

The Influence of Digital Leadership and Digital Collaboration on the Digital Skill of Manufacturing Managers in Tangerang

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ABSTRACT

Inequality in terms of digital skills is a challenge faced by organizations, both companies and governments to ensure productivity and effectiveness in working from home during Covid-19. The development of digital skills is an important factor that this article tries to discuss. Are the digital skills of employees who do WFH influenced more by the digital leadership of their supervisors or by the digital collaboration they do in their work teams? Empirical research that is cross sectional and involves 160 Manufatur Managers in Tangerang as respondents. Collecting data using an online-questionnaire with a convenience approach and snowballing as a sampling method. The data obtained were analyzed using structural equation modeling based on partial least squares in the format of first order constructs. The results of statistical hypothesis testing explain that digital skills are significantly influenced by digital collaboration and digital collaboration is influenced by digital leadership. Digital leadership has an indirect effect on digital skills. Supervisor leadership during the COVID-19 period should be more directed to encourage the development of digital collaboration so that through this digital skills develop.

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I. Introduction

Industry 4.0 is no longer the same as the previous industrial era. The role of information technology is no longer just as an additional tool but has become a mandatory tool to ensure smooth operations. This is driving a change in leadership in the digital age. In order to maintain competitiveness, companies need digital leadership that is oriented towards innovation and creativity. According to Asbari et al.(2021);Aboramadan et al. (2020); Amor et al. (2020) COVID-19 has revolutionized the world as a whole by accelerating digitization or digital transformation. COVID-19 has forced all of us to migrate from work places in offices, places to study at schools, places to shop at malls, even places of worship at places of worship to all being done at home. All of this was triggered by the massive growth of victims infected with the virus, so working, studying, shopping and worshipping from home is one effective way to flatten the curve of COVID-19 sufferers. Digital transformation is not only in companies but also at the individual level and the public sector. According to Amor et al. (2020) The big challenge for managers is to be involved in this change, while trying to keep the business going, facing a different and uncertain future.

In today's digital era, companies can get data on the best-selling products more easily. Ad monitoring is just as easy. When there is a less effective business strategy, it can be identified more quickly and easily.

The illustration above may look simple. But without digital leadership, this is difficult to do. In terms of using technology and data, the digital leader is the brain. Whether the company is able to process data and use it for the company's progress, it all depends on the

digital leader who holds the top leadership. The digitalization of companies will increase the importance of digital marketing and sales channels for companies. It will also encourage work-from-home and the consumption of technology products as more people will interact using hybrid communication mechanisms that can be accessed from anywhere, and not exclusively within the company's physical environment or from their homes. However, this digital migration or transformation cannot take place as simply as turning on a light switch. The individual productivity of a worker can be very different when they work from home than when they work from the office as usual. Employees today have the same opportunity and convenience to use digital technology from home independently. In the UK, lockdown policies have led to increasing digital inequality. With the closure of public libraries and online learning centers, residents without access to digital technology or with low digital skills are prevented from seeking health-related information.

The world keeps changing. For the company to survive and thrive, the only option is to embrace the change. A digital leader must be creative. He must be open to change and have a strong drive to innovate. Digital leaders understand that innovation is a fixed price. If the company stops innovating, that's when its position will be replaced. People who experience digital inequality are grouped into three categories, namely: (1) inability to pay for devices and connection fees; (2) lack of motivation to use digital technology for their lives and businesses, and (3) low digital skills, the inability to use digital technology to search for information and communicate. Based on the points of views mentioned above, this article seeks to discuss digital skills and how to improve them. As an alternative to temporary work arrangements, the productivity of working-from-home is still being questioned or questioned by many organizations in both the private and public sectors. Especially, in organizations that suddenly require intensive virtual work. According to Cahyono et al. (2020); Chughtai et al. (2011); Decuypere et al. (2020) Digital skills are a determining factor for work-from-home productivity. With adequate digital skills, workers can more freely utilize and manage their work time in line with efforts to achieve work-life balance. Digital skill development can be influenced by the support of superiors or supervisors as well as interactions with other employees. This article also attempts to empirically examine the influence of leadership from supervisors or superiors and collaboration with colleagues during the work-from-home process. Which of these two factors is more influential? Is it digital leadership from supervisors or digital collaboration with colleagues that has a significant impact on digital skill development.

A. Digital Skills

According to Cahyono et al. (2020)) Continuously intensive digital technology impacts productivity in all sectors of the economy and contributes to productivity growth in many companies. Therefore, policies to support digital adoption must go hand in hand with increasing digital skills. Digital skills include all skills related to digital technology ranging from basic skills or literacy, generic skills for all workers, and specific skills for information technology professionals. According to Cahyono et al. (2020); Chughtai et al. (2011); Decuypere et al. (2020) the concept of digital skills was developed that measures digital skills in four dimensions, namely: digital technical skills, digital communication, digital analysis, and digital mindset.

B. Digital Collaboration

Collaboration is a pattern of mutually beneficial and well-defined relationships between two or more entities to achieve a common goal. Collaboration is generally used as a means to solve problems or face complex challenges. In the context of work-from-home, collaboration is done over the internet. According to Edelbroek et al. (2019); Hutagalung et al. (2020); Kadiyono et al. (2020) digital collaboration as a construct and operationally defined as collaboration using digital technology among workers with internal and/or external partners to complete common tasks.

Digital collaboration is reflected in four dimensions, namely: the characteristics of the work team, the type of work, the quality of collaboration, and the use of digital technology. Previous research

According to Edelbroek et al. (2019); Hutagalung et al. (2020); Kadiyono et al. (2020) explained that a collaborative learning approach has proven to be effective in developing digital skills. Based on these empirical facts, this article develops a hypothesis that digital collaboration has a positive and significant effect on digital skills.

H1: Digital collaboration affects digital skills

C. Digital Leadership

Disruption of digital technology makes digital capabilities and leadership capabilities equally important in determining company competitiveness. Several literatures define digital leadership as a key skill that must be possessed by managers to carry out digital transformation. According to Lai et al. (2020); Li et al. (2018); Lee et al. (2019) Through digital leadership, company leaders develop a clear and meaningful vision and actualize strategies related to the digitalization process. Referring to these definitions, this article simplifies the definition by explaining that digital leadership is the capability possessed by superiors or supervisors to involve and develop all employees in utilizing digital technology to support companies in achieving business growth. According to Lee et al. (2019) digital leadership in two dimensions, namely: digital mental attitude - and leadership skills. Several previous studies have proven that leadership plays a role in developing skills, competencies or expertise and also affects the establishment of collaboration. According to Lai et al. (2020); Li et al. (2018); Lee et al. (2019) explains that self-leadership plays a moderating role in the relationship between work commitment and work competence. Through strong self-leadership, work commitment affects work competence. Based on these two empirical facts, this article develops a hypothesis that digital leadership also has a positive and significant effect on digital skills and also on digital collaboration.

H2: Digital leadership affects digital skills

H3: Digital leadership affects digital collaboration.

II. Method

This article is based on a quantitative study of office workers in Indonesia. Data were collected through online questionnaires on social media from professional and personal networks of researchers. This research involved 824 office workers as respondents. This research involves workers in the manufacturing industry in Tangerang. The complete respondent profile is listed in Table 1. The partial least squares-based structural equation modeling approach (PLS SEM, variance-based SEM) was used to construct the research model and SmartPLS version 3 was used to compute research data on the model built. The research model developed is a first order construct format where all variables are reflected on each indicator.

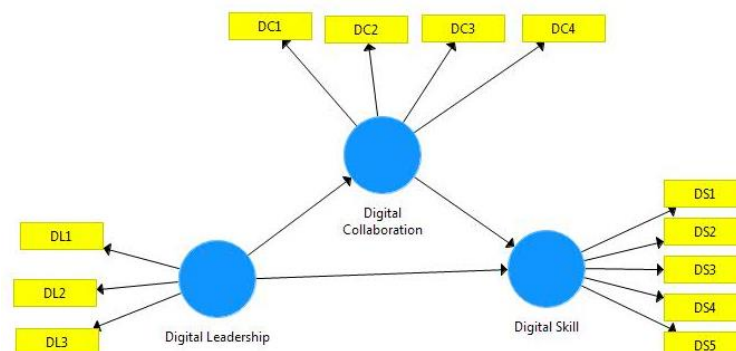


Fig 1 Research Model

H1: Digital collaboration has a positive effect on digital skills

H2: Digital leadership has a positive effect on digital skills

H3: Digital leadership has a positive effect on digital collaboration

III. Result and Discussion

The research model consists of three variables, namely: Digital Skill (DSKIL) which is reflected in four indicators; Digital Leadership (DLEAD) which is reflected in four indicators, and Digital Collaboration which is reflected in four indicators. From the results of the analysis of validity and reliability, Table 2 explains that all indicators of the three variables are valid, because they have an Outer Loading (OL) score of more than 0.60. Likewise, all variables are also valid, because they have an Average Variance Extracted (AVE) score of more than 0.50.

Table 1 shows the results of discriminant validity analysis, where all variables are discriminantly valid because they have an AVE square root score (score in the diagonal column and in bold) greater than 0.7 and is the highest score in the column. As for reliability analysis, Cronbach Alpha (CA) and Composite Reliability (CR) were used as parameters. The three variables are reliable because they have a CA or CR score of more than 0.70. So based on the analysis of validity and reliability, the research model is composed of valid indicators and valid and reliable variables

Table 1. Items Loadings, Cronbach’s Alpha, Composite Reliability, and Average Variance Extracted (AVE)

Variables	Cronbach’s Alpha	Rho_A	Composite Reliability	AVE
Digital collaboration	0.858	0.878	0.887	0.676
Digital leadership	0.866	0.866	0.812	0.654
Digital skill	0.859	0.857	0.812	0.635

Validity test is measured from the AVE (Average Variance Extracted) value. The AVE value > 0.5 means that the variable is able to describe the variance of each indicator. The reliability test was measured from the composite reliability value. Composite reliability value > 0.7 means that all question items in this study are reliable.

Table 2. R Square

	R Square	R Square Adjusted
Digital collaboration	0.657	0.647
Digital skill	0.876	0.832

The value of R Square can be seen in Table 2. This study has a relevant value where 65.7% of the Digital collaboration variable can be explained by Digital leadership variables while 34.3% is explained by other factors. 87,6% of the Digital skill variables can be explained by Digital collaboration, Digital leadership variables while 12.4% are explained by other factors.

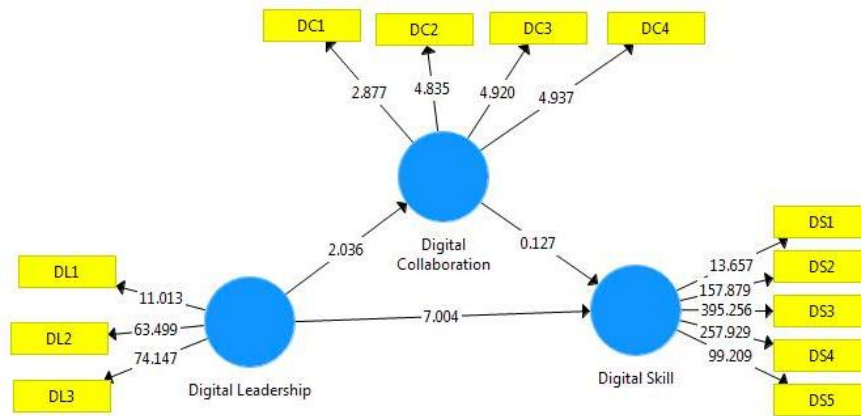


Fig 2 Hypotheses Testing

Table 3. Hypotheses Testing

Hypotheses	Relationship	P Values	Decision
H1	Digital leadership -> Digital collaboration	0.002	Supported
H2	Digital leadership -> Digital skill	0.001	Supported
H3	Digital collaboration -> Digital skill	0.000	Supported

A. Digital Collaboration Relationship To Digital Skills

Based on the results of the analysis, the p value of $0.002 < 0.050$ was concluded that Digital collaboration had a significant effect on digital skills. This result is in line with research by Malik et al. (2020); Quddus et al. (2020); Rahmadani et al. (2020) that Digital collaboration has a significant effect on digital skills. An increase in the Digital collaboration variable will encourage a significant increase in the digital skill variable, and a decrease in the Digital collaboration variable will encourage a decrease in the digital skill variable. Digital leadership has a key role and takes a leading position in terms of leadership in the digital era. Digital leadership skills allow a leader to leverage technology and data to lead a company. Digital leadership helps a leader to make objective decisions. The decisions of digital leaders tend to be more correct. This is what makes his leadership stronger and more preferred by employees.

B. The Relationship Between Digital Leadership And Digital Skills

Based on the results of the analysis, the p value of $0.001 < 0.050$ was concluded that Digital leadership has a significant effect on digital skills. This result is in line with the research by Supriadi et al. (2020); Singgih et al. (2020); Schreurs et al. (2014). An increase in the Digital leadership variable will encourage a significant increase in the digital skill variable, and a decrease in the Digital leadership variable will encourage a decrease in the digital skill variable. Digital leadership can increase employee loyalty. The percentage of employees to stay in the company even reached 21% higher. Even if they have the opportunity to quit, not a few employees choose to stay. Companies that implement digital leadership tend to be more inclusive and recognize its positive impact on work culture. In addition, the proportion of employees is also more flexible. When compared to companies that do not adopt digital leadership, the proportion of female employees is even higher.

C. Digital Leadership Relationship To Digital Collaboration

Based on the results of the analysis, the p value of $0.000 < 0.050$ was concluded that Digital leadership has a significant effect on digital collaboration. This result is in line with research by Wang et al. (2015); Zheng et al. (2020); Purwanto et al. (2020) that Digital leadership has a significant effect on digital collaboration. According to Putra et al. (2020); Purwanto et al. (2019) that Digital leadership has a significant effect on digital collaboration. An increase in the Digital leadership variable will encourage a significant increase in the digital collaboration variable, and a decrease in the Digital leadership variable will encourage a decrease in the digital collaboration variable. As many as 76% of the 4,000 executives who adopted digital leadership were able to score greater profit growth. They also have higher acceptance when compared to executives who still use traditional leadership. Digital leadership uses a lot of data in decision making. Although input from experts and trusted people is still used, the basis is still data. That's what makes companies with digital leadership able to make better decisions. A digital leader has a clear vision and understands how technology and data can help achieve that vision. Not only that, they also know how to use it to achieve company goals

IV. Conclusion

The development of digital skills is important because it will determine the productivity of office employees both in private companies and in the public sector. Digital skills are employee skills in utilizing digital technology which include digital mindset, technical skills, communication, and also digital technology-based analytical skills. Theoretically, the development of digital expertise can be driven from two directions, namely: vertically and horizontally. Development from the vertical direction through the leadership of superiors or supervisors, while from the horizontal direction through collaboration among colleagues. In the context of working-from-home, where the supervisor or supervisor cannot interact or have direct contact with the work team every day, the effect of the vertical direction is not significant. The development of digital skills turned out to be more influenced by the collaboration of employees with their co-workers, both from within the work unit, outside the work unit, and even with external parties. Supervisor leadership during work-from-home settings is more optimally geared towards encouraging and supporting digital collaboration. Supervisor support for digital collaboration can be strengthened by taking into account: the characteristics of the work team, type of work, quality of collaboration, and the availability of digital technology in the employees' homes. Through the mental attitude and expertise in leading these supervisors or superiors, collaboration is expected to develop the digital skills of employees who run alternative work arrangements in the form of work-from-home.

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