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Modeling the civil servant discipline in Indonesia: partial least square-structural equation modeling approach

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ABSTRACT

Purpose – This paper seeks to discover the factors that influence the supervisor to give the punishment level to civil servant staff—the data being used is a questionnaire to several civil servants in public academic institutions.
Methodology/approach – This research used computational tools to classify transgressions into punishment categories (light, medium, or severe) with the model using the data science technique based on the partial least square-structural equation modeling (PLS-SEM) approach.
Findings – It was found that the model of civil servant discipline in Indonesia is based on 14 hypotheses from bootstrapping technique and by using data science technique to support the result analysis of PLS-SEM.
Novelty/value – This research contributed to providing civil servant supervisors to understand factors that influence the discipline of their staff, so it can be used to determine the punishment categorization.

INTRODUCTION

Indonesia has approximately 3.74 million civil servants, or 1.3 percent of the 2010 population (Tjiptoherijanto, 2012). The civil servant population in Indonesia has grown over time since the colonialization period. Around 50,000 persons were employed in the civil service at the end of the Dutch colonial rule, 4.6 million in 2012 (Tjiptoherijanto, 2012). The number of civil servants is separated into various government or departments offices, moreover divided into five layers of government: Central, Provinces, *Kabupaten* (Districts) and *Kota* (Municipalities or City), *Kecamatan* (Sub-districts), and *Kelurahan*/*Desa* (Villages) (Nasution, 2016). In 2013, there were 34 provinces, 413 districts, 98 municipalities, 9.982 subdistricts, and 80.414 villages administrative government in Indonesia (Nasution, 2016). In Indonesia, many civil servants should be catered to well by the government to manifest working efficiency and effectiveness (Pratama et al., 2015). Every single country has implemented civil servant discipline to its employees, like in the United States (Ujhelyi,

2014), Malaysia (Division for Public Administration and Development Management, 2005), and Indonesia (Presiden Republik Indonesia, 2010). The last-mentioned country has implemented Government Regulation No. 53 2010 (PP53) to manage civil servants in Indonesia.

Indonesia Government Regulation No. 53 2010 (PP53) is a regulation concerning the discipline of civil servants that must be obeyed and implemented by all employees (Presiden Republik Indonesia, 2010). If employees make mistakes or take actions that do not comply with PP53, they will be processed and punished (Presiden Republik Indonesia, 2010). In PP53, several types of penalties will be given, such as warnings, reprimands, fines and deductions, suspensions, transfers, and dismissals (Presiden Republik Indonesia, 2010). There are three levels of disciplinary punishment: light punishment, medium punishment, and severe punishment (Presiden Republik Indonesia, 2010). The institution has also widely implemented government regulation similar to in central government. Most violations in districts, municipalities, sub-districts, and villages are in light punishment. The case of medium and severe punishment happened in government. In other institutions like government universities or polytechnic, the regulation is also implemented but limited to light punishment. In State of Jakarta Polytechnic−Indonesia for the example, most of cases are in light punishment.

The first problem is that civil servant supervisors in government institutions usually feel confused to determine the punishment level given to their staff, whether light, medium, or severe (Ariani, 2015), so the discovery of factors that influence supervisors to provide the punishment with level to civil servants' staff is essential. For this reason, this study will try to discover the factors that influence the supervisor to give the punishment level to civil servant staff—the data being used is a questionnaire to several civil servants in public academic institutions. There is too much ambiguity in the regulations (PP53 cannot categorize the punishment categories). Therefore, computational tools need to classify transgressions into punishment categories (light, medium, or severe), so this research intends to build the model for that reason by using the partial least square-structural equation modeling (PLS-SEM) approach. This research aims to propose PLS-SEM technique used for classifying civil servant discipline.

METHOD

Conceptual Framework

We have 14 hypotheses that will be observed whether this hypothesis positively affected punishment or not. They are simply whether or not coefficients are significant in a regression model. This hypothesis is derived from various empirical publications, mainly from PP53. The partial least square-structural equation modeling (PLS-SEM) will be performed to accept and reject the hypothesis.

Data is collected from the representative of civil servant supervisors in associate state polytechnic in Indonesia. The requirement demographic of the staffs are: (1) hold managerial position and has civil servant staff that directly supervised by them, (2) employed by state polytechnic in Indonesia, (3) has more than one cause for each type of punishment among light, medium and severe. The value of each hypothesis result below than benchmark should be removed from models (Sarstedt et al., 2017; Shmueli et al., 2019). The new architecture is the final model representing the punishment model for civil servants. Figure 1 explains the 14 hypotheses in this study.

Figure 1. Research model.

Based on Figure 1, we calculate the PLS-algorithm were as follows: (1) adaptation factor has a positive influence on punishment (Adf → PF), it's derived from (Presiden Republik Indonesia, 2010); (2) less attendance has a positive influence on punishment (AF → PF), it's derived from (Epstein & Sheldon, 2002), (Kenicer, 2008) and (Presiden Republik Indonesia, 2010); (3) choice factor has a positive influence on punishment (CF → PF), it's derived from (Presiden Republik Indonesia, 2010); (4) less initiative has a positive influence on punishment (InF → PF), it's derived from (Epstein & Sheldon, 2002) and (Presiden Republik Indonesia, 2010); (5) less innovation has a positive influence to punishment (IF → PF), it's derived from (Epstein & Sheldon, 2002), (Kenicer, 2008) and (Presiden Republik Indonesia, 2010); (6) less knowledge has a positive influence to punishment (KF → PF), is derived from (Epstein & Sheldon, 2002), (Kenicer, 2008) and (Presiden Republik Indonesia, 2010); (7) working quality has a positive influence to punishment (QF → PF), is derived from (Epstein & Sheldon, 2002), (Kenicer, 2008) and (Presiden Republik Indonesia, 2010); (8) working quantity has a positive influence to punishment (Qun → PF), is derived from (Epstein & Sheldon, 2002), and (Presiden Republik Indonesia, 2010); (9) less satisfaction has a positive influence to punishment (SaF → PF), it's derived from (Presiden Republik Indonesia, 2010); (10) seniority has a positive influence to punishment (SF → PF), it's derived from (Kenicer, 2008) and (Presiden Republik Indonesia, 2010); (11) poor team works has a positive influence to punishment (TF → PF), it's derived from (Epstein & Sheldon, 2002), (Kenicer, 2008) and (Presiden Republik Indonesia, 2010); (12) frequent violation has a positive influence to punishment (OF → PF), it's derived from (Fehr & Fischbacher, 2004) and (Presiden Republik Indonesia, 2010); (13) less working target has a positive influence to punishment (WTF → PF), it's derived from (Telep, 2009) and (Presiden Republik Indonesia, 2010); (14) less working overtime has a positive influence to punishment (Ov → PF), is derived from (Epstein & Sheldon, 2002), (Kenicer, 2008) and (Presiden Republik Indonesia, 2010); This 14 assumptions declare as hypotheses, that we modeling these hypotheses by the following Figure 2. There is no pairwise covariance between any of the 14 factors. Each of the fourteen features and the dependent variables is explained in detail in Table 1, which is about what they mean, are measured, what kind of variable, and their domain. Because all of these hypotheses do not know what constitutes light, medium, or severe punishment or whether this changes based on the context.

Table 1. Variable definition.

Indicator	Notation	Variable Type	Questionnaire Measurement	Domain
Attendance factor	AF	Latent Variable	With intervals 1−5	Mundane task
Come to work on time	AF1	Manifest Variable	With intervals 1−5	
Rarely absent from work	AF2	Manifest Variable	With intervals 1−5	
Always come when needed	AF3	Manifest Variable	With intervals 1−5	
Violation factor	OF	Latent Variable	With intervals 1−5	Mundane task
Deliberately made a mistake	OF1	Manifest Variable	With intervals 1−5	
Being rude to co-workers	OF2	Manifest Variable	With intervals 1−5	
Not in line with co-workers	OF3	Manifest Variable	With intervals 1−5	
Overtime factor	Ov	Latent Variable	With intervals 1−5	Mundane task
Needs more time to complete the work	Ov1	Manifest Variable	With intervals 1−5	
Often work outside the office hours	Ov2	Manifest Variable	With intervals 1−5	
Like to do work outside the office	Ov3	Manifest Variable	With intervals 1−5	
Initiative factor	InF	Latent Variable	With intervals 1−5	Mundane task
Took the initiative when a problem occurred	InF1	Manifest Variable	With intervals 1−5	
Always ask for help when needed	InF2	Manifest Variable	With intervals 1−5	
Have creative ideas in dealing with problems	InF3	Manifest Variable	With intervals 1−5	
Team factor	TF	Latent Variable	With intervals 1−5	Mundane task
Can work well together	TF1	Manifest Variable	With intervals 1−5	
Understand what the supervisor said	TF2	Manifest Variable	With intervals 1−5	
Understand what explained by co-workers or team members	TF3	Manifest Variable	With intervals 1−5	
Seniority factor	SF	Latent Variable	With intervals 1−5	Expert task
Staff followed their senior direction	SF1	Manifest Variable	With intervals 1−5	
Take more discussion with senior	SF2	Manifest Variable	With intervals 1−5	
Always prioritizes seniority	SF3	Manifest Variable	With intervals 1−5	

Knowledge factor	KF	Latent Variable	With intervals 1−5	Mundane task
Have knowledge and ability to solve a problem	KF1	Manifest Variable	With intervals 1−5	
Always looking for knowledge to improve the quality of work	KF2	Manifest Variable	With intervals 1−5	
The knowledge and skills are under the job	KF3	Manifest Variable	With intervals 1−5	
Work target factor	WTF	Latent Variable	With intervals 1−5	Expert task
Completed work on time	WTF1	Manifest Variable	With intervals 1−5	
Works with a reasonable time	WTF2	Manifest Variable	With intervals 1−5	
Collect work on time	WTF3	Manifest Variable	With intervals 1−5	
Works when near deadlines	WTF4	Manifest Variable	With intervals 1−5	
Choice factor	CF	Latent Variable	With intervals 1−5	Mundane task
Can provide a personal assessment on work	CF1	Manifest Variable	With intervals 1−5	
Can make many self-decisions on work	CF2	Manifest Variable	With intervals 1−5	
Can make a right decision	CF3	Manifest Variable	With intervals 1−5	
Adaptation factor	Adf	Latent Variable	With intervals 1−5	Mundane task
Overcome bad situations and obstacles well	Adf1	Manifest Variable	With intervals 1−5	
It can quickly be returned to normal after a bad situation	Adf2	Manifest Variable	With intervals 1−5	
Can quickly adapt to change in any work environment	Adf3	Manifest Variable	With intervals 1−5	
When a situation cannot be predicted, it can handle	Adf4	Manifest Variable	With intervals 1−5	
Quantity factor	Qun	Latent Variable	With intervals 1−5	Formal task
Work quantity always fulfilled	Qun1	Manifest Variable	With intervals 1−5	
Can arrange all work well, so the work is finished on time	Qun2	Manifest Variable	With intervals 1−5	
In the last three months, the number of works was increased	Qun3	Manifest Variable	With intervals 1−5	
Innovation factor	IF	Latent Variable	With intervals 1−5	Mundane task
Have a quite innovative in working	IF1	Manifest Variable	With intervals 1−5	

Very creative while working	IF2	Manifest Variable	With intervals 1−5	
Shows the ability to innovate in work	IF3	Manifest Variable	With intervals 1−5	
Convinced colleagues to innovate	IF4	Manifest Variable	With intervals 1−5	
Can give the advise improving the quality of work	IF5	Manifest Variable	With intervals 1−5	
Always looking for ways to work better than before	IF6	Manifest Variable	With intervals 1−5	
Quality factor	QF	Latent Variable	With intervals 1−5	
Carefully while working	QF1	Manifest Variable	With intervals 1−5	
Work-based on criteria and SOP	QF2	Manifest Variable	With intervals 1−5	Expert task
Work that has been completed under applicable criteria and SOP	QF3	Manifest Variable	With intervals 1−5	
Work that has been completed meets expectations	QF4	Manifest Variable	With intervals 1−5	
The quality of work that finished was done very well	QF5	Manifest Variable	With intervals 1−5	
Satisfaction factor	SaF	Latent Variable	With intervals 1−5	
Always satisfied with work conditions	SaF1	Manifest Variable	With intervals 1−5	
Always satisfied with the praise that given by supervisor when they do work well	SaF2	Manifest Variable	With intervals 1−5	
Always satisfied with the freedom to assess their work	SaF3	Manifest Variable	With intervals 1−5	Mundane task
Always satisfied with the freedom given to do work with the own method	SaF4	Manifest Variable	With intervals 1−5	
Always satisfied with the income and the amount of work given	SaF5	Manifest Variable	With intervals 1−5	
Like the current job	SaF6	Manifest Variable	With intervals 1−5	
Punishment factor	PF	Latent Variable	With intervals 1−5	
Constantly reprimanded when making a mistake	PF1	Manifest Variable	With intervals 1−5	
Can accept the punishment	PF2	Manifest Variable	With intervals 1−5	Expert task
Have commemorated if not good at work	PF3	Manifest Variable	With intervals 1−5	
Not approve or receive jobs if the work is not as expected	PF4	Manifest Variable	With intervals 1−5	

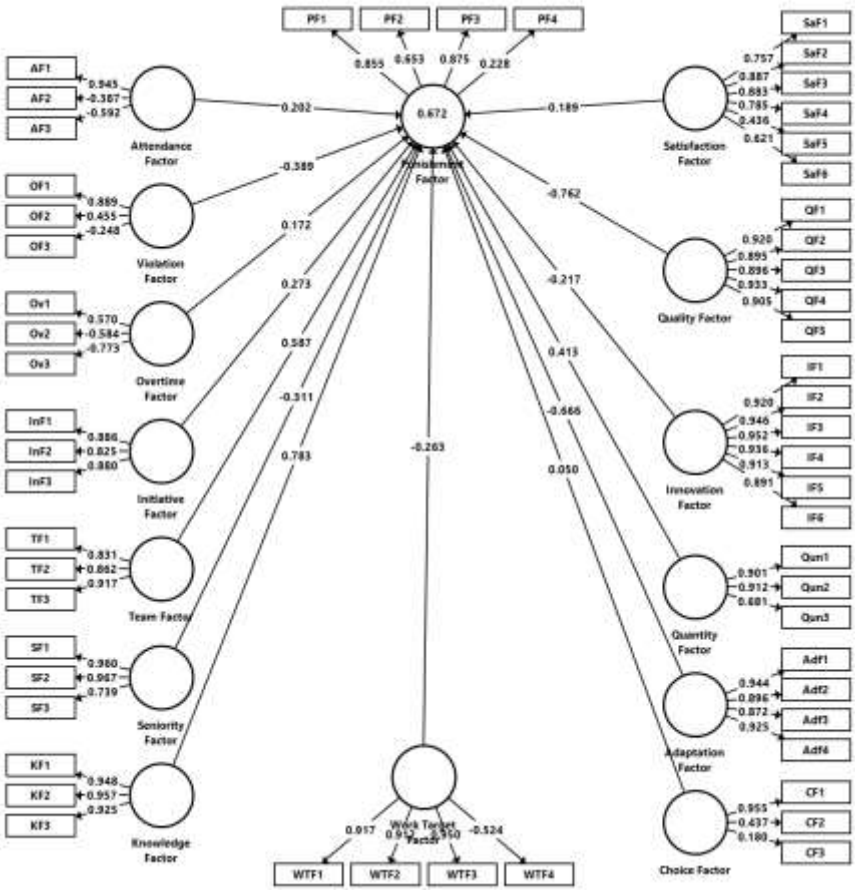

Figure 2. Initial PLS-Path model.

Based on Figure 2, we calculate the PLS-algorithm to give the loading factor (LF) results for each item code. For the value of LF, if the LF's value is below 0.7, it has been deleted. For this reason, based on the confirmatory research type in this study (Sarstedt et al., 2017, 2020). Hypothesis 14 (Ov → PF) has been deleted caused by the value of LF < 0.7 for all item codes, but some item codes we not deleted for the value of 0.6, so the valid model of PLS-path can be seen in Figure 3.

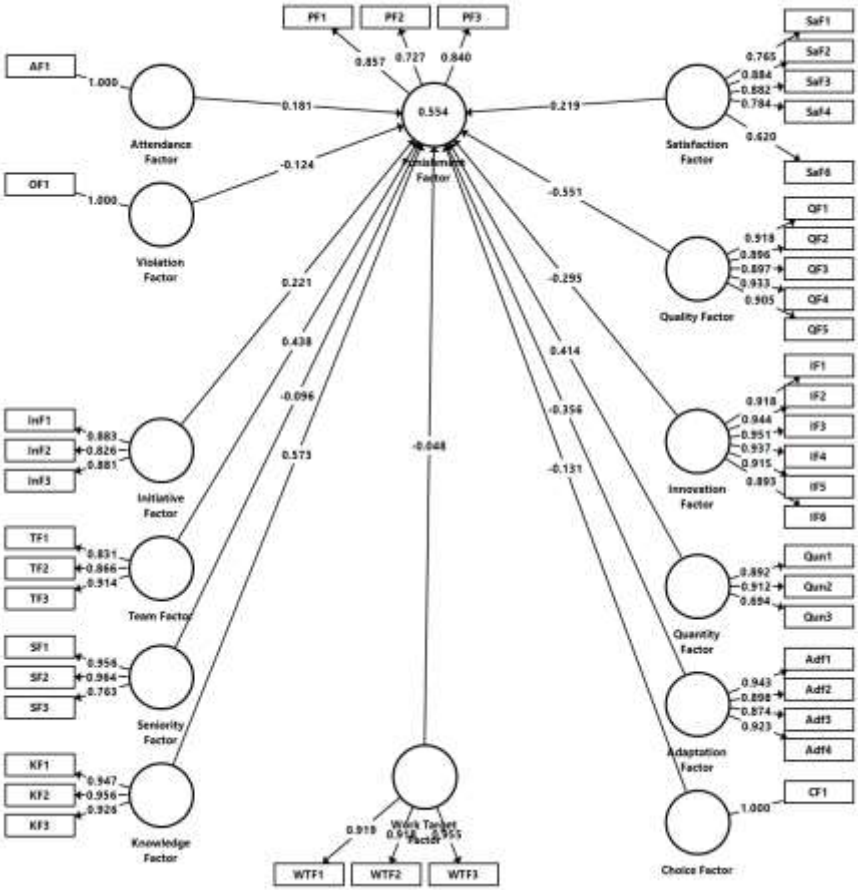

Figure 3. Modified PLS-Path model.

Based on Figure 3, we only have 13 hypotheses that would like to know the p-value for each hypothesis later using bootstrapping. The bootstrapping procedure can be used if the data situation does not meet the normality assumption or analyze non-normal data (Sharma & Kim, 2013). The bootstrapping method can obtain the estimates of path analysis (Awang et al., 2015).

Sample

We used respondents to fulfill the questionnaire data; this research involved a small group of 42 civil servants from some state polytechnic in Indonesia (*purposive random sampling*). All civil servants registered in the Indonesian government participated in the survey. Before the data analysis, the researchers "cleaned and accounted" the data from errors and uncompleted ones (Creswell, 2012) for data filtering. The data cleaning process included checking the students' responses on each item in the research instrument to ensure that the respondents completed all statements; re-ranking each negative report was also conducted simultaneously. As a result, 42 civil servants were considered eligible for the following data analysis phase. Table 2 explains the total number of respondents based on gender.

Table 2. Respondents' profile demography is based on gender.

Gender	Number (n)	Percentage (%)
Male	21	50
Female	21	50
Total	**42**	**100**

Data Analysis

We have 14 hypotheses that will be observed whether this hypothesis positively affected punishment or not. This research will determine the model of influence factors of discipline in civil servants in Indonesia. The next phase will analyze the discriminant validity: heterotrait-monotrait ratio (HTMT) and Fornell and Larcker Criterion. We focus on developing influence factors of the punishment model for civil servants derived from Indonesian Government Regulation No. 53 2010 (PP53). Then, the construct would build based on empirical research from various scientific papers and books. Then the construct will be spread out into civil servant employees and supervisors located in associate of state polytechnic in Indonesia. After having appropriate data, the data is then analyzed using Structural Equation Modeling (SEM) combined with Partial Least Square (PLS) to obtain the final model of influence factors of punishment model to a civil servant (analysis of accepted factors). The model is then used as a parameter that can determine civil servant punishment type.

Data processing procedures for this research are as the following. We used an online questionnaire to assess civil servants. The online questionnaire was initially developed in the Indonesian language. To obtain a valid and reliable measurement used in the context of factors that influence the punishment for civil servants, the questionnaire was first adapted into the English version (US-standard). The translation process of this questionnaire was conducted through standard translation methodology, including translation, verification, and modification (Maison et al., 2019). All of the items were translated into English (US). The result was then validated qualitatively by each supervisor of the employees. The feedback provided by the validators was adopted as the basis for improving the translation versions of the questionnaires.

For this study, we conducted one stage of data analysis, confirmatory factor analysis (CFA) (Sarstedt et al., 2017). Hence, we set the data into a dataset. The dataset was used for confirmatory factor analysis (CFA) test using PLS-based SEM (PLS-SEM). The CFA was conducted on the questionnaire to measure civil servant punishment in Indonesia. The questionnaire consists of 56 statement items (manifest variable) categorized into 15 (latent variable). Each group contains a minimum of 3 statement items and a maximum of 6 statement items. Then the CFA test was performed to analyze the convergent validity (Maison et al., 2019) for the factors influencing civil servant punishment in Indonesia. The CFA test was also conducted to examine the structural model of the correlation (Maison et al., 2019) between the 15 latent variables of this study; there are punishment factor, attendance factor, violation factor, overtime factor, initiative factor, team factor, seniority factor, knowledge factor, satisfaction factor, quality factor, innovation factor, quantity factor, adaptation factor, choice factor, and work target factor. We also conducted CFA instrument validation (discriminant validity), such as outer loading (OL), composite reliability (CR), average variance extracted (AVE) for each instrument were examined (Nawanir et al., 2020). Finally, we performed structural equation modeling (SEM), which is based on variance (PLS-SEM), to analyze the fit of the research model (Maison et al., 2019) in Figure 1. The PLS approach is asymptotic distribution-free (ADF) for the interpreted data that cannot possess a specific distribution pattern. It can be ratio, interval, ordinal, category, and nominal (Maison et al., 2019). Lastly, data science techniques such as Pearson Correlation and Exploratory Data Analysis improve PLS-SEM processes. This gives us an initial indication of a positive linear relationship between these two variables.

RESULT AND DISCUSSION

We run the descriptive statistics and normality assessment for the first analysis. All item code (constructs, manifest variables) has been accepted for the normality assessment. This is because Excess Kurtosis and Skewness values are not above 2.000 (Arifin, 2017), so all the data can be analyzed for the next phase, convergent validity and reliability assessment, also discriminant validity.

Table 3. Demographic profile of respondents.

Demographic Profile	Count (n)	%
Institution		
State Polytechnic of Bali	1	2.38%
State Polytechnic of Bandung	2	4.76%
State Polytechnic of Jakarta	19	45.24%
State Polytechnic of Jember	6	14.29%
State Polytechnic of Lampung	6	14.29%
State Polytechnic of Lhokseumawe	2	4.76%
State Polytechnic of Padang	1	2.38%
State Polytechnic of Semarang	2	4.76%
State Polytechnic of Sriwijaya	2	4.76%
University of Indonesia	1	2.38%
Work Experience (years)		
< 1	2	4.76%
1 - 5	7	16.67%
6 - 10	2	4.76%
11 - 15	5	11.90%
> 15	26	61.90%
Gender		
Female	21	50.00%
Male	21	50.00%
Grand Total	42	100.00%

Based on Table 3, this study dominance of the respondent by the lecturer of State Polytechnic of Jakarta (n=19), with work experience of more than 15 years (n=26) and with both sex female and male (n=21). The output of the concurrent validity assessment is shown in Table 4.

Table 4. Convergent validity and reliability.

Construct	Item Code	OL	CR	AVE
Adf	Adf1	0.943	0.950	0.828
	Adf2	0.898		
	Adf3	0.874		
	Adf4	0.923		
AF	AF1	1.000	1.000	1.000
CF	CF1	1.000	1.000	1.000
IF	IF1	0.918	0.973	0.858
	IF2	0.944		
	IF3	0.951		
	IF4	0.937		
	IF5	0.915		
	IF6	0.893		
Inf	InF1	0.883	0.898	0.746

	InF2	0.826		
	InF3	0.881		
KF	KF1	0.947	0.960	0.889
	KF2	0.956		
	KF3	0.926		
OF	OF1	1.000	1.000	1.000
QF	QF1	0.918	0.960	0.828
	QF2	0.896		
	QF3	0.897		
	QF4	0.933		
	QF5	0.905		
Qun	Qun1	0.892	0.875	0.703
	Qun2	0.912		
	Qun3	0.694		
SF	SF1	0.956	0.926	0.809
	SF2	0.964		
	SF3	0.763		
SaF	SaF1	0.765	0.893	0.629
	SaF2	0.884		
	SaF3	0.882		
	SaF4	0.784		
	SaF6	0.620		
TF	TF1	0.831	0.904	0.759
	TF2	0.866		
	TF3	0.914		
WTF	WTF1	0.919	0.951	0.867
	WTF2	0.918		
	WTF3	0.955		

Based on Table 4, the low outer loading (OL) value, if below 0.4 were deleted (Leguina, 2015). Then, composite reliability (CR) and average variance extracted (AVE) values show adequate convergent validity for all constructs, which have exceeded 0.5 and 0.7 (Franke & Sarstedt, 2019). The next phase will analyze the discriminant validity: heterotrait-monotrait ratio (HTMT) (Table 5) and Fornell and Larcker Criterion (Table 6). These discriminant validity tests can assume that the square root of AVE values of all constructs is higher than the correlation values with any other constructs and all constructs distinct from each other (Nawanir et al., 2020).

Table 5. Discriminant validity: HTMT assessment.

	Adf	**AF**	**CF**	**InF**	**IF**	**KF**	**PF**	**QF**	**Qun**	**SaF**	**SF**	**TF**	**OF**	**WTF**
Adf														
AF	0.396													
CF	0.354	0.479												
InF	0.741	0.503	0.506											
IF	0.857	0.482	0.323	0.805										

KF	0.905	0.534	0.488	0.899	0.876								
PF	0.479	0.459	0.319	0.648	0.418	0.692							
QF	0.822	0.530	0.489	0.736	0.751	0.919	0.626						
Qun	0.856	0.538	0.366	0.826	0.763	0.951	0.786	1.029					
SaF	0.324	0.361	0.586	0.386	0.314	0.521	0.615	0.465	0.500				
SF	0.434	0.254	0.088	0.256	0.331	0.476	0.273	0.479	0.594	0.156			
TF	0.848	0.338	0.456	0.759	0.686	0.854	0.673	0.936	0.886	0.498	0.258		
OF	0.536	0.332	0.182	0.244	0.420	0.409	0.241	0.459	0.381	0.248	0.157	0.359	
WTF	0.637	0.625	0.466	0.704	0.660	0.818	0.583	0.851	0.846	0.278	0.465	0.752	0.422

Table 6. Discriminant validity: Fornell and Larcker criterion.

	Adf	**AF**	**CF**	**InF**	**IF**	**KF**	**PF**	**QF**	**Qun**	**SaF**	**SF**	**TF**	**OF**	**WTF**
Adf	**0.910**													
AF	0.372	**1.000**												
CF	0.357	0.479	**1.000**											
InF	0.657	0.437	0.457	**0.864**										
IF	0.819	0.477	0.320	0.708	**0.926**									
KF	0.859	0.517	0.471	0.789	0.835	**0.943**								
PF	0.416	0.390	0.278	0.533	0.357	0.579	**0.810**							
QF	0.780	0.517	0.478	0.659	0.724	0.869	0.520	**0.910**						
Qun	0.749	0.472	0.336	0.685	0.677	0.825	0.588	0.896	**0.838**					
SaF	0.305	0.349	0.538	0.319	0.278	0.472	0.493	0.415	0.403	**0.793**				
SF	-0.402	-0.200	0.057	-0.233	-0.305	-0.434	-0.257	-0.441	-0.515	0.080	**0.899**			
TF	0.764	0.308	0.420	0.639	0.618	0.757	0.527	0.836	0.736	0.417	-0.233	**0.871**		
OF	-0.506	-0.332	-0.182	-0.155	-0.416	-0.396	-0.208	-0.447	-0.352	-0.238	0.118	-0.333	**1.000**	
WTF	0.593	0.601	0.448	0.608	0.623	0.759	0.472	0.796	0.733	0.248	-0.396	0.657	-0.404	**0.931**

Note: Diagonal values are the square root of AVE, off-diagonals are correlation coefficients.

Based on Tables 5 and 6, the results of the discriminant validity test have shown the valid value for each item code (higher than each below values). So, the next phase is multicollinearity support analysis (Table 7).

Table 7. Multicollinearity support.

Construct	**PF**	**Multicollinearity**
Adf	9.361	Supported
AF	2.073	Supported
CF	2.488	Supported
InF	4.117	Supported
IF	4.876	Supported
KF	15.182	Not Supported
QF	14.616	Not Supported
Qun	8.418	Supported
SaF	2.858	Supported
SF	2.072	Supported
TF	6.260	Supported

OF	1.974	Supported
WTF	4.783	Supported

Note: multicollinearity supported if < 10 (Sarstedt et al., 2017).

Based on Table 7, the results of the multicollinearity support test have shown the supported value for Adf, AF, CF, InF, IF, Qun, SaF, SF, TF, OF, WTF construct. These constructs can support multicollinearity for more than two variables. Then, the next phase analysis can be run due to the hypothesis testing with bootstrapping procedure (Table 8).

Table 8. Summary of path-hypotheses testing.

Hypotheses	Std. Dev.	Bias	Confidence Interval		t-value	p-value
			5.00%	95.00%		
H1	0.397	0.053	-0.982	0.335	0.897	0.185
H2	0.222	0.010	-0.159	0.583	0.814	0.208
H3	0.216	-0.034	-0.404	0.303	0.604	0.273
H4	0.339	0.062	-0.329	0.760	0.653	0.257
H5	0.296	0.029	-0.971	0.038	0.998	0.159
H6	0.668	-0.158	-0.288	1.788	0.857	0.196
H7	0.575	0.115	-1.542	0.275	0.958	0.169
H8	0.397	-0.035	-0.152	1.127	1.041	0.149
H9	0.229	0.058	-0.240	0.518	0.954	0.170
H10	0.269	-0.016	-0.471	0.384	0.357	0.361
H11	0.371	-0.024	-0.152	1.029	1.182	0.119
H12	0.174	0.013	-0.426	0.149	0.713	0.238
H13	0.313	-0.021	-0.491	0.501	0.153	0.439

*Note: $p \leq 0.05$ (one-tailed test).

The p-value of each hypothesis (H1−H13) shown not significantly different ($p > 0.05$ with one-tailed test), which means that attendance factor, violation factor, initiative factor, team factor, seniority factor, knowledge factor, satisfaction factor, quality factor, innovation factor, quantity factor, adaptation factor, choice factor, and work target factor does not influence the civil servant discipline in Indonesia. Based on the loading factor (LF) criteria, the overtime factor has been removed due to a low LF value (below 0.7), so it can be explained that the overtime factor does not correlate with the influence factor of civil servant discipline in Indonesia.

All of these factors (except the overtime factor) did not show a level of significance in the correlation path. Still, there was an indication of the relationship for each element to the punishment factor. This study implies that the model of civil servant discipline in Indonesia, which is based on questionnaire data from a small population of public polytechnic employees, is influenced by the factors in this study but with a significant degree that does not affect the correlation path in the sense that it is negatively related to the punishment factor. We use Pearson Correlation and Exploratory Data Analysis for implementing data science. The value of all Pearson Correlations are between the interval ($0.5 \leq r \leq 0.9$). We visualize the relationship between an independent variable (all variables except punishment factor; PF) and punishment to map whether there is no correlation between them, so we omit all variables with no correlation (for example, in Figure 4).

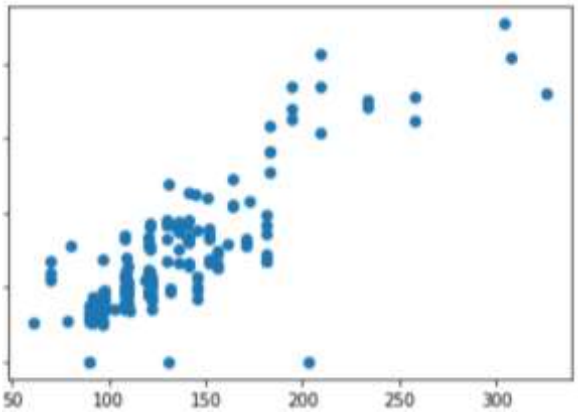

Figure 4. Example correlation between working quantity (Qun) and punishment factor (PF).

For initiative factor (InF), knowledge factor (KF), quality factor (QF), working quantity factor (Qun), and working overtime factor (Ov) are affected to punishment model of civil servant discipline. Otherwise will be rejected. Data science techniques such as Exploratory Data Analysis (EDA) are performed to support the result analysis of PLS-SEM will improve the model's performance because it rejects uncorrelated variables. All analysis is done and interpreting its findings is as important as describing the quantitative results. With this, supervisors can use quantitative results to evaluate their disciplined or not staff.

CONCLUSION

The attendance factor, violation factor, initiative factor, team factor, seniority factor, knowledge factor, satisfaction factor, quality factor, innovation factor, quantity factor, adaptation factor, choice factor, and work target factor does not influence the civil servant discipline in Indonesia, respectively, but all of these factors (except the overtime factor) in terms of negatively related to the punishment factor. Related to data science technique, our study shows that initiative factor (InF), knowledge factor (KF), quality factor (QF), working quantity factor (Qun), and working overtime factor (Ov) are affected to punishment model of civil servant discipline.

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