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Research article

Predictors of employee well-being: A global measurements using reflective-formative model

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ABSTRACT

Background: Employee well-being (EW) is an integral part of occupational safety & health. Therefore, measuring EW is very important for holistically evaluating well-being instruments and measurement models. This research aimed to identify and confirm dimensions that significantly contribute to EW and also to examine the reliability and validity of the formative model of EW.
Methods: The survey consisted of 89 items from a well-being questionnaire administered to 426 employees in the coal mining industry, covering five domains. Measurements were analyzed using partial least squares–structural equation modelling (PLS-SEM) with SmartPLS 4.1.1. The measurement and analysis were conducted in two stages, the first of which used a reflective model. Subsequently, the results of the first stage were used in the second stage as a formative model to measure EW globally.
Result and conclusion: Home, Community, and Society (HCS), Health Status (HS), Workplace Environment and Experience (WEE), Workplace Policies and Culture (WPC), as well as Workplace Environment and Safety Climate (WPE) domain significantly contributed to EW, as identified through first-order reflective and second-order formative models.
Contribution: This research developed a measurement model for EW with two orders: first-order reflective and second-order formative. It also offered practical insights for organizations and companies to measure and understand EW, providing a basis for implementing effective interventions.

1. Introduction

Total Worker Health (TWH) is a practice and guideline that integrates well-being into occupational safety and health to improve employee well-being (EW) [1,2]. Generally, well-being is a positive concept comprising various factors contributing to employee health and quality of life [3,4]. Additionally, well-being is crucial for creating a healthy and safe work environment and improving EW's entire motivation and productivity [5,6]. An example of a model for measuring EW is subjective measurement [7], using reflective-formative models [8–10]. According to Dennerlein et al. [2], integrating occupational safety and health can improve EW by reducing accidents and maintaining a safe work environment. EW has been measured using a reflective-formative model [11] with a subjective approach to data collection. Additionally, [12], introduces an objective approach to complement the measurement of EW.

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EW's subjective and objective measurements contain individual evaluations of happiness, life satisfaction, health, and work opportunities [13].

The measurement of EW is still a debated topic, particularly concerning the most effective approach. A significant part of the debates centres on EW's theoretical importance and essential dimensions, leading to the perception that existing instruments are inadequate [14,15]. Even though various scales for measuring EW have been developed and validated, no standard instrument has been universally accepted [11,14]. Measuring EW independently is challenging due to the interdependent relationships between dimensions [16,17]. Additionally, current measurement approaches have not fully validated the formative construction, often relying on reflective models instead [11]. Most measures of EW focus on individual abilities rather than socio and organizational factors [18]. Also, the standard form for measuring EW has not been established [14] due to the poorly defined relationships between dimensions and the lack of universally accepted measurement standards [11,16].

Several research studies show the necessity of developing comprehensive models to measure EW from various aspects. Additionally, it also assists in identifying factors that improve EW from both objective and subjective perspectives, ensuring employee feels safe, healthy, and secure [19]. A critical area is the construct component, which significantly impacts EW. Loveridge et al. [20] developed well-being measurement protocols using interdisciplinary mixed methods across various work environments. In this research, the results of EW measurement can guide organizations and companies in designing specific interventions, recognizing that well-being is a holistic concept [1,21,22].In addition, this research carries out holistic measurements regarding the complexity of construction and practical implementation [19]. Subsequently, a reflective-formative approach was used to measure EW [23]. The primary objectives are to identify and confirm the dimensions that contribute significantly to EW and to examine the reliability and validity of EW according to its formative nature.

2. Literature review

The workplace environment significantly influences employee and represents a substantial investment in their work. Employee often face stressful environmental conditions that reduce their well-being [24]. This implies that when employee faces stressful environmental conditions, their well-being tends to be affected [25]. Therefore, organizations need to improve EW in order to increase productivity and reduce absenteeism due to accidents [26,27]. It is crucial to be aware that EW is closely related to experiences and daily life in the family and organizational environment [28]. According to Batat [29], experience and evaluation are signs that can improve EW. In addition, home, community, and society (HCS) should also be considered both externally and internally [30]. Other aspects related to EW are also reviewed in questionnaires, such as work environment, workplace, and work experience evaluation [19]. Considering that EW is a key organizational goal Adler & Seligman [31], implementing the practice requires strong commitment [32]. Organizational support promotes a work environment that improves EW [8]. Previous measurements of EW primarily used reflective model, as described by Khatri & Gupta [11], and have been developed into two reflective-formative orders. Developing questions globally becomes a tool to measures EW comprehensively [13]. Specifically, formative calculations measure multicollinearity among formative components [33]. Meanwhile, reflective-formative research describes construct validity using structural validity [9].

Employee well-being is a positive concept that captures many factors that contribute to workers' health and quality of life [34]. This work lays the foundation for more significant efforts to measure the employee's well-being and will provide tools for practitioners to assist workers. The conceptual model in this study is to explore physically visible factors and non-physical factors that have a significant influence on the achievement of Total Worker Health (TWH). Conceptualizing and measuring EW is a growing field of research. Schulte et al., [35], Said that EW has been measured through various concepts such as job satisfaction, employee engagement, positive emotions, good physical or mental health, and the quality of social relationships [36,37]. Therefore, well-being has been proposed as a unifying framework for integrating various occupational safety and health indicators and a valuable tool for researchers and occupational health practitioners who wish to develop and implement a holistic approach to improving the overall quality of the workforce population. However, for such an approach to be successful, agreed definitions and measures of worker well-being must be used as a starting point for action.

Chari et al. [34] Categorize and group five domains towards well-being, namely Workplace physical environment and safety climate (WPE), including factors related to physical features and safety of the work environment [37,38]. Workplace policies and culture (WPC) related to organizational policies, programs, and practices that have the potential to affect workers' well-being [35, 39–41]. Health status (HS) involves aspects of an individual's life related to physical and mental health and well-being [42,43]. Work evaluation and experience (WEE) refers to individual experiences and assessments related to the quality of work life, including aspects of job satisfaction, work engagement, and emotional factors towards work [29,44,45]. Home, community, and society (HCS) covers external contexts or aspects of an individual's life that lie outside of work but can still affect the well-being of workers [40,46,47].

The HCS scale with 5 items was adopted from Ref. [19], where all items in this variable were measured on a 6-point Likert scale (1 = not completely satisfied, 6 = very satisfied, 1 = not worried at all, 6 = very worried). HS scale with 23 items was adopted from Refs. [19,48], and all items in this variable were measured on a 6-point Likert scale (1 = poor, 6 = very good, or 1 = not at all, 6 = almost every day). Furthermore, the WEE scale with 16 items was adopted from Refs. [19,49], where all items in this variable were measured on a 6-point Likert scale (1 = strongly disagree, 6 = strongly agree, or 1 = never, 6 = always). WPC scale with 14 items was adopted from Refs. [19,50], and all items in this variable were measured on a 6-point Likert scale (1 = strongly disagree, 6 = strongly agree, or 1 = never, 6 = always). In addition, WPE scale with 10 items was adopted from Refs. [19,51], where all items in this variable were measured on a 6-point Likert scale (1 = strongly disagree, 6 = strongly agree, or 1 = not completely satisfied, 6 = very satisfied). In addition, this research method included selecting formative indicators and measurement constructs as outcome variables [52]. One measure of EW, EWBG" – "I feel complete EW in my work," was used globally to address under-identification and support validation objectives. A theoretical proposal for measuring EW was shown in Fig. 1.

H1. Health status was a significant measure of EW.

H2. Home, community, and society were a significant measure of EW.

H3. Workplace evaluation and experience were a significant measure of EW.

H4. Workplace policies and culture were a significant measure of EW.

H5. The physical environment and safety climate of workplace were significant measures of EW.

H6. EW was reflective first order and formative second order.

3. Materials and research method

The research consisted of four steps (Fig. 2), the first of which was to conduct a literature review regarding EW. Specifically, the first step consisted of developing a work well-being questionnaire instrument composed of 5 domains and collecting data. Furthermore, this exploration used a questionnaire regarding the general health of employees, which included sections on Home, Community, and Society (HCS), Health Status (HS), Workplace Environment and Experience (WEE), Workplace Policies and Culture (WPC), as well as Workplace Environment and Safety Climate (WPE) were all part of the questionnaire [19]. The second step was to measure the reliability and validity of all EW indicators. The acceptable limits were typically skewness and kurtosis with values of <2.00 and < 7.00. Indicators with outer loading <0.400 were deleted, those with outer loading between 0.400 and 0.700 were maintained when average variance extracted (AVE) was >0.500, and indicators with outer loading >0.700 were retained. In addition, Alpha of Cronbach, Rho_A, and Rho_C were all >0.700, with Rho_A values falling between Alpha of Cronbach and Rho_C. To determine the validity of the questionnaire, explorers used discriminant validity measurements with Fornell-Larcker and the heterotrait-monotrait ratio (HTMT), which were <0.85 [53]. The third step was to identify formatively measured elements that were not excessive in the variance matrix of the observed variables and had to correspond to variables not identified in the model or latent constructs. This research method selected reflective indicators and reflective measurement constructs as outcome variables [52]. EWBG measure, which assessed employee comfort at the workplace, was included to address identity loss and validation issues. Moreover, this proposed step includes global measurements that review significant construction aspects [52]. Formative measurements included calculating the path coefficient with limit >0.700, outer load >0.500, T-value >1.645, and P-value <0.005 [10]. The fourth step was to discuss as well as finalize the results and the detailed steps were showed in Fig. 2.

The population in this research consisted of coal mining employees in Indonesia, totalling 23,857 people, including 3121 foreigners. Four hundred and twenty-six respondents were randomly selected from the population, showing that the respondents had completed the questionnaire as required. Furthermore, the number of respondents passed the data adequacy test using the G.power and Danielsoper calculator at a probability level of 0.05 was 426. The second exploration used a gradual design, but the first explorer used a well-being questionnaire with reflective Structural Equation Modeling (SEM). This method was used to identify dimensions of EW as a holistic construct related to work and the workplace. All constructs of the well-being questionnaire were analyzed, and in the second stage, only valid and realistic constructs and indicators were used [11]. However, the second step determined the reliability and validity of EW factors by adding global indicators of EW.

Explorers collected data from June 2023 to December 2023 in three stages. First, respondents were informed about the research objectives, and in the second step, respondents provided consent by filling out a consent form. Respondents completed the questionnaire in the third step, and eighty-nine instruments were used [19]. Additionally, this research used a well-being questionnaire with five domains for 426 respondents from four mining locations in Indonesia. Based on the data adequacy test with the G*Power program [53], the number of respondents was sufficient, and explorers kept the identity of respondents confidential.

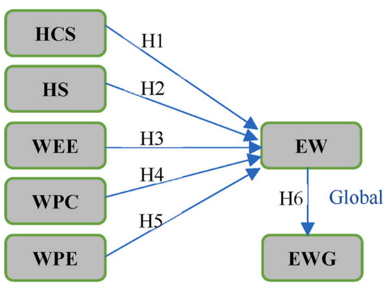

Fig. 1. Theoretical measures of EW

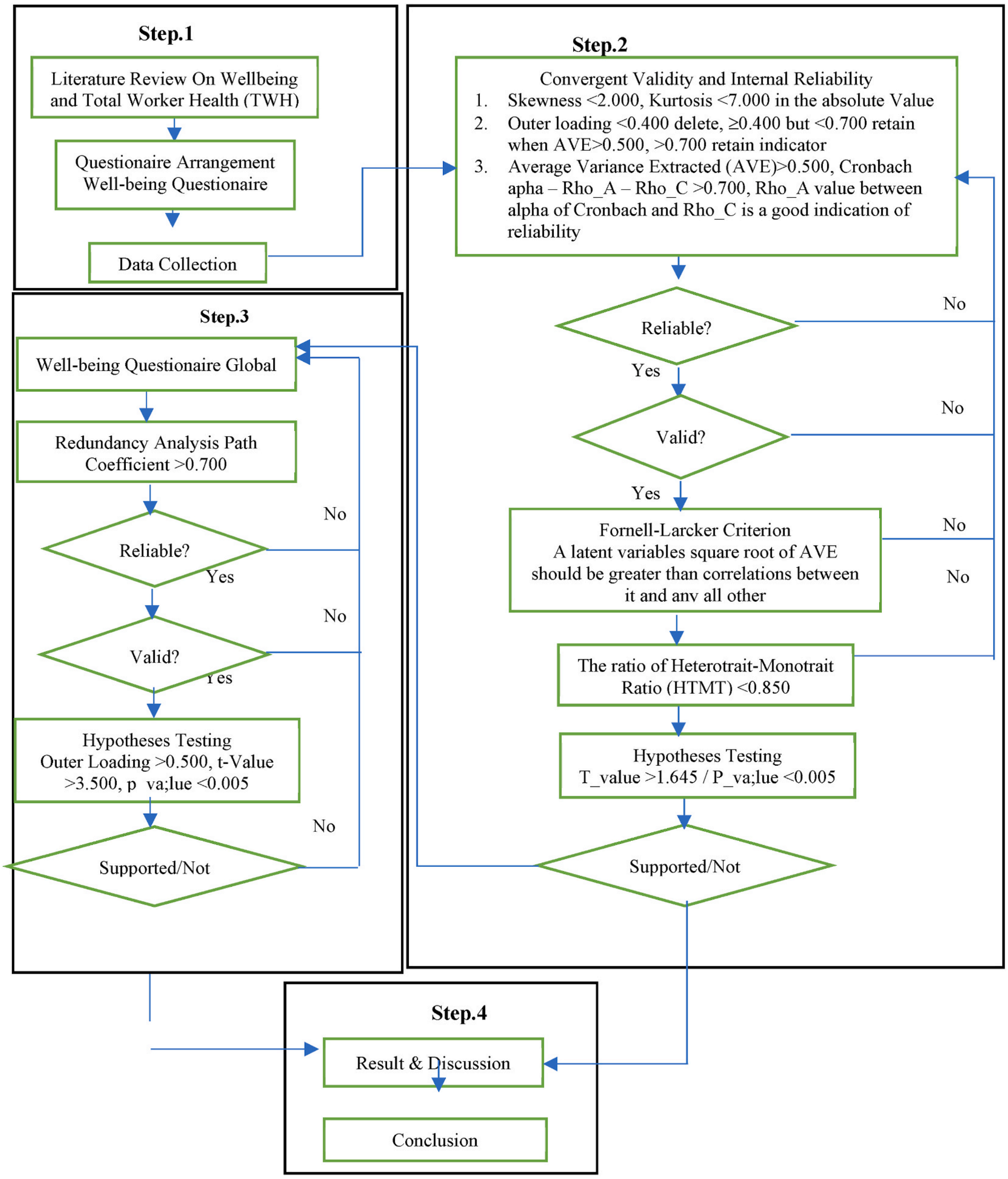

Fig. 2. Steps of research.

4. Results

4.1. Characteristic of respondents

Table 1 shows the characteristics of 426 respondents who participated in this research. The number of female respondents was 1.42 %, while males constituted 98.58 %. Typically, respondents aged 18–29 were the most represented, constituting 48.35 %, followed by those aged 30–44 years and those aged 45 to above 55, with respective percentages of 44.60 % and 7.05 %. Among the respondents, 73.03 % were full-time, and 26.95 % were employed part-time. Of most respondents, 85.37 % had completed high school, while 14.63 % had a bachelor's degree or higher. Regarding income, 74.19 % of respondents earned US$3500-US$5000/year. 12.36 % received US $5001–6500/year, 12.36 % made US$6501–8000/year, and only 6.45 % earned more than US$ 8000/year. In addition to the characteristics, 63.50 % of the respondents were married, and 36.50 % were unmarried.

Table 1
Demographic profile of respondents.

Characteristics	Category	Number of Samples (n)	Percentage (%)
Work Arrangement	Standard Work Arrangement	420	98.59
	Contract Worker	6	1.41
Part-time – full time	Full-time	298	73.03
	Part-time	110	26.97
Duration of Job	<1 year	172	41.14
	1–5 year	144	34.44
	6–10 year	58	13.87
	10–20 year	24	5.74
	>20 year	20	4.78
Age	18–29 year	206	48.35
	30–44 year	190	44.60
	45–55 year	28	6.57
	>55 year	2	0.46
Education	Senior High School	322	85,37
	Diploma	28	6.60
	Bachelor's or higher	34	8.01
Ethnic	Asia	348	84.87
	Others	62	15.13
Sex	Male	418	98.58
	Female	6	1.42
Income	US$3.500 – US$5.000/year	276	74.19
	US$5.001 – US$6.500/year	46	12.36
	US$6.501 – US$8.000/year	26	6.98
	>US$ 8.000/year	24	6.45
Marital Status	Married	268	63.50
	Never married	154	36.50

Table 2
Internal consistency reliability and convergent validity.

constructs	Item Code	Item	Outer loadings	AVE	Cronbach alpha	Rhoa_a	Rho_c
HCS	HCS1	Life Satisfaction	0.857	0.521	0.708	0.799	0.809
	HCS2	Financial Insecurity	0.673				
	HCS3	Support outside of work	0.768				
	HCS4	Activities outside of work	0.554				
HS	HS1	General Health	0.735	0.508	0.861	0.868	0.891
	HS3	Chronic Health Condition	0.660				
	HS6	General Stress	0.644				
	HS11	Risky drinking	0.675				
	HS12	Healthy diet	0.817				
	HS13	Sleep hours	0.671				
	HS18	Work-Related Injury	0.815				
	HS19	Injury Consequence	0.663				
WEE	WEE1	Job	0.804	0.532	0.817	0.834	0.869
	WEE2	Wage	0.785				
	WEE3	Benefits	0.796				
	WEE4	Advanced	0.778				
	WEE5	Supervisor	0.657				
	WEE6	Coworker	0.505				
WPC	WPC1	Management trust	0.762	0.607	0.903	0.909	0.924
	WPC2	Health culture at work	0.890				
	WPC3	Supportive work culture	0.823				
	WPC4	Work to non-conflict	0.759				
	WPC5	Non-work-to-work conflict	0.889				
	WPC6	Availability of job benefits	0.816				
	WPC7	Programs at work	0.519				
	WPC8	Workplace flexibility	0.710				
WPE	WPE1	Work-related sexual harassment	0.770	0.502	0.795	0.797	0.856
	WPE2	Work-related physical violence	0.753				
	WPE3	Discrimination	0.642				
	WPE4	General workplace safety	0.772				
	WPE5	Physical environment satisfaction	0.761				
	WPE6	Workplace safety	0.514				

4.2. Convergent validity and internal consistency reliability

The skewness and kurtosis values were measured in this step, and all EW indicators in the research were within acceptable limits, with a maximum skewness of 0.655 and kurtosis of 1.108. Furthermore, AVE, Rho_a, and Rho_c values were also in acceptable limits, where the average variance extracted (AVE) was >0.500, Alpha of Cronbach >0.700, Rho_a >0.700, and Rho_c > 0.700. The Rho_a value was between 'Alpha of Cronbach (the lower limit) and Rho_c (the upper limit), showing that all constructs were valid and reliable. In addition, items with values between 0.4 and 0.7 were reviewed to determine when the objects should be kept or removed based on the impact of items on AVE being greater than 0.50. Table 2 shows the convergent validity and internal consistency reliability results after adjustments.

The selected indicators were found to be valid and reliable based on measurements of external load, AVE, Cronbach Alpha, Rho_a, and Rho_c. All indicators for home, community, as well as society were kept and there were eleven indicators showing deviations in health status. Furthermore, nine indicators were deleted due to outer load <0.400, and two were deleted, although outer load >0.400, AVE <0.500. The removed health status indicators were poor days (physical and mental health), insomnia, poor mental health, physical activity, and tobacco use. In addition, alcohol consumption, sleeping at work, and limitations in cognitive function, work, as well as work productivity were deleted from the health status. Six work and experience evaluation indicators were kept, while eight were deleted. The indicators that were deleted included work security, work autonomy, time scarcity, meaningful work, fatigue, and work bullying, typically because the external load was <0.400. However, all workplace policies and culture indicators remained unchanged. Table 2 shows that ave >0.500, rho_a, rho_c, and Cronbach alpha >0.700, and the Rho-a is between Cronbach alpha and rho-c, which shows that the indicators are valid and reliable [54,55].

4.3. Discriminant of Fornel-larcker

Table 3 showed discriminant validity according to the Fornell-Larcker criteria. Traditional methods for assessing discriminant validity require that the external loading of an indicator on a construct be higher than all its cross-loadings with other constructs. Additionally, the square root of AVE of each 'construct should be higher than its highest correlation with any other construct. All valid constructs in this research met the Fornell-Larcker criteria [56]. The discriminant validity measures for the five constructs HCS-HS-WEE-WPC-WPE were 0.722, 0.713, 0.729, 0.779, and 0.708, respectively, showing validity because these values had higher cross-loadings than the other constructs.

4.4. Heterotrait-monotrait ratio (HTMT)

Table 4 showed discriminant validity using a heterotrait-monotrait ratio (HTMT) with a value of <0.850, showing discriminant validity. The measurement discriminant validity with HTMT of all five HCS-HS-WEE-WPC-WPE constructs was valid <0.850 because all of the result measurements <0.850.

4.5. Hypotheses testing

Table 5 showed that all constructs had a significant effect on t_values > 1.645 and p_values < 0.005. The hypothesis results in Table 5 supported H1 through 5, showing that factors such as home, community, society, health status, evaluation and work experience, workplace policies and culture, as well as workplace environment and safety climate significantly influenced EW. Since the T-value was >1.645 and the P-value <0.005 for all constructs, all hypotheses were accepted. Complete hypothesis measurement results could be seen in Fig. 3 and Table 5.

The assessment of EW was conducted in two steps. The first stage focused on reflective measurement to evaluate the significance of HCS-HS-WEE-WPC-WPE for EW. Subsequently, the formative model was evaluated after combining global indicators. The hypothesis testing in Table 5 confirmed that H1 to H5 was supported, as shown by t_values > 1.645 and p_values < 0.005. The subsequent step included redundancy analysis in Fig. 4 and the formative assessment model in Table 6.

4.6. Analysis of Redundancy

Formative measurement models had a significant weakness, the models required additional data for statistical identification. To

Table 3
Discriminant of fornel-larcker.

	HCS	HS	WEE	WPC	WPE
HCS	**0.722**				
HS	0.044	**0.713**			
WEE	−0.093	−0.296	**0.729**		
WPC	−0.013	−0.268	0.576	**0.779**	
WPE	−0.033	−0.324	0.605	0.633	**0.708**

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

Table 4
Heterotrait-monotrait ratio (HTMT).

	HCS	HS	WEE	WPC	WPE
HCS					
HS	0.087				
WEE	0.155	0.337			
WPC	0.074	0.306	0.675		
WPE	0.088	0.384	0.753	0.728	

Table 5
Hypotheses testing.

Hypo theses	Patch	Std. Beta	Std. Error	t_value	p_value	Bias	interval		R^2 Adjusted	f^2	VIF	Decision
							5.00 %	95.00 %				
H1	EWB - > HCS	−0.070	0.118	10.593	0.002	0.040	−0.169	0.150	0.003	2.005	1.000	supported
H2	EWB - > HS	−0.557	0.046	12.065	0.000	−0.004	−0.622	−0.468	0.309	0.450	1.000	supported
H3	EWB - > WEE	0.801	0.021	37.446	0.000	−0.001	0.761	0.832	0.641	1.792	1.000	supported
H4	EWB - > WPC	0.862	0.016	52.853	0.000	0.000	0.826	0.882	0.742	2.887	1.000	supported
H5	EWB - > WPE	0.828	0.017	47.596	0.000	0.000	0.798	0.853	0.684	2.177	1.000	supported

Note: $p \leq 0.05$ (1-tailed test).

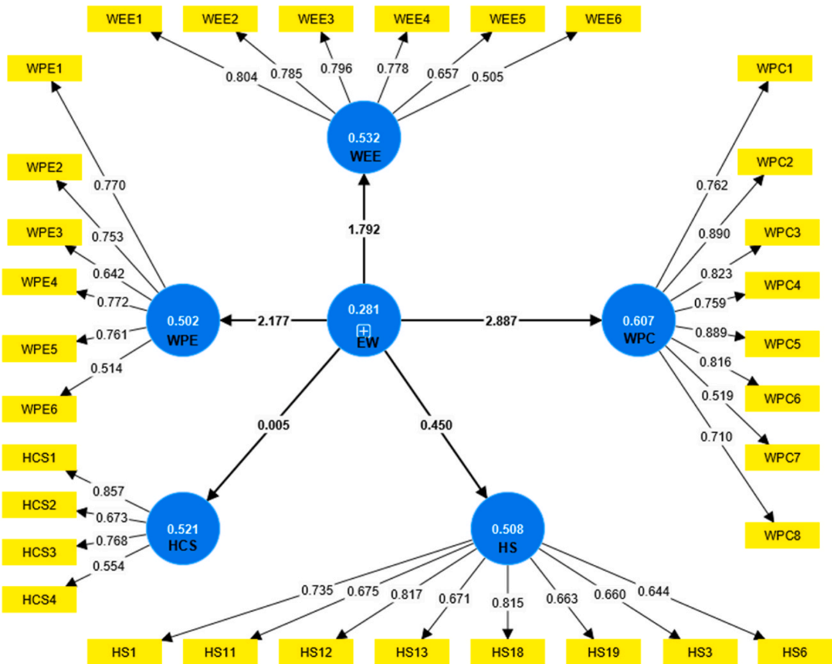

Fig. 3. Patch Coefficients after modification (bootstrapping subsample 5000, level significance 0.05, one-tailed test).

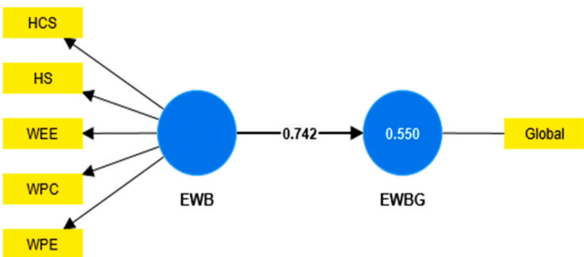

Fig. 4. Analysis of redundancy.

Table 6
Measurement formative evaluations of model.

Construct	Item	VIF	Std.Beta (Convergent Validity)	Outer Weight	Outer Loading	Std.Error	t_value	p_value
EWB	HCS	1.012	0.742	0.146	0.701	0.069	4.953	0.002
	HS	1.141		0.258	0.712	0.048	10.638	0.000
	WEE	1.786		0.475	0.882	0.008	109.855	0.000
	WPC	1.856		0.256	0.788	0.030	26.245	0.000
	WPE	1.995		0.326	0.839	0.018	46.566	0.000

identify measurable formative constructs, the covariance matrix of 'non-redundant elements of observed variables was exceeded or equalled to the total of 'unknown model parameters and latent constructs. In addition, this research method included selecting formative indicators and measurement constructs as outcome variables [52]. One measure of EW, EWBG" – "I feel complete EW in my work" was used globally to address under-identification and support validation objectives. Khatri & Gupta [11] recommended adding a global metric that reviews main contraction points. The validity of formative indicators was shown by the relationship with the general measure, assuming that the total measure was a valid criterion.

The analysis in Fig. 3 showed that the patch coefficient was 0.724, with the recommended threshold being 0.700 [53]. This research supported the convergent validity of the construct, showing that EW was a first-class formative construct reflecting the five dimensions of HCS-HS-WEE-WPC-WPE. Additionally, EW was identified as a determining construct that supported the research findings.

4.7. Measurement formative evaluations of model

Table 6 showed significant measurement results based on Convergent validity, t_value, and p_value results after using EWBG indicators to analyze formative measures.

Based on the review results of hypothesis testing in Table 6, the outcome was found that convergent validity was achieved at 0.742. This result showed that all constructs had t_value $>$ 1.645 and p_value $<$ 0.005, leading to the acceptance of all hypotheses [57]. However, H1 through 5, which were HCS-HS-WEE-WPC-WEE, were shown to significantly impact EW while H6 recommended that EW was both reflexive and formative.

5. Discussion

The research used structural equation models to validate the structure and various criteria for forming formative constructs. Based on the findings from the reflective model, it was determined that H1, showing health status, was a significant measure of well-being. Furthermore, H2 showed that factors related to HCS were important for well-being. Meanwhile, H3 presented that job and experience evaluations played a crucial role in well-being. H4 showed that workplace policies and culture were significant indicators of well-being. However, H5 showed that physical climate and workplace safety were major factors in well-being. In addition, EW appeared as a crucial concept in this research, helping to understand its nature and establish its effectiveness as a formative construct.

The measurement results showed a structure consisting of five domains namely, HCS, HS, WEE, WPE, as well as WPC, and the EW of the model was evaluated using various parameters. Furthermore, the parameters comprised five first-order reflective constructs that led to second-order formative constructs. Several parameters experienced evaluation using the checklist developed by Fleuren et al. [58], who viewed EW as a formative reflexive construct at both the second and first levels. This research was significant and distinctive because it showed differences across dimensions of EW, including multiple factors influencing well-being, and also identified associations among the features.

In line with the earlier discussion, the dimensions were fundamentally different and did not show a strong correlation or interaction because the measurements represented distinct aspects of the EW construct. This research used structural equation modelling to ensure structural validity and various criteria for forming formative constructs. Furthermore, the exploration signified EW as a suitable method to clearly explain the nature of the concept and its validity as a formative construct. The research determined the relative importance of various components of the construct by showing the weights of the indicators in the model. The findings of this exploration further informed interventions aimed at improving EW. Subsequent research was anticipated to assess the impact of interventions both before and after the implementation. Combining occupational health, safety, and EW into TWH concept promoted a deeper understanding of employee safety, health, performance conditions, and well-being. In addition, this research was established in its measurement of EW using the NIOSH Well-Being Questionnaire with reflective-formative measures. The global measurement of EW among 1068 employees in the United States and the United Kingdom using a subjective method stressed the need for standardization in well-being measurements [51]. When evaluating EW, it was crucial to consider global outcomes as substantive measurement objectives and perspectives that contribute to assessing cognitive and affective well-being [59].

The research provided a comprehensive model for measuring EW, where Companies used the five EW factors to get an accurate result of well-being in the workplace. Furthermore, the exploration stressed the need for companies to focus on five major dimensions of EW, specifically in the work environment. The research proposed that job engagement and satisfaction were critical for improving EW [26,60,61]. Based on the measurements, interviews, and previous intervention evaluations, organizations implemented various strategies to improve work engagement and satisfaction. In addition, both theory and empirical research focused on the importance of building employee resources to improve well-being [1]. Strengthening these resources through operational interventions addressed work demands while maintaining or improving work engagement and satisfaction [62].

In line with the previous paragraph, interventions were designed to prevent employee from becoming physically and mentally exhausted. Companies needed to ensure that employee received all the extrinsic and intrinsic benefits and rewards necessary to improve job satisfaction and performance. Furthermore, recommendation was made that organizations recognize and value human resources to improve general resources [3]. This research provided an important understanding of well-being that formed the basis for both theory and practice.

6. Limitations and recommendations for future research

The finding had limited usefulness as it focused only on factors influencing well-being. Other explorers could test these variables in different job settings that require positive focus. Additionally, research needed to be conducted before and after implementing the procedure. Future explorers could also examine work-related factors such as work stress, organizational commitment, and other aspects of WE. Furthermore, cross-cultural and cross-country comparisons should be made to analyze EW. Responses in this exploration were obtained from self-reported questionnaires, which increased the possibility of common method unfairness. Moreover, this research was based on individual observations, which changed for a moment due to the influence of the psychosomatic mental state of the person.

7. Conclusion

In conclusion, the HCS-HS-WEE-WPC-WPE construct made a significant contribution to EW and was identified for its formative nature. This research contributed to the theory that measuring EW comprised two steps namely a reflective model in the first order and a formative model in the second order. Furthermore, organizations and practitioners could use this research to measure EW holistically. The research used structural equation models to conduct structural validation and various formative indicator modelling criteria to form formative constructs. These formative measurements represented global testing and the findings provided a comprehensive model that was the basis for measuring EW. Therefore, organizations used these five EW factors to get an accurate result and appropriate conditions for EW in the organizational or company environment.

CRediT authorship contribution statement

Willy Tambunan: Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Sri Gunani Partiwi:** Writing – review & editing, Supervision, Conceptualization. **Adithya Sudiarno:** Writing – review & editing, Supervision, Methodology, Data curation, Conceptualization.

Data availability

Data was available during the research and data requests through the authors.

Ethical approval

Research on respondents has been approved and carried out by the protocol of the Commission of Ethical Research For Health Medical Faculty of Mulawarman University Number.152/KEPK-FK/X/2023.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.heliyon.2024.e40222.

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