Structural validity of Utrecht Work Engagement Scale in the Indian Context

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Abstract

The present study assesses the structural validity of four different measurement models of the Utrecht Work Engagement Scale in the Indian context. Data were collected from 300 banking professionals from private-sector banks. Confirmatory factor analyses were used to evaluate the structural validity of the instruments, and internal consistency was also examined. Confirmatory factor analyses results showed a superior fit of the two-factor structure (vigor and dedication) over and above the one-factor and three-factor structure of UWES-9 items. While theoretical defined three-factor structure of UWES-9 also demonstrated adequate goodness-of-fit estimates on the Indian sample. Based on the findings, it was suggested that a two-factor structural model (vigor and dedication) could be a cost-effective and viable alternative to measure work engagement in the Indian context.

Keywords: Structural validity, factorial validity, work engagement, engaged workers, UWES

Introduction:

Work engagement is one of the most popular concepts in occupational health psychology because it is strongly associated with positive outcomes for both organizations and individuals in this competitive business world (Bakker & Albrecht, 2018). Engaged workers perform extraordinarily in their jobs by attaching themselves emotionally, cognitively, and physically to their work roles and providing value to the organization in the form of innovativeness and competitiveness (Albrecht et al., 2015). Work engagement is defined as 'positive, fulfilling, work-related psychological state characterized by the dimensions of vigor, dedication, and absorption' (Balducci et al., 2010, p.143). Vigor is defined as high levels of energy and mental resilience of an individual while

working. Dedication refers to the strong involvement of an individual with his/her work and fulfilling a sense of pride, significance, inspiration, challenge, and enthusiasm. Absorption is leveled as a full concentration of mind in one's work, whereby time flies and one faces difficulty in detaching oneself from the work desk.

The most extensively used device to plant the conceptual definition of work engagement in practice is the Utrecht Work Engagement Scale (UWES). The scale was developed by Schaufeli and Bakker (2003). The original scale consists of 17 observed items to measure the three distinct characteristics of work engagement: vigor, dedication, and absorption. Vigor was loaded with three observed items, the dedication was equipped with five observed items, and the rest of the six items were used to measure the absorption. Later, a short form of UWES was developed with 9 items equally divided into three dimensions with similar psychometric properties and became an alternative to the UWES-17 items (Schaufeli, Bakker, & Salanova, 2006). Further, Seppala et al. (2008) conducted a longitudinal study and observed that the UWES-9 factor structure remained comparatively unchanged across the samples, and time and exhibited sound construct validity over the UWES-17 items. According to the leading psychology publication depository, PsycINFO, the UWES-9 item scale was used in 83 percent of the research articles deposited in this database (Schaufeli

& Salanova, 2011). Furthermore, the scale gained widespread popularity and was translated into different languages such as Vietnamese (Tran et al., 2020) Spanish (Serrano et al., 2019), Brazilian (Vazquez et al., 2015), Italian (Balducci et al., 2010), Norwegian (Nerstad, 2010), Japanese (Shimazu et al., 2008), and Chinese (Zhang & Gan, 2005). Concerning India, Hindi is the national language of India. No endeavor was shown by the researcher to develop a Hindi version of the scale as higher education in India has been taught in the English language (Alok, 2013). In addition, most organizations used English as well as Hindi as an operational language in their day-to-day paperwork. So, workers in India are well familiar with English, therefore, transformation of scale into Hindi may not be required.

Despite its ubiquitous popularity, UWES- 9 items scale getting widespread disagreement regarding its factor structure (Wickramasinghe et al., 2018; Lekutle & Nel, 2012; Shimazu et al., 2008; Hallberg & Schaufeli, 2006; Sonnentag, 2003; Storm & Rothmann, 2003).Conceptually, work engagement is defined as a three-dimensional structure, but validation studies on work engagement have observed the presence of one dimension as well as a two-dimension structure. For example, Shimazu et al. (2008) confirmed the greater fit of the one-dimensional structure of the UWES-9 scale as compared to the three-dimensional structure of UWES-9, and the structure remained stable across

three independent sample groups in Japan. Sonnentag (2003) observed indistinctness in the factor structure of the scale using principal component analysis and used the total composite scale for further analysis. In addition, De Buhi and Henn (2013) used two factor model of work engagement in their study over and above one factor and three-factor structure of UWES. It was also evident from the study reported by Wefald et al. (2012) that both three and one-factor structures were unable to produce the desired model fit results and suggested an alternative scale to better capture the concept of engagement. Furthermore, Kulikowski (2019) found the superiority of the two-factor structure over and above the three-factor structure of UWES-9 in Poland and raised a question about the dimensionality of UWES. Despite the presence of one, two, and three-factor structure in literature, Schaufeli et al. (2006) has suggested the four-factor-'professional efficacy' as an expanded work engagement factor in their study. Therefore, due to the presence of variety of factor structures in the validation studies across countries, it has become important to assess the factor structure of UWES-9 in terms of structural validity in the Indian context.

Most of the validation studies to assess the utility of the UWES-9 scale were performed on western populations. Limited studies were performed in the Indian context (Kataria et al., 2003; Choudhary et al., 2012; Alok 2013; Lathabhavan et al., 2017). Kataria et al. (2003) conducted the validation studies in the Indian context and found a superior fit of the correlated three-factor structure of UWES-9 over UWES-17 and established discriminant validity. Lathabhavan et al. (2017) also found an adequate fit for the three-factor structure of UWES-9 in the Indian context. Despite the superior fit of the three-factor structure of UWES-9 in an Indian sample, Choudhary et al. (2012) did not find a clear view of the three-factor structure of UWES-9 using exploratory factor analysis. They rather found a one-factor structure, as one component was extracted with an Eigenvalue greater than one. Further, Alok (2013) found the one-factor model as an appropriate tool for the Indian sample. Due to inconsistency regarding the factor structure of UWES-9 in the Indian context, it has become important to understand the structural validity of UWES-9 in the Indian sample. Furthermore, all the above studies were performed in different organizational settings and samples, as different organizations provide different types of resources to engage their workforce, thereby affecting their level of engagement at work (Bakker & Demerouti, 2008). Given the above facts, the present paper seeks to assess the structural validity of UWES-9 and the internal consistency of the scale. Considering the above, four different types of the factor structure of UWES were examined in the Indian sample. Model 1 was based on a three-factor structure, model-2 was created as the two-factor structural model with two core elements of engagement (vigor and dedication) and model 3 was also

designed as a two-factor model while taking into consideration all the nine items (vigor and dedication were combined as one factor and absorption as another) and model-4 was formed as a one-factor model in which all the nine items were clubbed into one latent factor. The structural validity of all four models was evaluated using confirmatory factor analyses, and the results were compared with the recommended cutoff criteria.

Methods

Demographic details of the respondents:

The current study's participants were Indian managers from private-sector banks. The respondents consist of assistant managers, deputy managers, relationship managers, sales managers, and branch operation managers. For the statistical analysis, 350 managers were contacted. Responses were collected by visiting the branches. There were 300 usable, valid sample data points obtained in total. There were 202 men and 98 women among the respondents. 14 percent were graduates, 28.3 percent had postgraduate studies, and 57.7% had professional courses such as a diploma in banking and finance, an MBA, an MCA, or a B. Tech. The mean age of the participants was 32.46 years, with an SD of 5.34.

Measurement Scale:

The UWES-9 items scale was applied to measure the individual level of engagement at work. The scale consists of three dimensions leveled as vigor, dedication, and absorption. Each dimension is equipped with three indicators. The scale was graded on a seven-point scale, with one being 'never' and seven being 'always'. A sample item on each dimension includes (a) 'At my job, I am bursting with energy'; (b) 'At my job, I am enthusiastic about my job'; and (c) 'I get carried away while working', respectively.

Statistical Analyses:

The observed data was assessed with the help of statistical software called SPSS and AMOS. The structural validity was examined by applying the confirmatory factor analysis technique using the AMOS program. Hair et al. (2010) suggested that reporting one incremental index and one absolute index along with chi-square (χ^2) scores and degree of freedom (df) is provide adequate information to judge the model fit. Therefore, the following fit indices were applied to evaluate the models: (a) the χ^2/goodness-of-fit statistic (χ^2/degrees of freedom ratio); (b) RMSEA (Root Mean Square Error of approximation); (c) CFI (Comparative Fit Index); and (d) TLI (Tucker-Lewis Index). RMSEA is known as an absolute fit index that determines how well a theoretical-based model is captured by observed data. CFI and TLI are known as incremental indexes that compare the fit of a hypothesized model with that of a baseline model or a model with the worst fit. The χ^2/degrees of freedom ratio is one of the first goodness of fit statistics to overcome the problem of χ^2 that is associated with large samples (Byrne, 2010; Wheaton et al., 1977). As per the recommendation given by Hair et al. (2010), if the χ^2/degrees of freedom ratio of the observed data concerning the said

model is less than 5.00 is considered to be a good model. For RMSEA, a value below 0.08 is a sign of adequate model fit (Hair et al., 2010). In the case of CFI and TLI, a value greater than 0.90 is suggested as a good model fit (Hoyle, 1995; Hu & Bentler, 1998; Browne & Cudeck 1992). However, Hu and Bentler (1999) revised the values of CFI and TLI and considered values above 0.95 to be a good model fit in the case of the maximum likelihood approach technique. Further, internal consistency estimates of scale were computed using Cronbach's alpha coefficient value.

Statistical Results:

Confirmatory Factor Analysis for Structural Validity:

The results of the confirmatory factor analyses of all the four models of UWES were presented in tables 1-4. The measurement models diagram with corresponding standardized loadings were given in figures 1-4 for unconstrained models. . The goodness of fit statistics of all the four models suggested that model-2 (with vigor and dedication) depicted superior fit with TLI = 0.917 and CFI = 0.956. However, the RMSEA and $\chi 2/df$ values of all the four models were not adequate. So, we applied certain considerable constraints in the form of error terms as suggested by the modification indices to improve the model fitness. In the case of model 1, the error term between items V1 and V2 and between D1 and D3 were also suggested. In the case of model 2, the error term between D1 and D3 as well as between D2 and D3 were suggested

by the modification indices to be correlated. Similarly, for models 3 and 4 a considerable number of error terms were also suggested by the modification indices. The results of all the constrained models were also reported in the tables. The results of constrained models for model 1 and model 2 have shown improved goodness of fit. However, model 2 demonstrated excellent goodness of fit indices with lower RMSEA and $\chi 2/df$ values. Hence, based on the multiple fit indices, we suggested a two-factor model with six items (vigor and dedication) had a superior fit over and above one-factor, two-factor, and three-factor models of UWES with nine items in the Indian context.

Reliability and item analysis of UWES-9 Scale:

Cronbach alpha coefficients were used to assess the internal consistency/reliability of the three-factor UWES-9 model. The Cronbach alpha of the total UWES-9 items scale was 0.880 whereas the alpha value for the subscales vigor, dedication, and absorption was 0.801, 0.840, and 0.726 respectively. All the Cronbach alpha values of the scale have achieved the minimum cutoff criteria of 0.70 and above as recommended by Nunnally (1978). All the nine items of the scale were equally contributed to achieving the total alpha scale of 0.880. The inter-item correlation among the nine items ranged from 0.197 to 0.664. Because the goodness of fit statistics results showed an acceptable fit of the two-factor model over and above the three-factor model, the Cronbach alpha values UWES-6 were also assessed.

The Cronbach alpha coefficient for the two-factor model was 0.863.

Discussion:

The study focused on examining the structural validity of four models of UWES(one, two, and three-factor models) in the Indian sample. The goodness of fit statistic derived from the confirmatory factor analyses technique suggested superiority of the two-factor model (vigor and dedication) over and above the one and three-factor model. The Cronbach alpha value of the total scale was 0.880, which met the strict criteria of 0.80 as suggested by Henson (2001). In addition, the Cronbach alpha scores of three subscales were 0.801, 0.840, and 0.726 for vigor, dedication, and absorption respectively. The Cronbach alpha value of the total scale in the case of the three-factor structure was 0.880. Furthermore, approximately similar results produced by two factor model of UWES when compare with the three-factor model raises doubt about the dimensionality of the concept for the developing countries like India with diverse cultures. And also raised questions like what should be the ideal instrument to measure the engagement of an employee in the Indian context? In conclusion, the findings of this study supported the application of the both three-factor and two-factor model of UWES. noting it as valid and reliable instruments for measuring work engagement in the Indian context.

Limitation

There were several limitations to this study as well. First, because the data was obtained from a specific industry *i.e.* private sector banks, it is not possible to extrapolate the findings to other industries or profession categories. In addition, the use of error terms to improve the model fit to the observed data is not an ethical practice because it reduces the applicability of the scale in different contexts and reduces the chance of concrete decisions being made on the concept (Storm & Rothmann, 2003). Second, the data was gathered by a self-report questionnaire, common method bias is probable. The third limitation includes factor structure, the present study has focused only on four different types of measurement models of work engagement, whereas Kulikowski (2019) proposed eleven different types of measurement models of UWES in total. So, a more elaborated study is required. Furthermore, the study used a cross-sectional design, which may limit inclusive remarks on the scale's internal consistency. Longitudinal studies should be conducted to investigate the validity of UWES in the Indian context to draw more accurate conclusions about the measurement instrument's efficacy in terms of test-retest reliability.

Conclusion:

Work engagement is a very important concept for both occupational and health psychology in this volatile work environment. The finding of the study may provide new insight for a better understanding of the various type of measurement models of work engagement in the Indian contexts. The finding also suggested that the two-factor model (vigor and dedication)

could be a viable instrument and alternative for the three-factor model of work engagement. Furthermore, our findings also support the argument given by Bakker, Albrecht, and Leiter (2011) that, whether absorption is the core element of engagement as the two-factor model with dedication and vigor

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fit the data very well.

Table 1: Confirmatory factor analysis results for the three-factor model of UWES-9

UWES-9 (Model 1)	χ2	Df	χ2/*df*	TLI	CFI	RMSEA
Freely estimated	125.562	24	5.232	0.882	0.921	0.119
Constrained error term	94.581	22	4.299	0.908	0.944	0.105

Table 2: Confirmatory factor analysis results for the two-factor model (*vigor and dedication*) of UWES

UWES-6 (Model 2)	χ2	Df	χ2/*df*	TLI	CFI	RMSEA
Freely estimated	45.344	8	5.668	0.917	0.956	0.125
Constrained error term	17.184	6	2.864	0.967	0.987	0.079

Table 3: Confirmatory factor analysis results for two factor model (vigor and dedication as one factor and absorption as another) of UWES-9

UWES-9 (Model 3)	χ2	Df	χ2/*df*	TLI	CFI	RMSEA
Freely estimated	210.468	27	7.795	0.810	0.858	0.151
Constrained error term	148.329	25	5.933	0.863	0.904	0.128

Table 4: Confirmatory factor analysis results for one factor model of UWES-9

UWES-9 (Model 4)	χ2	Df	χ2/*df*	TLI	CFI	RMSEA
Freely estimated	252.789	27	9.363	0.767	0.825	0.167
Constrained error term	195.109	25	7.804	0.810	0.868	0.151
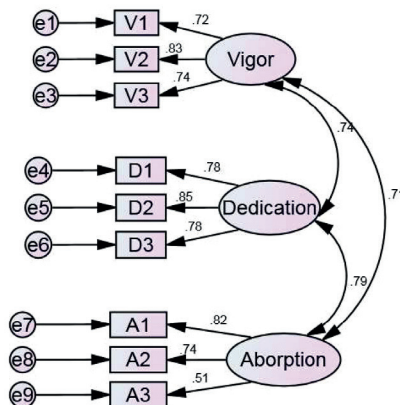
Figure 1: Three factor CFA model of UWES-9 items with standardized loading (model 1)
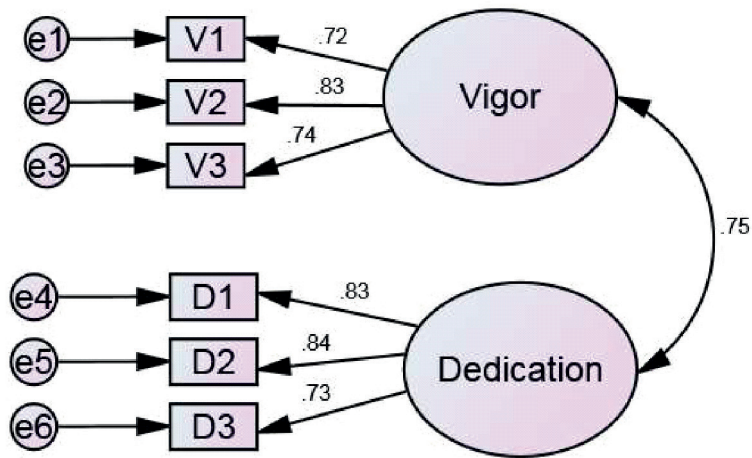
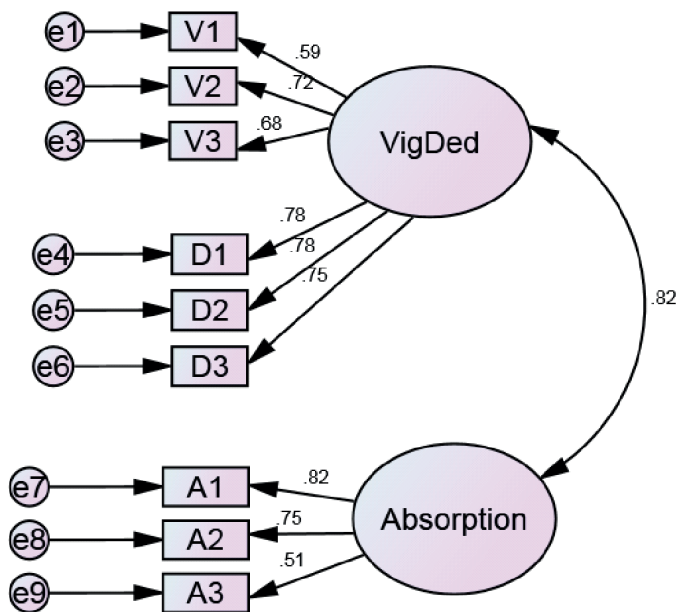Figure 2: Two Factor CFA model of UWES-6 items (vigor and dedication) with standardized loading (model 2)

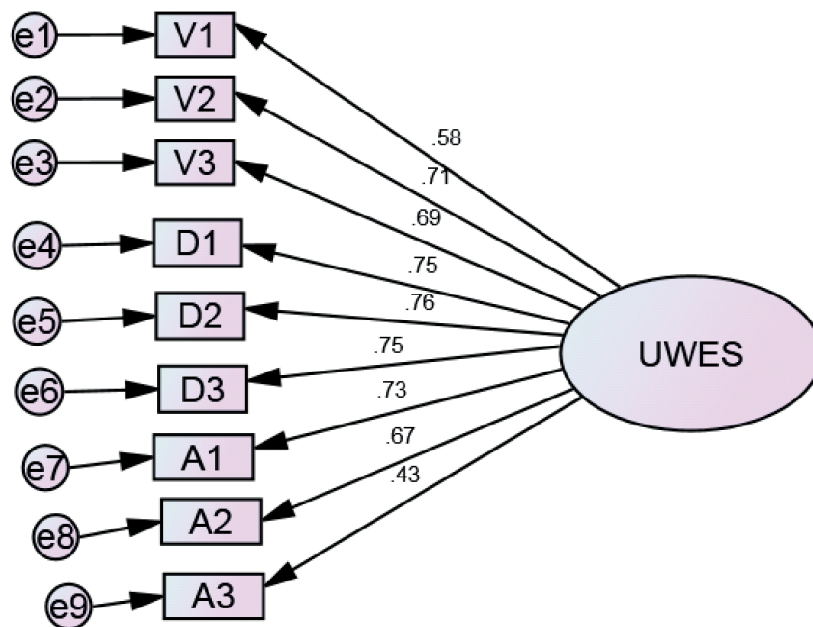Figure 3: Two factor CFA model of UWES-9 items with standardized loading (model 3)

Figure 4: One factor CFA Model of UWES-9 items with standardized loading (model 4)