RES MILITARIS
REVUE EUROPEENNE D ETUDES EUROPEAN JOURNAL OF MILITARY STUDIES
Social Science Journal

Industry 4.0 Technology to Improve the Performance of the Cyber Media Industry in Indonesia

By

Yuventius Sugiarno
Doctoral Student Program of University of 17 August 1945 Surabaya, Indonesia
Email: yuven@asmisurabaya.ac.id

Amiartuti Kusmaningtyas
University of 17 August 1945 Surabaya, Indonesia
Email: amiartuti@untag-sby.ac.id

Nanis Susanti
University of 17 August 1945 Surabaya, Indonesia
Email: nanis@untag-sby.ac.id

Abstract

This study aims to analyze the contribution and influence of industry 4.0 technology on the organizational performance of the cyber media industry in Indonesia, which is mediated by a consciousness of cyber defense and enterprise social media use at work. Various manufacturing and service companies apply the technical improvement of industry 4.0. The cyber media industry is a service industry that utilizes the technological advances of industry 4.0 to improve its organizational performance. The study used the quantitative method and PLS-SEM data analysis. Respondents were 153 cyber media organizations. The results showed that technology affects the consciousness of cyber defense, enterprise social media use at work, and organizational performance.

Keywords: consciousness of cyber defense, enterprise social media use at work, use of technology, organizational performance

1. Introduction

Industry 4.0 (I4.0) is the peak phase of the development of the industrial revolution. Industry 4.0 is characterized by the interconnectivity and interoperability of products and services that can help companies or organizations achieve higher industrial performance (Dalenogare et al., 2018), (Büchi et al., 2020), (Calış Duman & Akdemir, 2021).

Research related to the use of Industry 4.0 technologies is also increasingly widespread and covers various fields of science. Industry 4.0 technologies are increasingly being used, accessed, and configured in businesses (Mubarak & Petraite, 2020). However, so far, there has been no research on the contribution of the use of I-4.0 technologies to improve the organizational performance of the cyber media industry, especially in Indonesia. The cyber media industry in Indonesia is developing very rapidly, and the monetization of published information impacts extraordinary economic growth (Muslikhin et al., 2021), (Kung, 2017).

Industry 4.0 is described as the golden age of the production machinery industry, which is organized based on digital technology and is fully automated. The most specific features that distinguish I-4.0 from traditional industrial production are complete integration (close interconnection) and interactivity (adaptation) with the situation in real-time of all production

processes of an enterprise using digital technology (Popkova et al., 2019). In addition, there are also features of horizontal integration across the global value chain network, vertical integration of intelligent production systems, and end-to-end engineering throughout the value chain (Kraus et al., 2022), (Konopik et al., 2022), (Calış Duman & Akdemir, 2021), (Martínez-Caro et al., 2020).

Industry 4.0 is also designed based on information and communication technology (ICT) so that the production process becomes flexible and fast, monitoring and measurement take place in real-time, high efficiency, and waste of raw materials can be lowered (Calış Duman & Akdemir, 2021). Industry 4.0 is characterized by components (Calış Duman & Akdemir, 2021) or pillars according to the British Consulting Group (Büchi et al., 2020) used in digital transformation, known as Industry 4.0 technology or digital technology. Industry 4.0 technology (Calış Duman & Akdemir, 2021), (Yadav et al., 2020), (Bai et al., 2020), (Nara et al., 2021), (Mubarak & Petraite, 2020)) or digital technology (Calış Duman & Akdemir, 2021), (Martínez-Caro et al., 2020), (Kadir & Broberg, 2020), (Khin & Ho, 2019) are characterized by core components such as Cyber-Physical Systems (CPS), Internet of Things (IoT), Big Data (BD), Cloud Computing (CC), 3D Printing/Printer, Robotic Application (RA), Augmented Reality (AR). In addition, there are other components such as Blockchain (Mubarak & Petraite, 2020), digital automation with sensors (Dalenogare et al., 2018) or smart sensors (Martínez-Caro et al., 2020), cyber security (Büchi et al., 2020).

Industry 4.0 transforms corporate, organizational, business models, value and supply chains, processes, products, skills, and stakeholder relationships. Industry 4.0 technology or digital technology is that humans, machines, equipment, logistics systems, and products directly communicate and collaborate (Calış Duman & Akdemir, 2021). The focus is on the end-to-end digitization of all physical assets and integration into the digital ecosystem with the entire value chain (Martínez-Caro et al., 2020). Industry 4.0 creates various opportunities, but at the same time, vulnerabilities that must be managed and regulated positively affect business and society (Büchi et al., 2020).

The main focus of this study is on the contribution of Industry 4.0 technology or digital technology to the organizational performance of the media industry, especially the cyber media industry or also called online media or digital journalism or digital media (Cea-Esteruelas, 2013); (Olubunmi, 2016). The rapid response of the cyber media industry to leverage and adapt to the development of Industry 4.0 technology is an urgent and relevant option to improve organizational performance.

According to the Indonesian Press Council (2012), cyber media is any form of media that uses the Internet and carries out journalistic activities, and meets the requirements of the Press Law and Press Company Standards set by the Press Council. The 'explosion' of the growth in the number of cyber media in Indonesia has triggered fierce competition. In 2014, the number of cyber media was recorded at 43,300 media, but those verified to meet the provisions of the Press Law were only 65 cyber media (https://dewanpers.or.id/). In 2019, according to a report by the Indonesian Cyber Media Association (ASMI), the number of cyber media reached 47,000, and only 2,700 (5.7%) cyber media have been verified by the Press Council (Muslikhin et al., 2021); https://www.amsi.or.id/; (Haryanto, 2021).

This research was conducted in the light of goal-setting theory to explain the organizational performance of cyber media. The organizational arrangement of cyber media can improve and run optimally if it applies goal setting for each stage of work. Goal setting theory states that organizations that have set goals to be achieved from the beginning will

produce high performance than organizations that have no plans or have common goals. Specific and challenging goals will result in higher performance than those with no vague goals or objectives and abstract goals such as 'do your best (Locke & Latham, 2019).

2. Literature background and hypotheses development

Organizational performance means how well a business achieves its market and financial goals (Chavez et al., 2017). Organizational performance refers to the achievement of business goals and objectives at the end of a certain period and the level of success of a business (Calış Duman & Akdemir, 2021).

Organizations can achieve performance by the mission and goals set if they use Industry 4.0 technology. The use of technology based on the components of Industry 4.0 technology or digital technology is an inevitable necessity. The entire process and working procedure of cyber media are internet-based and the features of Industry 4.0 technology or digital technology. The use of Industry 4.0 technology or digital technology has an impact on the business landscape of the media industry, which is now changing rapidly (Valor, 2019).

This research is a replication and modification of the study that has been carried out by (Calış Duman & Akdemir, 2021), (Ho & Gross, 2021) and (Nusrat et al., 2021).The conceptual framework model resulting from replicating modifications from the three studies is a novelty of this study.

Research by (Calış Duman & Akdemir, 2021) examined the influence of technology components on organizational performance as measured by profitability, cost, sales, production amount, production amount per capita, capacity, speed of production, and quality. The results showed that the I-4.0 technology components had a positive effect on organizational performance.

However, (Calış Duman & Akdemir, 2021) have not provided precise results because the performance concept is applied to low and middle-level companies that have not yet matured in applying I4.0 technology. Research by (Calış Duman & Akdemir, 2021) has also not shown a clear relationship between the use of technology and the consciousness of cyber defense.

Cyber media's organizational performance concerns information as an asset that must be protected. For this reason, cyber media must be aware of cyber defense to protect information assets to achieve organizational performance (Ho & Gross, 2021). Cyber defense is a system of activity, the interaction between cyber defenders and attackers simulated in cloud-based laboratory spaces (Ho & Gross, 2021). Cyber defense means understanding the importance of cyber defense to protect information assets and cyberinfrastructure. (Ho & Gross, 2021) research are still weak in the ability to make predictions because the measurement indicators to achieve the organization's defense and consciousness of cyber defense are at the level of laboratory testing and are not yet operational.

The organizational performance will run better if cyber media use enterprise social media to coordinate, collaborate and share knowledge between employees (Nusrat et al., 2021). (Nusrat et al., 2021) showed the benefits of corporate social media in coordinating, sharing knowledge, and collaborating between employees so that work can run more efficiently and quickly. (Nusrat et al., 2021) research had not shown unequivocally the relationship between the use of I4.0 technology and social media use, which basis is the Internet.

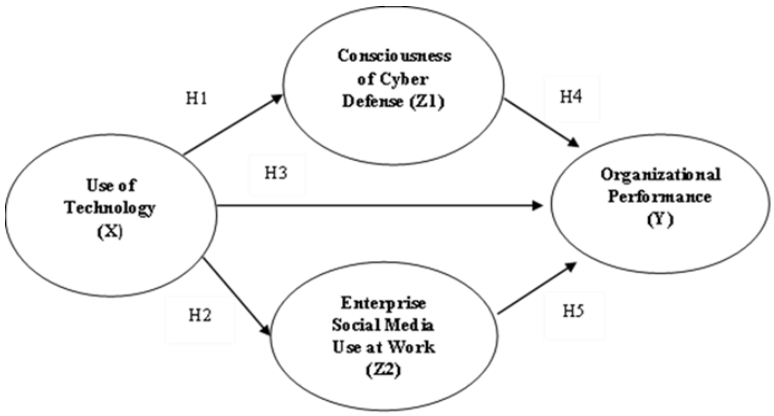

Figure 1: *Conceptual framework of the research*

Influence of the use of technology and consciousness of cyber defense.

The use of technology, in addition to providing many benefits, also poses new challenges to its security. Cyber security is a challenging aspect of implementing I4.0 technology (Calış Duman & Akdemir, 2021). (Corallo et al., 2020) mentioned that I4.0 technology has the potential to have a destructive impact on business performance due to cybersecurity violations.

The interaction between the system of cyber defense activities and cyber breaches by (Ho et al., 2019) and (Ho & Gross, 2021) is described as a challenging chess game. There is a contradiction between the attacker and the organization's cyber defense shield. (Ho et al., 2019) and (Ho & Gross, 2021) discovered the need for a consciousness of cyber defense. Cyberattacks gain access to cyber systems, networks, and infrastructure by increasing privileges to confidential information, regardless of the efforts system engineers make for security. The chess game between cyberattacks and defense disrupts an organization's ability to protect an organization's information assets.

Cybersecurity can be described as problem-solving and risk reduction. Cyberattacks include network attacks, including PC viruses, temporary cessation of knowledge, and other attacks. Hackers attempt to gain access to PCs illegally and licensed property or collect sensitive information (Alghamdie, 2022).

The presence and use of digital technology encourage organizations and people involved in the organization to have consciousness of cyber defense so that information assets and cyberinfrastructure are protected. The slightest leakage of information assets can adversely affect the system of activity of the entire organization (Corallo et al., 2020), (Ho et al., 2019).

H_1: Use of technology affects the consciousness of cyber defense in the cyber media industry.

Influence of the use of technology and enterprise social media use at work

The use of technology based on the internet of things impacts various types of enterprise social media applications. The Internet facilitates communication channels in the workplace to increase employee productivity (Alharthi et al., 2021).Through corporate social media, personal and social relationships between employees can be built and developed in the workplace. Employees can share knowledge, collaborate, and work together so that work can be completed more easily and quickly.

But on the other hand, using social media technology in the workplace also poses new challenges. The most prominent new challenge is cyber-slacking, which is the use of corporate

social media for entertainment or the personal interests of employees during working hours (Alharthi et al., 2021), (Luqman et al., 2020).

The next challenge is the emergence of employee-perceived overload. Employees feel an excess of information and social relationship, thus impacting tensions related to social media use in the workplace (Chen & Wei, 2019). In addition, information overload in social media connectivity affects the emotionally exhausted feelings of employees. Emotional weakness can drive intentions to turnover from work (Tang et al., 2020).

H_2: Use of technology affects enterprise social media use at work in the cyber media industry.

Effect of use of technology and organizational performance.

The use of technology for organizations is like a heart for the life of the human body (Shahim, 2021). Technology is increasingly being used, accessed, and configured in business organizations (Mubarak & Petraite, 2020). Research by (Calış Duman & Akdemir, 2021) shows that the technological components of Industry 4.0 affect organizational performance and have a positive effect. Research by (Büchi et al., 2020) shows a relationship between the use of I4.0 technology pillars- both in terms of breadth and depth with a greater chance of achieving the best performance of the organization.

(Gupta et al., 2020) use the I4.0 technology component, namely predictive analytics of big data in the form of resources and capability related to managerial skills and technical skills, to achieve superior organizational performance, market performance, and financial performance. The results of predictive extensive data analysis show that resources and capability have a positive relationship with all variables, managerial skills, and technical skills in achieving superior organizational performance, market performance, and financial performance.

H_3: Use of technology affects organizational performance in the cyber media industry.

Influence of consciousness of cyber defense and organizational performance.

The consciousness of cyber defense deserves serious attention from all members of the organization. It's not just experts who have the capability and responsibility for the organization's cyber security. Cyber defense consciousness protects information assets and organizational cyberinfrastructure (Ho & Gross, 2021)

(Ahmad et al., 2020) stated that the organization's digital assets are under constant threat from various cyber criminals that impact organizational performance. For this reason, there needs to be an integrated action between the information security management function and the incident response to cyberattacks. The goal is for the organization's digital assets to be protected and simultaneously become organizational learning that leads to corporate security benefits (Gross & Ho, 2021).

H_4: Consciousness of cyber defense affects organizational performance in the cyber media industry.

Influence of enterprise social media use at work and organizational performance

Enterprise social media use at work has a relationship with the psychological condition of employees and the deviation of social media use or cyber-slacking in the workplace. (Nusrat et al., 2021) stated that psychological conditions are psychological meaningfulness, psychological safety, and psychological availability.

The psychological conditions of employees have a positive impact on enterprise social media use at work or organization. Psychological conditions also affect preventing cyber-slacking in the workplace. But in addition to the positive relationship between the psychological needs of employees, social media use at work also triggers the occurrence of cyber-slacking itself (Luqman et al., 2020),(Luqman et al., 2021),(Alharthi et al., 2021).

(Cai et al., 2018) stated that psychological conditions have a relationship between social media use at work and the agility of performance, proactive attitude, and adaptability of employees in the workplace or organization. (Zhao et al., 2020) point out a link between social media features and knowledge sharing, and environmental awareness. The exchange of information between colleagues is related to knowledge sharing, which also impacts organizational performance.

H_5: Enterprise social media use at work affects organizational performance in the cyber media industry.

3. Method

This research uses a quantitative approach, and the analysis tool used is a Structural Equation Model Partial Least Square. The advantages of using PLS are that the data does not have to be distributed normally, can be used for the analysis of variables with reflective or formative indicators, and can be used to analyze intervariable relationships with small samples (Hair et al., 2014), (Hair et al., 2019a), (Khin & Ho, 2019).

The population of this study is the entire cyber media industry organization of 155 in the East Java province, Indonesia. The population is a member of specific professional organizations or unions, or cyber media associations. The details of the organization include Indonesia Cyber Media Union (SMSI) as many as 101 cyber media, members of the Indonesian Cyber Media Association (AMSI) as many as 28 cyber media, and members of the Indonesian Cyber Media Network (JMSI) as many as 26 cyber media.

The reason for using the locus in East Java is because it is one of the provinces that has the second most cyber media organizations outsides Jakarta. Census sampling is used for the entire defined population. Questionnaire data collection using google form. The data that can be processed is 153, while two data cannot be processed because they are not filled in completely.

Results and Discussion

Hypothesis testing of the direct influence of each research variable can be explained as follows:

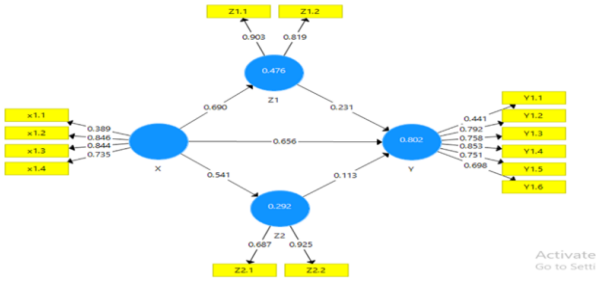

Figure 2: *PLS-SEM test output*

The effect of the use of technology on the consciousness of cyber defense.

The results of this study show that the use of technology has a positive and significant effect on cyber defense consciousness (Table 1), with a coefficient of influence shown in Figure 2. It means that the improvement of the use of technology triggered by factors such as cyber-physical systems, the Internet of things, big data, and augmented reality also increases the consciousness of cyber defense.

Organizations that have the capability of the information analysis process against cyber threats have proven to be able to respond to the threat of cyberattacks. The ability to analyze cyber threats is also positive for the company's security performance and is financially and strategically beneficial (Naseer et al., 2021). Organizations need consciousness of cyber defense so that organizational policies and decisions can fortify systems, networks, and cyber infrastructure against cyberattacks (Ho et al., 2019), (Corallo et al., 2020), (Alghamdie, 2022).

Path Coefficients Test Results

Table 1

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (| O/STDEV|)	P Values
X -> Y	0.656	0.651	0.066	9.934	0.000
X -> Z1	0.690	0.691	0.040	17.092	0.000
X -> Z2	0.541	0.544	0.056	9.611	0.000
Z1 -> Y	0.231	0.237	0.059	3.894	0.000
Z2 -> Y	0.113	0.117	0.057	1.968	0.050

The effect of the use of technology on enterprise social media use at work.

The results of this study show that the use of technology has a positive and significant effect on enterprise social media use at work (Table 1), with a coefficient of influence shown in Figure 2. It means that increasing the use of technology also increases the enterprise's social media use at work.

The use of I4.0 technology affects employee productivity, creativity, commitment to the organization, and acceleration in job completion due to the ease of communicating through enterprise social media (Alharthi et al., 2021), (Chen & Wei, 2019), (Luqman et al., 2021). On the other hand, enterprise social media use at work also has an impact on psychological conditions such as feelings of overload, fatigue, the desire to resign from a position, and the use of social media during working hours or cyber-slacking (Tang et al., 2020), (Luqman et al., 2021).

The effect of the use of technology on organizational performance.

The results of this study show that the use of technology has a positive and significant effect on organizational performance (Table 1), with the coefficient of influence shown in Figure 2. It means that the improvement of the use of technology also improves organizational performance in the cyber media industry.

This research is in line with the criteria or indicators used by (Calış Duman & Akdemir, 2021) to improve the organizational performance of the cyber media industry regarding the product amount, quality or accuracy of work, reputation/brand, innovation, efficiency, and profitability. Likewise, (Büchi et al., 2020) relates to indicators of product quality, efficiency, and production capacity affecting the organizational performance of the cyber media industry.

(Gupta et al., 2020) specifically highlighted analytics predictive of big data positively affect financial performance, market quality, and organizational performance. This research also supports the research results of (Marcucci et al., 2021) related to the influence of the use of Industry 4.0 technology on organizational resilience and the research results of (Cugno et al., 2021) associated with the openness of Industry 4.0 technology to the performance of companies or organizations.

The effect of consciousness of cyber defense on organizational performance.

The results showed that the consciousness of cyber defense had a positive and significant effect on organizational performance (Table 1), with a coefficient of influence shown in Figure 2. This means that with the improvement of the consciousness of cyber defense then, organizational performance will also increase.

Cyber defense encourages employees to jointly maintain cybersecurity that impacts organizational performance (Ho & Gross, 2021), (Gross & Ho, 2021), (Ahmad et al., 2020). (Ho & Gross, 2021) and (Gross & Ho, 2021) research is an experimental laboratory study involving students with a division of roles as defenders and cyber attackers. The two activities foster the consciousness of cyber defense, both impacting security, and organizational performance. The results of this study operationally confirm the effects of (Ho & Gross, 2021) research in the context of the cybermedia industry.

Employee's response against cyberattacks and the importance of cybersecurity readiness impacts organizational performance. Cybersecurity readiness affects the security of an organization's financial and non-financial performance. Cyberdefense readiness is also helpful in preventing cyberattacks (Stacey et al., 2021), (Hasan et al., 2021).

The influence of enterprise social media use at work on organizational performance.

The results showed that enterprise social media use at work had a positive and significant effect on organizational performance (Table 1), with a coefficient of influence shown in Figure 2. This result means that improvement of the enterprise social media use at work also improve the organizational performance in the cyber media industry.

Social media use at work stimulates various psychological conditions, both positively and negatively. Enterprise social media is used at work to coordinate, collaborate and share knowledge among employees. Enterprise social media use at work also psychologically impacts the feeling of total involvement of employees in the workplace, which in turn also improves organizational performance. However, enterprise social media use at work also has an impact on other psychological conditions, namely feelings of overload, psychological fatigue, and misuse of social media during working hours for the personal benefit of employees or cyber-slacking (Nusrat et al., 2021), (Cai et al., 2018), (Zhao et al., 2020). Motivation and ability as influential factors in terms of social media users sharing knowledge with employees in the workplace (Yee et al., 2021).

Role of mediator variables.

In this study, a consciousness of cyber defense and enterprise social media use at work also act as mediator variables for organizational performance. Mediator variables test a statistical model in which the construct intervenes between the other two constructs (Hair et al., 2019b)

Table 2 *Test Results of Mediation Variable Role*

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (| O/STDEV|)	P Values
X -> Z1 -> Y	-0.159	0.163	0.043	3.738	0.000
X -> Z2 -> Y	-0.061	0.064	0.033	1.873	0.062

Table 2 shows that the consciousness of cyber defense variable played a role in mediating the relationship between the use of technology and organizational performance and proved significant. Enterprise social media use at work does not play a role as a variable that mediates the relationship between the use of technology and organizational performance.

The argument that can be given is that the organization of cyber media in East Java, Indonesia, generally does not make social media the initial primary source of information and the leading media to virtualize information or news. This happens because the cyber press has a lot of human resources and is journalistically idealistic , so they can rely on obtaining initial sources of information from their journalists. Cyber media that have cyber technology independence also maximize their capabilities to increase views per click independently, not dependent on social media such as Facebook, WhatsApp, Instagram, Twitter, and others as an initial source of information and simultaneously as a channel to virtualize information.

These results differ from the research of (Muslikhin et al., 2021), which states that social media is the initial source of information and a means to virtualize news or information. (Muslikhin et al., 2021) research TribunNews.com research on communication science with a qualitative method. The difference between this study and the research of (Muslikhin et al., 2021) also revealed that differences in the paradigms of qualitative and quantitative research provide different results.

3. Conclusion

The use of technology affected the consciousness of cyber defense in the cyber media industry, with indicators of cyber-physical systems, the Internet of things, big data, and augmented reality. It also illustrates that the hands implemented by the cyber media organization contribute to improving the consciousness of cyber defense in the cyber media industry.

The use of technology affects enterprise social media use at work in the cyber media industry, with indicators of cyber-physical systems, the Internet of things, big data, and augmented reality. It also illustrates that the hands implemented by the cyber media organization contribute to improving enterprise social media use at work in the cyber media industry.

The use of technology affects organizational performance in the cyber media industry with indicators of cyber-physical systems, the Internet of things, big data, and augmented reality. It also illustrates that the hands implemented by the cyber media organization contribute to improving organizational performance in the cyber media industry.

The consciousness of cyber defense affects organizational performance in the cyber media industry with indicators of incident response and information security management. It also illustrates that the hands implemented by cyber media organizations contribute to improving organizational performance in the cyber media industry.

Enterprise social media use at work affects organizational performance in the cyber media industry with indicators of initial sources of information and information dissemination. It also illustrates that the indicators implemented by the cyber media organization contribute to improving organizational performance in the cyber media industry.

The consciousness of cyber defense plays a role in mediating the relationship between the use of technology and organizational performance. Enterprise social media use at work does not significantly negotiate the use of technology to organizational performance in the cyber media industry. It means that there are differences in the attitudes or strategies of each cyber media organization regarding the use of social media as an initial source of information and information dissemination.

7. Recommendations

Research results show that the use of technology detailed in the components of Industry 4.0 technology needs to be improved by maximizing integration, interactivity, interconnection, and interoperability in the implementation of work tailored to the capabilities, strategies, and business skills of each cyber media organization.

Research results show that the consciousness of cyber defense has a significant role and influence in improving organizational performance using components of Industry 4.0. Digital assets owned by a highly securely protected cybermedia organization will impact the organizational performance of cybermedia.

The research findings also show that enterprise social media use at work improves the organizational performance of cyber media. This finding needs to be improved, especially regarding the function of collaborating and interacting between employees so that work can be completed more quickly and efficiently completed. On the other hand, cyber media organizations must also further improve the capabilities and competencies of their journalists.

8. Limitations and future research

This research can be called a pioneering investigation in the field of cyber media from the point of view of economics with the specificity of management science from the Indonesian perspective. References related to this study can be said to be still minimal. But this situation is a challenge to pave the way for subsequent analyses.

Some notes for future research are suggested to increase the number of samples by expanding the scope of the research area. It is intended to achieve a development of understanding and generalizations that are closer to the facts on the ground regarding the use of technology, the consciousness of cyber defense, and enterprise social media use at work

towards the organizational performance of cyber media. In addition, future researchers to conduct research with data collection methods, both qualitative and combination analysis.

References

Ahmad, A., Desouza, K. C., Maynard, S. B., Naseer, H., & Baskerville, R. L. (2020). How integration of cyber security management and incident response enables organizational learning. Journal of the Association for Information Science and Technology, 71(8), 939–953. https://doi.org/10.1002/asi.24311

Alghamdie, M. I. (2022). A novel study of preventing the cyber security threats. Materials Today: Proceedings. https://doi.org/10.1016/j.matpr.2021.04.078

Alharthi, S., Levy, Y., Wang, L., & Hur, I. (2021). Employees' Mobile Cyberslacking and Their Commitment to the Organization. Journal of Computer Information Systems, 61(2), 141–153. https://doi.org/10.1080/08874417.2019.1571455

Bai, C., Dallasega, P., Orzes, G., & Sarkis, J. (2020). Industry 4.0 technologies assessment: A sustainability perspective. International Journal of Production Economics, 229. https://doi.org/10.1016/j.ijpe.2020.107776

Büchi, G., Cugno, M., & Castagnoli, R. (2020). Smart factory performance and Industry 4.0. Technological Forecasting and Social Change, 150. https://doi.org/10.1016/j.techfore.2019.119790

Cai, Z., Huang, Q., Liu, H., & Wang, X. (2018). Improving the agility of employees through enterprise social media: The mediating role of psychological conditions. International Journal of Information Management, 38(1), 52–63. https://doi.org/10.1016/j.ijinfomgt.2017.09.001

Calış Duman, M., & Akdemir, B. (2021). A study to determine the effects of industry 4.0 technology components on organizational performance. Technological Forecasting and Social Change, 167. https://doi.org/10.1016/j.techfore.2021.120615

Cea-Esteruelas, M. N. (2013). Cybermedia economics: Revenue model and sources of financing. Profesional de La Informacion, 22(4), 353–361. https://doi.org/10.3145/epi.2013.jul.12

Chavez, R., Yu, W., Jacobs, M. A., & Feng, M. (2017). Manufacturing capability and organizational performance: The role of entrepreneurial orientation. International Journal of Production Economics, 184, 33–46. https://doi.org/10.1016/j.ijpe.2016.10.028

Chen, X., & Wei, S. (2019). Enterprise social media use and overload: A curvilinear relationship. Journal of Information Technology, 34(1), 22–38. https://doi.org/10.1177/0268396218802728

Corallo, A., Lazoi, M., & Lezzi, M. (2020). Cybersecurity in the context of industry 4.0: A structured classification of critical assets and business impacts. In Computers in Industry (Vol. 114). Elsevier B.V. https://doi.org/10.1016/j.compind.2019.103165

Cugno, M., Castagnoli, R., & Büchi, G. (2021). Openness to Industry 4.0 and performance: The impact of barriers and incentives. Technological Forecasting and Social Change, 168. https://doi.org/10.1016/j.techfore.2021.120756

Dalenogare, L. S., Benitez, G. B., Ayala, N. F., & Frank, A. G. (2018). The expected contribution of Industry 4.0 technologies for industrial performance. International Journal of Production Economics, 204, 383–394. https://doi.org/10.1016/j.ijpe.2018.08.019

Gross, M., & Ho, S. M. (2021). Collective Learning for Developing Cyber Defense Consciousness: An Activity System Analysis. Journal of Information Systems Education, 32(1), 65–76.

Gupta, S., Drave, V. A., Dwivedi, Y. K., Baabdullah, A. M., & Ismagilova, E. (2020). Achieving superior organizational performance via big data predictive analytics: A dynamic capability view. Industrial Marketing Management, 90, 581–592. https://doi.org/10.1016/j.indmarman.2019.11.009

Hair, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. In European Business Review (Vol. 26, Issue 2, pp. 106–121). Emerald Group Publishing Ltd. https://doi.org/10.1108/EBR-10-2013-0128

Hair, J. F., Sarstedt, M., & Ringle, C. M. (2019a). Rethinking some of the rethinking of partial least squares. European Journal of Marketing, 53(4), 566–584. https://doi.org/10.1108/EJM-10-2018-0665

Haudi, H., Rahadjeng, E., Santamoko, R., Putra, R., Purwoko, D., Nurjannah, D., ... & Purwanto, A. (2022). The role of e-marketing and e-CRM on e-loyalty of Indonesian companies during Covid pandemic and digital era. Uncertain Supply Chain Management, 10(1), 217-224.

Haryanto, I. (n.d.). CYBER MEDIA CONDITION SURVEY ON IN INDONESIA INDONESIAN DIGITAL MEDIA LANDSCAPE REPORT AMSI 2021 LAPORAN SURVEI LANSKAP MEDIA DIGITAL DI INDONESIA: KONDISI MEDIA SIBER DI JAKARTA DAN DI LUAR JAKARTA.

Hasan, S., Ali, M., Kurnia, S., & Thurasamy, R. (2021). Evaluating the cyber security readiness of organizations and its influence on performance. Journal of Information Security and Applications, 58. https://doi.org/10.1016/j.jisa.2020.102726

Ho, S. M., & Gross, M. (2021). Consciousness of cyber defense: A collective activity system for developing organizational cyber awareness. Computers and Security, 108. https://doi.org/10.1016/j.cose.2021.102357

Ho, S. M., Oliveira, D., & Rathi, R. (2019). Consciousness of Cyber Defense: Boundary Objects for Expansive Learning Through Creation of Contradictions. Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), 11589 LNCS, 338–353. https://doi.org/10.1007/978-3-030-22338-0_28

Juwaini, A., Chidir, G., Novitasari, D., Iskandar, J., Hutagalung, D., Pramono, T., ... & Purwanto, A. (2022). The role of customer e-trust, customer e-service quality and customer e-satisfaction on customer e-loyalty. International Journal of Data and Network Science, 6(2), 477-486.

Kadir, B. A., & Broberg, O. (2020). Human well-being and system performance in the transition to industry 4.0. International Journal of Industrial Ergonomics, 76. https://doi.org/10.1016/j.ergon.2020.102936

Khin, S., & Ho, T. C. F. (2019). Digital technology, digital capability and organizational performance: A mediating role of digital innovation. International Journal of Innovation Science, 11(2), 177–195. https://doi.org/10.1108/IJIS-08-2018-0083

Konopik, J., Jahn, C., Schuster, T., Hoßbach, N., & Pflaum, A. (2022). Mastering the digital transformation through organizational capabilities: A conceptual framework. Digital Business, 2(2), 100019. https://doi.org/10.1016/j.digbus.2021.100019

Kraus, S., Durst, S., Ferreira, J. J., Veiga, P., Kailer, N., & Weinmann, A. (2022). Digital transformation in business and management research: An overview of the current status quo. International Journal of Information Management, 63. https://doi.org/10.1016/j.ijinfomgt.2021.102466

Kung, L. (2017). Strategic Management in the Media_ Theory to Practice. 2nd Edition. SAGE Publications Inc.

Locke, E. A., & Latham, G. P. (2019). The development of goal setting theory: A half century retrospective. Motivation Science, 5(2), 93–105. https://doi.org/10.1037/mot0000127

Luqman, A., Masood, A., Shahzad, F., Imran Rasheed, M., & Weng, Q. (2020). Enterprise Social Media and Cyber-slacking: An Integrated Perspective. International Journal of Human-Computer Interaction, 36(15), 1426–1436. https://doi.org/10.1080/10447318.2020.1752475

Luqman, A., Talwar, S., Masood, A., & Dhir, A. (2021). Does enterprise social media use promote employee creativity and well-being? Journal of Business Research, 131, 40–54. https://doi.org/10.1016/j.jbusres.2021.03.051

Marcucci, G., Antomarioni, S., Ciarapica, F. E., & Bevilacqua, M. (2021). The impact of Operations and IT-related Industry 4.0 key technologies on organizational resilience. Production Planning and Control. https://doi.org/10.1080/09537287.2021.1874702

Martínez-Caro, E., Cegarra-Navarro, J. G., & Alfonso-Ruiz, F. J. (2020). Digital technologies and firm performance: The role of digital organisational culture. Technological Forecasting and Social Change, 154. https://doi.org/10.1016/j.techfore.2020.119962

Mubarak, M. F., & Petraite, M. (2020). Industry 4.0 technologies, digital trust and technological orientation: What matters in open innovation? Technological Forecasting and Social Change, 161. https://doi.org/10.1016/j.techfore.2020.120332

Mukaromah, H., Muhajir, M., Fathudin, F., Purwanti, K., Ansori, Y., Fahlevi, M., ... & Purwanto, A. (2022). The role of buzz and viral marketing strategic on purchase intention and supply chain performance. Uncertain Supply Chain Management, 10(2), 637-644.

Muslikhin, M., Mulyana, D., Hidayat, D. R., & Utari, P. (2021). The commodification, spatialization and structuration of social media in the indonesian cyber media news. Media and Communication, 9(2), 11–0118. https://doi.org/10.17645/mac.v9i2.3752

Nara, E. O. B., da Costa, M. B., Baierle, I. C., Schaefer, J. L., Benitez, G. B., do Santos, L. M. A. L., & Benitez, L. B. (2021). Expected impact of industry 4.0 technologies on sustainable development: A study in the context of Brazil's plastic industry. Sustainable Production and Consumption, 25, 102–122. https://doi.org/10.1016/j.spc.2020.07.018

Naseer, H., Maynard, S. B., & Desouza, K. C. (2021). Demystifying analytical information processing capability: The case of cybersecurity incident response. Decision Support Systems, 143. https://doi.org/10.1016/j.dss.2020.113476

Nusrat, A., He, Y., Luqman, A., Waheed, A., & Dhir, A. (2021). Enterprise social media and cyber-slacking: A Kahn's model perspective. Information and Management, 58(1). https://doi.org/10.1016/j.im.2020.103405

Olubunmi, A. P. (2016). The Emerging Cyber Media: The beginning of a New Media and the end of Old Media. In Online Journal of Communication and Media Technologies. Volume: 6 – Issue: 1 January – 2016

PEDOMAN PEMBERITAAN MEDIA SIBER. (2012).

Popkova, E. G., Yulia, ·, Ragulina, V., & Bogoviz Editors, A. v. (n.d.). Studies in Systems, Decision and Control 169. http://www.springer.com/series/13304

Shahim, A. (2021). Security of the digital transformation. Computers and Security, 108. https://doi.org/10.1016/j.cose.2021.102345

Stacey, P., Taylor, R., Olowosule, O., & Spanaki, K. (2021). Emotional reactions and coping responses of employees to a cyber-attack: A case study. International Journal of Information Management, 58. https://doi.org/10.1016/j.ijinfomgt.2020.102298

Tang, G., Ren, S., Chadee, D., & Yuan, S. (2020). The dark side of social media connectivity: Influence on turnover intentions of supply chain professionals. International Journal of Operations and Production Management, 40(5), 603–623. https://doi.org/10.1108/IJOPM-05-2019-0391

Valor, J. (2019). Documentos IESE. The Media Industry. With the Collaboration of Carmen Arroyo and Kimberly Lee. IESE Business School-The Media Industry 2018 / ST-486-E, https://dx.doi.org/10.15581/018.st-486.

Yadav, G., Kumar, A., Luthra, S., Garza-Reyes, J. A., Kumar, V., & Batista, L. (2020). A framework to achieve sustainability in manufacturing organisations of developing economies using industry 4.0 technologies' enablers. Computers in Industry, 122. https://doi.org/10.1016/j.compind.2020.103280

Yee, R. W. Y., Miquel-Romero, M. J., & Cruz-Ros, S. (2021). Why and how to use enterprise social media platforms: The employee's perspective. Journal of Business Research, 137, 517–526. https://doi.org/10.1016/j.jbusres.2021.08.057

Zhao, Y., Zhang, X., Wang, J., Zhang, K., & Ordóñez de Pablos, P. (2020). How do features of social media influence knowledge sharing? An ambient awareness perspective. Journal of Knowledge Management, 24(2), 439–462. https://doi.org/10.1108/JKM-10-2019-0543