

THE INFLUENTIAL FACTORS OF WORK PRODUCTIVITY DURING COVID-19: THE EFFECT OF DIGITAL SKILL, COLLABORATION, AND ORGANIZATIONAL SUPPORT

Comment [i-[1]: Double “kata” dan “makna” Dipertimbangan diubah dengan “The role from”.

FAKTOR-FAKTOR BERPENGARUH TERHADAP PRODUKTIVITAS KERJA SEMASA COVID-19: DAMPAK KETERAMPILAN DIGITAL, KOLABORASI, DAN DUKUNGAN ORGANISASIONAL

Comment [i-[2]: Dipertimbangan untuk mengganti dengan kata “Peran dari”.

Nopriadi Saputra¹, Hesty Aisyah², Dyah Palupiningtyas³, Farid Ardiansyah⁴, Hayat⁵, Okta Karneli⁶, Bahri⁷, Khanifatul Khusna⁸
BINUS Business School, Bina Nusantara University, DKI Jaya¹
Faculty of Information System, STIMIK Indonesia, Padang Sumatera Barat²
STIE Pariwisata Indonesia, Semarang Jawa Tengah³
Universitas Trunojoyo, Bangkalan Madura⁴
Fakultas Ilmu Administrasi, Universitas Islam Malang, Malang Jawa Timur⁵
FISIP, Universitas Riau, Pekanbaru Riau⁶
Faculty of Economics, Universitas Widy Mataram, Sleman Yogyakarta⁷
Fakultas Ekonomi dan Bisnis, Universitas Jember, Jember Jawa Timur⁸

email: nopriadi.saputra@binus.ac.id

ABSTRACT

For controlling the negative impact of Covid-19 outbreak, the Indonesia government instructs the citizen to work from home. Unfortunately, the productivity of work from home is still questioned. This article is an attempt to elaborate work productivity and the effect of digital skill, digital collaboration, and perceived organizational support (POS) as drivers. For supporting the arguments, this article has conducted a quantitative study which involved 824 working citizens as the respondents from all over Indonesia. The respondents are mostly the first timers in doing working from home as work arrangement in governmental institution and private organizations. The gathered data were structured by PLS SEM and analyzed by SmartPLS application version 3. The result reveals digital skill plays as a mediator in the linkage between work productivity and digital collaboration. Digital skills and POS affect directly on work productivity, but digital collaboration impacts indirectly.

Keywords: productivity, digital skill, collaboration, POS

ABSTRAK

Untuk mengendalikan dampak negatif dari wabah Covid-19, pemerintah Indonesia menginstruksikan warganya untuk bekerja dari rumah. Sayangnya, produktivitas bekerja dari rumah masih disangsikan. Artikel ini berupaya untuk membahas mengenai produktivitas kerja dan pengaruh dari keterampilan digital, kolaborasi digital, dan perceived organizational support (POS) sebagai faktor-faktor penyebab. Untuk memperkuat argumentasi yang dikembangkan, artikel ini telah melakukan studi kuantitatif yang melibatkan 824 pegawai dari berbagai wilayah di Indonesia sebagai responden. Responden sebagian besar merupakan pegawai yang pertama kali melakukan pengaturan kerja dari rumah di instansi pemerintah dan organisasi swasta. Data yang dikumpulkan distrukturkan menggunakan PLS SEM dan dianalisis dengan aplikasi SmartPLS versi 3. Hasil analisis mengungkapkan bahwa keterampilan digital memainkan peran mediasi dalam hubungan antara kolaborasi digital dan produktivitas kerja. Keterampilan digital dan POS berpengaruh langsung pada produktivitas kerja, tetapi kolaborasi digital berdampak tidak langsung terhadap produktivitas kerja.

Kata kunci: produktivitas, keterampilan digital, kolaborasi, POS

Comment [i-[3]: Ada dua “kalimat kunci” yang kurang dan tidak nampak di “ABSTRAK”. Pertama para pengarang wajib menyorot “implikasi” dan kedua adalah “kelemahan” atau “agenda masa depan” mengacu kelemahan/keterbatasan studi. Tambahkan minimal 1-2 kalimat lagi.

INTRODUCTION

In the interconnecting world, the multiplier effect of morbidity and mortality from a disease has become threatening during the pandemics (McKibbin & Fernando, 2020). The pandemics impacts obviously on slowing down economic growth. The economic indicators are dropping down significantly. It depends on how population proportion that get ill, how the fatality level is, and how many citizens do not go to the office for avoiding the disease (Wren-Lewis, 2020). The pandemics has altered various aspects of human civilization profoundly. It forces the workplace migration from work centrally at office into remotely at homes. Working from home was stimulated by fast growth of Covid-19 victims and supposed to be a successful way to knock down the victim curve. The Indonesia authority commanded all working citizens to apply work from home during the pandemics.

It is only about 37 percent jobs may be conducted at home entirely in the USA (Dingel & Neiman, 2020). Immediate instruction for working at home makes employee productivity, business survivability, and growth of national economic dropped. The job composition that can be accomplished at home is a necessary contribution for assessing the commercial accomplishment during the period of social distancing (Dingel & Neiman, 2020). Work productivity may differ individually and substantially when it is conducted from home rather than from the company location as conventional workplace. Considering this point of views, work productivity during pandemics becomes an important issue in perspectives of micro and macroeconomic.

When it is compared to conversional work arrangement, work from home was projected to earn various advantages (e.g., had less sick days, took fewer time off, took shorter breaks, diminished carbon releases) and overcoming many obstacles such as job position, skill level, space, level of income, and gender (Bakker et al., 2019). The empirical research discovered that the higher skillfulness level, the larger composition of qualified staffs in the workplace, the more probable is work from home arrangement to be endorsed as fixed employment choice (Felstead et al., 2002). The work productivity is triggered by having a personal setting, which makes employee easier to accomplish the works. Offices becomes distracting places for working. The productivity of work from home is produced by the fact that citizens worked from home in the extended periods rather than at office (Bloom, 2014).

As an optional working scheme, the work productivity tend to be distrusted by the companies, particularly for the companies that implement work from home broadly at the first time. Various studies have explained that work from home provide many advantages for organizations and workers. Regrettably for the organizations, it is difficult to comply with. They need to study work productivity and to scrutinize impact of the influential drivers. Lots of studies also explained that there are various influential factors impact on the work productivity. Work hour is an influential driver. Doing work from home which is less than 18 hours a week makes a higher encouraging effect on productivity rather than fulltime setting (Kazekami, 2018). The trust and support from the supervisor, lessened communication with co-workers, the readiness of the working resource at

home, opportunity to provide family care were identified as the influential factors of work productivity at home (Nakrošienė et al., 2019).

This article has utilized organizational behavior theory (Uhl-Bien et al., 2020) as main conceptual framework. Work productivity is considered as individual behavior in the context of organization. As a behavior, productivity of workers is triggered simultaneously by individual, group, and organizational factors. This study determines that digital skill as personal driver of work productivity which emerge from the internal of people itself. Digital collaboration as group driver of work productivity which derived from people directly interact in daily organizational activity. Ultimately, POS was determined as organizational driver which happened and provides by the organization. According to all previous explanation, this study attempts to elaborate the work productivity and to examine its impactful drivers. Are digital skill, digital collaboration, and POS as influential factors for work productivity during COVID-19 pandemics?.

REVIEW OF LITERATURE AND HYPOTHESIS DEVELOPMENT

Work Productivity.

Since 1990's, work from home was already known as virtual or remote working, teleworking, or telecommuting which is specified as a remote work scheme that tolerates employees working remotely from various locations rather than from office conventionally in permanent or transitory basis (Maruyama et al., 2009). Work from home as an unconventional work arrangement is used for developing social presence by enabling people with particular constraints for contributing to the labor force (Bosua et al., 2017). Associated to the case of Covid-19, work from home is considered as an option which offers chances for safeguarding people for being diseased by infections in the unrestricted area. Work from home is organized on temporary base at the beginning in Indonesia (Ratnasari et al., 2021).

The number of studies indicate that work from home provides temporal-spatial flexibility (Baruch, 2000), improves work-life harmony while it also lessens traffic blocking (Maruyama & Tietze, 2012), lowering stress level and infrastructure costs, and improves productivity (Troup & Rose, 2012). The empirical research in eleven Malaysian oil and gas companies had exposed that WFH results on work-family balance, job self-government, occupational level, and work productivity (Khan et al., 2018).

The other research paper uncovered that work from home has a vulnerable but constructive association with fit work quality. It indicates that there are other influential factors on work quality rather than work productivity (Onyemaechi et al., 2018). This article defines the work productivity as personal accomplishment of a working during pandemic which is compared with conventional arrangement. This article used self-reported productivity. Based on worker's perception whether she or he achieved better outcome objectively (faster, more quantity, and more accurate) and subjectively (happier, more focused, more creative). It is adapted from "how effective is telecommuting" (Allen et al., 2015).

Comment [i-4]: Apa yang menjadi motivasi kontribusi dalam studi? Tolong dijabarkan. Selain belum ada kerangka/organisasi pada struktur makalah. Mis: **Bagian/fase/poin 1: menyroti fenomena, publikasi terdahulu, dan menggagas motivasi kajian, ...dst.**

Comment [i-5]: Ini termasuk "LITERATURE REVIEW & PENGEMBANGAN HIPOTESIS". Lebih praktisnya, masukkan ke BAB baru dan pisahkan dengan "PENDAHULUAN", agar tidak menjadi penafsiran ganda oleh pembaca.

Comment [i-6]: Mohon disitasi dan ditambahkan di "REFERENSI", terkait dengan pembatasan mobilitas di tempat kerja, dimana ini dilemma oleh krisis COVID-19.

Digital Skill.

Comment [1-[7]: LITERATURE REVIEW.

Based on organizational behavior (Uhl-Bien et al., 2020), ability or skill or competence is one of important factor which influence the work productivity. In work from home context, digital skill is needed. Previous study demonstrates that the advanced digital skill will activate work performance effectively and efficiently. Digital skills are applicable not only for workers in ICT related or high tech, but also to all conventional businesses too. The increasing digital technology utilization has been boosting the productivity in every economic sectors (Funes et al., 2018). Digital skill come to be a necessity for business organization. Profit growth and increased productivity in fascinating business outcomes, are going to be achieved by the companies which have implemented digital technology. Conventional businesses which do not adopt an integrated approach and developing workers with digital skills, are failing to seize a significant opportunities digital workplace could convey (Attaran et al., 2019).

Digital skills cover various abilities related to digital technology from the basic digital literacy as generic digital ability for the workers, and the specific digital mastery for the ICT professionals. Digital skills required by the workforce are possible to differ across sectors, there will be several least requirements related to information processing that will be applicable for all over sectors (Motyl et al., 2017). This article adapted concept developed by previous study (Van Deursen et al., 2016) about measuring digital skill. Digital skills cover four dimensions: digital mindset, digital technical, digital communication, and digital analytics. According to OECD Economic Policy Paper (Sorbe et al., 2019) digital technology can leverage firm productivity. The gains from digital resources have been concerted among the most industrious firms, which benefit from the organizational and human and capital. Based on the report, this article tries to formulate hypothesis that digital skill impact on work productivity positively and significantly.

H1: Digital skill has positive impact on work productivity significantly.

Digital Collaboration.

Beside individual capability, as behavior in organizational context, work productivity is affected by group or societal factors. Personal capability to cooperate with each other is also a necessary factor of work productivity (Uhl-Bien et al., 2020). Collaboration is a well-defined and mutual-beneficial connection among two or more entities for reaching common goals. Collaboration is frequently utilized as a vehicle for dealing with complex issues (Green & Johnson, 2015). In the context of working from home, collaboration is performed through internet connection. This article employs digital collaboration as the construct and is explained as collaboration by utilizing digital technology among employees with external partners or internal peers for accomplishing tasks (Kock, 2009). By considering the previous study (Easley et al., 2003), digital collaboration is measured based on four aspects: technology usage, collaboration quality, job type, and team characteristics.

Previous study explains that collaboration influences productivity. In academic research, scientists who had collaboration with industry produced more publications rather than scientists without industrial collaboration. Collaboration made scientists' productivity higher (Bikard et al., 2019). In partnership-based supply chain, collaboration impact on commitment, innovation, and performance of the firms (e.g. Purwadi et al., 2022; Shin et al., 2019). Based on those tested facts, this article makes hypothesis that digital collaboration has an effect on work productivity.

H2: Digital collaboration has positive impact on work productivity significantly

Several empirical studies have proven that collaboration influence skill development. In education, collaborative learning approach had a positive impact on the students' performance as compared to the conventional learning approach. Ability to learn collaboratively impact on student's ability to solve statistical cases (Allan, 2018). In manufacturing, quality circle programs influence positively on skill improvement. Skills can be improved through planned interventions in collaboration on the job (Kim et al., 2016). Relating to the evidence, this article tries to arrange hypothesis that digital collaboration has positive impact on digital skill significantly.

H3: Digital collaboration has positive impact on digital skill significantly

Perceived Organizational Support.

Beside skill as individual factor and collaboration as group factor, this article views that work productivity is influenced by organizational factors too. Perceived organizational support (POS) is perceived as organizational factor on this study. POS is a general perception of the employees about the extent to which the company appreciate the employees' contributions and well-being (Kurtessis et al., 2017). Employee who believes that the company considers him or her fairly and care about his or her welfare will think obligated to come back with raised commitment, loyalty, and performance (Eder & Eisenberger, 2008). When company delivers support to the employees and appreciates contributions of the employees, they will react with constructive behaviors at work (Lyubovnikova et al., 2018) such as enhanced performance and effort (Kim et al., 2017).

At the beginning for assessing POS, the previous research used questionnaire with 32 indicators but then applying only eight indicators with sufficient psychometric properties in which each respondent is requested to indicate the response on a seven-point scale (Eisenberger et al., 1986). This article assesses POS into four aspects, such as: employee welfare, working conditions, development, and rewards. Earlier empirical study has proven that work productivity and POS reciprocally affected each other. In a laundry plants, wellness and post-program health participation make significant effect on work productivity. POS in well-being of the employees has positive effect about 10% on work productivity (Gubler et al., 2018). The empirical study on 88 teams from 13 health care organizations in the United Kingdom proved that POS influenced on collective and personal work productivity (Lyubovnikova et al., 2018). Relating to the empirical facts, this article will test the hypothesis: POS impacts on work productivity.

H4: POS has positive impact on work productivity significantly

Prior empirical study on 916 nurses from seven publicly funded medical facilities in Japan concluded that good relationship with their organization is believed is effective for improving clinical competency in nurses with five or more years of experience (Sasaki et al., 2019). The empirical study on 224 teachers from 36 urban elementary schools in USA concluded that “CARE for Teachers’ program as POS intervention in educational organization had impacted on teachers’ social and emotional competence and the quality of classroom learning (Jennings et al., 2017). In Italian, POS influenced self-competence of nurses in two hospitals (Battistelli et al., 2016). Based on those empirical facts, this article proposes a hypothesis to test:

H5: POS has positive impact on digital skill significantly

Empirical study about impact of POS on collaboration is still limited. This article found impact of POS on team effectiveness (Howes et al., 2000), knowledge sharing behavior (Le & Lei, 2019), and team learning behavior (M. Kim, 2017). Based on the empirical facts, this article makes hypothesis:

H6: POS has positive impact on digital collaboration significantly

This article employed organizational behavior theory (Uhl-Bien et al., 2020) as central conceptual theory. Work productivity is considered as behavior in a certain organization. As a behavior, work productivity is stimulated by various factors in personal, group, organizational scopes. This article considered that digital skill as personal factor of work productivity which emerge from the internal of employee itself. Digital collaboration as group factor of work productivity which derived from others who directly or indirectly interact in daily routine activities. Finally, POS was defined as organizational factor which happened and provided by company as the organization. According to all previous explanation, this article attempts to examine the influence of organizational, group, and personal factors on work productivity. Are digital skill, digital collaboration, and POS influential factors on work productivity?

Comment [i-[8]: Sebuah “penekanan kalimat yang membingkan dan tidak perlu. Mengapa ada kalimat pertanyaan di akhir paragraf “hipotesis

METHOD

This article was established on quantitative study about Indonesia citizen who work for the organization at the office previously. Data was gathered by spreading the online questionnaires through the social media to personal and professional network of the researcher team. The researchers came from eight higher educational institutions, such as Universitas Bina Nusantara (Jakarta), STMIK Indonesia (Padang), STIE Pariwisata Indoensia (Semarang), Universitas Trunojoyo (Madura), Universitas Islam Malang (Malang), Universitas Riau (Pekanbaru), Universitas Widya Mataram (Yogyakarta), and Universitas Jember (Jember).

This article involved about 824 working citizens as the respondents. Most of the respondents are working for an organization permanently (75%), and rest of them are serving for many organizations independently. The biggest group of respondents are working for private companies (40%) and governmental institution (28%). Based on organizational structure, the respondents are divided into functionalist who are responsible for functional positions as specialist, expert,

or advisor (37%) and generalist who has structural position in their organization (63%). The generalist category is distributed into individual contributor (36%) and as structural managers (27%). The respondents experience work from home as work arrangement in the first-time about 69%. Only 19% of them ever conduct work from home before Covid-19 pandemics.

This article involved working citizen from all over Indonesia, from 32 provinces in Indonesia. Based on demographical indicators, the respondents are categorized by gender equally – male and female. Most of them (64 %) are with age older than 30 year old with work experience longer than five years in the organization (72%). They have master or bachelor's degree as educational background (70%). Most of the respondents (81%) came from six provinces (Jakarta, Yogyakarta, Jawa Barat, Sumatra Barat, Jawa Tengah, and Jawa Timur). Generally, they came from two biggest Indonesia islands: in Sumatera about 21% and Jawa about 70%. For further information about the profile of respondent is displays in Table 1.

TABLE I THE PROFILE OF RESPONDENTS

		Description		
Gender	Male	415	50%	50%
	Female	409	50%	100%
Age	Until 20	12	1%	1%
	21 – 30	283	34%	36%
	31 – 40	259	31%	67%
	41 - 50	169	21%	88%
	51 – 60	91	11%	99%
	> 60	10	1%	100%
Education	Diploma	67	8%	8%
	Bachelor	249	30%	38%
	Master	330	40%	78%
	Doctoral	79	10%	88%
	Others	99	12%	100%
Years of service	0 - 2 years	94	11%	11%
	3 - 5 years	135	16%	28%
	6 - 10 years	174	21%	49%
	11- 20 years	231	28%	77%
	21- 30 years	135	16%	93%
	> 30 years	55	7%	100%
WFH Experience	First timer	572	69%	69%
	Ever before	53	6%	76%
	Usually before	153	19%	94%
	Others	46	6%	100%
Institution	Government	230	28%	28%
	State owned	38	5%	33%
	Private	327	40%	72%

	Multinational	22	3%	75%
	Others	207	25%	100%
Position	Staff	295	36%	36%
	Supervisor	84	10%	46%
	Manager	53	6%	52%
	Senior Manager	25	3%	55%
	Director	40	5%	60%
	Owner	24	3%	63%
	Others	303	37%	100%
	Location	Jawa Timur	284	34%
Jawa Tengah		113	14%	48%
Sumatera Barat		110	13%	62%
Jawa Barat		56	7%	68%
DKI Jakarta		54	7%	75%
DI Yogyakarta		48	6%	81%
Rest of Jawa		23	3%	83%
Sumatera		60	7%	91%
Kalimantan		44	5%	96%
Sulawesi		20	2%	99%
Papua		12	1%	100%

Source: compilation by Authors.

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Because this article is based on exploratory research, PLS SEM or partial least squares structural equation modeling as variance-based SEM is applied for statistical analysis by using SmartPLS application version 3. The second order constructs are applied for the research model. All variables are revealed into several aspects or dimensions and each dimension is measured by several indicators.

Work productivity is adjusted from “how effective is telecommuting” concept (Allen et al., 2015). The construct of work productivity is explained into two aspects: objective outcome - which measured by WFH03, WFH02, and WFH01 and subjective outcome which measured by WFH06, WFH05, and WFH04.

Digital skill is adapted previous study (Van Deursen et al., 2016) about measuring digital skill. In this article, digital skill is explained by four dimensions: digital technical (DIS01, DIS02); digital communication (DIS03, DIS04); digital analytics (DIS05, DIS06), and digital mindset (DIS07). Digital Collaboration is adapted from concept of technological use in collaboration (Easley et al., 2003).

Digital collaboration is described into characteristics (KOL02, KOL01), job type (KOL04, KOL03), quality (KOL06, KOL05) and technology use (KOL08, KOL07). Perceived organizational support (POS) is modified from previous research (Lynch et al., 1999). POS is explained in appreciation (POS02, POS01); development (POS04, POS03); working condition (POS06, POS05) and well-being (POS08, POS07).

Measurement Model

This article applied second order construct for the measurement model. It means that all variables were described into dimensions and indicators. Figure 1 shows the measurement model. Table II and Table III provides the result of reliability and validity analysis on the measurement model. Validity analysis on indicators uses scores of outer loading factor or loading (OL), meanwhile validity analysis on variables and its dimensions by using convergent and/or discriminant validity. Reliability analysis is established on internal consistency and/or composite reliability. Table II present the scores of average variance extracted (AVE). Composite reliability (CR), Cronbach's alpha (CA), and outer loading (OL). Table III presents the discriminant validity. For validity analysis on indicators, OL score is used as parameter. An indicator or item is valid, when the OL score higher than 0.6 0 for exploratory study or higher than 0.70 for confirmatory (Henseler et al., 2014). Because this article is based on exploratory study, an indicator is valid when OL score more than 0.60. Table II informs that OL score of all indicators of all variables are more than 0.60 even more than 0.70. It means that all indicators of the measurement model are valid.

TABLE II VALIDITY AND RELIABILITY ANALYSIS

DIMENSION	ITEM	OL	CA	CR	AVE
WORK PRODUCTIVITY			0.893	0.920	0.654
Objective Outcome	WFH01	0.864	0.779	0.877	0.700
	WFH02	0.906			
	WFH03	0.724			
	WFH04	0.853			
Subjective Outcome	WFH05	0.904	0.852	0.909	0.772
	WFH06	0.877			
DIGITAL SKILL			0.873	0.903	0.571
Digital Technical	DIS01	0.915	0.769	0.896	0.812
	DIS02	0.887			
Digital Communication	DIS03	0.816	0.611	0.836	0.718
	DIS04	0.878			
Digital Analytics	DIS05	0.918	0.810	0.913	0.840
	DIS06	0.915			
Digital Mindset	DIS07	1.000	1.000	1.000	1.000
DIGITAL COLABORATION			0.874	0.901	0.534
Characteristics	KOL01	0.857	0.587	0.829	0.707
	KOL02	0.824			
Job Type	KOL03	0.839	0.598	0.833	0.713
	KOL04	0.850			
Quality	KOL05	0.898	0.768	0.896	0.812
	KOL06	0.904			
Technological Use	KOL07	0.937	0.852	0.931	0.871
	KOL08	0.929			
PERCEIVED ORG. SUPPORT			0.935	0.946	0.688
Appreciation	POS01	0.907	0.792	0.906	0.828
	POS02	0.911			

Comment [i-[9]: Sebaiknya "tidak memberi warna" atau "marka" apapun meski tujuannya adalah memberi tanda/sinyal tertentu bahwa output empiris negatif, bertolak belakang dengan hipotesis, maupun disorot eksplisit.

Development	POS03	0.898	0.769	0.896	0.812
	POS04	0.904			
Working Condition	POS05	0.950	0.891	0.949	0.902
	POS06	0.950			
Well-Being	POS07	0.919	0.824	0.919	0.850
	POS08	0.926			

Source: compilation by Authors.

Note: OL = Outer Loading, CA = Cronbach's Alpha

CR = Composite Reliability, AVE + Average Variance Extracted

TABLE III DISCRIMINANT VALIDITY ANALYSIS

	1	2	3	4	5	6	7
1 Appreciation	0.91						
2 Characteristics	0.46	0.84					
3 Digital Analytics	0.29	0.42	0.9				
4 Digital Communication	0.25	0.41	0.68	0.85			
5 Development	0.76	0.45	0.31	0.23	0.90		
6 Digital Mindset	0.25	0.36	0.62	0.56	0.29	1.00	
7 Digital Technical	0.25	0.35	0.57	0.59	0.25	0.51	0.90
8 Job Type	0.41	0.63	0.40	0.37	0.38	0.38	0.34
9 Objective Outcome	0.26	0.32	0.39	0.30	0.27	0.28	0.31
10 Quality	0.44	0.64	0.4	0.41	0.47	0.38	0.38
11 Subjective Outcome	0.24	0.29	0.39	0.32	0.28	0.30	0.31
12 Technological Use	0.37	0.53	0.59	0.60	0.39	0.52	0.57
13 Well-Being	0.75	0.46	0.29	0.26	0.69	0.26	0.27
14 Working Condition	0.73	0.46	0.30	0.26	0.76	0.26	0.22
	8	9	10	11	12	13	14

1 Appreciation							
2 Characteristics							
3 Digital Analytics							
4 Digital Communication							
5 Development							
6 Digital Mindset							
7 Digital Technical							
8 Job Type	0.84						
9 Objective Outcome	0.27	0.84					
10 Quality	0.56	0.28	0.91				
11 Subjective Outcome	0.25	0.78	0.28	0.88			
12 Technological Use	0.51	0.34	0.61	0.35	0.93		
13 Well-Being	0.40	0.31	0.4	0.27	0.38	0.92	

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Comment [i-[11]: Dihitamkan kembali (terkecuali untuk Gambar, silakan berwarna).

14	Working Condition	0.26	0.38	$\begin{matrix} 2 \\ 0.8 \\ 0 \end{matrix}$	0.26	0.38	0.80	$\begin{matrix} 0.9 \\ 5 \end{matrix}$
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For validity analysis on variables or dimensions, this article used squared root of AVE for discriminant validity and AVE score for convergent validity. A dimension or variable is convergent valid, when score of AVE higher than 0.5. Table II presents AVE scores of all variables and its dimension are more than 0.5; it means that all dimensions and variables are convergent valid. Table III presents all squared root of AVE (diagonally bold blue colored scores) are higher than 0.7. It concludes that all dimensions of all variables are discriminant valid. Considering on validity analysis on item, convergent, and discriminant; measurement model of this article has valid indicators, dimensions, and variables.

For reliability analysis of variables or dimensions, this article used CA scores for internal consistency reliability and CR scores for composite reliability. Table II demonstrates all variables and its dimension has CA scores are higher than 0.7; except characteristics and job type. It means that all variables and dimension are internal consistency reliable, except characteristics and job type. Table II displays CR scores of all dimensions and variables are more than 0.7. It concludes that all dimensions and variables are composite reliable. According to the result of reliability analysis, this article uses research model with reliable variables and dimensions as a whole for measurement and hypothesis testing.

RESULTS AND DISCUSSION

In second order model, the variable is reflected into several dimensions and dimension is measured by several indicators. Table IV displays *p*-Values, *t*-Statistics, and path coefficient of all variables to its dimensions. All of *p*-Values scores are 0.000 and *t*-Statistics scores are ranging from 35.61 to 241.36. If *p*-Values scores less than 0.05 or *t*-Statistics scores more than 1.96; those mean that all path coefficients from variables to its dimensions are reflected significantly. All variables of measurement model are reflected significantly on its dimensions.

TABLE IV ANALYSIS OF MEASUREMENT MODEL

VARIABLE	DIMENSION	PATH COEF.	<i>t</i> -STATISTICS	<i>p</i> -VALUE	REMARK
Work	Objective Outcome	0.95	183.03	0.00	Significant
Productivity	Subjective Outcome	0.94	241.36	0.00	Significant
Digital Skills	Digital Technical	0.81	49.48	0.00	Significant
	Digital Communication	0.86	68.84	0.00	Significant
	Digital Analytics	0.88	85.69	0.00	Significant
	Digital Mindset	0.76	35.61	0.00	Significant
Digital Collaboration	Characteristics	0.83	55.26	0.00	Significant
	Job Types	0.81	42.85	0.00	Significant

	Quality	0.86	72.31	0.00	Significant
	Technology Use	0.82	53.65	0.00	Significant
POS	Appreciation	0.91	96.76	0.00	Significant
	Development	0.89	88.53	0.00	Significant
	Working Condition	0.97	118.02	0.00	Significant
	Well-Being	0.91	105.42	0.00	Significant

Source: compilation by Authors.

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Work productivity is reflected into objective outcome (0.94) and subjective outcome (0.95) equally and significantly. Digital skill is described into digital technical (0.81), digital communication (0.86), digital analytics (0.88) and digital mindset (0.77) significantly. Digital collaboration is explained into characteristics (0.83), job type (0.80), quality (0.87), and technology use (0.82) significantly and equally. POS is explained by appreciation (0.91), development (0.89), working condition (0.92), and well-being (0.91) significantly. The research model is shown in Figure 1 which describes structural and measurement model. Measurement model demonstrates the connection variables and its dimensions and indicators. Meanwhile, structural model explains the association among variables. Hypothesis testing was conducted for examining the structural model. The result of hypothesis testing is displayed in Table V.

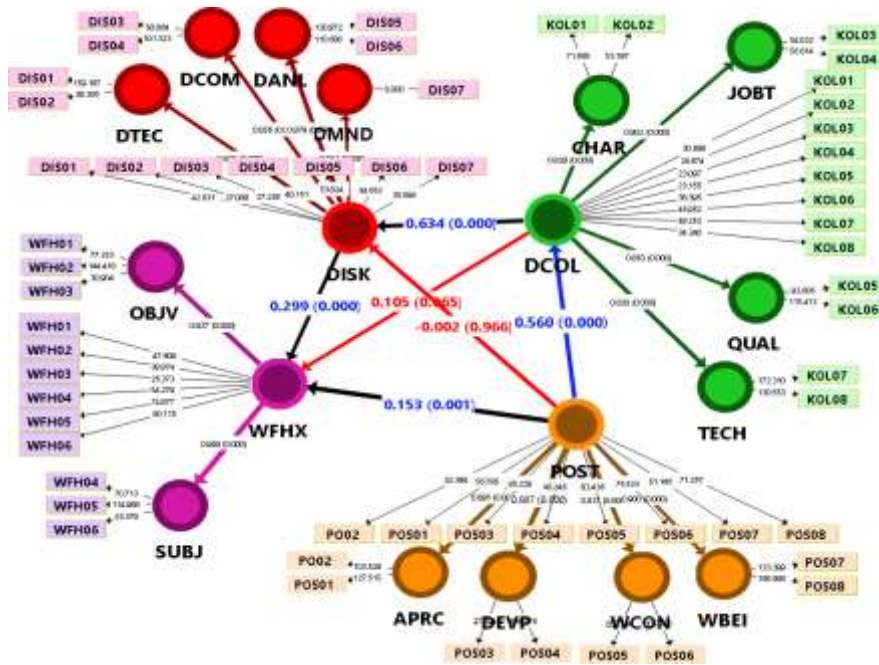


FIGURE 1 TESTED RESEARCH MODEL

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Because its path coefficient having t -Statistics more than 1.98 or p -Value less than 0.05; four hypotheses (H1, H3, H4, and H6) are accepted. It means that the path coefficient is not zero and it explains there is significant impact between one variable to another. The other hypotheses (H2 and H5) are rejected. Because its path coefficient is not significant. The path has t -Statistics less than 1.98 or p -Values more than 0.05. The result of hypothesis explains that work productivity is influenced significantly by digital skill and POS significantly. Digital collaboration does not influence work productivity significantly.

TABLE V HYPOTHESIS TESTING

Hypotheses	Path Coef.	t -Statistics	p -Values	Conclusion
H1: Digital Skill \Rightarrow Work Productivity	0.30	5.84	0.00	Accepted
H2: Digital Collaboration \Rightarrow Work Productivity	0.11	1.84	0.07	Rejected
H3: Digital Collaboration \Rightarrow Digital Skill	0.64	15.64	0.00	Accepted
H4: POS \Rightarrow Work Productivity	0.15	3.34	0.00	Accepted
H5: POS \Rightarrow Digital Skill	-0.00	0.04	0.97	Rejected
H6: POS \Rightarrow Digital Collaboration	0.56	19.11	0.00	Accepted

Source: compilation by Authors.

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POS also influence digital collaboration significantly but does not influence digital skill significantly. Digital collaboration influences digital skill significantly. According to the result of hypothesis testing, digital collaboration influences work productivity indirectly. Digital collaboration influences digital skills and then digital skills influences work productivity. Digital skill plays as a mediator in the connection between digital collaboration and work productivity. POS impacts on digital skill indirectly. POS impacts on digital collaboration and then digital collaboration impacts on digital skill. Digital collaboration plays as a mediator in the influence of POS on digital Skill.

CONCLUSION

Digital skill of working citizen and POS of the organization are the influential driver for work productivity. Digital collaboration is not a driver for work productivity. It influences work productivity indirectly. Digital collaboration which improves the digital skill of working citizen will impact on work productivity.

For the future studies, it is recommended to use other factors which influenced productivity in individual, group and organizational scope. The collecting data may be expanded in collecting data in Kalimantan, Sulawesi, Papua, and small islands in Indonesia.

REFERENCES

- Allan, B. G. M. (2018). Impact of the 21st Century Skill (Collaboration Skills) on Students' Academic Performance in Nature of Statistics at Mukuba University. *International Journal of Innovative Science and Research Technology*, 3(7), 738–744.
- Allen, T. D., Golden, T. D., & Shockley, K. M. (2015). How effective is

Comment [i-[13]: Bagian "KESIMPULAN" ter singkat. Idealnya, struktur di "Paragraf 1" adalah luaran kajian. Lalu, "Paragraf 2" mengagendakan "Arah Penelitian Masa Depan". Khusus di "Paragraf 3": Implikasi Teoritis & Manajerial dan terakhir "Paragraf 4" mempertegas rekomendasi/saran.

- telecommuting? Assessing the status of our scientific findings. *Psychological Science in the Public Interest*, 16(2), 40–68.
- Attaran, M., Attaran, S., & Kirkland, D. (2019). The need for digital workplace: increasing workforce productivity in the information age. *International Journal of Enterprise Information Systems (IJEIS)*, 15(1), 1–23.
- Bakker, A. B., Du, D., & Derks, D. (2019). Major life events in family life, work engagement, and performance: A test of the work-home resources model. *International Journal of Stress Management*, 26(3), 238.
- Baruch, Y. (2000). Teleworking: benefits and pitfalls as perceived by professionals and managers. *New Technology, Work and Employment*, 15(1), 34–49.
- Battistelli, A., Galletta, M., Vandenberghe, C., & Odoardi, C. (2016). Perceived organisational support, organisational commitment and self-competence among nurses: a study in two Italian hospitals. *Journal of Nursing Management*, 24(1), E44–E53.
- Bikard, M., Vakili, K., & Teodoridis, F. (2019). When collaboration bridges institutions: The impact of university–industry collaboration on academic productivity. *Organization Science*, 30(2), 426–445.
- Bloom, N. (2014). To raise productivity, let more employees work from home. *Harvard Business Review*, January–February.
- Bosua, R., Kurnia, S., Gloet, M., & Mendoza, A. (2017). Telework impact on productivity and well-being: An Australian study. In *Social inclusion and usability of ICT-enabled services* (pp. 187–207). Routledge.
- Dingel, J. I., & Neiman, B. (2020). How many jobs can be done at home? *Journal of Public Economics*, 189, 104235.
- Easley, R. F., Devaraj, S., & Crant, J. M. (2003). Relating collaborative technology use to teamwork quality and performance: An empirical analysis. *Journal of Management Information Systems*, 19(4), 247–265.
- Eder, P., & Eisenberger, R. (2008). Perceived organizational support: Reducing the negative influence of coworker withdrawal behavior. *Journal of Management*, 34(1), 55–68.
- Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). Perceived organizational support. *Journal of Applied Psychology*, 71(3), 500.
- Felstead, A., Jewson, N., Phizacklea, A., & Walters, S. (2002). Opportunities to work at home in the context of work-life balance. *Human Resource Management Journal*, 12(1), 54–76.
- Funes, J. M., Aguirre, F., Deeg, F., & Hoefnagels, J. (2018). Skill for tomorrow: How to address the digital skill gap. *Policy*, 3.
- Green, B. N., & Johnson, C. D. (2015). Interprofessional collaboration in research, education, and clinical practice: working together for a better future. *Journal of Chiropractic Education*, 29(1), 1–10.
- Gubler, T., Larkin, I., & Pierce, L. (2018). Doing well by making well: The impact of corporate wellness programs on employee productivity. *Management Science*, 64(11), 4967–4987.
- Henseler, J., Dijkstra, T. K., Sarstedt, M., Ringle, C. M., Diamantopoulos, A., Straub, D. W., Ketchen Jr, D. J., Hair, J. F., Hult, G. T. M., & Calantone, R.

- J. (2014). Common beliefs and reality about PLS: Comments on Rönkkö and Evermann (2013). *Organizational Research Methods*, 17(2), 182–209.
- Howes, J. C., Cropanzano, R., Grandey, A. A., & Mohler, C. J. (2000). Who is supporting whom?: Quality team effectiveness and perceived organizational support. *Journal of Quality Management*, 5(2), 207–223.
- Jennings, P. A., Brown, J. L., Frank, J. L., Doyle, S., Oh, Y., Davis, R., Rasheed, D., DeWeese, A., DeMauro, A. A., & Cham, H. (2017). Impacts of the CARE for Teachers program on teachers' social and emotional competence and classroom interactions. *Journal of Educational Psychology*, 109(7), 1010.
- Kazekami, S. (2018). Does teleworking improve labor productivity. *27th Eurasia Business and Economics Society Conference on January 11th*.
- Khan, F. F. P., Mohammed, N., & Harith, N. H. M. (2018). The relationship between the impacts of telecommuting engagement and employee performance in oil and gas industry in Kuantan, Pahang. *Malaysian Journal of Social Sciences and Humanities (MJSSH)*, 3(5), 1–9.
- Kim, H.-J., Hawley, J. D., Cho, D., Hyun, Y., & Kim, J.-H. (2016). The influence of learning activity on low-skilled workers' skill improvement in the South Korean manufacturing industry. *Human Resource Development International*, 19(3), 209–228.
- Kim, H. J., Hur, W.-M., Moon, T.-W., & Jun, J.-K. (2017). Is all support equal? The moderating effects of supervisor, coworker, and organizational support on the link between emotional labor and job performance. *BRQ Business Research Quarterly*, 20(2), 124–136.
- Kim, M. (2017). Effects of team diversity, transformational leadership, and perceived organizational support on team-learning behavior. *Social Behavior and Personality: An International Journal*, 45(8), 1255–1269.
- Kock, N. (2009). *E-Collaboration: Concepts, Methodologies, Tools, and Applications: Concepts, Methodologies, Tools, and Applications*. IGI Global.
- Kurtessis, J. N., Eisenberger, R., Ford, M. T., Buffardi, L. C., Stewart, K. A., & Adis, C. S. (2017). Perceived organizational support: A meta-analytic evaluation of organizational support theory. *Journal of Management*, 43(6), 1854–1884.
- Le, P. B., & Lei, H. (2019). Determinants of innovation capability: the roles of transformational leadership, knowledge sharing and perceived organizational support. *Journal of Knowledge Management*.
- Lynch, P. D., Eisenberger, R., & Armeli, S. (1999). Perceived organizational support: Inferior versus superior performance by wary employees. *Journal of Applied Psychology*, 84(4), 467.
- Lyubovnikova, J., West, T. H. R., Dawson, J. F., & West, M. A. (2018). Examining the indirect effects of perceived organizational support for teamwork training on acute health care team productivity and innovation: The role of shared objectives. *Group & Organization Management*, 43(3), 382–413.
- Maruyama, T., Hopkinson, P. G., & James, P. W. (2009). A multivariate analysis of work–life balance outcomes from a large-scale telework programme. *New*

- Technology, Work and Employment*, 24(1), 76–88.
- Maruyama, T., & Tietze, S. (2012). From anxiety to assurance: Concerns and outcomes of telework. *Personnel Review*.
- McKibbin, W., & Fernando, R. (2020). 3 The economic impact of COVID-19. *Economics in the Time of COVID-19*, 45.
- Motyl, B., Baronio, G., Uberti, S., Speranza, D., & Filippi, S. (2017). How will change the future engineers' skills in the Industry 4.0 framework? A questionnaire survey. *Procedia Manufacturing*, 11, 1501–1509.
- Nakrošienė, A., Bučiūnienė, I., & Goštautaitė, B. (2019). Working from home: characteristics and outcomes of telework. *International Journal of Manpower*.
- Onyemaechi, U., Chinyere, U. P., & Emmanuel, U. (2018). Impact of telecommuting on employees' performance. *Journal of Economics and Management Sciences*, p54–p54.
- Purwadi, P., Yijo., S., Ilmi, Z., & Sampeliling, A. (2022). Supporting logistics management to anticipate Covid 19 using the “retail direct order” concept. *Journal of Telecommunications and the Digital Economy*, 10(3), 128–148. <https://doi.org/10.18080/jtde.v10n3.519>
- Ratnasari, S. L., Rahmawati, R., Ramadania, R., Darma, D. C., & Sutjahjo, G. (2021). Ethical work climate in motivation and moral awareness perspective: The dilemma by the Covid-19 crisis?. *Journal Public Policy and Administration*, 20(4), 398-409. <https://doi.org/10.13165/VPA-21-20-4-04>
- Sasaki, S., Fukada, M., Okuda, R., & Fujihara, Y. (2019). Impact of organization and career commitment on clinical nursing competency. *Yonago Acta Medica*, 62(2), 221–231.
- Shin, N., Park, S. H., & Park, S. (2019). Partnership-based supply chain collaboration: Impact on commitment, innovation, and firm performance. *Sustainability*, 11(2), 449.
- Sorbe, S., Gal, P., Nicoletti, G., & Timiliotis, C. (2019). *Digital dividend: Policies to harness the productivity potential of digital technologies*.
- Troup, C., & Rose, J. (2012). Working from home: Do formal or informal telework arrangements provide better work–family outcomes? *Community, Work & Family*, 15(4), 471–486.
- Uhl-Bien, M., Piccolo, R. F., & Schermerhorn Jr, J. R. (2020). *Organizational behavior*. John Wiley & Sons.
- Van Deursen, A. J. A. M., Helsper, E. J., & Eynon, R. (2016). Development and validation of the Internet Skills Scale (ISS). *Information, Communication & Society*, 19(6), 804–823.
- Wren-Lewis, S. (2020). The economic effects of a pandemic. *Economics in the Time of COVID-19*, 109–112.

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Comment [i-[15]: Ketentuan di Sostek ITB menerapkan gaya sitasi APA. Karenanya, *) Jurnal yang memiliki no doi segera ditambahkan. **) Khusus jurnal, laman, buku, atau dokumen/laporan, *working papers* yang tidak mempunyai doi, bisa mencantumkan http/laman pengutipannya, contoh: Altindag, D. T. (2014). *Crime and international tourism. AUWP No. 2014-01*. Retrieved from: <https://cla.auburn.edu/econwp/Archives/2014/14-01.pdf>

Wirjopranoto, S. (1954). Collaboration between Italy and Indonesia. *East and West*, 5(3), 182-183. Retrieved from: <https://www.jstor.org/stable/29753592>

