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Psychometric test analysis of employee work engagement using the Utrecht Work Engagement Scale (UWES)

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Abstract: Work engagement is a positive psychological condition that is important in supporting employee performance. This study aims to test the construct validity and reliability of the Indonesian version of the Utrecht Work Engagement Scale (UWES-18) on workers in Gorontalo Province. The study involved (N=202) workers aged at least 19 years with at least one year of service. Data were collected using a purposive sampling technique and analyzed using Confirmatory Factor Analysis (CFA) and Cronbach's Alpha reliability tests. The CFA results indicated that the three-factor model of the UWES-18 did not fully meet the model suitability criteria, while the reliability test results showed good internal consistency with a Cronbach's Alpha value of (α = 0.894). These findings indicate that the UWES-18 is reliable in measuring work engagement, but its construct validity still requires further testing.

Keywords: CFA; construct validity; reliability; work engagement**;** UWES

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Introduction

Various organizations and companies strive to retain employees so they can continue to deliver maximum performance and contribute optimally to achieving organizational goals (Suardi, 2019). According to Schaufeli and Salanova (2002) work engagement describes a condition in which employees possess energy, enthusiasm, and high spirits in carrying out their duties. Employees with high work engagement tend to consciously enjoy their work, demonstrate strong dedication, and have confidence in their ability to complete assigned responsibilities (Widarnandana & Pura, 2019). In line with this view, Widarnandana and Pura (2019) explain that work engagement is characterized by the emergence of positive feelings toward work, where individuals demonstrate a meaningful perspective and a high commitment to their work. The term engagement was first introduced by the consulting firm Gallup in

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the 1980s and later developed academically by Kahn (1990), who explained that engaged employees exhibit physical, cognitive, emotional, and mental well-being when carrying out their work roles. Furthermore, Macey and Schneider (2008) defined engagement as a desirable state characterized by involvement, commitment, passion, enthusiasm, directed effort, and energy. However, this definition is considered too broad, encompassing various similar concepts (Rahmadani & Schaufeli, 2022).

The concept of work engagement was developed within the framework of the Job Demands-Resources (JD-R) Model, which explains that work engagement is formed through the interaction of job demands, job resources, and personal resources (Bakker & Demerouti, 2007). Job demands refer to various aspects of work that require sustained physical and psychological effort. In contrast, job resources include supervisor support, job autonomy, feedback, development opportunities, and a supportive work environment. Furthermore, personal resources, such as self-efficacy, optimism, and resilience, help individuals cope with work demands more effectively. The availability of adequate work and personal resources can increase employee motivation, energy, dedication, and focus at work, thus fostering higher work engagement (Bakker & Demerouti, 2007). The JD-R framework served as an important basis for the development of the Utrecht Work Engagement Scale (UWES), as the three dimensions it measures vigor, dedication, and absorption, represent the state of work engagement that arises when individuals have sufficient resources to cope with work demands.

In the concept proposed by W. B. Schaufeli and Salanova (2002), work engagement consists of three main dimensions: vigor, dedication, and absorption. Vigor is characterized by high levels of energy, mental resilience at work, and a willingness to persist despite facing various work difficulties. Dedication reflects feelings of enthusiasm, pride, inspiration, and a view of work as meaningful and important. Meanwhile, absorption refers to a state in which an individual is highly focused and involved in their work, feeling that time passes quickly and finding it difficult to detach from the task at hand. According to the JD-R Model, employees with adequate work resources tend to exhibit higher levels of vigor, dedication, and absorption as a form of engagement with their work (Bakker & Demerouti, 2007).

Schaufeli and Bakker (2004 developed an instrument called the Utrecht Work Engagement Scale (UWES) to measure an individual's level of work engagement. The initial version of the UWES consisted of 24 items representing three main dimensions: vigor (9 items), dedication (8 items), and absorption (7 items). After undergoing an evaluation process on two different groups of respondents, 7 items were removed because they were deemed less effective in measuring the construct. The result was the UWES-17 version, which was more concise but still maintained the three-factor structure (Schaufeli & Bakker, 2004). The UWES was then adapted to Indonesia by (Aulia, 2016). Based on the results of (Aulia, 2016) adaptation of the Utrecht Work Engagement Scale (UWES) developed by (W. Schaufeli & Bakker, 2004), the instrument was structured into 17 statements and used on a sample of soldiers. In the adaptation process, Aulia assessed the feasibility of each item through a content validity test using Aiken's V statistical formula. The test results showed that the content validity value for the vigor dimension ranged from 0.722 to 0.833, for the dedication dimension between 0.611 and 0.833, and for the absorption dimension between 0.722 and 0.788. Furthermore, the reliability test results using the Cronbach's Alpha formula showed that the adapted version of the UWES scale had an excellent level of internal consistency with a reliability index of 0.908 (Aulia, 2016).

Furthermore, Aulia (2018) modified the Utrecht Work Engagement Scale (UWES) by increasing the number of items. This modified instrument added 18 items. The modified instrument was retested and yielded a Cronbach's Alpha reliability coefficient of 0.862, item reliability of 0.96, and respondent reliability of 0.90, indicating that this measuring instrument has high internal consistency and good stability in respondent responses. The addition of these items and reliability results indicate that the modified version of the scale still has a high level of reliability in measuring work engagement (Aulia, 2018, in Aryanti et al., 2020). This 18-item version was chosen for this study because it has undergone a process of cultural adaptation to the Indonesian context and demonstrated high reliability, making it considered most suitable for measuring work engagement among the working population in Indonesia, including in Gorontalo. Research by (Kristiana & Purwono, 2018) using a sample of 100 inclusive school teachers concluded that, based on the CFA analysis of the 9-item version of the UWES instrument, all of them were equally related to measuring the work engagement construct, as evidenced by an RMSEA value of 0.049 (very good) and CFI, NFI, and GFI values of >0.95 (very good).

Although the Utrecht Work Engagement Scale (UWES) has been widely used and demonstrated good psychometric qualities in various studies, the validity and reliability of an instrument cannot be assumed to be universally applicable to all populations. The psychometric quality of a measurement instrument needs to be re-evaluated when used with different respondent groups, organizational contexts, and cultural backgrounds because these factors can influence how individuals understand and respond to each item in the instrument. Previous research in Indonesia has primarily tested the UWES-17 and UWES-9 versions and was conducted with specific populations, such as soldiers and teachers. Therefore, evidence regarding the construct validity and reliability of the UWES-18 in a more diverse worker population is still limited. Furthermore, workers in Gorontalo Province have diverse job sectors, socio-cultural backgrounds, and work experiences that could potentially influence how respondents understand each item in the instrument. To date, research on the psychometric quality of the UWES-18 in the context of workers in Gorontalo Province is also very limited. Therefore, this study was conducted to evaluate the construct validity and reliability of the Indonesian version of the Utrecht Work Engagement Scale (UWES-18) using the Confirmatory Factor Analysis (CFA) and Classical Test Theory (CTT) approaches. This study is expected to provide empirical evidence regarding the suitability of using the UWES-18 for workers in Gorontalo Province as well as enrich the psychometric evidence of work engagement instruments in Indonesia.

Method

This study employed a quantitative, non-experimental survey design to evaluate the psychometric properties of the Indonesian version of the Utrecht Work Engagement Scale (UWES-18). Data were collected online from 202 workers in Gorontalo Province using purposive sampling. Eligible participants were at least 19 years old and had a minimum of one year of work experience. Construct validity was evaluated using Confirmatory Factor Analysis (CFA), whereas internal consistency reliability was assessed using Cronbach's alpha.

Research Participants

Respondents were recruited using purposive sampling. The inclusion criteria were adapted from Aryanti et al. (2020): (1) residing in Gorontalo Province, (2) at least 19 years of age, and (3) having a

minimum of one year of work experience. The one-year work experience criterion was applied to ensure that participants had sufficient exposure to their work environment.

A total of 213 responses were initially collected. After data screening based on the predefined inclusion criteria, 11 responses were excluded, resulting in a final sample of 202 workers, comprising 117 men and 85 women. This sample size was considered adequate for CFA based on recommendations for models with moderate complexity (Kyriazos, 2018).

Research Instruments

The measurement model used in this study refers to the Utrecht Work Engagement Scale (UWES) developed by Aulia (2018). This scale is based on the work engagement theory of (W. Schaufeli & Bakker, 2004), which consists of three main dimensions: vigor, dedication, and absorption. In the version developed by Aulia (2018), this instrument consists of 18 positive statement items. This scale consists of five answer choices: never (0), rarely (1), sometimes (2), often (3), and always (4). This scale has a Cronbach's Alpha reliability value of 0.862 (Aulia, 2018), which indicates that this measuring instrument has good internal consistency.

Table 1
Distribution of Utrecht Work Engagement Scale (UWES) Items

No	Dimensions	Number Item Favorable	Number of Items
1	Vigor	1, 4, 8, 12, 15, 17	6
2	Dedication	2, 5, 7, 10, 13, 18	6
3	Absorption	3, 6, 9, 11, 14, 16	6
Amount			18

Data Collection Procedure

This research was conducted from November to December. The researcher prepared a questionnaire in the form of a Google Form for easy access by participants residing in the Gorontalo region. Before completing the questionnaire, each participant was required to read and agree to the informed consent form, which explained the research objectives, the principles of data confidentiality, and stated that participation was voluntary and could be terminated at any time without any consequences. After providing consent, participants were directed to complete the demographic data section, which included information on age and gender. Next, participants were asked to complete the work engagement scale, the main research instrument. The instructions were clearly structured so that participants could understand each statement clearly and provide answers that reflected their experiences in the work context. The time required to complete all statements on this scale was estimated at approximately 7-10 minutes. After all items were answered, participant responses were automatically saved digitally via Google Form, then downloaded and stored securely by the researcher. Access to the data was granted only to the researcher to maintain the confidentiality and integrity of participant information.

Data Analysis

The data analysis in this study used the Classical Test Theory (CTT) approach to test instrument reliability and Confirmatory Factor Analysis (CFA) to test the construct validity of the Utrecht Work

Engagement Scale (UWES) using JASP. The first stage involved data checking and cleaning to ensure completeness and compliance with the researcher's predetermined criteria. Respondents who did not meet the inclusion criteria, such as being under 19 years of age or having worked for less than one year, were excluded from the analysis. This step was crucial to ensure that only appropriate and compliant data were used, thus ensuring more accurate and reliable research results.

The second stage involved descriptive analysis, which aimed to provide an overview of the participant characteristics and data patterns. In this stage, the researcher described the respondent profiles, including age distribution, gender, and type of employment, and calculated the average work engagement score based on its three dimensions: vigor, dedication, and absorption. The third stage involved construct validity testing using Confirmatory Factor Analysis (CFA). This analysis was conducted to ensure that the work engagement measurement instrument accurately measures the intended theoretical model, namely the three main dimensions. CFA tests whether the empirical data obtained from respondents' responses aligns with the three-factor theoretical model used. If the CFA results indicate a good fit between the model and the data, it can be concluded that the research instrument has good construct validity. To assess model fit in the CFA analysis, researchers will examine the Chi-square value. However, because Chi-square is sensitive to sample size, if the Chi-square value does not meet the assumptions, the researcher will interpret it through RMSEA values < 0.05, CFI, NFI, and GFI >0.90 (Kristiana & Purwono, 2018). In addition to the model fit index, this study also evaluated construct validity using Average Variance Extracted (AVE). AVE is used to evaluate the convergent validity of latent constructs in the CFA model with a standard value of >0.50 (Dunggio & Mayendry, 2025; Febrianti et al., 2023; Junianto et al., 2020).

The fourth stage, an internal reliability test was conducted using the Cronbach's Alpha coefficient. According to (Nunnally & Bernstein, 1995, in Hadi, 2023, a construct or variable is said to be reliable if it produces a Cronbach's Alpha value >0.70. This indicates that the items in the scale have a strong relationship with each other and consistently measure the same concept. Through this entire analysis procedure, the study is expected to provide an accurate picture of the extent to which the Indonesian version of the Utrecht Work Engagement Scale (UWES) demonstrates adequate validity and reliability in measuring the level of work engagement in research participants.

Results

After collecting data through an online questionnaire, this study obtained a total of 213 respondents. The next stage was systematic data cleaning to ensure the data met the established research criteria and ensured the quality and suitability of the data for further analysis. Based on this process, the number of usable data for analysis was reduced to 202. This reduction in the number of respondents was due to several respondents not meeting the research criteria, particularly for the employment variable. Respondents who stated their employment status as students were excluded from the analysis to ensure more representative, valid, and free from potential bias that could influence the interpretation of the research results. Therefore, the analyzed data is expected to provide a more accurate picture in accordance with the research objectives and targets.

Table 2
Demographic Data Age, Gender, and Occupation

Variable Data		%	n	Mean	Std. D
Age	19-56 Years	100	202	28.64	8.338
Gender	Man	57.9	117		
	Women	42.1	85		
Type of Work	Trade & Retail	34.7	70		
	State Apparatus & Government	26.7	54		
	Food & Beverages	10.9	22		
	Services & Customer Service	8.9	18		
	Educational Staff	7.4	15		
	Other	8	16		

Based on the results of the descriptive analysis, a total of 202 respondents were obtained, with an age range of 19-56 years. The average age of respondents was 28.64 years with a standard deviation of 8.338, indicating a fairly diverse variation in the ages of respondents. The majority of respondents were male, 117 people (57.9%), while female respondents numbered 85 people (42.1%). This composition indicates that the research participants were dominated by male respondents. Most respondents worked in the trade and retail sector, namely 70 people (34.7%). Furthermore, respondents who worked as State Apparatus and Government numbered 54 people (26.7%). In addition, respondents also came from several other sectors, such as food and beverages, services and services, education staff, health workers, industry and engineering, creative and media, banking and finance, as well as state-owned enterprises (BUMN/BUMD) and contract workers, with a smaller proportion. Although the number of respondents in these sectors is relatively smaller, the diversity of work backgrounds shows that the research participants have quite diverse characteristics, thus providing a broader picture of the conditions of respondents based on the type of work.

Table 3
Instrument Descriptive Data

	UWES
Mean	48.50
Std. Deviation	11.43
Z-Skewnesss	-4.421
Z-Kurtosis	5.240
P-value of Shapiro-Wilk	< .001

Researchers conducted Z-Skewness and Z-Kurtosis tests on respondents' total scores to verify the fulfillment of the data normality assumption. The test results showed that the Z-Skewness value was -4.421 and the Z-Kurtosis value was 5.240. These values indicate that the data distribution is not normally distributed, because the Z-Skewness and Z-Kurtosis values are outside the range of -2.58 to 2.58. Thus, the normality test assumption was not met according to the criteria proposed by Field (2009; in Matore & Khairani, 2020).

Table 4
Coefficient α Test of Total Score and Dimension of Measuring Instrument

Coefficient α	Estimate	Std. Error
Total Score	0.894	0.016
Vigor	0.747	0.039
Dedication	0.748	0.037
Absorption	0.773	0.028

The results of the Cronbach Alpha reliability test on the total score and dimensions of vigor, dedication, and absorption showed numbers above 0.70 with a Standard Error value of 0.016. This indicates that the Utrecht Work Engagement Scale (UWES) measuring instrument is a reliable measuring instrument for repeated testing because it is in accordance with the minimum Cronbach Alpha value standard of > 0.70 to be considered reliable (Nunnally & Bernstein, 1995). The Cronbach Alpha reliability value in this study is lower than that of (Aryanti et al., 2020) which has a reliability value of 0.93.

Table 5
Fit Index Test

Index	Value	Interpretation
Comparative Fit Index (CFI)	0.818	Model Doesn't Fit
Normed Fit Index (NFI)	0.743	Model Doesn't Fit
Root mean square error of approximation (RMSEA)	0.092	Medium Suitability
Goodness of fit index (GFI)	0.818	Model Doesn't Fit

The results of the Confirmatory Factor Analysis (CFA) analysis conducted to determine the level of model fit with the items indicate that the Goodness of fit index (GFI) value obtained does not meet the assumptions of a fit model. Based on the criteria proposed by Hu & Bentler (1995) in Kristiana & Purwono, 2018, a model is said to have a good fit if the CFI, NFI, and GFI values are above 0.90 and the RMSEA value is 0.08-0.10 for the Moderate Fit category. However, the results of the CFA test in this study show that the CFI value of 0.818, the NFI value of 0.743, and the GFI value of 0.818 are still below the recommended limit, while the RMSEA itself is 0.092 which is above the established criteria. These findings indicate that the tested measurement model does not fully match the empirical data obtained from respondents.

Tabel 6
Average Variance Extracted Test

Factor	AVE
Vigor	0.333
Dedication	0.352
Absorption	0.368

The Average Variance Extracted (AVE) standard value is >0.50 to be considered effective in measuring factors within an instrument (Dunggio & Mayendry, 2025; Febrianti et al., 2023; Junianto et al., 2020). The results of the Average Variance Extracted (AVE) analysis indicate that all dimensions of the Utrecht Work Engagement Scale (UWES) have AVE values below the minimum threshold of 0.50; thus, the convergent validity of the latent construct has not been met. This indicates that the indicators in each dimension have not been able to optimally explain the variance of the latent construct.

Discussion

This study was conducted to assess the psychometric properties of the 18-item Indonesian version of the Utrecht Work Engagement Scale (UWES) when used with workers in Gorontalo Province. The UWES was developed based on the concept of work engagement, which consists of three main dimensions: vigor, dedication, and absorption (W. B. Schaufeli & Salanova, 2002; W. Schaufeli & Bakker, 2004). These three dimensions theoretically describe an individual's energy at work, high emotional involvement, and the ability to focus and immerse themselves in their work. Therefore, testing the instrument's validity and reliability is a crucial step to ensure the Utrecht Work Engagement Scale (UWES) can be used appropriately in the context of this study.

Based on the results of the Confirmatory Factor Analysis (CFA), the three-factor model of the 18-item Indonesian version of the Utrecht Work Engagement Scale (UWES) did not demonstrate optimal fit with the empirical data. The model's fit indices, such as CFI, NFI, and GFI, fell below the recommended criteria, while the RMSEA value fell within the moderate fit category. Referring to the fit criteria proposed by (Hu and Bentler 1995 in Kristiana & Purwono, 2018), this condition indicates that the factor structure of the 18-item Indonesian version of the Utrecht Work Engagement Scale (UWES) does not fully align with respondents' response patterns. This indicates that although the three-factor model is theoretically well-established, in practice, this structure has not been fully confirmed among workers in Gorontalo Province.

The CFA results are supported by the Average Variance Extracted (AVE) findings, which indicate that all dimensions of the Utrecht Work Engagement Scale (UWES) have AVE values below the recommended standard. Low AVE values indicate that the items within each dimension are not optimally explaining the variance of the latent construct, resulting in relatively high error variance (Dunggio & Mayendry, 2025; Febrianti et al., 2023; Junianto et al., 2020). In other words, although the Utrecht Work Engagement Scale (UWES) items point to the construct of work engagement, the contribution of each item to the latent construct is still not empirically strong.

Interestingly, this suboptimal construct validity is not consistent with the reliability test results. The reliability analysis showed that the Cronbach's Alpha values for the total score and for each dimension of the 18-item Utrecht Work Engagement Scale (UWES) were above the minimum threshold of 0.70. Based on the criteria proposed by Nunnally and Bernstein (1995), this value indicates that the 18-item Utrecht Work Engagement Scale (UWES) has good internal consistency. In a study by Aryanti et al., 2020, the Cronbach's Alpha reliability value was 0.93, indicating a decrease from 0.93 to 0.894 in this study. However, the items in this scale remained correlated and consistently measured work engagement. However, good reliability does not automatically guarantee that the construct structure aligns with the proposed theoretical model. Because the research data is not normally distributed, careful interpretation of the results is necessary, particularly when generalizing the findings to a broader population.

These findings indicate that high reliability does not always translate into good construct validity. High internal consistency indicates that the items in the Utrecht Work Engagement Scale (UWES-18) are interrelated and consistently measure the concept of work engagement. However, Confirmatory Factor Analysis (CFA) results indicate that the relationships between the items do not fully form a three-factor structure of vigor, dedication, and absorption as proposed in the theoretical model. Therefore, although

this instrument demonstrates good response consistency, its construct structure requires further evaluation to more accurately represent the concept of work engagement among workers in Gorontalo Province.

The discrepancy between reliability and construct validity results is likely influenced by the characteristics of the psychological constructs and the tendency of respondents to cluster their responses. One factor suspected of influencing how respondents answered items in the Utrecht Work Engagement Scale is the variation in respondents' ages, with an average age of 28, which is considered Generation Z. According to Iftadi et al., 2025, employee empowerment by leaders contributes 19.6% to the formation of work engagement in Generation Z employees. This finding indicates that work engagement in this age group is heavily influenced by situational and contextual factors within the organization or company. This argument is further supported by research by Aryanti et al., 2020, which states that one of the limitations in analyzing the UWES measurement tool is age variation.

Therefore, the low AVE value can be understood as a reflection of the characteristics of Generation Z, where work engagement is heavily influenced by leadership and the work environment. This condition causes work engagement responses to vary and not yet form consistently, thus weakening the construct's representation in the 18-item Utrecht Work Engagement Scale (UWES) measurement model. The results of this study indicate that the Indonesian version of the 18-item Utrecht Work Engagement Scale (UWES) has good reliability, but its construct validity still requires further evaluation. This finding does not indicate that the UWES-18 is unsuitable for use, but rather indicates that its measurement results need to be interpreted cautiously because the three-factor structure does not fully match the empirical data. Therefore, evaluation of statement items with low factor loadings is necessary to improve the quality of the instrument's construct validity in future research.

Conclusion

This study aimed to test the validity and reliability of the Indonesian version of the Utrecht Work Engagement Scale among workers in Gorontalo Province using Classical Test Theory (CTT) and Confirmatory Factor Analysis (CFA). The analysis results showed that the UWES-18 had good reliability across both its total score and dimensions. The Cronbach's Alpha value, which was within the minimum threshold, indicated that this instrument had adequate internal consistency in measuring work engagement. However, the construct validity test results indicated that the three-factor model of the 18-item Utrecht Work Engagement Scale (UWES) did not fully align with the empirical data. The model fit index and AVE values were below the standard, indicating that the instrument's items did not optimally reflect the latent construct. Therefore, the first hypothesis (H1) was not supported, and the second hypothesis (H2) was supported in this study.

Future researchers are recommended to conduct cross-cultural testing, namely retesting the Utrecht Work Engagement Scale (UWES-18) in different cultural groups and regions to determine whether this instrument continues to produce consistent results. Further research should also conduct measurement invariance testing, which is testing to ensure that the instrument measures work engagement in the same way across different respondent groups, such as based on gender, age, type of work, and length of service. Furthermore, researchers are advised to evaluate or revise statement items that have low factor loadings,

i.e., items that are less able to represent the construct being measured, or items that contribute to low Average Variance Extracted (AVE) values, which are measures that indicate how well each dimension can explain the variation of its constituent items. The construct validity of the Utrecht Work Engagement Scale (UWES-18) is expected to be improved in further research.

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