

## Development and Psychometric Properties of MKDP Day's Instrument as the Measurement of Personality Based on Worker in Kalimantan Selatan

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### Abstract

The personality of a worker or employee is one of the important things to know. However, the development of personality measurement tools made directly in Indonesia is still relatively small. This study aims to develop and identify the psychometric properties of the MKDP Day's Instrument as a personality measurement tool in the context of the workforce in South Kalimantan. The research subjects were 1,123 people between the age of 20-30 years. MKDP Day's Instrument was made by researchers consisting of motivation, cooperation, discipline, and leadership dimensions by taking into account the personality theory of Needs from Murray and Papi Kostick from Kostick. The reliability test used a composite score with a stratified alpha coefficient. The validity test used was confirmatory factor analysis (CFA). The result of the reliability test is 0.832. The four dimensions of the instrument were able to explain 22% of the variables. It found 19 factors that can be formed on the instrument. There are 21 valid items from the initial 60 items with an uneven distribution between the dimensions. Further instrument development is needed to produce better psychometric properties.

**Keywords:** Personality, Worker, MKDP Day's Instrument

### Introduction

The personality of a worker or employee is one of the important things to know. Through personality, various things can be seen, including behavior patterns to better understand how a person acts in certain situations. Murray (2008) reveals that motivation and direction of behavior can be explained through the concept of needs in one's personality.

Salgado (1997) states that one of the factors that determine the quality of a person's work is the personality of that person. This is because personality is a psychic aspect that is potentially together with physical abilities is used for production purposes. Personality has a positive and significant effect on employee performance (Fiernaningsih, 2017; Widyasari et al., 2007), and is the best factor to predict employee performance (Kierstad, 1998), personality is also associated with organizational stress on first-level employees (Anitei, 1998). et al., 2013).

A person's personality has dimensions that are specifically related to the behaviors needed to be effective at work. Yesil and Sozbilir (2012) conducted research on the important role of personality in understanding human behavior. The researcher found that among the personality dimensions based on the five-factor personality theory (neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness) only one dimension had a positive relationship to innovative behavior, namely openness to experience. Hogan et al (1994) also suggested that leadership effectiveness, ability to build a work group, and cooperation can be assessed from personality characteristics.

Hogan et al (1996) revealed that if the personality assessment instrument is well structured, the instrument will be valid in predicting one's work performance. Generally, this performance prediction is needed by companies in selecting prospective employees. Ashton (1998) said that the workforce selection process in management is based on the prediction of the workforce performance. Van der Walt (2002) suggests that employees who are undisciplined, less active and less agile in carrying out their duties are influenced by weak emotional stability, living habits, and thoroughness. This shows that it is important to know a person's personality in the process of choosing and selecting employees.

Hartati (1991) states that personality can be measured using personality assessment tools. Methods to reveal personality varied. Personality disclosure can also be called a personality assessment or psychological assessment. Techniques such as interviews, observations, and tests are commonly used as assessment methods by adjusting to needs. Each method has its own characteristics with its advantages and disadvantages. Naisaban (2003) states that the classification of humans and their personality types is considered the best through the inventory test method.

The personality scale in the form of an inventory is quite varied and is often used in Indonesia. Various inventory personality scales in Indonesia along with evaluations of the personality tests are MMPI, 16 PF, EPPS, DISC, and NSQ. Periantalo and Azwar (2017) reveal the shortcomings of this personality assessment tool. First, those personality tests are designed for a broad population. Second, most of it has not been updated so they are not up to date. Third, the scoring method is relatively complicated so it can increase the risk of error and weaken the validity of the test. Fourth, the relatively large number of items can have an impact on the seriousness of the respondents in taking the test. Fifth, various psychological tests have already been leaked and circulated in the market. Sixth, the development of personality scales that were originally made in Indonesia or not adapted from abroad is still relatively small.

Lusiana (2018) conducted analysis on worker performance toward performance productivity in Kalimantan Selatan. Hasibuan (2006, in Lusiana, 2018) explained the aspect of performance are loyalty, work achievement, integrity, discipline, creativity, cooperation, leadership, personality, initiative, proficiency, and responsibility. Unfortunately, Lusiana (2018) did not use all of the aspect, it was only loyalty, work achievement, responsibility, cooperation, and initiative. Personality was not included in that research. Purwoko (2012) stated that worker's performance and comfort will be influenced by personality. Research conducted by Efendi (2020) towards Department of Manpower and Transmigration, Balangan Regency, Kalimantan Selatan found that the quality of workers or job seekers have not been able to compete and to be independent in the workplace due to internal and external factors. Lusiana (2018) added that internal factor which is influenced work productivity comes from within the worker while the external factor comes from organization or institution.

Based on this explanation, the researchers want to develop a personality assessment tool, especially in the South Kalimantan region. This research intends to make an assessment instrument that is simple, practical, and has good psychometric property requirements. Therefore, the researchers want to develop and identify the psychometric properties of the MKDP Day's Instrument as a personality assessment tool in the context of the workforce in South Kalimantan.

## Methods

This research uses quantitative research methods with special survey types in the construction of assessment instruments. The research population is workers in South Kalimantan aged 20-30 years. 1,123 people became subjects in this study after using the accidental sampling technique.

The research instrument was made by the researcher by looking at the personality dimensions. Which in many cases or activities like psychological tests of job selection, are very dominant to be revealed and assess for. These dimensions are achievement motivation, cooperation, discipline, and leadership. The constructs of personality dimensions in this study were taken and based on the theory of needs by Murray (2008) which was first published in 1938, consisting of the need of achievement for the dimension of achievement motivation, the need of affiliation for the dimension of cooperation and need of order for the dimension of discipline. While Papi Kostick from Max Martin Kostick as a source of inspiration for writing items, especially on the leadership dimension. The name of this instrument is hereinafter referred to by the researcher as MKDP Day's Instrument. MKDP Day's Instrument consists of 60 items. Each dimension is represented by 15 items. Each item has 3 answer choices. Answers scoring uses the Likert technique, namely 0, 1, or 2. Each item has its own scoring format that has been regulated by the researchers.

Data collection was carried out using a survey method, in which the subjects were given MKDP Day's Instrument which had been printed and made into a booklet. After filling instructions were given, the subject can immediately provide answers in the book. Researchers are directly involved in the data collection process so that they can supervise the subject during the test.

The process of data analysis was carried out to see the reliability and validity of the instrument. The reliability technique used is the composite score reliability. The validity technique used is factor analysis with confirmatory factor analysis (CFA) type.

## Results

The reliability of the composite score on this instrument uses a stratified alpha coefficient. This coefficient is used to estimate the reliability of the instrument consisting of several subtests or multidimensional (Widhiarso, 2011). Calculating the reliability of the components (dimensions) is done with Cronbach's alpha through the help of the SPSS application. The following is a stratified alpha formula that will be used to measure reliability.

$$r_{STRAT,\alpha} = 1 - \frac{\sum_{j=1}^k \sigma_i^2 (1-r_i)}{\sigma_t^2} \quad (1)$$

where  $\sigma_i^2$  refers to variance of i component,  $r_i$  is reliability of i component, and  $\sigma_t^2$  is variance of total score (involving all item on the test).

Based on the stratified alpha formula (1), the reliability of the composite score is 0.832.

Table 1. Dimension Reliability

Dimension	Variance	Reliability
Motivation	12,282	0,650
Cooperation	9,155	0,458
Discipline	12,134	0,627
Leadership	19,412	0,715
Total	115,085	

Confirmatory factor analysis is used to see the validity of the items based on the four factors that make up the MKDP instrument. The results of the KMO Measure of Sampling Adequacy shows the number 0.864, which means the scale meets the requirements to be tested using factor analysis.

Based on table 2, 4 factors formed in the scale can explain 22% of the variables. However, by looking at the eigenvalue > 1, it is found that 19 factors can be formed. This formed factor can explain 52% of the variables. Factor 1 can explain 12% of the total 4 factors (22%), factor 2 can explain 4%, factor 3 explains 3%, and factor 4 explains 3%.

Table 2: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.118	11.863	11.863	7.118	11.863	11.863	4.149	6.916	6.916
2	2.253	3.755	15.618	2.253	3.755	15.618	3.891	6.485	13.401
3	2.102	3.504	19.123	2.102	3.504	19.123	2.797	4.662	18.062
4	1.694	2.823	21.946	1.694	2.823	21.946	2.330	3.883	21.946
5	1.612	2.687	24.633						
6	1.416	2.359	26.992						
7	1.350	2.249	29.242						
8	1.272	2.121	31.362						
9	1.250	2.083	33.446						
10	1.224	2.041	35.486						
11	1.201	2.001	37.487						
12	1.176	1.961	39.448						
13	1.117	1.862	41.311						
14	1.106	1.844	43.154						
15	1.087	1.812	44.966						
16	1.065	1.774	46.741						
17	1.054	1.756	48.497						
18	1.022	1.704	50.201						
19	1.014	1.690	51.890						

The results of the CFA with a loading factor of 0.4 can be seen in table 3.

Table 3: CFA Result

Dimension_Aitem	Factor			
	1	2	3	4
A_25	.532			
C_21	.484			
A_37	.480			
C_19	.476			
C_45	.445			
C_44	.438			
C_57	.418			
C_56	.414			
A_15	.410			
C_55	.410			
D_23		.626		
D_47		.551		
D_59		.544		
D_12		.498		
D_10		.491		
D_46		.478		
D_48		.457		
D_11		.431		
C_33		.405		
A_2			.655	
D_60			.518	
D_36			.489	
A_14			.479	
A_50			.464	
A_51			.425	
B_40				.456
B_41				.437

Factor 1 consists of 7 items of discipline dimension and 3 items of motivation dimension. The three items on the motivation dimension are “(15) against the standards that have been set: a) pursuing them; b) among them; c) don't really care about it”, “(25) for tasks that have standardized specifications: a) don't really care about it; b) among them; c) working perfectly”, and “(37) against criticism related to the results of the task: a) accepted and carried out; b) among them; c) don't really care about it.” Factor 1 is called discipline because it is dominated by the dimension of discipline.

Factor 2 consists of 8 items of leadership dimension and 1 item of discipline dimension. One item of the discipline dimension is “(33) I can write neatly and straight on unlined paper: a) yes; b) sometimes; c) no.” Factor 2 is called leadership because it is dominated by the leadership dimension.

Factor 3 consists of 4 items of motivation dimension and 2 items of leadership dimension. The two items on the leadership dimension are “(36) In the activity committee, I prefer to be: a) secretary; b) the person in charge; c) members” and “(60) in the decision-making process, I prefer to wait and adjust: a) yes; b) sometimes; c) no.” Factor 3 is called motivation because it is dominated by the motivational dimension.

Factor 4 consists of 2 cooperation items and no items in other dimensions are included in factor 4. Therefore factor 4 is called cooperation.

Based on the results of the CFA, a total of 27 valid items were found. However, if you look at the suitability of the dimensions, then the valid items are 21 items. The reliability for each dimension are 0.627 (factor 1), 0.712 (factor 2), 0.545 (factor 3), and 0.338 (factor 4).

## Discussion

The reliability of MKDP Day's Instrument after being calculated through stratified alpha is 0.832. Furr and Bacharach (2013) mentioned that reliability 0.70 or 0.80 is a satisfactory value. So it can be concluded that this instrument is reliable. If you look at the reliability value of each dimension, a higher value for the overall instrument reliability is found. This is in line with the research of Widhiarso and Ravand (2014) where when each dimension has reliability between 0.71-0.84, a stratified alpha

reliability of 0.86 is obtained. Widhiarso (2009) also confirms that the stratified alpha coefficient is appropriate for use in the case of multidimensional composite scores.

MKDP Day's Instrument used confirmatory factor analysis (CFA) with varimax rotation to confirm 4 dimensions. Based on the results of the CFA, 4 factors formed in the scale can explain 22% of the variables. However, by looking at the eigenvalue  $> 1$ , it is found that 19 factors can be formed. This formed factor can explain 52% of the variables. This shows that further research is needed regarding the elaboration of the 4 dimensions that have been determined to become items by the researchers. The percentage of representation of 22% is feared to result in biased measurements to produce valid data according to the purpose of the instrument. The number of 19 factors formed from this instrument can also be further considered because one of the assessment instruments that became the inspiration for making this instrument, Papi Kostick, has many more aspects. As stated by Tirtawinata (2013) Papi Kostick describes a person's personality in 20 aspects, each of which represents a need or another role comprehensively based on the perception of the individual who tests themself.

Based on the factor loading of 0.4, we found factors with items originating from 2 different dimensions. A good measuring tool is when the elaboration of the dimensions is theoretically the same as the grouping of factors from the results of statistical calculations. Therefore, the items in these different dimensions require further analysis by construct expert to assess their suitability.

Apart from the existence of several items that are incompatible with the instrument blueprint, leadership is the dimension that has the highest number of valid items compared to other dimensions. This is quite good and needs to be maintained given the importance of the leadership role. Leadership has a direct impact on organizational performance through the role of employees in the organization (Isa et al., 2019). Leadership in the management function is related to how leaders are able to influence, direct, motivate and supervise others to be able to carry out planned tasks so as to achieve organizational goals and objectives (Jakaria & Putra, 2020).

The total number of valid items and suitable to their respective dimensions are 21 items from the initial 60 items. Of the 21 items, the dimensions do not have an equal number. However, in terms of reliability, this instrument can be said to be reliable.

Making personality assessment tools requires continuous development and of course through a process that is not short. Like Triwahyuni, et al (2019) which underwent 11 trials to get good reliability on the personality assessment tool that is being developed. The results of this MKDP Day's Instrument research can be the first step to then go back through the development and evaluation process. This is because the development of personality assessment tools made directly in Indonesia is still relatively small (Periantalo & Azwar, 2017). While the personality assessment tool has its own important role. Personality has a positive and significant effect on employee performance (Fiernaningsih, 2017; Widyasari et al., 2007). Hogan et al (1996) revealed that if the personality assessment instrument is well structured, the instrument will be valid in predicting one's work performance.

## Conclusion

MKDP Day's Instrument has satisfactory reliability. The four dimensions of the instrument were able to explain 22% of the variables. 19 factors that can be formed on the instrument were found. There are 21 valid items from the initial 60 items with an uneven distribution between dimensions. The reliability for each dimension are 0.627 (factor 1), 0.712 (factor 2), 0.545 (factor 3), and 0.338 (factor 4). The leadership dimension has the most valid items compared to other dimensions. Further instrument development is needed to produce better psychometric properties. The next researcher can use the whole series of evaluation and composing processes by involving many experts for item review and many respondents for the trial process. In addition, more than one approach to the validity test can also be considered.

## Bibliography

- Anitei, M., Stoica, I. & Samsonescu, M. (2012). Particularities of personality traits and perceived stress at workplace for the young workers in Romania. *Procedia Social and Behavioral Sciences*, 84 (2013), 1010 – 1014
- Ashton, M. C. (1998). Personality and job performance: The importance of narrow traits. *Journal of Organizational Behavior*, 19, 289 - 303.

- Efendi, F. (2020). Analisis Kompetensi, Sarana Prasarana Dan Perencanaan Program Pelatihan Terhadap Kualitas Tenaga Kerja Pada Dinas Tenaga Kerja Dan Transmigrasi Kabupaten Balangan Kalimantan Selatan. *KINDAI*, 16(2), 177-200.
- Fiernaningsih, N. (2017). Pengaruh kepribadian terhadap kinerja karyawan di Hotel Elresas
- Furr, R.M. & Bacharach, V.R., (2013). *Psychometrics: An introduction*. Sage
- Hartati, S. (1991). Keterlibatan kerja ditinjau dari tes kepribadian karyawan. Lembaga Penelitian Fakultas Psikologi Universitas Gadjah Mada.
- Hogan, R., Curphy, G. J., & Hogan, J. (1994). What we Know about leadership: Effectiveness and personality. *American Psychologist*, 46 (6), 493 - 504.
- Isa, K., Tenah, S. S., Atim, A., & Jam, N. A. (2019). Leading Happiness: Leadership and Happiness at a Workplace. *International Journal of Recent Technology and Engineering (IJRTE)*, 8(3), 6551-6553.
- Jakaria, R. B., & Putra, B. I. (2020). *Buku Ajar Mata Kuliah Psikologi Industri*. Umsida Press, 1-119.
- Kierstead, J. (1998). *Personality and Job Performance: A Research Overview*. Policy, Research and Communications Branch Public Service Commission of Canada
- Lusiana, H. (2018). Analisis Kinerja Karyawan Terhadap Produktifitas Kerja. *At-Tadbir: jurnal ilmiah manajemen*, 2(1).
- Murray, H. A. (2008). *Explorations in personality*. New York: Oxford University Press, Inc
- Naisaban, L. (2003). *Psikologi jung: tipe kepribadian manusia dan rahasia sukses dalam hidup*. Gramedia.
- Periantalo, J., & Azwar, S. (2017). Pengembangan skala kepribadian siswa SMA dari tipologi kepribadian Jung dan Myers-Briggs. *Jurnal Sains Sosio Humaniora*, 1 (2), 191 – 207
- Pituch, K.A. & Stevens, J.P., (2015). *Applied multivariate statistics for the social sciences: Analyses with SAS and IBM's SPSS*. Routledge.
- Purwoko, A. P. (2012). Peningkatan Produktivitas Pegawai Melalui Rekrutmen Berdasarkan Karakteristik Kepribadian Individu. *Civil Service Journal*, 6(2 November).
- Salgado, J. F. (1997). The five factor model of personality and job performance in the European Community. *Journal of Applied Psychology*, 82 (1), 30 – 43.
- Tirtawinata, C. M. (2013). Mengenal dan menemukan diri melalui kebersamaan dengan orang lain. *Humaniora*, 4(2), 1309-1319.
- Triwahyuni, A., Purwono, U., Sadarjoen, S.S. & Sapri, E.R., (2019). Pengembangan Millon Personality Type Inventory (MPTI) sebagai Instrumen Pengukuran Kepribadian di Indonesia. *Journal of Psychological Science and Profession*, 3(2), pp.65-74.
- Van der Walt, H.S. (2002). Meta-analyses of the relationship between personality measurement and job performance in South Africa. Presentation: SIOPSA Conference, Pretoria, 13-14 June 2002
- Widhiarso, W. (2011). Menghitung koefisien Alpha berstrata. Manuskrip tidak dipublikasikan.
- Widhiarso, W. & Ravand, H., (2014). Estimating reliability coefficient for multidimensional measures: A pedagogical illustration. *Review of psychology*, 21(2), pp.111-121.
- Widhiarso, W., (2009). Koefisien reliabilitas pada pengukuran kepribadian yang bersifat multidimensi. *Psikobuana*, 1(1), pp.39-48.
- Widyasari, R., Syahlani, S. P., & Santosa, K. A. (2007). Pengaruh kepribadian terhadap kinerja karyawan berpendidikan tinggi: Analisis pada perusahaan peternakan di Jawa Tengah dan Daerah Istimewa Yogyakarta. *KINERJA*, 11 (1), 40 – 49
- Yesil, S., & Sozibilir, F. (2012). An empirical investigation into the impact of personality on individual innovation behaviour in the workplace. *Procedia Social and Behavioral Sciences*, 81 (2013), 540 – 551