with the rules that have been set, especially the rules relating to local customs. So it is not from the digital capabilities he has, as to whether or not he is considered understanding digital, not from how long or how many applications he has and use, but from how he can make the technology useful for many people both in terms of effectiveness and efficiency.

## References

- Bali, I. N. A. P., & Darma, G. S. (2019). Menguji Kesiapan Pengelolaan Desa Berbasis Manajemen Modern Guna Menghadapi Era Revolusi Industri 4.0. *Jurnal Manajemen Bisnis*, 16(2), 1-13. <http://dx.doi.org/10.38043/jmb.v16i2.2037>
- Berman, B. (2012). 3-D printing: The new industrial revolution. *Business horizons*, 55(2), 155-162. <https://doi.org/10.1016/j.bushor.2011.11.003>
- Contractor, N. S., DeChurch, L. A., Carson, J., Carter, D. R., & Keegan, B. (2012). The topology of collective leadership. *The Leadership Quarterly*, 23(6), 994-1011. <https://doi.org/10.1016/j.leaqua.2012.10.010>
- Dewi, M. V. K., & Darma, G. S. (2019). The Role of Marketing & Competitive Intelligence In Industrial Revolution 4.0. *Jurnal Manajemen Bisnis*, 16(1), 1-12. <http://dx.doi.org/10.38043/jmb.v16i1.2014>
- Dilberoglu, U. M., Gharehpapagh, B., Yaman, U., & Dolen, M. (2017). The role of additive manufacturing in the era of industry 4.0. *Procedia Manufacturing*, 11, 545-554. <https://doi.org/10.1016/j.promfg.2017.07.148>

- Ekvall, G., & Arvonen, J. (1991). Change-centered leadership: An extension of the two-dimensional model. *Scandinavian Journal of Management*, 7(1), 17-26. [https://doi.org/10.1016/0956-5221\(91\)90024-U](https://doi.org/10.1016/0956-5221(91)90024-U)
- El Sawy, O. A., Kræmmergaard, P., Amsinck, H., & Vinther, A. L. (2016). How LEGO built the foundations and enterprise capabilities for digital leadership. *MIS Quarterly Executive*, 15(2).
- Fitria, R. D. (2018). Literasi Dan Inovasi Dalam Meningkatkan Kompetensi Kepemimpinan Pendidikan. 3rd Intern.
- Fukuyama, F. (2002). Social capital and development: The coming agenda. *SAIS review*, 22(1), 23-37.
- Ghufron, G. (2018, September). Revolusi Industri 4.0: Tantangan, Peluang, dan Solusi bagi Dunia Pendidikan. In *Seminar Nasional dan Diskusi Panel Multidisiplin Hasil Penelitian dan Pengabdian Kepada Masyarakat 2018* (Vol. 1, No. 1).
- Hirzan. (2019). Joko Widodo Dipuji Dunia Internasional.
- Hollander, E. P. (1992). Leadership, followership, self, and others. *The Leadership Quarterly*, 3(1), 43-54. [https://doi.org/10.1016/1048-9843\(92\)90005-Z](https://doi.org/10.1016/1048-9843(92)90005-Z)
- Horner-Long, P., & Schoenberg, R. (2002). Does e-business require different leadership characteristics?: An empirical investigation. *European Management Journal*, 20(6), 611-619. [https://doi.org/10.1016/S0263-2373\(02\)00112-3](https://doi.org/10.1016/S0263-2373(02)00112-3)
- Hughes, R. L., & Beatty, K. C. (2005). *Becoming a strategic leader*. John Wiley & Sons.
- Jovane, F., Yoshikawa, H., Alting, L., Boer, C. R., Westkamper, E., Williams, D., ... & Paci, A. M. (2008). The incoming global technological and industrial revolution towards competitive sustainable manufacturing. *CIRP annals*, 57(2), 641-659. <https://doi.org/10.1016/j.cirp.2008.09.010>
- Kasali, R. (2017). Disruption, PT. *Gramedia Pustaka Utama, Jakarta*.
- Lee, F. L., & Chan, J. M. (2015). Digital media use and participation leadership in social protests: The case of Tiananmen commemoration in Hong Kong. *Telematics and Informatics*, 32(4), 879-889. <https://doi.org/10.1016/j.tele.2015.04.013>
- Lim, G. S., & Daft, R. L. (2017). *The Leadership Experience in Asia* (2nd Editio). Cengage.
- Lu, Y. (2017). Industry 4.0: A survey on technologies, applications and open research issues. *Journal of Industrial Information Integration*, 6, 1-10. <https://doi.org/10.1016/j.jii.2017.04.005>
- Meindl, J. R. (1995). The romance of leadership as a follower-centric theory: A social constructionist approach. *The leadership quarterly*, 6(3), 329-341. [https://doi.org/10.1016/1048-9843\(95\)90012-8](https://doi.org/10.1016/1048-9843(95)90012-8)
- Narolita, D., & Darma, G. S. (2020). Prodia: disruption in clinical laboratory service system. *International research journal of management, IT and social sciences*, 7(1), 9-18. <https://doi.org/10.21744/irjmis.v7n1.811>
- Oberer, B., & Erkollar, A. (2018). Leadership 4.0: Digital Leaders in the Age of Industry 4.0. *International Journal of Organizational Leadership*.
- Pendapat Para Ahli Tentang Kunci Sukses. (2017). Retrieved from belajar-powerpoint-2007.blogspot.com
- Prewitt, J., Weil, R., & McClure, A. (2011). Developing leadership in global and multi-cultural organizations. *International Journal of Business and Social Science*, 2(13).
- Ramli, M. (2017). Kepemimpinan Inovatif Dalam Implementasi Kebijakan Strategis Pemerintah Kota Makassar. *JPP (Jurnal Politik Profetik)*, 5(2), 168-184. <https://doi.org/10.24252/jpp.v5i2.4343>
- Rasim, A. (2014). Tipologi Dan Karakter Ideal Kepemimpinan Dunia. *Jurnal Lingkar Widaiswara*, 1(1), 4652.
- Schuh, G., Potente, T., Wesch-Potente, C., Weber, A. R., & Prote, J. P. (2014). Collaboration Mechanisms to increase Productivity in the Context of Industrie 4.0. *Procedia Cirp*, 19, 51-56. <https://doi.org/10.1016/j.procir.2014.05.016>
- Sheninger, E. (2014). Pillars of digital leadership. *International Center for Leadership in Education*, 1-4.
- Subagyo, A. (2017). KEPEMIMPINAN NASIONAL UNTUK GENERASI MILENIAL DI ERA DIGITAL. *Jurnal Caraka Prabu*, 1(2), 71-83.
- Sultan, Y. H., & Suhail, K. S. (2019). The impact of significant factors of digital leadership on gamification marketing strategy. *International Journal for Advance Research and Development*, 4(5), 29-33.
- Sutaryo, K., & Purwana, D. (2017). The Impact Of Leadership Style And Work Environment To Employee's Job Satisfaction With Organizational Culture As Moderating Variable At Balai Kesehatan Penerbangan Jakarta. *Jurnal Riset Manajemen Sains Indonesia (JRMSI) Vol*, 8(1).
- Syam, N., & Sharma, A. (2018). Waiting for a sales renaissance in the fourth industrial revolution: Machine learning and artificial intelligence in sales research and practice. *Industrial Marketing Management*, 69, 135-146. <https://doi.org/10.1016/j.indmarman.2017.12.019>
- Tupa, J., Simota, J., & Steiner, F. (2017). Aspects of risk management implementation for Industry 4.0. *Procedia Manufacturing*, 11, 1223-1230. <https://doi.org/10.1016/j.promfg.2017.07.248>
- Ulfa, M. (2019). Eksistensi Bahasa Daerah di Era Disrupsi. *Stilistika: Jurnal Pendidikan Bahasa dan Sastra*, 12(2), 197-207. <http://dx.doi.org/10.30651/st.v12i2.2948>

- Utomo, I. G. W., & Darma, G. S. (2020). Measuring optimization of digital military programs: an innovation of information and communication systems in industrial digitalization 4.0. *International Research Journal of Engineering, IT & Scientific Research*, 6(2), 39-46. <https://doi.org/10.21744/irjeis.v6n2.862>
- Wahab, A. A. (2018). Kepemimpinan dalam Perubahan dan Perkembangan Organisasi. *Eklektika: Jurnal Pemikiran dan Penelitian Administrasi Pendidikan*, 3(1), 3-8.
- Widana, I. W., & Darma, G. S. (2017). Branding Denpasar Smart City Guna Meningkatkan Kunjungan Wisatawan. *Jurnal Manajemen Dan Bisnis*, 15(1), 176-199.
- Widana, I. W., & Darma, G. S. (2018). Branding Denpasar Smart City Guna Meningkatkan Kunjungan Wisatawan. *Jurnal Manajemen Bisnis*, 15(1), 176-199. <http://dx.doi.org/10.38043/jmb.v15i1.370>
- Wire, P. (2019). Digital leadership kunci perusahaan hadapi era disruptif - ANTARA News.
- Wulandari, F., Febriansyah, D., Salwa, S., & Sulaiman, R. M. (2019, February). Kepemimpinan kepala sekolah di era revolusi industri 4.0 dalam meningkatkan akreditasi sekolah. In *prosiding seminar nasional program pascasarjana universitas PGRI Palembang* (Vol. 12, No. 01).